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PREFACE.

In the preparation of this work, it was not designed to make a book to take the place of any other, nor one to constitute a necessary part of the series to which it belongs, nor to adapt it to the use of beginners, or those commencing the study of Arithmetic; but it was prepared to meet a demand in graded and advanced schools for a larger number of carefully prepared and practical examples for review and drill exercises than are furnished from ordinary text-books; and it may be used in connection with any other series of Arithmetics.

Of course, it is no substitute for a *systematic* treatise. On the contrary, its leading aim is to bring together *promiscuously* a large number of practical examples, involving nearly all the principles and ordinary processes of common Arithmetic, and designed thoroughly to test the pupil's judgment; to bring into use his knowledge of the theory and applications of numbers; to cultivate a habit of patient investigation and self-reliance; to test the truth and accuracy of his own processes by proof—the only test he will have to depend upon in all the computations in real business transactions in after life; in a word, to make him independent of the text-book, and of written rules and analysis.

Although the examples are promiscuous, yet there is a *general* classification of them, the work being divided into six chapters. The first chapter presents the Standards and

Tables of Weights and Measures; the second involves the applications of the Simple Rules of Arithmetic; the third embraces Common and Decimal Fractions; the fourth takes in Compound and Denominate Numbers; the fifth involves Percentage, in all its varied applications; and the sixth comprehends all other subjects properly belonging to this science. The examples in each chapter involve the combination and application of the principles and processes contained in the preceding ones, but not to any extent those of the following chapters. Classes, therefore, that, in regular course, have gone over the Simple Rules of Arithmetic only, will find in the second chapter of this book all they need in the way of supplementary examples for drill and review. Those who have finished, in any systematic treatise, the study of Fractions, will here have in chapter third proper exercises to try their skill in this part of the science; and so they may proceed by successive reviews, till the same searching test comes to be applied to every part of the subject.

Two editions are printed; one with answers at the close of the book, for the use of *teachers*, so that when different members of the same class obtain different results to the same example, he may decide which is correct, without being obliged to take the time necessary to solve or verify it himself. The other edition is without answers, and designed for the use of *classes*.

D. W. F.

New York, *July*, 1864.

MEASURES.

CHAPTER I.

1. **Measure** is that by which extent, dimension, capacity, or amount is ascertained, determined according to some fixed standard.

NOTE.—The process by which the extent, dimension, capacity, or amount is ascertained, is called *Measuring;* and consists in comparing the thing to be measured with some conventional standard.

Measures are of seven kinds:

1. Length.
2. Surface or Area.
3. Solidity or Capacity.
4. Weight, or Force of Gravity.
5. Time.
6. Angles.
7. Money or Value.

The first three kinds may be properly divided into two classes—Measures of Extension and Measures of Capacity.

MEASURES OF EXTENSION.

2. **Extension** has three dimensions—length, breadth, and thickness.

A Line has only one dimension — length.

A Surface or Area has two dimensions—length and breadth.

I. LINEAR MEASURE.

3. **Linear Measure**, also called Long Measure, is used in measuring lines or distances.

TABLE.

12 inches (in.)	make	1 foot,	ft.
3 feet	"	1 yard,	yd.
$5\frac{1}{2}$ yards, or $16\frac{1}{2}$ feet,	"	1 rod,	rd.
40 rods	"	1 furlong,	fur.
8 furlongs, or 320 rods,	"	1 statute mile,	mi.

The following denominations are also in use:

3	barleycorns	make	1 inch,	used by shoemakers in measuring the length of the foot.
4	inches	"	1 hand,	used in measuring the height of horses directly over the fore-feet.
9	"	"	1 span,	
21.888	"	"	1 sacred cubit.	
3	feet	"	1 pace.	
6	"	"	1 fathom,	used in measuring depths at sea.
1.15	statute miles	"	1 geographic mile,	used in measuring distances at sea.
3	geographic "	"	1 league.	
60	"	" or	1 degree	of latitude on a meridian or of longitude on the equator.
69.16	statute "	"		
360	degrees	"	the circumference of the earth.	

NOTES.—1. For the purpose of measuring cloth and other goods sold by the yard, the yard is divided into *halves*, *fourths*, *eighths*, and *sixteenths*. The old table of Cloth Measure is practically obsolete.

2. A span is the distance that can be reached, spanned, or measured between the end of the middle finger and the end of the thumb. Among sailors 8 spans are equal to 1 fathom.

3. The geographic mile is $\frac{1}{60}$ of $\frac{1}{360}$ or $\frac{1}{21600}$ of the distance round the center of the earth. It is a small fraction more than 1.15 statute miles.

4. The cubit was originally the length of a man's forearm and hand; or the distance from the elbow to the end of the middle finger

5. The length of a degree of latitude varies, being 68.72 miles at the equator, 68.9 to 69.05 miles in middle latitudes, and 69.30 to 69.34 miles in the polar regions. The mean or average length, as stated in the table, is the standard recently adopted by the U. S. Coast Survey. A degree of longitude is greatest at the equator, where it is 69.16 miles, and it gradually decreases toward the poles, where it is 0.

SURVEYOR'S LINEAR MEASURE.

4. **A Gunter's Chain**, used by land surveyors, is 4 rods, or 66 feet long, and consists of 100 links.

TABLE.

7.92	inches (in.)	make	1 link,	l.
25	links	"	1 rod,	rd.
4	rods, or 66 feet,	"	1 chain,	ch.
80	chains	"	1 mile,	mi.

NOTE.—The denomination, rods, is seldom used in chain measure, distances being taken in chains and links.

II. Square Measure.

5. Square Measure is used in computing areas or surfaces; as of land, boards, painting, plastering, paving, etc.

TABLE.

144	square inches	(sq. in.)	make	1	square foot,	sq. ft.
9	" feet		"	1	" yard,	sq. yd.
$30\frac{1}{4}$	" yards		"	1	" rod,	sq. rd.
40	" rods		"	1	" rood,	R.
4	roods		"	1	acre,	A.
640	acres		"	1	square mile,	sq. mi.

Artificers estimate their work as follows:

By the square foot: glazing and stone-cutting.

By the square yard: painting, plastering, paving, ceiling, and paper-hanging.

By the square of 100 square feet: flooring, partitioning, roofing, slating, and tiling.

Bricklaying is estimated by the thousand bricks, by the square yard, and by the square of 100 square feet.

NOTES.—1. In estimating the painting of moldings, cornices, etc., the measuring-line is carried into all the moldings and cornices.

2. In estimating brick-laying by either the square yard or the square of 100 feet, the work is understood to be 12 inches or $1\frac{1}{2}$ bricks thick.

3. A thousand shingles are estimated to cover 1 square, being laid 5 inches to the weather.

SURVEYORS' SQUARE MEASURE.

6. This measure is used by surveyors in computing the area or contents of land.

TABLE.

625 square links (sq. l.)	make	1	pole,	P.
16 poles	"	1	square chain,	sq. ch.
10 square chains	"	1	acre,	A.
640 acres	"	1	square mile,	sq. mi.
36 square miles (6 miles square)	"	1	township,	Tp.

NOTES.—1. A square mile of land is also called a *section*.

2. Canal and railroad engineers commonly use an engineers' chain, which consists of 100 links, each 1 foot long.

3. The contents of land are commonly estimated in square miles, acres, and hundredths; the denomination, *rood*, is rapidly going into disuse.

III. Cubic Measure.

7. Cubic Measure, also called Solid Measure, is used in computing the contents of solids, or bodies; as timber, wood, stone, etc.

TABLE.

1728	cubic inches (cu. in.)	make 1	cubic foot, cu. ft.
27	cubic feet	" 1	cubic yard, cu. yd.
40	cubic feet of round timber, or	" 1	ton or load, T.
50	" " hewn "		
16	cubic feet	" 1	cord foot, cd. ft.
8	cord feet, or	" 1	cord of wood, Cd.
128	cubic feet		
$24\frac{3}{4}$	cubic feet	" 1	perch of stone or masonry, Pch.

Notes.—1. A cubic yard of earth is called a load.

2. Railroad and transportation companies estimate light freight by the space it occupies in cubic feet, and heavy freight by weight.

3. A pile of wood 8 feet long, 4 feet wide, and 4 feet high, contains 1 cord; and a cord foot is 1 foot in length of such a pile.

4. A perch of stone or of masonry is $16\frac{1}{2}$ feet long, $1\frac{1}{2}$ feet wide, and 1 foot high.

5. Joiners, bricklayers, and masons, make an allowance for windows, doors, etc., of one half the openings or vacant spaces. Bricklayers and masons, in estimating their work by cubic measure, make no allowance for the corners of the walls of houses, cellars, etc., but estimate their work by the *girt*, that is, the entire length of the wall on the *outside*.

6. Engineers, in making estimates for excavations and embankments, take the dimensions with a line or measure divided into feet and decimals of a foot. The computations are made in feet and decimals, and the results are reduced to cubic yards. In civil engineering, the cubic yard is the unit to which estimates for excavations and embankments are finally reduced.

7. In scaling or measuring timber for shipping or freighting, $\frac{1}{5}$ of the solid contents of round timber is deducted for waste in hewing or sawing. Thus, a log that will make 40 feet of hewn or sawed timber, actually contains 50 cubic feet by measurement; but its market value is only equal to 40 cubic feet of hewn or sawed timber. Hence, the cubic contents of 40 feet of round and 50 feet of hewn timber, as estimated for market, are identical.

8. Sawed timber, joists, plank, and scantlings are generally bought and sold by what is called *board measure*.

9. A cubic foot of water at the maximum density, at the level of the sea, weighs $62\frac{1}{2}$ pounds, avoirdupois.

10. A cubic foot of lead weighs $708\frac{3}{4}$ lbs.; of brass, $534\frac{3}{4}$ lbs.; of copper, 555 lbs.; of wrought iron, $486\frac{3}{4}$ lbs.; of cast-iron, $450\frac{3}{4}$ lbs.; of marble, 171 lbs.; of granite, 165 lbs.; of clay, 130 lbs.; of common soil, 124 lbs.; of bricks, 124 lbs.; of sand, 95 lbs.; of sea water, $64\frac{5}{10}$ lbs.; of oak wood, 55 lbs.; of Anthracite coal, 54 lbs.; of Bituminous coal, 50 lbs.; of red pine wood, 42 lbs.; and of white pine wood, 30 lbs.

MEASURES OF CAPACITY.

I. Liquid Measure.

8. **Liquid Measure**, also called Wine Measure, is used in measuring liquids; as liquors, molasses, water, etc.

TABLE.

4	gills	make	1 pint,	pt.
2	pints	"	1 quart,	qt.
4	quarts	"	1 gallon,	gal.
31½	gallons	"	1 barrel,	bbl.
2	barrels, or 63 gal.	"	1 hogshead,	hhd.

Notes.—1. The denominations, barrel and hogshead, are used in estimating the capacity of cisterns, reservoirs, vats, etc. In Massachusetts the barrel is estimated at 32 gallons, in some States 31½ gallons, and in others from 28 to 32 make 1 barrel.

2. The tierce, hogshead, pipe, butt, and tun are the names of casks, and do not express any fixed or definite measures. They are usually gauged, and have their capacities in gallons marked on them. Several of these denominations are still in use in England.

The following denominations are also in use:

9	old ale gallons	make	1 firkin.
4	firkins	"	1 barrel of beer.
7½	Imperial gallons	"	1 firkin.
52½	Imperial gallons, or	"	1 hogshead.
63	wine "		
70	Imperial " or	"	1 puncheon or
84	wine "	"	⅓ of a tun.
2	hogsheads, that is	"	1 pipe.
105	Imperial gallons or		
126	wine "		
2	pipes	"	1 tun.

Pipes of wine are of different capacities, as follows:

110	wine	gallons	make	1	pipe	of Madeira.
120	"	"	"	1	"	Barcelona, Vidonia, or Teneriffe.
130	"	"	"	1	"	Sherry.
138	"	"	"	1	"	Port.
140	"	"	"	1	"	Bucellas, or Lisbon.

BEER MEASURE.

9. **Beer Measure** is a species of liquid measure used in measuring beer, ale, and milk.

TABLE.

2	pints (pt.)	make 1 quart,	qt.
4	quarts	" 1 gallon,	gal.
36	gallons	" 1 barrel,	bbl
$1\frac{1}{2}$	barrels, or 54 gallons,	" 1 hogshead,	hhd.

This measure is not a standard; it is rapidly falling into disuse.

II. DRY MEASURE.

10. **Dry Measure** is used in measuring articles, not liquid; as grain, fruit, salt, roots, ashes, etc.

TABLE.

2	pints (pt.)	make 1 quart,	qt.
8	quarts	" 1 peck,	pk.
4	pecks	" 1 bushel,	bu. or bush.

The following are sometimes used:

8 bushels of 70 pounds each make 1 quarter of wheat.
36 " heaped measure, " 1 chaldron of coal.

NOTE.—The quarter of wheat is 560 pounds, or $\frac{1}{4}$ of a ton of 2240 pounds.

11. COMPARATIVE TABLE OF MEASURES OF CAPACITY.

	Cubic in. in one gallon.	Cubic in. in one quart.	Cubic in. in one pint.	Cubic in. in one gill.
Wine measure, ...	231	$57\frac{3}{4}$	$28\frac{7}{8}$	$7\frac{7}{32}$
Dry measure ($\frac{1}{2}$ pk.),	$268\frac{4}{5}$	$67\frac{1}{5}$	$33\frac{3}{5}$	$8\frac{2}{5}$

NOTES.—1. The beer gallon of 282 inches is retained in use only by custom.

2. Grain and some other commodities are sold by *stricken measure*, and in such cases the "measure is to be stricken with a round stick or roller, straight, and of the same diameter from end to end."

3. Coal, ashes, marl, manure, corn in the ear, fruit, and roots are sold by *heap measure*. The bushel, heap measure, is the Winchester bushel heaped in the form of a cone, which cone must be $19\frac{1}{2}$ inches in diameter (= to the outside diameter of the standard bushel measure), and at least six inches high. A bushel, heap measure, contains 2747.7167 cubic inches, or 597.2967 cubic inches more than a bushel stricken measure. Since 1 peck contains $\frac{2150.4}{4} = 537.605$ cubic inches, the bushel, heap measure, contains 59.6917 cubic inches more than 5 pecks. As this is about 1 bu. 1 pk. $1\frac{3}{4}$ pt., it is sufficiently accurate in practice, to call 5 pecks stricken measure a heap bushel.

4. A standard bushel, stricken measure, is commonly estimated at 2150.4 cubic inches. The old English standard bushel from which the United States standard bushel was derived, was kept at Winchester, England; hence the name.

WEIGHTS.

I. Troy Weight.

12. **Troy Weight** is used in weighing gold, silver, and jewels.

TABLE.

24 grains (gr.)	make	1 pennyweight,	pwt. or dwt.
20 pennyweights	"	1 ounce,	oz.
12 ounces	"	1 pound,	lb.

Note.—Troy weight is sometimes called *Goldsmith's Weight.*

II. Avoirdupois Weight.

13. **Avoirdupois Weight** is used for all the ordinary purposes of weighing.

TABLE.

16 drams (dr.)	make	1 ounce,	oz.
16 ounces	"	1 pound,	lb.
100 lb.	"	1 hundred weight,	cwt.
20 cwt., or 2000 lbs.,	"	1 ton,	T.

Note.—The *long* or *gross ton*, hundred weight, and quarter were formerly in common use; but they are now seldom used except in estimating English goods at the United States Custom-houses, in freighting and wholesaling coal from the Pennsylvania mines, and in the wholesale iron and plaster trade.

LONG TON TABLE.

28 lb.	make	1 quarter,	marked qr.
4 qr. = 112 lb.	"	1 hundred weight,	" cwt.
20 cwt. = 2240 lb.	"	1 ton,	" T.

The following denominations are also in use:

8 pounds of butchers' meat	make	1 stone.	
14 " other commodities	"	1 "	or $\frac{1}{8}$ of a cwt.
2 stone, or 28 pounds	"	1 todd of wool.	
70 pounds of salt	"	1 bushel.	
56 "	make	1 firkin of butter.	
100 "	"	1 quintal of dried salt fish.	
100 "	"	1 cask of raisins.	
196 "	"	1 barrel of flour.	
200 "	"	1 "	" beef, pork, or fish.
280 "	"	1 "	" salt at the N.Y. State salt-works.

NOTES.—The English quarter is 28 pounds, the hundred weight is 112 pounds, and the ton is 20 hundred weight, or 2240 pounds.

2. The weight of a barrel of flour is 7 quarters of old, or long ton weight.

3. The weight of a bushel of Indian corn and rye, as adopted by most of the States, and of a bushel of salt is 2 quarters; and of a barrel of salt 10 quarters, or $\frac{1}{8}$ of a long ton.

4. The terms *gross* and *net* are used in this weight. *Gross weight* is the weight of the goods, together with the box, cask, or whatever contains them. *Net weight* is the weight of the goods alone.

14. The weight of the bushel of certain grains and roots has been fixed by statute in many of the States; and these statute weights must govern in buying and selling, unless specific agreements to the contrary be made.

TABLE OF AVOIRDUPOIS POUNDS IN A BUSHEL,

As prescribed by statute in the several States named.

COMMODITIES.	California.	Connecticut.	Illinois.	Indiana.	Iowa.	Kentucky.	Louisiana.	Maine‡	Massachusetts.	Michigan.	Minnesota.	Missouri.	N. Hampshire.	New Jersey.	New York.	Ohio.	Oregon.	Pennsylvania.	Rhode Island.	Vermont.	Washington T.	Wisconsin.
Barley	50		48	48	48	48	32		46	48	48	48		48	48	48	46	47		46	45	48
Beans			60	60	60	60						60			62							
Blue Grass Seed			14	14	14	14						14										
Buckwheat	40	45	40	50	52	52			46	42	42	52		50	48		42	48		46	42	42
Castor Beans			46	46	46							46										
Clover Seed			60	60	60	60				60	60	60		64	60	60	60				60	60
Dried Apples			24	25	24					28	28	24					28				28	28
Dried Peaches			33	33	33					28	28	33					28				28	28
Flax Seed			56	56	56	56						56		55	55	56						56
Hair			8					11														
Hemp Seed			44	44	44	44						44										
Indian Corn	52	56	52	56	56	56	56		56	56	56	52		56	58	56	56	56		56	56	56
Indian Corn in ear			70	68	68																	
Indian Corn Meal			48	50		50		50	50										50			
Mineral Coal*			80	70								80										
Oats	32	28	32	32	35	33¼	32	30	30	32	32	35	30	30	32	32	34	32		32	36	32
Onions			57	48	57	57			52			57							50		50	
Peas															60							
Potatoes		60	60	60	60	60		60				60	60	60	60		60		60	60	60	60
Rye	54	56	54	56	56	56	32		56	56	56	56		56	56	56	56	56		56	56	56
Rye Meal								50	50										50			
Salt†				50	50	50						50			56							
Timothy Seed			45	45	45	45						45			44							46
Wheat	60	56	60	60	60	60	60		60	60	60	60		60	60	60	60	60		60	60	60
Wheat Bran			20		20	20						20										

* In Kentucky 80 lbs. of bituminous coal, or 70 lbs. of cannel coal, make 1 bushel.

† In Pennsylvania 80 lbs. coarse, 70 lbs. ground, or 62 lbs. fine salt make 1 bushel; and in Illinois, 50 lbs. common or 55 lbs. fine salt make 1 bushel.

‡ In Maine 64 lbs. of ruta baga turnips or beets make 1 bushel.

III. Apothecaries' Weight.

15. **Apothecaries' Weight** is used by apothecaries and physicians in compounding medicines; but medicines are bought and sold by avoirdupois weight.

TABLE.

20 grains (gr.)	make	1 scruple,	sc. or ℈.
3 scruples	"	1 dram,	dr. or ʒ.
8 drams	"	1 ounce,	oz. or ℥.
12 ounces	"	1 pound,	lb. or ℔.

APOTHECARIES' FLUID MEASURE.

16. The measures for fluids, as adopted by apothecaries and physicians in the United States, to be used in compounding medicines, and putting them up for market, are given in the following

TABLE.

60 minims (♏)	make	1 fluidrachm,	f ʒ.
8 fluidrachms	"	1 fluidounce,	f ℥.
16 fluidounces	"	1 pint,	O.
8 pints	"	1 gallon,	Cong.

17. COMPARATIVE TABLE OF WEIGHTS.

	Troy.	Avoirdupois.	Apothecaries'.
1 pound =	5760 grains, =	7000 grains. =	5760 grains,
1 ounce =	480 " =	437.5 " =	480 "
	175 pounds, =	144 pounds, =	175 pounds.

18. COMPARATIVE TABLE.

	United States.	English.	French.
Extension,	Yd. of 3 ft., or 36 in.	Same as U. S.	Metre, 39.3685 in.
Capacity,	Wine gal., 231 cu. in. Winch'r bu., 2150.42 cu. in.	Imp'l gal., 277.274 cu. in. Imp'l bu., 2218.192 cu. in.	Litre, 61.53294 cu. in.
Weight,	Troy lb., 5760 gr.	Imperial lb., 5760 gr.	Gramme 15.433159 T. gr.

NOTES.—An Imperial gallon is equal to 1.2 wine gallons.
2. An old ale or beer gallon is very nearly equal to 1.221 wine gallons, or 1.017 Imperial gallons.

MEASURES OF TIME AND ANGLES.

TIME.

19. **Time** is the measure of duration.

TABLE.

60 seconds (sec.)	make	1 minute,	min.
60 minutes	"	1 hour,	h.
24 hours	"	1 day,	da.
7 days	"	1 week,	wk.
365 days	"	1 common year,	yr.
366 days	"	1 leap year,	yr.
12 calendar months	"	1 year,	yr.
100 years	"	1 century,	C.

The calendar year is divided as follows:

No. of month.	Season.	Names of months.	Abreviations.	No. of days.
1	Winter.	January,	Jan.	31
2		February,	Feb.	28 or 29
3	Spring,	March,	Mar.	31
4		April,	Apr.	30
5		May,	——	31
6	Summer,	June,	Jun.	30
7		July,	——	31
8		August,	Aug.	31
9	Autumn,	September,	Sept.	30
10		October,	Oct.	31
11		November,	Nov.	30
12	Winter,	December,	Dec.	31

NOTE.—In most business transactions 30 days are called 1 month.

MEASURE OF ANGLES.

20. **Circular Measure**, or Circular Motion, is used principally in surveying, navigation, astronomy, and geography, for reckoning latitude and longitude, determining locations of places and vessels, and computing difference of time.

Every circle, great or small, is divisible into the same number of equal parts: as quarters, called quadrants; twelfths, called signs; 360ths, called degrees, etc.

TABLE.

60 seconds (″)	make	1 minute,	′.
60 minutes	"	1 degree,	°.
30 degrees	"	1 sign,	S.
12 signs, or 360°,	"	1 circle,	C.

NOTES.—1. Minutes of the earth's circumference are called geographic or nautical miles.

2. A Knot is a nautical or geographical mile. Thus, the expression, "ten knots an hour," denotes ten geographical miles per hour.

3. One English mile equals 5280 feet, and one nautical or geographical mile equals 6086 feet.

4. The denomination, *signs*, is confined exclusively to Astronomy.

5. A degree has no fixed linear extent. When applied to any circle it is always $\frac{1}{360}$ part of the circumference. But, strictly speaking, it is not any part of a circle.

6. 90° make a quadrant or right angle;
60° " a sextant or $\frac{1}{6}$ of a circle.

MISCELLANEOUS TABLES.

21. COUNTING.

12 units or things	make	1 dozen.
12 dozen	"	1 gross.
12 gross	"	1 great gross.
20 units	"	1 score.

22. PAPER.

24 sheets	make	1 quire.
20 quires	"	1 ream.
2 reams	"	1 bundle.
5 bundles	"	1 bale.

23. BOOKS.

The terms *folio*, *quarto*, *octavo*, *duodecimo*, etc., indicate the number of leaves into which a sheet of paper is folded.

A sheet folded in 2 leaves	is called	a folio.
A sheet folded in 4 leaves	"	a quarto, or 4to.
A sheet folded in 8 leaves	"	an octavo, or 8vo.
A sheet folded in 12 leaves	"	a 12mo.
A sheet folded in 16 leaves	"	a 16mo.
A sheet folded in 18 leaves	"	an 18mo.
A sheet folded in 24 leaves	"	a 24mo.
A sheet folded in 32 leaves	"	a 32 mo.

24. COPYING.

72 words make 1 folio, or sheet of common law.
90 " " 1 " " " " chancery.

MONEY AND CURRENCIES.

I. United States Money.

25. The currency of the United States is decimal currency, and is sometimes called *Federal Money.*

TABLE.

10 mills (m.)	make	1 cent,	ct.
10 cents	"	1 dime,	d.
10 dimes	"	1 dollar,	$.
10 dollars	"	1 eagle,	E.

Coins.—*The gold coins* are the double eagle, eagle, half eagle, quarter eagle, three dollar piece, and dollar.

The silver coins are the half and quarter dollar, dime and half dime, and three cent piece.

The nickel coin is the cent.

STATE CURRENCIES.

26. United States money is reckoned in dollars, dimes, cents, and mills, one dollar being uniformly valued in all the States at 100 cents; but in many of the States money is sometimes reckoned in dollars, shillings, and pence.

Georgia Currency.

Georgia, South Carolina, $1=4s. 8d.=56d.

Canada Currency.

Canada, Nova Scotia, $1=5s.=60d.

New England Currency.

New England States, Indiana, Illinois, Missouri, Virginia, Kentucky, Tennessee, Mississippi, Texas, $1=6s.=72d.

Pennsylvania Currency.

New Jersey, Pennsylvania, Delaware, Maryland, $1=7s. 6d.=90d.

New York Currency.

New York, Ohio, Michigan, North Carolina. $1=8s.=96d.

II. Canada Money.

27. The currency of the Canadian provinces is decimal, and the table and denominations are the same as those of the United States money.

Note.—The decimal currency was adopted by the Canadian Parliament in 1858, and the Act took effect in 1859. Previous to the latter year the money of Canada was reckoned in pounds, shillings, and pence, the same as in England.

Coins.—The *silver coins* are the shilling, or 20-cent piece, the dime, and half dime.

The *copper coin* is the cent.

Notes.—The 20-cent piece represents the value of the shilling of the old Canada currency.

2. The value of the 20-cent piece in United States money is 18¾ cents, of the dime 9⅓ cents, and of the half dime 4⅔ cents.

3. Every 3d. of the old coinage is equal to 5 cents of the new.

III. English Money.

28. **English** or **Sterling Money** is the currency of Great Britain.

TABLE.

4 farthings (far. or qr.)	make 1 penny,	d.
12 pence	" 1 shilling,	s.
20 shillings	" 1 pound or sovereign,	£ or sov.

Notes.—1. Farthings are generally expressed as fractions of a penny; thus, 1 far., sometimes called 1 quarter, (qr.) = ¼d.; 3 far. = ¾d.

2. The *gold coins* are the sovereign (= £1) and the half sovereign (= 10s.)

3. The *silver coins* are the crown (= 5s.), the half crown (= 2s. 6d.), the shilling, and the 6 penny piece.

4. The *copper coins* are the penny, half penny, and farthing.

5. The guinea (= 21s.) and the half guinea (= 10s. 6d. sterling) are old gold coins, that are still in circulation, but are no longer coined.

6. In France accounts are kept in francs and decimes. A franc is equal to 18.6 cents United States money.

7. The pound (£) is not a coin, but stands for 20s.; it is represented by the sovereign, or the bank note of £1. The pound is so called, because its equivalent, 240d. or 20s., formerly contained a pound weight of siver, the pound then being smaller than at present. A pound of standard silver is now coined into 66s. The value of £1 in Canada and the United States is $4.84. Hence the value of an English shilling is 24⅕ cents.

INTEREST.

29. **Legal Interest** is the rate per cent. established by law. It varies in different States, as follows:

Alabama,	8	per cent.	Minnesota,	7	per cent.
Arkansas,	6	" "	Mississippi,	8	" "
California,	10	" "	Missouri,	6	" "
Connecticut,	6	" "	New Hampshire,	6	" "
Delaware,	6	" "	New Jersey,	6	" "
Dist. of Columbia,	6	" "	New York,	7	" "
Florida,	8	" "	North Carolina,	6	" "
Georgia,	7	" "	Ohio,	6	" "
Illinois,	6	" "	Pennsylvania,	6	" "
Indiana,	6	" "	Rhode Island,	6	" "
Iowa,	6	" "	South Carolina,	7	" "
Kentucky,	6	" "	Tennessee,	6	" "
Louisiana,	5	" "	Texas,	8	" "
Maine,	6	" "	U. States (debts),	6	" "
Maryland,	6	" "	Vermont,	6	" "
Massachusetts,	6	" "	Virginia,	6	" "
Michigan,	7	" "	Wisconsin,	7	" "

NOTES.—1. The legal rate in Canada, Nova Scotia, and Ireland is 6 per cent., and in England and France 5 per cent.

2. When the rate per cent. is not specified in accounts, notes, mortgages, contracts, etc., the legal rate is always understood.

TABLE.

30. *Showing the number of days from any day of one month to the same day of any other month within one year.*

FROM ANY DAY OF	TO THE SAME DAY OF THE NEXT											
	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
January	365	31	59	90	120	151	181	212	243	273	304	334
February...	334	365	28	59	89	120	150	181	212	242	273	303
March	306	337	365	31	61	92	122	153	184	214	245	275
April.....	275	306	335	365	30	61	91	122	153	183	214	244
May	245	276	304	335	365	31	61	92	123	153	184	214
June.....	214	245	273	304	334	365	30	61	92	122	153	183
July	184	215	243	274	304	335	365	31	62	92	123	153
August.....	153	184	212	243	273	304	334	365	31	61	92	122
September...	122	153	181	212	242	273	303	334	365	30	61	91
October	92	123	151	182	212	243	273	304	333	365	31	61
November..	61	92	120	151	181	212	242	273	304	334	365	30
December..	31	62	90	121	151	182	212	243	274	304	335	365

ARITHMETICAL EXAMPLES.

CHAPTER II.

1. The total length of railroads in Massachusetts, Jan. 1st, 1864, was 1941 miles, and the total cost of the roads and equipments up to the same date, was $66809802. How much had been expended per mile?

2. At the same date there were 112 miles of horse-railroads, costing for building and equipments $3979596. How much more had been expended per mile upon horse-railroads than upon steam railroads?

3. A man bequeathed his estate as follows: to each of his three sons, $8500; to each of his four daughters, $4250; to his wife, $350 more than the sum of the shares of one son and three daughters; and the remainder, which was $2000 more than he gave to all his family, he left to benevolent institutions. What was the value of his estate?

4. The national debt of Great Britain in 1861 was $133.55 for each person, and the population was 29334788. What was the national debt?

5. At the same date, the annual interest of the national debt was $127665701. Required, the annual interest to each person.

6. The Finances of the State of Maine for the year 1862 were stated as follows:

Receipts.—Balance in Treasury, Jan. 1, 1862, $68434.63; receipts from Taxes, $439150.64; receipts from Loans and miscellaneous sources, $220661.39. *Expenditures.*—For war purposes, $124088.36; for soldiers' allotments, $109072.31; for civil services, $400732.45. Required the balance in Treasury, Jan. 1, 1863.

7. The area of Ireland is 32481 square miles, and 5023984 acres are uncultivated. How many more acres are cultivated than 3 times the number uncultivated, there being 640 acres in one square mile?

8. In 1861 England paid the United States $132741160 for cotton; Egypt, $6225330; and India, $31165565. In 1863 she paid the United States $2302290; Egypt, $32996465, and India, $110258560. How much less was paid for cotton by England in 1863 than in 1861?

9. Western Virginia embraces 51 counties, in which there were, Oct. 1, 1863, 368623 whites, 3981 free colored persons, and 20606 slaves. What was the average population in each county?

10. During the six months ending March 1, 1864, 1020000 quarters of wheat were exported from the United States. How many vessels, each carrying 600 short tons, were required to ship the same?

11. The city of New York paid taxes from 1858 to 1864 amounting in the aggregate to $64445967.34. The property upon which these taxes were assessed amounted to $531194290 in 1858, and $594196863 in 1863. How much less than the taxes was the increase of property?

12. The number of pupils in Girard College in 1857 was 295, and the expenses for the year were $88173; in 1862 the pupils numbered 400, and the expenses that year were $73247. How much less was the expense per pupil in 1862 than in 1857?

13. There were in operation, Jan. 1, 1862, in the New

England States 3641 miles of railroad; in New York, 2769; in Pennsylvania, 2918; in Virginia, 1729; in Georgia, 1419; in Tennessee, 1253; in Ohio, 4232; in Indiana, 2169; and in Illinois, 3041. What was the aggregate number of miles in operation in all these States?

14. The total length of railroad in operation in the United States, Jan. 1, 1862, being 33222 miles, what was the aggregate number of miles in all the other States not mentioned in the preceding Example?

15. The total cost of the Atlantic Telegraph Cable, as originally made, was $1258250, of which 10 miles deep-sea cable was made at a cost of $1450 per mile, and 25 miles shore-ends at $1250 per mile; the cost of the remainder was $485 per mile. How many miles of cable were made?

16. If a house is worth $2500, and the farm on which it stands, 3 times as much, lacking $500, and the stock, one half as much as the house and farm, what is the value of the whole?

17. The population of Boston in 1862 was 177812; of New York, 805651; of Philadelphia, 562529; of Baltimore, 212418; of New Orleans, 168675; of St. Louis, 160773; of Cincinnati, 161044, and of Chicago, 109260. What was the entire population of these cities?

18. The product of three numbers is 535500; one of the numbers is 68, and another 75. What is the third?

19. Forty Michigan regiments, whose original strength was 35630 men, lost in 1861–'62, 771 men in battle, 1810 by disease, 370 missing, and 3791 were discharged. What was the total loss in two years, and, making no allowance for recruits, what was the entire strength of those regiments, Jan. 1, 1863?

20. The population of the New England States in 1860 was as follows:—Maine, 628279; New Hampshire, 326073; Vermont, 315098; Massachusetts, 1231066; Rhode Island,

174620; Connecticut, 460147. Required the entire population.

21. The Pennsylvania Central Railway is 356 miles long, and cost $31450000; the New York Central Railway is 655 miles long, and cost $38825000; the Illinois Central is 708 miles long, and cost $31280000, and the Michigan Central is 329 miles long and cost $14000000. Required the aggregate length and cost of these four roads.

22. Of libraries containing 10000 volumes and upwards, Massachusetts has 20, containing an aggregate of 614415 vols.; Connecticut 6, containing 102373; Rhode Island 3, containing 69868; Maine 3, containing 40700; New Hampshire 2, containing 25679, and Vermont 1, containing 10000. What is the aggregate number of volumes in these libraries, and how many more in the libraries of Massachusetts than in those of all of the other New England States?

23. In Illinois in 1862 there were 9811 public schools, which were attended by 519983 scholars. What was the average number in each school?

24. A man invests in trade at one time, $680; at another time, $820; at a third time, $1580, and on a fourth occasion $420. How much must he add to the sum of these that the amount may be increased three-fold?

25. The Coast Survey issued a certain number of hydrographic maps and charts in 1863, of which 3000 were delivered to the marine transportation service, 4 times as many + 300 to the military authorities, and the remainder, which was 650 less than one-half the whole number issued, to the naval service. What number of maps and charts were issued?

26. What number is that which, being divided by 24, the quotient increased by 25 + 1, the sum diminished by the difference between 40 and 27, the remainder multiplied by 4, and the product divided by 11, will give 12 for a quotient?

27. France, with a population of 36000000 in 1861, had a national debt of $61.28 per capita. Required her national debt.

28. The annual interest upon the national debt of France was $110000000. How much was the annual interest to each person?

29. Colorado Territory, organized Feb. 28, 1861, was formed of 47657000 acres formerly included in the territories of Utah and Kansas, 10262400 acres in that of Nebraska, and 8960600 acres formerly in New Mexican territory. Required, the number of acres and square miles in Colorado Territory.

30. There were 10869 miles of railway in Great Britain in 1862, the receipts from which were 28565355 pounds sterling. Reckoning a pound sterling worth $4.86, how many dollars were received per mile?

31. A man worth $12750 received a legacy of $8000; he spent $456 in traveling, and gave $1000 to a college. How much money had he left?

32. The number of 1 and 2 cent internal revenue stamps sold in 1863 was 70036697, the value of which was $1146738.69; the number of 3 to 20 cent stamps was 23065021, valued at $1520440.18, and of 25 to 40 cent stamps 3745355, worth $1009039.65. Required, the number and value of the stamps of these denominations.

33. Connecticut made, during the year 1863, an aggregate monthly payment of $70636 to the families of 8333 soldiers. How much was the average amount paid to the family of each soldier?

34. The population of the States in 1860 was 31224885, there being 241 representatives, how large a representation should New York have, whose population was 3880735?

35. Divide $900+\overline{(34+2)\times 5}$ by $(75\div 5)+\overline{(4\times 12)-33}$.

36. In Vermont during the month of August, 1863, 7071 men were drafted; 3583 of these were exempted, 557 failed to report, 145 cases were undecided, and 5 died; the remainder were held to military service; of these 1833 paid com-

mutation, and 630 furnished substitutes. How many entered the service personally?

37. There is an island 40 miles in circumference. A and B commence traveling around it at the same time and place, but in different directions, A at the rate of 4 miles an hour, and B, 5 miles. How far apart will they be at the end of 7 hours?

38. The entire coinage of the U. S. Mint and branches from the commencement of their operations till June 30, 1863, was as follows: At Philadelphia, 768279944 pieces were coined, valued at $509602439.14; at San Francisco, 15136912 pieces, worth $165459288.20; at New Orleans, 94890695 pieces, worth $70271652.13; at Charlotte, 1206954 pieces, worth $5048641.50; at Dahlonega, 1381750 pieces, worth $6121-919.00; and at the Assay Office, New York, gold and silver in various forms worth $133131557.35. Required the whole number of pieces and their value.

39. A grocer bought 25 barrels of sugar at $25 a barrel, and 34 barrels at $22 a barrel. How much would he gain by selling the whole at $27 a barrel?

40. What is the area of New England, there being in Maine, 31766 square miles; in Vermont, 9056; in New Hampshire, 9280; in Massachusetts, 7800; in Rhode Island, 1046; and in Connecticut, 4730?

41. The cavalry and artillery furnished by Illinois up to Jan. 1, 1863, amounted to 20916 men, and the cavalry was 12918 more than the artillery; the infantry was 985 more than 7 times the cavalry. How many men had Illinois furnished for the war, Jan. 1, 1863?

42. A drover bought cattle for $19800, and sold a certain number of them for $15360, at $96 per head, gaining thereby $960. How much did he gain per head, and how many cattle did he buy?

43. The exports of flour and wheat from the United States to Great Britain were as follows: in 1861, 2561661 barrels

of flour, and 25553970 bushels of wheat; in 1862, 2672515 barrels, and 25754709 bushels; in 1863, 1479413 barrels, and 23107190 bushels. How many more bushels of wheat than barrels of flour were exported in the three years?

44. Bought 600 bushels of potatoes for $540, and sold 360 bushels at $1.25 per bushel, and the remainder at cost. How much was gained by the transaction?

45. In 1862 Ohio sowed 69374 acres of barley, from which 763114 bushels were produced; 2266129 acres of corn were planted, which yielded 74782257 bushels. How much greater was the yield of corn than barley per acre?

46. Jan. 1, 1863, there were 507 banks in the Eastern States, 491 in the Middle States, 167 in the Southern States, 307 in the Western States. How many more banks in the Eastern and Middle States than in the Southern and Western States?

47. The sum of the killed and prisoners in the Union army at the battle of Stone River was 3496, and the prisoners were 548 more than the killed. The wounded were 747 more than three times the prisoners. The whole Union force engaged being 43500, how many were left for duty after the battle?

48. In 1864 there were 237 members of Congress, and the salary of each member was $3000. How much did they all receive?

49. The United States contain an area of 2819811 square miles, and in 1860 there were 11 inhabitants to the square mile. What was the entire population?

50. The New England States have 35 libraries, containing 863035 vols.; the Middle States, 28, containing 763733; the Southern States, 24, containing 503563, and the Western States, 17, containing 273109. What is the average number of volumes in these libraries?

51. A mechanic earns $75 a month, but his necessary ex-

penses are $50 per month. How long will it take him to pay for a farm of 60 acres worth $40 an acre?

52. A grocer wishes to put 1280 pounds of tea in 4 kinds of boxes, containing respectively 7, 9, 10 and 14 pounds, using the same number of boxes of each kind. How many boxes can he fill?

53. In 1860 there were made in the United States 1860000 gallons of wine, valued at $2.50 per gallon. How many school houses, worth $750 each, could be built with the proceeds?

54. The United States paid $61000 for the site of the Custom House at Richmond, Va., and contracted for the building for $110000; the total expense to the Government June 1, 1861, was $252016. How much did the cost exceed the price agreed upon?

55. The population of New Orleans in 1850 was 116375; in 1855, 139190, and in 1860, 168675. How much more was the increase in the last five years than in the previous five years?

56. In 1861 the importation of specie into the United States was $46339611, and the exportation $29791080. What was the excess of importation over exportation?

57. $16415052 specie was imported in 1862, and $36886956 was exported. How much more was the excess of exportation in 1862 than the excess of importation in 1861?

58. In 1863, $9555648 specie was imported, and $64156610 was exported. What was the excess of exportation over importation for the three years?

59. In 1862 there were sent out from the Dead Letter Office for delivery 10475 letters, containing $46538.90; of these 8766, containing $41068.48 were delivered, 1593, containing $5095.74 were returned to the office, and guerillas appropriated the remainder. What was the average amount in each letter lost?

60. Gunpowder was invented in the year 1330. Iron was discovered B. C. 1406. What period of time elapsed between these two events?

61. Of the appropriation for the Custom House in Galveston, $1640.18 was unexpended, $6000 was paid for the site, and the building cost $17850.75 more than the contracted price, which was $90509.07. What was the appropriation?

62. M. Smith rented a sugar orchard containing 1500 trees, agreeing to assume all the necessary expenses in making sugar, for one-half the quantity made; he made on an average $3\frac{1}{2}$ lbs. to each tree, and sold his part of the first 3000 lbs. made for 25 cents a pound, and the remainder at 20 cents; he paid $60 for labor, $30 for team work, and burned 25 cords of wood worth $2 a cord. How much was his gain?

63. A horse dealer gave $8448 for a certain number of horses; he sold a part of them for $7650 at $90 each, and by so doing lost $6 a head. For how much must he sell the remainder per head to gain $252 on the whole?

64. The expenditures of the Post Office Department in 1860 were $14874772.89, and the gross revenue $9218067.40. How much greater than the revenue were the expenditures?

65. In 1861 the expenses of the Post Office Department were $13606739.11, and the gross revenue, $9049296.40. How much more had the expenditures decreased than the revenue from the previous year?

66. In 1862 the expenditures were $11125364.13, and the revenue $9012549.56. How much nearer self-supporting was the Post Office Department in 1862 than in 1861?

67. In Massachusetts 32079 men were drafted in 1863; of these 22343 were exempted, 3046 failed to report, and the remainder were held for service; of these 743 served personally, 2325 furnished substitutes, and the remainder paid $300. How much commutation money did the Government receive?

68. Jan. 1, 1863, Rhode Island had furnished 3147 men for

three months, 2069 for nine months, and 9410 for three years; during the year 1863, 1246 men were obtained by draft, 716 recruits were sent to regiments in the field, and two new regiments were formed, containing 1800 men; 425 enlisted in other States, and 1400 were in the navy. What was the aggregate number of men furnished by Rhode Island for the war up to Jan. 1, 1864?

69. What must the number be which divided by 453, will give the quotient 307, and the remainder 109?

70. A has $310; B, $558, and C, $744, with which they agree to purchase horses at the highest price per head that will allow each man to invest all his money. How many horses can each man buy?

71. Of 3003 cases admitted into the retreat for the insane at Hartford, Connecticut, 574 were married males, and 728 were single, 704 were married females, and 730 single; the remainder were widowed; the whole number of females exceeded the whole number of males by 279. Required the number of widowed males and females.

72. The receipts of the U. S. Treasury for 1863 were as follows: Customs, $69059642; Public Lands, $167617; Direct Tax, $1485104; Internal Revenue, $37640788; Miscellaneous, $3046615; Loans, $776682362. Required the total receipts.

73. The expenditures for the same period were as follows: Civil List, $6350618.78; Foreign Intercourse, $1231413.06; Miscellaneous, $15671890.24; Interior Department, $4216-520.79; War Department, $599298600.83; Navy, $63211-105.28; on account of Public Debt, $205816482. Required the aggregate expenditures.

74. The balance in the Treasury at the beginning of the year was $13043547. What was the balance at the end of the year, the receipts and expenses being as is stated in the preceding examples?

75. The State of Delaware received $60385.51 for general

expenditures, in 1861, and $37424.99 for educational purposes; the expenditures for general purposes were $38989.05, and so much was expended for school purposes that the balance in Treasury Jan. 1, 1862, was $21396.46. Required the sum expended for education?

76. The gold coin made at the U. S. Mint in Philadelphia in 1863 was as follows: 152963 double eagles, 3658 eagles, 6902 half eagles, 39 three-dollar pieces, 20990 quarter-eagles, and 1950 dollar pieces. What was the whole number of pieces made and their value?

77. The silver coin made at the mint in Philadelphia in 1863 was as follows: 31400 dollars, 425260 half-dollars, 412860 quarter-dollars, 49460 dimes, 64460 half-dimes, and 93460 three-cent pieces. Required the whole number of pieces and their value.

78. At the branch mint in San Francisco in 1863, 866423 double-eagles were coined, 9000 eagles, 16500 half eagles, and 4000 quarter-eagles. Required the number of pieces and their value.

79. During the year 1863 there were coined at the branch mint in San Francisco, 1542000 half-dollars, 43000 quarter-dollars, 291250 dimes, and 100000 half-dimes. How many pieces of silver were coined, and what was their value?

80. In 1863, 47845000 cents were coined in the United States; $1949877.90 of gold and $390204.42 of silver were coined at the Assay Office, New York; the coinage of the U. S. Mint and branches being as stated in the four preceding examples; what was the value of the entire coinage of 1863?

81. A flour merchant bought 2000 barrels of flour at $9 a barrel, and sold 1200 barrels at $10, and the remainder at $8 a barrel. How much was his gain?

82. What was the value of gold and silver of domestic production in 1863, if $2093590.69 was deposited at the mint in Philadelphia, $18207316.21 at San Francisco, and $1379448.60 at the Assay Office, New York?

83. The sum of two numbers is 2487, and the greater is 553 more than the less. What are the numbers?

84. The Internal Revenue collected for the year ending June 30, 1863, was $40993954.97. The total receipts to Aug. 31, 1863, were $47489473.03; to Sept. 30, $53625678.46. How much less was received in September, than in July and August?

85. A cistern containing 1260 gallons has two pipes. By the first 48 gallons run into the cistern every half hour, and by the second 36 gallons run out in an hour. In how many hours will the cistern be filled?

86. A man sold 600 bushels of wheat at $1.50 a bushel, and took his pay in sugar at 12 cents a pound; he afterward sold one-half his sugar. How much had he left?

87. The number of men sent by Vermont to the war was as follows: One regiment of 3-months men, numbering 782; 5 regiments of 9-months troops, containing 4833 men; one regiment of cavalry, 966 strong; 2 batteries, containing 286 men; 3 companies of sharpshooters, averaging 100 men each; 10 regiments of 3-years men; and 2740 recruits for regiments in the field; making the total number of men furnished for the war, up to Oct. 1st, 1863, 19607. What was the average strength of the 3-years regiments?

88. The quota of Vermont under the first call for 500000 3-years volunteers was 8950; under the second call for 300000 3-years volunteers, 4898, and the same under the call for 300000 9-months volunteers. To meet the first two requisitions the State furnished 13992 men, and under the last call 4834 9-months men. How much in excess of her quota was Vermont, 4 9-months men being equivalent to 1 3-years man?

89. From $340+(20-4)\times(8+2)$ take $36\div3+(28\times6)\div(19-5)$.

90. A tailor made 2804 pairs of pants in four successive years, making each year 50 pairs more than during the previous year. How many pairs did he make each year?

91. The expenditures for educational purposes in New York for the year 1861, were $3842270.81; in New Jersey, $540-283.80; in Pennsylvania, $2389383.60, and in Delaware, $85333.03. How much more was expended in New York than in the other three States?

92. The State debt of Maine at the outbreak of the rebellion stood as follows: Debt incurred during the Aroostook war, $449000; debt due Massachusetts for lands, $250000. The war debt for 1861 was $800000; during 1862, $27000 of this debt was paid, and there was added to the war debt in 1863, $950000. What was the total debt of the State, Jan. 1, 1863, and Jan. 1, 1864?

93. How many pounds of sugar at 20 cents per pound, must be given for 5 pieces of cotton cloth, containing 44 yards each, at 42 cents a yard?

94. A man bought 750 acres of land at $20 per acre; he sold at one time 325 acres at $23 per acre, at another time 260 acres at $25 per acre. At what price per acre must he sell the remainder to gain on his purchase $1945?

95. According to the census of 1860, there were in the United States 13869434 white males and 13133890 females; 234000 free colored males and 253996 free colored females; 1982625 male slaves, and 1971135 female slaves. How many more males than females in the United States?

96. $250 \times 6 \div \overline{(4 \times 16) \div (8 \times 2) + (25 \times (8 \div 4))} =$ how many?

97. In 1860 New Jersey cultivated 1039086 acres, worth $180281421; Maryland cultivated the same year 1833306 acres, worth $145976990.25. How much were the farms of New Jersey worth per acre more than those of Maryland?

98. Divide $16 \times 72 \times 45 \times 21$ by $27 \times 32 \times 12 \times 35$.

99. The rebel army in the battle of Stone River lost one-fourth of all its forces engaged; 3500 were taken prisoners, and four times this number was 2000 more than the killed and wounded. Required the Confederate force in the battle.

100. Bought 60 yards of cloth at the rate of 2 yards for $5, and 80 yards more at the rate of 4 yards for $9; I immediately sold the whole at the rate of 5 yards for $14; how much did I gain?

101. The quota of New Jersey under the various calls for troops was as follows: 1st requisition, 3123; 2d, 3138; 3d, 5230; 4th, 5230; and 5th, (drafted militia,) 10478. Under the first call she furnished 3105 men; 2d, 3120; 3d, 7601; 4th, 4644; 5th, 10714, and 1030 recruits for old regiments in the field were enlisted. How much in excess of her quota was New Jersey, Jan. 1, 1863?

102. Connecticut cultivated in 1862, 1830800 acres, laid out in 22885 farms, the total value of which was $91540000. What was the average value of each farm? Average number of acres in each farm?

103. A farmer exchanged 40 bushels of corn and oats, mixed in equal quantities, at $1.25 and $.95 per bushel respectively, for wheat and rye in equal quantities, at $2.25 and $2.15 per bushel respectively. How many bushels of wheat and rye did he obtain?

104. Arkansas Post surrendered to Gen. McClernand, Jan. 11, 1863. The rebel loss in killed and wounded was 550, which was twice the Union loss, and the number of prisoners was 230 less than 6 times the loss in killed and wounded of both armies. What was the number of prisoners?

105. A farmer bought an equal number of horses, sheep and hogs for $9600. He gave $108, $9 and $11 per head for them respectively. What was the number of animals bought?

106. The population of the five largest cities in England in 1861 was as follows: London, 2803034; Liverpool, 443874; Manchester, 338346; Birmingham, 295955; Leeds, 207153. How many more inhabitants in London than in the four other cities?

107. A and B invested $120 in lottery tickets, A paying $3 as often as B $5. C and D invested an equal sum, C paying

$4 as often as D paid $6. They purchased tickets together agreeing to share the prizes in proportion to the sums invested by each. The prizes amounted to $7200. How much ought each to receive?

108. The aggregate receipts of the Post Office Department for 1863 were $11163789.59, while the expenditures during the same time were $11314206.84. What was the net expense?

109. A company in a fort numbering 75 men have provisions for 30 days. How many men must depart, that the same may last the remainder 45 days?

110. The rebel loss at Gettysburg was reported 40121; the prisoners were 371 more than half the loss in killed and wounded, and 4 times the killed was 1000 more than the wounded. What were the respective losses in killed, wounded and prisoners?

111. A merchant expended for cloth $7850. He sold a certain number of yards for $5580, at $15 per yard, and gained on those sold $1860. How many yards did he buy at first, and how much did he gain per yard on the cloth sold?

112. A horse worth $120, and 4 cows at $28 each, were exchanged for 31 sheep and $46 in money. What were the sheep valued at per head?

113. The quotient of one number divided by another is 74, the divisor is 321, and the remainder 95. What is the dividend?

114. The mails of the United States in 1862 were carried 2001500 miles by steamboat, at an expense of $300225; by coaches 7268400 miles, for $1744416, and by railroad 22777-200, for which $2505492 were paid. How much was the rate per mile by each mode of transportation?

115. General Meade reported the losses of the Union army at Gettysburg 23186. The number killed was 290 more than one-eighth of the sum of the losses in prisoners and

wounded, and twice the prisoners was 423 less than the wounded. How many were the killed, wounded and prisoners?

116. Bought 17 cwt. of prunes at $15 per cwt., and gave in exchange for them 250 lbs. of butter at 25 cents per pound, 48 dozen eggs at 15 cents per dozen, and the remainder in salt at $1.70 per bushel. How many bushels of salt were required?

117. The population of the seven largest cities in France in 1861 was as follows: Paris, 1696141; Lyons, 318803; Marseilles, 260910; Bordeaux, 162750; Lille, 131827; Nantes, 112625; Toulouse, 113229. How much did the population of Paris exceed that of the other six cities?

118. What is the value of $16\times3125-(49\times7)+(125\times27)-(9\times32)+43264-16\times9$?

119. A trader purchased a lot of horses and oxen for $2000, paying twice as much for a horse as for an ox. There were three times as many oxen as horses, and the horses cost him $80 a head. Required the number of each.

120. Required the area of North America, if the United States contain 2988892 square miles; British America, 2914318; Danish America, 800000; Russian America, 394000; Mexico, 645822; and Central America, 219000.

121. S. J. Eaton bought 75 hhds. molasses at $18 per hhd. How much must he charge per hhd. to gain $300, and what will be the gain on each?

122. What were the respective losses in the Union army in the battle of Chickamauga, 3 times the killed being 13 less than the missing, and twice the missing being 628 more than the wounded, and the whole loss 15851?

123. If the President of the United States expends daily $60, how much will he be able to save at the end of four years, his salary being $25000 per annum?

124. The army pension rolls stood as follows, June 30,

1863: Invalid pensioners 7248, to whom $570648 was payable annually; Revolutionary soldiers, 18, to whom $1045 was payable; widows of Revolutionary soldiers, 1573, amount payable to them $129684; widows, mothers, sisters and orphans, in wars since the Revolution, 4820, annual payment to the same $526266. What was the whole number of pensioners and the sum paid them?

125. I exchanged 5 barrels of vinegar, each containing 32 gallons, at 25 cents a gallon, for 5 pieces of sheeting, each containing 40 yards. How much did it cost me per yard?

126. In 1860 Virginia contained 19578964 acres of improved land, worth $371608736.72; Pennsylvania, 6548847 acres, worth $662022943.23. How much more were the farms worth per acre in the latter State than in the former?

127. Required the actual value of my farm if $25344 is 6 times the sum I paid for it, and it cost me $776 less than its real value.

128. According to the census of 1860, 20875 of the population of New York city were born in the Eastern States, 397980 in the Middle States, 1941 in the Western States, 4881 in the Border States, 1353 in the Seaboard Slave States, 882 in the Southwest Slave States, and 2130 in the territories. How many of the inhabitants of the city were natives of the United States?

129. The foreign born in New York city in 1860 were as follows: natives of Germany, 119984; of Great Britain, 244826; of Continental Europe, 17235, and of various other countries 1672. Required the total foreign born.

130. The population of the city was 629904 in 1855. How much was the increase in 5 years, the population in 1860 being as stated in Examples 128 and 129?

131. Ten men agreed to gather 1000 bushels of cranberries, and to receive for their labor one-half the quantity gathered. After 400 bushels were gathered 4 men withdrew, leaving the

others to complete the job. How many bushels should each man receive?

132. F. Harriman purchased 318 acres of wild land for $6996, and sold 253 acres at $17 per acre, and the remainder at cost. Did he gain or lose, and how much?

133. During the year 1863 $2876983 was paid to postmasters, and $6541580 for mail transportation. The expenditures being $150417 in excess of the revenue, which was $11163789. How much was expended for miscellaneous purposes?

134. Having money to invest I buy 2 farms worth $4550 each, 20 shares railroad stock at $106 per share, and have $250 left. How much had I at first?

135. The navy pension rolls for 1863 showed that 545 navy invalids were paid $35019; 577 widows or children were paid $107886, and 10 privateer pensioners were paid $622. How many pensioners were there, and what was the amount paid?

136. How many barrels of apples at $4 per barrel must be given in exchange for 10 bags of wheat, each containing 3 bushels at $2 per bushel?

137. During the first three months of 1864 there were 27 gold mining companies organized in New York city, with an average capital of $2350000; 4 silver companies, with an average capital of $3625000; 8 coal and iron companies, whose average capital was $1250000, and 4 copper companies, with an average capital of $625000. How much capital was invested in mining companies during the three months?

138. What is the number of subjects belonging to the Russian Government, there being 66891493 in Europe, 8203197 in Asia, and 54000 in America?

139. How many sheep at $3.62½ must be given in exchange for 58 cows at $40 each?

140. The first settlement in the United States was made

in 1565. America was discovered by Columbus in 1492. How many more years from the first settlement to the Declaration of Independence in 1776, than from the discovery to the first settlement?

141. A grocer in packing 6 dozen dozen eggs, broke half a dozen dozen, and sold the remainder at 20 cents a dozen. How much did he receive for the eggs?

142. What are 30 hogsheads of molasses worth at $.75 a gallon, if each hogshead contains 68 gallons?

143. A speculator paid $6569.64 for a quantity of wheat; he sold 1480 bushels at $2 a bushel, and the remainder stood him in $1.42 a bushel. How many bushels did he purchase?

144. During the year 1862, 60021250 1-cent, 182740250 3-cent, 1029300 5-cent, 4058450 10-cent, 1046750 12-cent, 984125 24-cent, 396040 30-cent, and 30940 90-cent stamps were issued by the Post Office Department. Required the whole number of stamps and their value.

145. During the same year the following number of stamped envelopes were issued: 1-cent, 3084400; 3-cent, 20963050; 4-cent, 35000; 6-cent, 131850; 10-cent, 520050; 12-cent, 8400; 20-cent, 7850; 24-cent, 8800; 40-cent, 4100, and 195800 letter sheets and stamped envelopes combined; the total value of all was $733265.50. What was the value of the combined letter sheets and envelopes?

146. During the same time 2364850 1-cent newspaper wrappers were issued. What were the total receipts from stamps, stamped envelopes and wrappers?

147. The receipts from stamps in 1861 were $5908522.60, and from envelopes, $781711.13. The receipts in 1862 from the same sources being as stated in previous examples, how much more was received in 1862 than in 1861?

148. A grocer gave 153 barrels of flour worth $9 a barrel for 81 barrels of sugar containing 170 pounds each. What was the cost of the sugar per pound?

149. In 1861, 10631 vessels, tonnage 1024726, arrived in

the ports of Russia; 10739 vessels, tonnage 1026794, departed from the same ports. What was the average tonnage of the vessels?

150. If 850 men require 25500 rations of bread for a month, how many rations will a garrison of 1250 men require for the same time?

151. In the month of Sept. 1863, on account of the Indian massacre, 6588 fugitives fled from the St. Peters district in Minnesota, one-ninth as many from the Minneapolis district, and in other districts 127 more than from Minneapolis. How many were made homeless by this massacre?

152. From Jan. 1, to April 15, 1864, 27 gold mining companies were organized in New York with an aggregate capital of $63450000. What was the average capital of each company?

153. Two persons, starting from the same place and traveling in opposite directions, are 20 miles apart at the end of one hour, but traveling in the same direction they are 6 miles apart at the end of an hour. How far does each travel per hour?

154. The population of France in 1861 was 37472732; of Algeria, 2999124; and of French colonies, 3062389. How many subjects had the French government?

155. Three men rented a farm and raised 960 bushels of grain, which was divided in proportion to the rent paid by each; the first was to have one-half of the whole, the second two-thirds of the remainder, and the third what was left. How much did each receive, the grain being worth $2 a bushel?

156. During the year ending July 1, 1862, 9763 letters containing papers of value other than money, were sent to the dead letter office, and the following reasons were assigned for their non-delivery: Held for postage, 1050; misdirected, 1466; mails suspended, 326; refused, 26; name of post

office omitted, 86; person addressed dead, 27; and the others were uncalled for. How many of this last number were there?

157. Gen. Grant reported the losses of the Union army in the series of battles connected with the taking of Vicksburg as follows: Port Gibson, 130 killed, 718 wounded, and 5 missing; Raymond, 73 killed, 365 wounded, and 32 missing; Jackson, 40 killed, 240 wounded, 6 missing; Champion's Hill, 426 killed, 1842 wounded, 189 missing; Big Black Bridge, 29 killed, 242 wounded, 2 missing, and the losses before Vicksburg made the entire loss 8875. This was so distributed that the total missing were 706 less than the killed, and the wounded were 25 less than 4 times the sum of the killed and missing. Required the number of killed, wounded and missing before Vicksburg.

158. The forward wheels of a carriage are 7 feet in circumference, and the hind wheels 10. How many times will each revolve in passing over 42 miles, there being 5280 feet in a mile?

159. A man paid $1024 for a farm, $250 for drainage, $50 for fencing, and for hired labor, $376. The gross proceeds of one year amounted to $2100; with the profits he purchased an equal number of sheep at $3 each, and horses at $77 a piece. How many of each did he buy?

160. The population of Great Britain and Ireland in 1863 was estimated at 30000000, and the value of real and personal property, $33402600000; at the same time the estimated population of the loyal States was 24000000, and the value of property, $13929840000. How much more property to each person in the United Kingdom than in the loyal States?

161. The products of Great Britain and Ireland in 1863, amounted to $3340200000, and in the Loyal States to $3720000000. How much more was the value of the annual products to each person in the loyal States than in Great Britain and Ireland?

162. Suppose two locomotives start from the same place and move in the same direction, the first at the rate of 30 miles an hour, and the second 20 miles; after the first has gone 150 miles it commences a backward movement with the same velocity till it meets the second engine. How far from the point of starting, and in how many hours do they meet?

163. The Internal Revenue collected upon advertisements in 1863, at the rate of 3 cents upon a dollar, amounted to $40629. What was paid for advertising during the year?

164. What number is that which being divided by 72, the quotient increased by 25, the sum diminished by the difference between 25 and 18, the remainder multiplied by 7, and the product increased by $\overline{(9\times8)\div(3\times4)}$ the sum will be 167?

165. In Dec. 1862, the United States Navy numbered 427 vessels, carrying 3268 guns, tonnage 340036; in Dec., 1863, there were 588 vessels, carrying 4443 guns, tonnage, 467967. What was the increase in vessels, guns and tonnage?

166. How many subjects are claimed by the British government, there being 29458442 in Europe, 4496741 in America, 1020525 in Africa, 173738866 in Asia, and 3423996 in Australia?

167. In 1862 New Hampshire reported 2352 school districts, and 84672 children who attended school. Required the average attendance in each district.

168. Bought 25 sheep for $56; how much less per head should I have paid, had I purchased 7 more sheep with the same money?

169. According to the census of 1860, the population of Maine was 628279; New Hampshire, 326073; Vermont, 315098; Massachusetts, 1231066; Connecticut, 460147; Rhode Island, 174620; New York, 3880735. How many more inhabitants in New York than in New England?

170. A and B pay $2.25 for a barrel of apples, and 20 cents for the barrel; A contributes $1.25 and B the remain-

der. They divide the apples equally, and A takes the barrel. Which owes the other, and how much?

171. How many melodeons at $66\frac{2}{3}$ are worth as much as 4 pianos at $333\frac{1}{3}$?

172. It is estimated that the public lands of the United States amount to 2265625 square miles; if one-half of this was donated to various purposes, and the remainder was sold at $1.25 per acre, what would be the net income?

173. It is estimated that the annual loss to the United States by intemperance is $98400000. How many school houses could be built, and schools sustained each year with this sum, provided that the cost of a school house and the yearly expenses of the school, were each $1200?

174. At a certain election 5000 votes were cast for three candidates, A, B and C. B had 400 more than A, and C 300 more than B. How many votes did A receive?

175. The income from the various shops in Wethersfield State Prison for the year 1863, was $13026.80, the expenditures, $12065.30. What was the net income?

176. The number of vessels belonging to the U. S. Navy which were captured by the rebels during 1863 was 12, carrying 48 guns, tonnage, 5947; the number destroyed to prevent falling into the enemy's hands was 3, carrying 29 guns, tonnage 2983; sunk in battle, 4, with 28 guns, tonnage 2201; lost by shipwreck, 13, with 61 guns, tonnage 4854. Required the total naval loss during the year.

177. The revenue collected from railroads is 3 cents for every dollar of fare; from this source $1029238 revenue was collected in 1863. What amount was received for passengers' fare?

178. In Rhode Island there are 400 school districts, and 29600 children attend schools. Required the average attendance in each district.

179. One-half the sum of two numbers is 500, and one-half their difference is 300. What are the numbers?

180. The whole number of pupils attending the four normal schools of Massachusetts in 1862, and the expenses of the schools were as follows: Framingham, 104 pupils, expenses, $3519; Salem, 140 pupils, expenses, $4020; Westfield, 179 pupils, expenses, $3119; and Bridgewater, 141 pupils, expenses, $3977. What was the average expense per scholar?

181. The condition of the banks of New York city, April 16, 1864, was as follows: Loans, $198703699; specie, $21687760; circulation, $57796650; and deposits, $168350790. How much were the assets in excess of the liabilities?

182. During the year ending June 30, 1862, the number of letters exchanged between the United States and Great Britain was 1485970 received, 1391386 sent; between the United States and France, 493275 received, 506461 sent. How many letters did the exchange with Great Britain exceed the exchange with France?

183. The postage on mails sent to Europe in 1862 amounted to $573533.45; on mails received, $570562.37. The postage collected in Europe was $465744.23, and the remainder was collected in the United States. How much more was collected in the United States than in Europe?

184. The postage on mails transported by the Cunard line in 1862 amounted to $521854.78. What was the amount of postage on mails carried by other lines, the whole amount being as stated in Example 183?

185. There were in the State of New York in 1862, 11750 public schools, attended by 893000 pupils. Required the average attendance in each school.

186. In 1862 there were 554 stone school houses in the State of New York, 964 brick, 10004 frame, and a number of log school houses, making the whole number 11750. How many less than one-fiftieth of the school houses were built of logs?

187. In 1862 there were 21145212 acres of land in Kentucky, valued at $174187963. How much had the land de-

creased in value per acre since 1861, when the average value was $10.34?

188. Wisconsin sent into the army before Nov. 1, 1863, 34 infantry regiments, averaging 1001 men each; 3 regiments cavalry, averaging 1290; 13 batteries, averaging 161; one company sharpshooters, numbering 147; and 2441 recruits for old regiments. The quota under all calls up to that date was 44661. How much did the State lack of filling its quota?

189. Russia exported gold and silver coin and bullion, in 1861, amounting to 5790355 roubles. The imports for the same time were 7138395 roubles. How much did the imports exceed the exports, one rouble being worth 80 cents?

190. A teacher having a school of 144 ladies and 128 gentlemen, divided it into the largest possible equal classes, so that each class of ladies should number the same as each class of gentlemen. What was the number of classes?

191. Ohio produced in 1862, 35442858 pounds of butter, worth on an average 20 cents a pound, and 20637235 pounds of cheese, worth 14 cents a pound. What was their aggregate value?

192. A farmer sold 34 bushels of oats and 26 bushels of corn for $63.10. He received for the corn 35 cents more per bushel than for the oats. What was the price of each per bushel?

193. The value of all the exports of Russia in 1861, by maritime commerce, was 137702143 roubles; by overland commerce, 30473888 roubles. The value of the imports for the same year was, by maritime commerce, 115651243 roubles; by overland commerce, 44028013 roubles. How much did the value of the exports exceed the imports, a rouble being worth 80 cents?

194. The number of letters exchanged between the United States and Europe, in 1862, was 2644039 sent, and 2556624 received, being a decrease of 945158 from the number re-

ported the previous year. How many letters were exchanged in 1861?

195. The Treasurer of Vermont made the following report Sept. 1, 1863: Balance in treasury, Sept. 1, 1862, $224250.41; receipts from ordinary sources during the year, $774327.30; on account of the war, $1853874.28. The disbursements were, for civil purposes, $281666.34; for war purposes, $2358682.69; interest, $89669.21. What balance did the Treasurer report?

196. In New York, in 1863, 77862 men were drafted; 53109 were exempted, 14073 paid commutation, 6619 furnished substitutes, 1504 failed to report. How many entered the military service?

197. Jan. 1, 1863, Pennsylvania had furnished men for the war as follows: 20979 3-months men; Reserve Corps, 15856; under call of July 22, 1861, 93759; under requisition of July 7, 1862, 40383; under call of Aug. 4, 1862, 15100; recruits for old regiments, 9259. The Adjutant General, allowing for enlistments in other States, reported the whole number 200336. How many did he estimate enlisted out of the State?

198. There were 476203 votes cast for two candidates for governor in Ohio, in 1863. The majority of the successful candidate was 101079. How many votes were cast for each?

199. A speculator had 210 acres of land, which he might have sold at $220 an acre, and gained $6300, but after holding for a time, he sold it at a loss of $3150; how much per acre did it cost him, and for how much per acre did he sell it?

200. A merchant bought 3 pieces of cloth of equal lengths at $5 a yard; he gained $35 on the whole cost, by selling 2 pieces for $350; how many yards in each piece?

CHAPTER III.

1. If $5\frac{4}{7}$ yards of calico cost \$1.17, how much must be paid for $43\frac{1}{3}$ yards?

2. Change $\frac{7}{11}$ of $\frac{1}{14}$ of $\frac{2}{3}\frac{2}{9}$ to an equivalent fraction, having 75 for its denominator.

3. If cloth 1.875 yards in breadth require 18.75 yards in length to make a certain number of garments, how many yards in length will it require if the cloth be .625 yards wide?

4. In a certain school room, $\frac{7}{9}$ of the desks are occupied; $\frac{1}{3}$ of the scholars study grammar; $\frac{1}{6}$ study physiology; $\frac{1}{7}$ study book-keeping; and the remaining scholars are equally divided into 3 algebra classes. $\frac{1}{2}$ of the most advanced algebra class study geometry, and there are 5 in the geometry class. What is the number of scholars in the school-room, and how many desks are unoccupied?

5. $\frac{8}{11}$ of a certain number exceeds $\frac{4}{7}$ of the same by 156. What is the number?

6. A certain sum of money is divided among 4 persons. A has $\frac{1}{4}$; B, $\frac{1}{5}$; C, $\frac{1}{3}$; and D the remainder, which is \$39. How much more has A than D?

7. A book publisher sold 2 dozen Webster's Unabridged Dictionary at \$60 a dozen, 15 dozen Robinson's Arithmetic at \$9, and 10 dozen Testaments at \$2; the actual cost of the books was \$250. How much was his gain?

8. I exchanged $14\frac{3}{8}$ cords of wood at $\$4\frac{1}{2}$ per cord, for flour at $\$9\frac{6}{7}$ per barrel. How much flour did I receive?

9. The product of 3 numbers is 112; one of them is $5\frac{3}{5}$; another is $6\frac{1}{8}$. What is the third?

10. Divide $\frac{\frac{3}{4} \text{ of } \frac{4}{5} \times 5\frac{1}{3}}{\frac{3}{5} \text{ of } 2\frac{1}{7} \times 3\frac{1}{2}}$ by $\frac{\frac{4}{9} \text{ of } 9\frac{3}{5}}{\frac{8}{13} \text{ of } 3}$.

11. A can do a piece of work in $\frac{3}{4}$ of a day; B can do it in $\frac{4}{5}$ of a day, and C can do it in $1\frac{1}{3}$ days. In what time can all do it, working together?

12. If $5\frac{1}{2}$ lbs. of coffee cost $\$1\frac{1}{10}$, what will $27\frac{1}{2}$ lbs. cost?

13. A merchant had $9000 with which to purchase goods. He bought 20 pieces of sheeting, each containing 44 yds., at $.12 per yard; 400 pieces of calico of 31 yds. each, at $.17$\frac{1}{2}$ per yard; 25 pieces of cassimere, each containing 38.75 yds., at $2.375 per yard; 100 pieces of silk, each containing $29\frac{3}{4}$ yds., at $.95 a yard. How much money had he left?

14. In 1864 Illinois packed 1273400 hogs, of an average weight of 200 pounds. How many car-loads would these make, 10 tons of 2000 pounds each loading a car?

15. How long a train would all the cars necessary to ship the pork mentioned in the preceding example make, allowing 25 feet for each car, there being 5280 feet in one mile?

16. A and B engage in trade. A furnished $\frac{7}{10}$ of the capital, and B $\frac{9}{10}$. If B should transfer $\$379\frac{3}{7}$ of his capital to A, their shares would be equal. How much did each furnish?

17. How many times can a vessel containing $\frac{1}{4}$ of a gallon be filled from $\frac{2}{3}$ of a barrel containing $31\frac{1}{2}$ gallons?

18. Add the following fractions: $\frac{1}{3}$ of $\frac{3}{5}$, $2\frac{1}{6}$, $\frac{3}{4}$ of $\frac{2}{3}$ of 5, $\frac{3}{7}$ of $\frac{6}{7}$ of $3\frac{1}{2}$.

19. Bought a cord of wood for $4.625, a cheese for $7.-$56\frac{1}{4}$, and $14\frac{9}{10}$ lbs. butter at $.25 per lb. What was the cost of the whole?

20. A man purchased a number of lemons at 2 cents each, and $\frac{3}{4}$ as many at 3 cents each; he sold them all at the rate of 2 for 5 cents, and gained 25 cents. How many of each kind did he purchase?

21. A can do a piece of work in $2\frac{2}{3}$ days, B can do it in $3\frac{3}{7}$ days. In what time can both, working together, do it?

22. What number is that from which, if $7\frac{1}{6}$ be taken, the remainder will be $9\frac{2}{3}$?

23. Find the sum of forty-nine and three-tenths, four hundred, and three millionths, subtract from it two hundred forty-six, and three thousandths, multiply the remainder by five thousand, and divide the product by four ten-thousandths.

24. In New Jersey 137578 children attended the public schools in 1861, and the total expenditures for school purposes were $540283; in 1862, 132590 children were in the public schools, at an expense of $562259. How much more was the expense per scholar the latter year than the former?

25. Peter can do a piece of work in $1\frac{1}{4}$ days, Martin in $\frac{9}{10}$ of a day, and Jacob in 2 days. They commence the work together, but Martin ceases to labor after working $\frac{1}{4}$ of a day, and Jacob quits after having performed $\frac{1}{6}$ of the task, when Peter completes the work. How long does Peter work?

26. If 3 horses eat $2\frac{1}{7}$ bushels of oats in 2 days, how many horses will eat $34\frac{2}{7}$ bushels in 8 days?

27. From one take two ten-millionths.

28. Reduce $\frac{2\frac{1}{2} \times \frac{2}{5}}{\frac{5}{8} \text{ of } 3\frac{1}{5}}$ to a decimal fraction.

29. In the Massachusetts State Prison, for one year, $30958 was paid for salaries, $18468 for provisions, $7489 for clothing, and $26432 for miscellaneous purposes; $53655 was received for the labor of the convicts. How much were the net expenses of the prison?

30. If a family of 9 persons consume $98\frac{1}{6}\frac{1}{4}$ lbs. butter in $4\frac{1}{4}$ weeks, how many pounds will each person consume per week?

31. If $\frac{2}{3}$ of a bushel of corn be worth $\frac{3}{7}$ of a bushel of wheat, and wheat be worth $1.40 a bushel, how many bushels of corn will $27 buy?

32. After spending $\frac{1}{4}$, $\frac{2}{3}$ of $\frac{6}{7}$, and $\frac{1}{14}$ of my money, I had $48\frac{6}{7}$ left. How much had I at first?

33. What is the continued product of

$$\frac{9}{38\frac{1}{4}} \times \frac{174\frac{4}{9}}{196\frac{1}{4}} \times \frac{44\frac{5}{9}}{16\frac{1}{3}} \times \frac{40\frac{8}{11}}{364\frac{4}{7}}?$$

34. What number is that from which, if 11 be subtracted, $\frac{7}{9}$ of the remainder will be 42?

35. How many yards of carpeting $1\frac{1}{8}$ yds. wide would be required to carpet a room $6\frac{1}{4}$ yds. long and $5\frac{2}{3}$ yds. wide?

36. Bought 12 yds. of cloth at $\$.37\frac{1}{2}$ per yard, and agreed to pay $\frac{1}{2}$ of the cost in butter, at $\$.16\frac{2}{3}$ per pound; $\frac{1}{6}$ in money, and the remainder in eggs, at $\$.12\frac{1}{2}$ per dozen. How many pounds of butter and dozens of eggs were required?

37. If 21.65 tons of hay are sold for $\$1082\frac{1}{2}$, what will 1 ton cost?

38. What will 42.875 yards of cloth cost at $\$5\frac{1}{3}$ per yard?

39. What is the profit upon one million spelling books, at $\$.006$ per book?

40. If $\frac{5}{11\frac{1}{6}}$ of a tub of butter cost $\$6.55$, what will 9 tubs cost?

41. Samuel Smith has 99.875 acres of land in one field, 163.625 acres in another, and 243.1678 acres in a third. How much land must he purchase to have 640 acres?

42. A farmer sold at one time 7 tons and 375 thousandths of a ton of hay, at another time 12 tons and 3125 ten-thousandths of a ton, and at a third time 13 tons and 3125 hundred-thousandths of a ton, at an average price of $\$8$ per ton. How much did he receive for the whole?

43. What is the sum of $2\frac{1}{8}$ decimal units of the first order, $4\frac{3}{4}$ of the second order, $7\frac{1}{11\frac{1}{6}}$ of the third order, and $9\frac{3}{2\frac{3}{5}}$ of the fourth order?

44. How many pairs of pants can be made from 48.6 yds. of cloth, allowing 1.8 yds per pair?

45. I purchased a quantity of grain, $\frac{3}{6}$ of it being oats, at $\$.75$ a bushel; $\frac{7}{11\frac{1}{6}}$ wheat, at $\$1.50$ a bushel, and the remain-

der barley, at $.90 a bushel, to the amount of $7.425. How much did I pay for the whole?

46. A owns $\frac{5}{9}$ of a ship; he sells $\frac{3}{5}$ of his share for $1800. What is the value of the ship?

47. A can perform a piece of work in 9 days; A and B together can do the same in 6 days; A, B and C working together can do it in 4 days. In how many days can B and C, working together, perform the whole?

48. What is the sum of $5\frac{3}{6\,4}$ decimal units of the first order, $6\frac{5}{3\,2}$ of the second order, $7\frac{9}{1\,6}$ of the third order, $8\frac{3}{8}$ of the fourth order, $9\frac{3}{4}$ of the fifth order, and $3\frac{1}{2}$ of the sixth order?

49. Multiply the sum of the quotients of $270 \div 4000$; $1307 \div .008$; $.0103 \div .04$; $70.306 \div .5$; $3.78 \div 200$; $.04735 \div .0005$; $30 \div .004$; $903 \div 30000$ by 25.25.

50. There are two numbers whose sum is $1\frac{3}{4\,0}$, and whose difference is $\frac{7}{4\,0}$. What are the numbers?

51. A, B and C own a furnace; A owns $\frac{5}{1\,5}\frac{7}{4}$ of it; B owns $\frac{3}{2\,2}$ of it more than C. What parts of the furnace do B and C own respectively?

52. X and Y traded in company. X put in merchandise valued at $8000, and Y put in $20000 cash. They agreed to share the gains or losses equally. At the end of two years, the business proving unsuccessful, they dissolved partnership, and found the losses amounted to $11500. What was each partner's share of the remaining property?

53. In the thirty-eighth Congress, 1864, the House of Representatives was divided into two parties, so that $\frac{4}{5}$ of the number in one was equal to $\frac{1\,0}{1\,1}$ the number in the other, and there were 177 members. Required the number of each party.

54. What is the sum of the continued products of $\frac{2}{7} \times 4\frac{2}{3} \times \frac{5}{6} \times \frac{3}{4} \times \frac{9}{1\,0}$ and $3\frac{2}{3} \times \frac{3}{7} \times \frac{2\frac{1}{3}}{5\frac{1}{2}}$?

55. A man having $96, gave A $5 more than $\frac{1}{6}$ of the whole; B $2 less than $\frac{1}{3}$ of the remainder; C $12 more than $\frac{1}{4}$ of the remainder, and the rest he gave to D. How much did each receive?

56. The transactions of the Treasury of the State of New York, in 1863, were as follows: Balance in Treasury at the beginning of the year, $5750621.19; receipts during the year, $18656285.17; payments, $20703585.84. How much less in Treasury, Jan. 1, 1864, than Jan. 1, 1863?

57. Multiply $\frac{7}{9}$ of $\frac{9}{11}$ of $\frac{11}{14}$ by $\frac{5}{18}$ of $\frac{18}{19}$ of $\frac{19}{25}$.

58. A teacher spends $\frac{3}{5}$ of his salary in board for himself and family, $\frac{1}{10}$ in clothing himself, his wife's clothing costs $\frac{5}{7}$ as much as his own, his daughter's, $\frac{1}{2}$ as much as his wife's; his son's, $\frac{4}{5}$ as much as his daughter's, and he lays by $115. What is his salary?

59. The marble used in the Capitol extension, Washington, had cost, Jan. 1, 1863, $1029041, and the cutting and the setting of the same, $1373749 more; 19403800 bricks had been used, worth $7.50 per thousand, and the new iron dome cost $900000. Required the sum of these expenditures.

60. Divide 172170063 by .0000009.

61. What will $15\frac{11}{12}$ doz. eggs cost at $18\frac{1}{2}$ cents per doz.?

62. Add nine ten-thousandths, 1000 and six-millionths, 3 and forty-seven ten millionths, 246 and twenty-five-thousandths.

63. John Brown killed an ox, which, when dressed, weighed $1178\frac{3}{5}$ lbs., he kept $\frac{3}{5}$ of it for his own use, and sold $\frac{2}{3}$ of the remainder to Hiram Jones. What was the value of the remainder at $11\frac{1}{4}$ cents per pound?

64. A merchant purchased 17 bales of cotton goods containing $587\frac{1}{2}$ yds., at $8\frac{3}{4}$ cents per yard; he sold $\frac{1}{3}$ of it at $11\frac{1}{2}$ cts. per yard, and $\frac{3}{4}$ of the remainder at $12\frac{1}{2}$ cts. per yard. How much would he receive for what still remained at 13 cents per yard and what profit would the merchant make on his bargain?

65. Fanny Church disposed of $\$38.88\frac{8}{9}$ as follows: She gave $\frac{1}{2}$ of it to the Sanitary Commission, $\frac{2}{5}$ of the remainder to the Christian Commission, and the remainder she divided equally among 7 poor women. How much did each woman receive?

66. What number must be multiplied by $9\frac{3}{8} \times 3\frac{1}{2}$, that the product may be 100?

67. A boy in flying his kite lost $\frac{3}{5}$ of the string, then added 65 feet and found that it was just $\frac{5}{6}$ of the original length. What was the length at first?

68. A and B, being 133 miles apart, travel towards each other, both starting at the same time. They meet at the end of 10 hours, and find that A has traveled $1\frac{1}{2}$ miles more than B each hour. How many miles did each travel?

69. California cultivated, in 1861, 361350 acres of wheat, which produced 8816940 bushels, and 20780 acres of potatoes, from which 1298750 bushels were harvested. Allowing the expense of cultivating an acre of each to be the same, the wheat worth $1.75 per bushel, and the potatoes $.60, how much more profitable per acre was the wheat than the potato crop?

70. A barrel holding $31\frac{1}{2}$ gallons is $\frac{4}{9}$ full; $9\frac{1}{2}$ gallons being drawn off, what part of the contents remain?

71. Reduce to their lowest terms $\frac{13308}{14417}$; $\frac{427}{671}$; $\frac{5473}{5603}$, and $\frac{1389}{3704}$.

72. Three men, A, B and C, start from the same point to travel around an island 100 miles in circumference; A travels $22\frac{2}{9}$ miles each day; B, $11\frac{3}{7}$ miles, and C, $12\frac{44}{63}$ miles. Required the least number of days in which all will be together at the point of starting, and how many times each will have traveled around the island.

73. If at each stroke of the piston rod of a locomotive engine a distance of 15.625 feet be passed over, how many strokes must be made in passing from New York to Washing-

ton, the distance being 225.25. miles, allowing 5280 feet in each mile?

74. If the circumference of the truck wheels of an engine be 8.$\dot{8}$ feet, and of the drivers 21.$\dot{3}$ feet, how many more times will the one revolve than the other, in running from New York to Albany, the distance being 150 miles?

75. The enumeration of youths of school age in Ohio in 1857 was 838037; the enrollment of those in attendance was 603347, and the average attendance, 350867. In 1862 the enumeration was 920890; enrollment, 723669, and average attendance, 433343. Required the respective increase in enumeration, enrollment and average attendance.

76. If $\frac{2}{3}$ of $\frac{4}{9}$ of an acre of land sell for $\$16\frac{48}{100}$, what is 5 times $\frac{1}{2}$ of $\frac{1}{2}\frac{0}{7}$ of an acre worth at the same rate?

77. S. Smith being asked how many sheep he had, replied that he had them in 4 fields; in the first there were 5 less than $\frac{1}{2}$ of the whole number of sheep; in the second $\frac{1}{3}$ as many as in the first; in the third $\frac{2}{5}$ as many; and in the fourth there were 30 sheep. How many sheep had he?

78. A man spent $18.81 for equal quantities of butter and lard; for the butter he paid $.18 per lb., and for the lard, $.15 per lb. How much of each did he buy?

79. A had $576, which was $156 more than $\frac{3}{4}$ of $2\frac{1}{2}$ times B's money. How much money had B?

80. If $\frac{1}{4}$ of John's marbles equals $\frac{1}{7}$ of James', and both together have 44; how many marbles has each?

81. If one yard of sheeting cost $18\frac{3}{4}$ cents, how many yards may be bought for $\$1.31\frac{1}{4}$?

82. The State of Kansas paid $14009.67 for teachers' salaries in 1862, and $1747.23 for incidentals. The district taxes amounted to $10381.81, and the school fund, $4148.45. How large a school debt remained to be provided for the next year?

83. It is $116\frac{7}{11}$ miles from New York to Hudson, and $74\frac{1}{1}\frac{2}{3}$

miles from New York to Poughkeepsie; how many miles from Poughkeepsie to Hudson?

84. $41\frac{2}{3}$ is the $\frac{5}{6}$ part of what number?

85. A owns $\frac{3}{11}$ of a cargo worth $\$23426\frac{1}{3}$; B owns $\frac{3}{8}$ of a steamboat worth $\$17425\frac{1}{3}$. They exchange stocks. How much money must A pay to B?

86. A father divided $3000 among his 6 sons so that each elder brother had $100 more than his next younger brother. Required the share of the youngest.

87. Bought 33 baskets of peaches, each basket containing $\frac{3}{4}$ of a bushel, at $\$1.37\frac{1}{2}$ per bushel. What was the cost?

88. From $23\frac{2}{3}$ bushels, subtract the sum of $\frac{3}{9}$ and $4\frac{5}{6}$ bushels.

89. If a man earns $56 in $\frac{9}{14}$ of a month, how much does he earn in one week, allowing 4 weeks to a month?

90. A merchant in selling $10\frac{5}{8}$ lbs. sugar at the rate of 8 lbs. for $1, gains 17 cents; what was the cost of the sugar per pound.

91. When potatoes are worth $\$.87\frac{1}{2}$ per bushel, and corn $\$1.16\frac{2}{3}$, how many bushels of corn will a farmer receive in exchange for 28 bushels of potatoes?

92. If 9 horses eat $\frac{3}{4}$ of $7\frac{1}{5}$ bushels of oats in a day, how much does each horse eat?

93. Bought $\frac{1}{3}$ of $3\frac{5}{16}$ cords of wood for $\frac{2}{5}$ of $\$17\frac{1}{2}$. How much did one cord cost?

94. If 1.75 acres produce 6.51 tons of hay, how many tons will 7.625 acres produce?

95. A man bought $43\frac{3}{4}$ yds. of carpeting for $\$58\frac{1}{3}$; he sold $\frac{2}{5}$ of the piece, gaining $\$.16\frac{2}{3}$ on each yard sold. How much did he receive for it?

96. If 28 men build a bridge in $4\frac{6}{7}$ days, how many men could build the same in $2\frac{2}{3}$ days?

97. Reduce $\dfrac{7\frac{2}{3}-4\frac{1}{4}}{\frac{1}{2}\text{ of }3\frac{5}{6}}\times\dfrac{7\frac{2}{3}}{31\frac{8}{9}}$ to its simplest form.

98. The distance from Boston to Worcester is 44 miles; A, starting from Boston, travels $\frac{4}{11}$ of the distance; B, starting from Worcester, travels $\frac{3}{11}$ of the distance in the same time. How far apart are they?

99. A merchant has 3 pieces of cloth, containing respectively $28\frac{3}{4}$ yds., $35\frac{1}{3}$ yds. and $41\frac{5}{8}$ yds.; after selling several yards from each piece, he finds he has left in the 3 pieces $65\frac{7}{8}$ yds. How many yards has he sold?

100. What number is that to which, if you add $\frac{3}{7}$ of $\frac{8}{11}$ of itself, $\frac{1}{2}$ of the sum will be 101?

101. Bought 2.125 yards of cloth, 1.375 yards wide, for \$4.675; what will 27.625 yards, $1\frac{7}{8}$ yards wide, cost, at the same price per square yard?

102. A and B traded with equal sums of money; A gained a sum equal to $\frac{1}{5}$ of his stock; B lost \$220, and then had $\frac{1}{2}$ as much as A. What was the original stock of each?

103. James can do a piece of work in $\frac{6}{7}$ of a day; Henry can do it in $1\frac{1}{3}$ days, and John can do it in $\frac{4}{5}$ of a day. How much longer will it take John to do the work alone than it does James and Henry working together?

104. From a piece of calico containing $33\frac{7}{8}$ yds. there have been sold, at different times, $11\frac{3}{4}$ yds., $7\frac{5}{8}$ yds., $2\frac{3}{16}$ yds. and $1\frac{1}{2}$ yds. How many yards remain?

105. What number must be multiplied by $\frac{2\frac{3}{5}}{4\frac{1}{2}}$, that the product may equal 1?

106. The report from the Army of the Potomac, Feb. 1, 1862, was as follows: There were present for duty 1002 men less than $\frac{6}{7}$ of the whole army; 1621 men less than $\frac{1}{14}$ were in hospitals; 107 less than $\frac{1}{74}$ were in confinement; 124 more than $\frac{1}{16}$ were on furlough, and 1580 were unaccounted for. How many men were reported for duty, in hospital, in confinement, and on furlough, respectively, and what was the aggregate strength of the army?

107. If $\frac{6}{11}$ of a yard cost $10, what quantity will $17\frac{1}{2}$ purchase?

108. A merchant sold a piece of cloth for $24, and thereby lost $\frac{1}{4}$ of his purchase money. What part of his purchase money would he have gained had he sold it for $34?

109. George Hawkins leased 100 acres of land in Mississippi, of the U. S. Government, for one year; his cotton crop, raised upon $\frac{3}{4}$ of the land, averaged 1 bale of 400 lbs. per acre; he planted corn upon the remaining land, raising $45\frac{3}{5}$ bushels per acre. He sold the cotton at 50 cents per pound, and the corn at 75 cents per bushel; his expenses for farming implements, labor, and Government tax, were just $\frac{1}{3}$ the gross receipts. What were the net profits for the year?

110. Bought a horse and saddle for $150, and paid for a buggy $\frac{8}{9}$ of what I paid for the horse; the saddle cost $\frac{2}{7}$ the value of the horse. What was the price of each?

111. A company, whose capital stock is divided into 1000 equal shares, consolidate the stock into 300 equal shares. How much larger would a share of the latter be than one of the former size?

112. If 22 boarders consume a barrel of beef in 63 days, how long would it last if 6 more were added to their number?

113. If a man, by laboring 14 hours a day, can perform a certain piece of work in 6 days, how many days would it require to do the same work, by laboring 12 hours a day?

114. In 1856, 4056471 votes were cast for three presidential candidates. Buchanan received 497573 votes more, and Fillmore 467309 votes less, than Fremont. How many votes did each receive?

115. If a horse eat $19\frac{3}{7}$ bushels of oats in $87\frac{3}{7}$ days, how many bushels would 14 horses eat in 30 days?

116. James Stow can mow a field in 6 days, by working 10 hours a day; his son George can mow the same field in 9 days, by working 8 hours a day. How long will it take them

both to mow the field, provided they each work 6 hours a day?

117. An Illinois farmer sold $212\frac{6}{7}$ bushels of wheat for $\$201\frac{3}{4}$; $328\frac{7}{12}$ bushels of corn for $\$178\frac{5}{8}$; $187\frac{9}{14}$ bushels of oats for $\$84\frac{7}{9}$. How many bushels of grain did he sell, and how much did he receive for the whole?

118. The total expenses of public schools in Pennsylvania, in 1862, were $1955315, and 385463 scholars attended school. The same year there were 68954 scholars in the public schools of Philadelphia, educated at an expense of $604100. How much were the expenses per scholar in the city more than in the State at large?

119. Bought $\frac{3}{4}$ of a ten-acre lot, and sold $\frac{4}{5}$ of what I purchased. How much did I sell?

120. Bought 8 lbs. hyson tea and 12 lbs. black tea. The price per pound of the latter was $\frac{5}{8}$ the price of the former, which was $\$\frac{9}{10}$. What did the whole cost?

121. What is the difference between $4\frac{7}{8}$ yards, and 159 whole yards?

122. A lady spent $\frac{1}{3}$ of the day in sleep, $\frac{1}{7}$ in visiting, $\frac{1}{8}$ at her toilet, $\frac{1}{9}$ in reading, and 2 hours each day in receiving calls. How much of her time remained for other occupations?

123. A gentleman bequeathed $\frac{1}{3}$ of his estate to his wife, $\frac{1}{4}$ of the remainder to his oldest son, and $\frac{1}{5}$ of the residue to his oldest daughter, whose share was $\$684.66\frac{2}{3}$. What was the value of the estate?

124. The estimated value of all the gold throughout the world in 1863, was $4860000000; of the silver, $5700000000. What part of this sum was produced the same year, the annual product of gold being $180000000, and of silver, $60000000?

125. A having $104\frac{3}{8}$ bushels of wheat, sold $\frac{3}{5}$ of it to B, who sold $\frac{2}{3}$ of what he bought to C, who sold $\frac{1}{4}$ of what he bought to D. How many bushels did each purchase?

126. A boy can do a certain piece of work in $3\frac{2}{5}$ days, and

a man can do the same in $\frac{4}{7}$ of the time. How many days will both working together require to do the work?

127. A grocer has $74\frac{13}{16}$ gallons of beer, which he wishes to put into bottles, each holding $\frac{7}{16}$ of a gallon. How many dozen bottles must he obtain?

128. A garrison of 5000 men were besieged in a town, with provisions for three weeks, allowing each man 16 ounces per day. Being reinforced by 3000 men, upon what allowance per day must the garrison be put, that the same provisions may last four weeks?

129. What will 12.75 bales of cotton cost, each bale weighing 7.75 cwt., at $28.625 per cwt.?

130. What is the greatest common divisor of 408, 1190 1445 and 4012?

131. How many times does the sum of $21\frac{1}{3}$ and $12\frac{1}{5}$ contain their difference?

132. In a certain school, .375 of the pupils study arithmetic, .3 study grammar, .25 study geography, and the remainder, which is 21, learn to read. What is the whole number of pupils?

133. The public debt of Austria in 1863 was 2539090836 florins, and her population was 34714326. What was the debt per capita, a florin being worth 50 cents in United States money?

134. Divide $1000 among 7 boys and 9 girls, giving to each girl $\frac{7}{9}$ as much as to each boy. How much does each boy and girl respectively receive?

135. If 7 men or 11 boys can perform a piece of work in 28 days, in what time can 11 men and 7 boys do the same?

136. Four persons bought a house together for $8250; B paid twice as much as A, C paid as much as A and B, and D paid as much as A and C. How much did each pay?

137. In Belgium, the budget for 1863 gives the total receipts at 155946790 francs, and the expenditures at 150120345

francs. How many more dollars were the receipts than the expenditures, 5 francs being worth 98 cents U. S. money?

138. A man, going a journey of 418 miles, finds at the end of 5 days that the distance he has traveled is $\frac{17}{21}$ of the remaining distance. How many miles does he travel per day?

139. A regiment of soldiers, consisting of 1025 men, is to be furnished with coats, each to contain $2\frac{2}{3}$ yards, $1\frac{3}{8}$ yards wide. How many yards of cloth, $1\frac{5}{16}$ yards wide, will line them?

140. How many times is .75 of 2.625 contained in .375 of $26\frac{1}{4}$.

141. A man having a cow and horse found that 4 loads of hay would keep them both 6 months; having disposed of his horse he found that the same quantity of hay would keep his cow 14 months. In what time did each consume 1 load?

142. Bought a hogshead of molasses containing 128 gallons at $.65 a gallon; paid $.80 for cartage, and lost 16 gallons by leakage. At what price per gallon must the remainder be sold to gain $\frac{1}{5}$ of the entire cost?

143. Jan. 20th, 1864, Gen. B. F. Butler seized at Norfolk, Va., 48 barrels of whiskey, each containing 31.5 gallons; this was sold for the U. S. Government, $\frac{1}{2}$ at $7.50 per gallon, and the remainder at $8.75 per gallon; the parties violating the laws of trade were also fined $1000. How much did the Government receive?

144. The number of the Union army killed in the battle of Gettysburg was 515 more than $\frac{1}{10}$ of the whole loss; the number of wounded was 956 more than $4\frac{1}{2}$ times the number killed; there were 6647 missing. What was the whole loss?

145. A boy bought a slate, a book and a pen for 80 cents; the pen cost 10 cents, and the book cost $1\frac{2}{7}$ times as much as the slate and pen. How much did each cost?

146. Divide $870 among A, B and C, so that $\frac{1}{2}$ of A's money shall be equal to $\frac{2}{3}$ of B's, or $\frac{3}{4}$ of C's.

147. Bought a horse for $115. At what price must it be sold so that the gain shall be $\frac{3}{8}$ of the cost?

148. By selling a house for $2175, my gain was $\frac{3}{17}$ of the cost of the house. What did I pay for the house?

149. A grocer bought a cask of sugar, containing 400 pounds, for $32; a part of it being damaged he sold the remainder for $\frac{5}{4}$ the cost per pound, and thereby gained a sum equal to $\frac{1}{8}$ of his purchase money. How many pounds were damaged?

150. A merchant bought a bag of coffee, containing 80 pounds, at 15 cents per pound; he also paid $.54 for roasting it. For what must it be sold per pound to yield a profit of $\frac{1}{8}$ the cost of the coffee, allowing to each pound $\frac{1}{4}\frac{1}{0}$ of a pound for waste?

151. The entire population of Denmark and the two Duchies of Holstein and Schleswig, is 2554870; Denmark contains 3 times as many inhabitants as Holstein—32706, and Schleswig contains 134519 less than Holstein. What is the population of Denmark and the Duchies respectively?

152. Bought a cask of nails containing 100 pounds at $4\frac{2}{5}$ cents per pound, and, after reserving 15 pounds for myself, I sold the remainder at $5\frac{1}{5}$ cents per pound. How much did I gain?

153. A can do $\frac{1}{3}$ of a piece of work in 4 days; B can do $\frac{1}{4}$ of it in 5 days; C can do $\frac{1}{5}$ of it in 3 days, and D can do $\frac{1}{6}$ of it in $1\frac{1}{2}$ days. How long will it take them all to do it?

154. Divide $\frac{.03\frac{1}{4}}{24\frac{1}{4}}$ of $\frac{2}{.006\frac{1}{7}}$ by $\frac{37\frac{1}{2}}{.0125}$ of $\frac{62}{.08\frac{1}{2}}$.

155. A man owned seventy-five-thousandths of the stock in a bank, and sold three hundred and twenty-five ten-thousandths of the whole stock. How much did he still own?

156. A mast stands $\frac{1}{5}$ in the ground, $\frac{1}{4}$ in the water, and 33 feet above the water. What is its length?

157. I sold an article for $\frac{1}{4}$ more than it cost me, to A, who

sold it to B for $10, which was $\frac{1}{3}$ less than it cost him. What did it cost me?

158. The number of postage stamps sold in one year was as follows: 53893792 one-cent stamps; 151223056 three-cent; 677200 five cent; 3925690 ten-cent; 1053900 twelve-cent; 650600 twenty-four-cent; 340000 thirty-cent; and 24280 ninety-cent stamps. What was the whole number of stamps and their value?

159. Seven men engage to do a piece of work in a given time, but three of them failing to come, the work was prolonged $7\frac{1}{2}$ days. In what time would the seven men have done it?

160. The report of the Normal School at Albany, N. Y., for the year 1863, showed that the number of males was 1 less than $\frac{2}{9}$ of the whole number in attendance; the number of females was 32 more than $\frac{2}{3}$ of the whole number, and 22 less than 4 times the number of graduates; and three-fourths of the entire number of graduates were females. What was the whole number of graduates, and how many were males?

161. A man bought 3 barrels of molasses, containing respectively 30.375, 33.675, and 28.6625 gallons, at an average price of $.375 per gallon. What was the whole cost?

162. A person proposes to sell his horse by lottery; if the price of the tickets be $3 each, he will lose $20 on his horse, but if he sell them at $4 each he will gain $20. What was the value of the horse and the number of tickets?

163. There is an island 27 miles in circumference; A, B and C start from the same point, and travel in the same direction around it; A goes at the rate of 4 miles; B, 7 miles, and C, 10 miles per hour. In what time will they all be together?

164. What are all the exact divisors of 560?

165. A person after spending $40 more than $\frac{3}{5}$ of his money, had $60 less than $\frac{3}{7}$ of it left. How much money had he?

166. In 1860 Georgia cultivated 14321 farms and plantations, containing an average of 563 acres each, at an average value of $20 per acre. New Jersey cultivated 18518 farms, containing an average of 105 acres each, at an average value of $94 per acre. Of how much greater value were the farming lands of the latter State considered, than those of the former?

167. From a cask of rum there were drawn off 26 gallons; $\frac{1}{3}$ of the remainder leaked out; the cask was then found to be 4 gallons more than $\frac{1}{2}$ full. How many gallons did the cask at first contain?

168. A man being asked his age, replied, "If $\frac{1}{3}$ of my age be multiplied by 11, and $\frac{4}{9}$ of it be multiplied by 15, and $\frac{1}{4}$ of it be added to the sum of these products, the sum will be 381. What was his age?

169. The Illinois Central Railroad sold, in one month, 16461 acres construction land, at $11\frac{1}{3}$ per acre; 242 acres interest fund land at $9\frac{1}{2}$ per acre; 2781 acres free lands at $10\frac{8}{9}$ per acre; and 4 town lots at $425.50 each. How much were the total receipts from the sale of lands?

170. The receipts of the same railroad for the same month were, from passengers, $138615.83; from freight, $164226.20; from mails, $6358.33; from rent of road, $4000, and from other sources, $5000. How much did the receipts from running the road exceed those from sale of lands?

171. A and B have the same income; A saves $\frac{1}{6}$ of his, but B spends $1\frac{2}{7}$ times as much as A, and finds himself $98.56 in debt at the end of the year. What is their income?

172. The third satellite of Jupiter is .0000885 of the mass of the planet, and .02947 of the mass of the earth. The mass of Jupiter is how many times that of the earth?

173. If $8\frac{2}{3}$ ounces of bread are bought for $.06\frac{1}{2}$, when wheat is $1\frac{1}{4}$ per bushel, how much bread may be bought for $.25 when wheat is $\frac{7}{8}$ per bushel?

174. What is the sum of 45 millionths, 45 thousandths, 45 hundredths, 45 tenths, and 45 units?

175. In 1861, the revenue of the Post Office Department was $9049296.40, from 28586 offices; in 1862, it was $10388-934.60, from 19973 offices. How much more was received, on an average, from each office, the latter year than the former?

176. A market woman wished to sell a basket of oranges; her first customer bought $\frac{1}{3}$ of what she had, and gave her back 5; the second bought $\frac{1}{5}$ of what she then had, and gave her back 10; the third bought $\frac{1}{6}$ of the remainder, and gave her back 15; the fourth bought $\frac{3}{4}$ of the residue, and gave her back 20; after which she found she had 60 oranges left. How many had she at first?

177. If $\frac{7}{9}$ of a yard of cloth cost $\frac{7}{25}$, what will $\frac{5}{6}$ of a yard cost?

178. The exterior semi-diameter of the exterior ring of Saturn is 88209 miles, and of the interior ring 75845 miles; the width of the interval between the rings is 1791 miles, and the space between the planet and interior ring is 19089 miles. What is the width of the rings, the semi-diameter of the planet being 39580 miles?

179. A and B can perform a piece of work in 1 $\frac{5}{7}$ days; A and C in two days; C and B in $2\frac{2}{5}$ days. In what time would each perform the work alone, and how long would it take them to do the work together?

180. Bought 7640 brick, at $4.75 per 1000; 26789 feet of lumber, at $2.75 per 100; and 986 feet of pine boards, at $20 per 1000; I paid $.35 per 1000 for planing 23463 feet of boards. What was the whole bill?

181. There were 193 applications for admission into the Normal School, at Albany, in 1864; the number that passed examination was 2 less than 4 times the number that failed. How many failed, and how many were admitted?

182. A speculator gave $19550 for horses, and sold a cer-

tain number of them for $8925, at $105 each; by so doing he lost $10 apiece. For how much must he sell the remaining horses each, to gain $425 by the operation?

183. A and B together have $600; $\frac{1}{4}$ of what A has, added to $\frac{1}{5}$ of what B has, amounts to $135. What have they each?

184. In 1862, the export of petroleum from four ports was as follows, viz.: from New-York, 6783563 gallons, valued at $2037413; from Philadelphia, 2607203 gallons, worth $529-575; from Boston, 891616 gallons, worth $457859; from Baltimore, 1120000 gallons, worth $500000. How many gallons were exported, and of what value?

185. What is the smallest sum of money with which I can purchase either sheep at $3.50 a head, calves at $10.50, cows at $35, oxen at $70, or horses at $105?

186. A and B, traveling together, started with such sums of money that $\frac{1}{9}$ of A's was equal to $\frac{1}{13}$ of B's; each spent $12, when $\frac{1}{3}$ of A's money was equal to $\frac{1}{5}$ of B's. How much did each start with?

187. The point in the earth's orbit farthest from the sun is 96600000 miles; the point nearest, 93400000 miles; of the moon from the earth the farthest, 251760 miles; the nearest, 221290 miles. What are the greatest and least possible distances between the sun and the moon?

188. From a cistern containing 3465 gallons, 62.75 barrels, of 31.5 gallons each, were drawn off. How many gallons remained?

189. A has $647, which lacks $33 of being 4 times what B has; C is worth twice as much as A and B together, lacking $72. How much money have B and C respectively?

190. A merchant bought a number of bushels of corn; having sold 6 bushels more than $\frac{1}{4}$ of it to W. Smith, and 8 bushels more than $\frac{2}{3}$ of the remainder to J. Acker, he had 20 bushels remaining. How many bushels did he buy?

191. The number of stamped envelopes sold in one year

were as follows: three-cent envelopes, 22940100; one-cent, 2845000; four-cent, 70000; six cent, 40450; ten-cent, 131-750; allowing 5 cents as the cost of paper and manufacturing every package of 25 envelopes, what was the whole number sold and their value?

192. Reduce $\frac{5}{7}$, $\frac{8}{13}$, $\frac{11}{42}$, $\frac{9}{52}$ and $\frac{15}{78}$ to their least common denominator.

193. A, B and C, who can respectively travel 3, 4 and 5 miles an hour, propose to walk from Springfield to Hartford, the distance being 26 miles. How many hours after A starts must B and C each set out, that all may reach Hartford at the same time?

194. In the battle of Chickamauga, the number killed was 485 more than $\frac{1}{8}$ the wounded; the missing were 13 more than 3 times the number killed; the total loss being 15861, how many were killed, wounded and missing?

195. A farmer exchanged 50 loads of wood, each containing $\frac{3}{4}$ of a cord, at $4.40 per cord, for an equal number of bushels of corn worth $.75 a bushel, and of oats worth $.57 a bushel. How many bushels of each did he receive?

196. A has 6.4 acres in one lot, and 8.75 in another; B has 4.375 acres less than 3 times as much as A; C has 7.2875 acres less than $\frac{1}{2}$ as much as A and B together. How many acres had B and C?

197. The entire population of Connecticut in 1860, was 460146, and the products of industry were $83056353; allowing $\frac{1}{3}$ of the entire population to be engaged in industrial pursuits, what was the average value of the labor of each during the year?

198. How many bushels of corn must a farmer carry to mill that he may bring back $3\frac{3}{4}$ bushels, provided the miller takes $\frac{1}{16}$ for toll?

199. Reduce $\frac{32}{36}\frac{17}{04}\frac{71}{29}$ to its lowest terms.

200. John, Henry and Charles have respectively 65, 91

and 117 cents, with which they agree to purchase tops at the highest price that will allow each one to spend all his money. How many tops can each buy?

201. Bought a quantity of lumber for $\$785\frac{3}{16}$, and of wood for $\$347\frac{2}{3}$; sold the lumber for $\$649\frac{4}{5}$, and the wood for $\$589\frac{7}{9}$. How much did I gain?

202. Hudson County, New Jersey, appropriated $3723.03 for the education of 17501 children for one year. How much was appropriated for each child?

203. Two men, 84.675 miles apart, traveled till they met each other, when they found that one had traveled 8.425 miles farther than the other. How far did each travel?

204. How many bushels of potatoes at $\$\frac{7}{8}$ per bushel, will pay for $6\frac{3}{7}$ bushels of wheat at $1.40 per bushel?

205. The N. Y. Central R. R. Company owned, in 1862, 556 miles in length of railroad, which cost for construction and equipment, $31524226. The New York and Erie R. R. Company owned 446 miles in length, which cost $35796902. How much was the average cost per mile of the one more than of the other?

206. The discharging pipe of a cistern has $\frac{3}{5}$ the capacity of the receiving pipe, which will fill the cistern in 9.8 hours; the receiving pipe has been open $4\frac{2}{3}$ hours, when the discharging pipe is opened. In how many hours after will the cistern be full?

207. There were 2187480 pieces of gold, silver and copper coined at the U. S. Mint in one month, valued at $168908; 2170000 were copper coins, and there were 12002 silver coins, valued at $6606. What was the average value of the gold coins?

208. If $\frac{5}{9}$ of $\frac{2}{3}$ of $\frac{4}{5}$ of $\frac{7}{8}$ of a ship be worth $\frac{2}{9}$ of $1\frac{4}{9}$ of $1\frac{9}{25}$ of $\frac{5}{12}$ of her cargo, how many times the value of the ship is her cargo worth?

209. I exchanged 30 barrels of molasses, each containing 34 gallons, at $.56 a gallon, for 17 chests of tea of 24 pounds each. How much did the tea cost me per pound?

210. A coal dealer sold 5 tons of coal for $57.50, which was $\frac{5}{8}$ as much as he received for all he had left at $7.66\frac{2}{3}$ per ton. How many tons did he sell?

211. A farmer sold, in one year, 150 bushels of oats at $.45 per bushel; 250.25 bushels of corn at $.875 per bushel; 75.75 cords of wood at $3.625 a cord; $645\frac{2}{3}$ pounds of wool at $.78 per pound; 23 head of cattle at an average price of $50.75 per head. How much did he receive for the whole?

212. The number of railroad accidents, in the U. States, in 1862, was $\frac{3}{8}$ of the number of persons killed by the accidents; and the injured, which were 877, were 30 more than $2\frac{1}{3}$ times the number of accidents and killed together. What was the number of accidents, and how many were killed?

213. Six boys divided some chestnuts among themselves; James took $\frac{1}{3}$ of them wanting 6; Thomas took 6 less than $\frac{1}{3}$ of the remainder; John took 5 less than $\frac{1}{2}$ of what still remained; Henry took 2 less than $\frac{1}{4}$ of what then remained; William took 5 less than $\frac{3}{5}$ of the residue, and George took the remainder, which was 25. How many chestnuts were divided?

214. In 1858, 9061504 bushels of wheat were sent out of the country; in 1859, 2849192 bushels; in 1860, 4076704 bushels; and in 1861, 38313624 bushels. How many more bushels were exported in 1861, than during the three previous years?

215. What number is that whose sixth part exceeds its eighth part by 20 less than its ninth part?

216. A speculator sold a quantity of grain for $96, and gained $\frac{1}{7}$ of what it cost him. What part of the cost would his gain have been had he sold it for $100?

217. A, B and C can perform a certain piece of work in $26\frac{10}{19}$ days; A, B and D in $29\frac{11}{17}$ days; A, C and D in $33\frac{3}{5}$ days, and B, C and D in 42 days. How long would it take each to do it alone?

218. If a mason, in constructing a sewer, 650.25 feet in length, begin with a diameter of 32 inches, and increase .1 of an inch in every foot in length. How many times the diameter of the beginning will the end be?

219. The sales of sperm oil for export and home use, at New Bedford, for the week ending Jan. 23, 1864, were 3488 barrels, of 31.5 gallons each, at $1.65 per gallon; 5.6 times the quantity for home use, was equal to $1\frac{2}{3}$ times the quantity for export. What was the value of the exported oil?

220. If $3\frac{3}{11}$ tons of coal will last as long as $4\frac{10}{11}$ cords of wood, how many tons of coal will last as long as $13\frac{7}{11}$ cords of wood?

221. A merchant expended $384 for an equal number of yards of six different kinds of broadcloth, costing respectively $2.00, $3.00, $3.50, $4.00, $4.50, $7.00 per yard. How many yards of each kind did he buy?

222. How many rails, of the longest possible equal length, will inclose a rectangular field 9893 feet long by 8047 feet wide, with a straight fence six rails high?

223. In 1863 the school houses built of brick in the State of New York were $\frac{1}{12}$ the whole number $+16$; the framed school houses were 10 more than 10 times the brick; the stone, 3 less than $\frac{7}{12}$ the brick, and the log school houses were 33 less than $\frac{1}{4}$ the brick. Required the number of each kind.

224. What number is that whose $\frac{1}{3}$ part being subtracted from its $\frac{1}{2}$, the remainder will be 4 less than $\frac{1}{4}$ the number?

225. A man dying, left to his oldest son $\frac{1}{3}$ of the estate, increased by $\frac{1}{10}$ his daughter's share; to his youngest son $\frac{1}{3}$ of the estate plus $\frac{1}{8}$ of his daughter's share; and to his daughter the remainder, which was $700 less than the younger son's share. What was the value of the estate?

226. A grocer has forgotten the weight and first cost of a box of coffee; he only recollects that if he had sold it at 28 cents a pound he would have gained $2.00, but if he had sold

it at 21 cents a pound he would have lost $5.00. Required the number of pounds in the box and the first cost per pound.

227. The sum of $\frac{\frac{3}{5} \text{ of } \frac{5}{6}}{.5}$ and $\frac{\frac{4}{7} \text{ of } \frac{7}{12}}{\frac{4}{9} \text{ of } 2.25}$ is equal to how many times their difference?

228. During the year 1861, of the letters exchanged between the United States and Great Britain, 1707439 were received, 1591644 were sent; between the United States and France, 679184 were received, 680577 sent. How many letters did the exchange with Great Britain exceed that with France?

229. The rate of postage between the United States and Great Britain was $.24 for each $\frac{1}{2}$ ounce; between the United States and France, $.30; allowing the letters to weigh $\frac{1}{2}$ ounce each, how much greater were the receipts for postage, between the United States and Great Britain than between the United States and France?

230. A and B can do a piece of work in $6\frac{2}{3}$ days; B and C in 12 days; and A and C in 10 days. In how many days could all working together do it?

231. A trader bought corn at $.63 per bushel, and sold it for $.56. How much did he lose on every dollar he paid out?

232. A boat which could move 14 miles an hour in still water, was accelerated $2\frac{1}{2}$ miles per hour in going down stream, and retarded the same in coming up; it was 10 hours longer in coming up a certain distance than in going down the same. What was the distance?

233. The difference between two numbers is 8, and $\frac{1}{11}$ of the larger is equal to $\frac{1}{7}$ of the smaller. What are the numbers?

234. J. Burke engaged to work a year for $180 and a suit of clothes; at the end of 8 months he was disabled, and received for his wages the suit of clothes and $110. What was the cost of the suit of clothes?

235. How long will it take a man to walk 486 miles, if he walk $3\frac{3}{8}$ miles an hour, and $7\frac{1}{5}$ hours each day?

236. The population of the United States in 1840, was 17069453; in 1850, 23191876; in 1860, 31445080. How much more was the increase for every hundred, from 1840 to 1850, than from 1850 to 1860?

237. A grocer exchanged 112.5 lb. of coffee, for tea at $.875 per lb., the price of $3\frac{8}{9}$ lb. of coffee being equal to that of 2 lb. of tea. How many pounds of tea did he receive, and what was the price of his coffee per pound?

238. A tree, by falling, was broken into 3 pieces; the top part was 15 feet long; the bottom, as long as the top and $\frac{1}{2}$ the middle piece, and the middle part as long as the top and bottom. What was the height of the tree?

239. How far may a person ride in a coach, which goes 10 miles an hour, so that he may be gone 3 hours, provided he walk back at the rate of 4 miles an hour?

240. If it is worth $.80 to saw a cord of wood consisting of sticks 4 feet long, into pieces $1\frac{1}{3}$ feet in length, how much is it worth to saw a cord consisting of sticks 8 feet long, into pieces of the same length?

241. What number is that which being increased by $\frac{3}{4}$ of $\frac{7}{12}$ of $\frac{8}{21}$ of itself, will amount to $247\frac{1}{8}$?

242. The forward wheels of a carriage are 10.5 feet in circumference, and the hind wheels 15 feet. The places where the tires are welded together in each wheel were up together when the carriage started, and when it stopped the same places were up together for the 352nd time. Required the number of miles the carriage had traveled, allowing 5280 feet to a mile?

243. A and B set out from the same place, and in the same direction; A traveled 16 miles a day, and after traveling $7\frac{1}{2}$ days turned and went back as far as B had traveled in $7\frac{1}{2}$ days; he then turned again, and pursuing his journey, over-

took B 25 days after they first set out. How far did B travel each day?

244. If 10 oxen, or 14 cows, eat $4\frac{5}{16}$ tons of hay in 58 days, in what time will 4 oxen and 6 cows eat the same quantity of hay?

245. In the State of New York 72104 children attended school more than 10 months of a certain year; 65161, more than 8 months; 115450, more than 6 months; 176221, more than 4 months; 240328, more than 2 months, and 217551, less than 2 months. How many children of school age did not attend school at all, the whole number being 1357047?

246. Six men can do a piece of work in $7\frac{1}{3}$ days. How soon after beginning must they be joined by 2 more, so as to complete it in $5\frac{3}{9}$ days?

247. Bought a western farm for \$11180, and after expending \$871 in improvements, I sold one half of it for \$7740, at \$18 per acre. How many acres of land did I purchase, and at what price?

248. How many times is the greatest common divisor of $4\frac{1}{3}$, $6\frac{1}{2}$, $7\frac{2}{9}$ and $7\frac{7}{12}$ contained in the least common multiple of the same numbers?

249. When one dollar of gold is worth $159\frac{1}{2}$ cents, how many whole dollars in gold ought a broker to pay for a ten-dollar U. S. note, and how much fractional currency?

250. A hound ran 200 rods before he caught a fox; $\frac{3}{7}$ the distance the fox ran before being caught was equal to the distance he was in advance when they started. How far in advance was the fox, and how far did he run?

251. The State Superintendent of Schools in Pennsylvania reported, in 1862, that 98 more than $\frac{1}{5}$ the whole number of school houses in the State were wholly unfit for use; that 25 more than twice this number were improvable, so as to answer for school purposes; and the remainder, 4133, were suitable in all respects. How many school houses in the State?

252. Twelve men can do a piece of work in $8\frac{5}{6}$ days; how many days may 3 remain away, and yet finish the work in the same time, by bringing 7 more with them?

253. In 1860, Virginia produced 12396775 lbs. of tobacco, at an average value of \$.10 per lb. How many school houses, at a cost of \$1150, and how many churches, at a cost of \$8550, of each an equal number, could be built with the proceeds of the tobacco crop?

254. A boy spent one-third of his money for apples, and 20 cents for nuts; he then gave 10 cents more than one-fourth of the remainder for oranges, when he found he had but 50 cents left. How many cents had he at first?

255. Divide \$14500 between A and B, so that A shall have $\frac{7}{8}$ as much as B, increased by \$2500.

256. In a lot of silver change, worth \$13.50, $\frac{3}{9}$ of the value is in 50-cent pieces, $\frac{4}{7}$ of the remainder in 25-cent pieces, and the rest is made up of 10-cent, 5-cent and 3-cent pieces, of each an equal number. How many pieces of each coin are there?

257. If a cubic foot of granite weigh 168.48 pounds, what will be the weight of a block of granite 10.75 feet long, 4.5 feet wide, and 3.8 feet thick?

258. The United States has an area of 2819811 square miles, and a population of 31445089. Europe has an area of 3757209 square miles, and a population of 268851381. What is the difference in area and population?

259. Divide the sum of $\frac{1}{6}$ of $\frac{4}{7}$ of $28\frac{3\frac{6}{7}}{4\frac{2}{7}}$ and $3\frac{39\frac{1}{2}}{105}$ by the continued product of $\frac{34\frac{4}{5}}{27}$, $\frac{98\frac{1}{8}}{87\frac{2}{9}}$, $\frac{2\frac{1}{3}}{\frac{7}{8}}$ and $\frac{128}{81\frac{5}{11}}$.

260. John and James started together and ran a race; when James had run 80 rods, $\frac{1}{17}$ the distance John had run was equal to the distance he was ahead of James. How much did John gain on James in running 80 rods?

261. A school house which cost $980 is to be paid for by four men, A, B, C and D. It is agreed that each shall pay according to his nearness to the school house. A is twice as near as B, and B is $\frac{3}{2}$ as near as C, who is $\frac{8}{5}$ as near as D. How much ought each to pay?

362. If 14 men can perform a job in 27 days, in how many days can they perform the same labor with the assistance of 7 more men?

263. The value of books printed in New York, in 1860, was $6920102; of job work, $2574529; of newspapers, $13422254. The aggregate value of printing in the United States for the same period was $39678043. How much more than one-half the value of the whole printing was done in New York?

264. A can travel around a certain island in $2\frac{2}{5}$ days, B in $3\frac{1}{3}$ days, and C in $3\frac{1}{3}$ days. If they all set out from the same point, and travel the same way, in how many days will they all meet at the point from which they started?

265. The total cost of maintaining schools in the State of New York, in 1863, was $3859159.21. The rural districts raised by taxation $503181.28, by rate bills, $363741.05; the cities raised by taxation $1595728.80; the remaining cost was paid by the State School Fund? What amount of money was received from the State?

266. A man laid out $\frac{3}{7}$ of his fortune in speculation, and put out on interest the remaining $6800; at the end of the year he had gained $\frac{5}{17}$ as much by speculation as he laid out, and his interest was $\frac{1}{8}$ of the principal. What was his fortune, and how much did he gain during the year?

267. A man bought 2400 bushels of corn, at $.90 a bushel, but in measuring it he found that he had more bushels than he paid for, and that he had gained 2.25 bushels for every hundred. He sold the same without delay at $1.05 a bushel. How much did he make by the transaction?

268. A man has 2 horses and a saddle; if the saddle be placed upon the first horse, valued at $60, it will make him $1\frac{1}{4}$ times the value of the second horse, but if it be put on the second horse, it will make his value twice that of the first horse. Required the value of the saddle and the second horse.

269. In 1861, there were 2819811 square miles, of 640 acres each, in the United States; and there were 1155510 farms, of 215 acres each, under cultivation. How many acres were still uncultivated?

270. The above farms were each valued at an average of $5756, and upon each farm there was an average of $213 in machinery and implements. What was the aggregate value of the farms and implements?

271. Bought a bale of cloth for $96.75, and disposed of it for $\frac{3}{3}$ the cost, by which I lost $1.00 on a yard. How many yards were there in the bale?

272. There is a cask containing brandy and water; $\frac{3}{4}$ of the whole + 4 gallons, is brandy, and $\frac{1}{5}$ of the whole + 2 gallons is water. How many gallons of each?

273. A had $\frac{2}{5}$ of $\frac{5}{6}$ of $3\frac{3}{4}$ times $31448, and paid $\frac{3}{7}$ of $\frac{1}{3}$ of $\frac{7}{10}$ of it for a farm. How much money had he remaining?

274. Bought 7.5 lb. of sugar for $.37$\frac{1}{2}$. For how much must I sell 5.25 lb., to gain the cost of .25 of a lb.?

275. The New England States had sent into the army, Jan. 1, 1863, 183732 men; the Middle States, 453386; the Western States, 103887 more than the Middle States; the Border States 101877 less than the New England States. Of the whole number, 91561 were three-months men, 67335 nine-months men, and 48571 were enlisted for irregular periods; the remainder enlisted for three years. How many of this class were there?

276. A man divided $670 among his 3 sons, so that $\frac{1}{3}$ the share of the first was equal to $\frac{3}{4}$ the share of the second, and to $\frac{4}{5}$ the share of the third. Required the several shares.

277. Bought 24 tons of hay, at $16.50 per ton, for $\frac{2}{3}$ of which I paid sheep, at $3\frac{1}{3}$ each, and for the remainder I paid butter, at $.19\frac{1}{5}$ per pound. How many sheep and how many pounds of butter did it require to pay the debt?

278. Bought 17 chests of tea, each containing 59 pounds, at $.67 a pound, and gave in exchange 118 bags of wheat, each containing 3.4 bushels. What was the value of the wheat per bushel?

279. The value of the flour and meal produced in the United States, in 1860, was $224000000; of cotton goods, three million of dollars more than one-half the value of the corn and meal; of boots and shoes, $\frac{1}{2}\frac{8}{3}$ the value of cotton goods; of clothing, $\frac{7}{9}$ the value of the boots and shoes; of printing, $\frac{3}{5}$ the value of the clothing. How much did the sum of the values of the printing, and boots, and shoes, exceed in value the cotton goods?

280. The circumference of a circle is always 3.141592 times the diameter. How many revolutions will a carriage wheel, which is $3\frac{1}{2}$ feet in diameter, make in going a distance of 5.73 miles?

281. A father divided a piece of land among his three sons. To the first he gave 16.25 acres; to the second, $\frac{5}{1}\frac{}{2}$ of the whole; and to the third, as much as to the other two. How many acres had the third?

282. The British army in India, in 1863, consisted of 7062 cavalry; twice as many artillery, lacking 124; and 4 times as many infantry as artillery, lacking 1163. The cavalry in the home army were 66 more than the artillery in the India army, and the infantry 2968 more than 9 times the home cavalry. What was the aggregate strength of the home and of the India army?

283. A market woman bought a number of peaches at the rate of 2 for 1 cent, and as many more at the rate of 3 for 2 cents, and sold them all at the rate of 5 for 3 cents, gaining 4 cents. How many peaches did she buy?

284. A tree 164 feet high, in falling was broken into two pieces, of such lengths that $\frac{3}{5}$ of one piece equaled $\frac{4}{7}$ of the other. Required the length of the pieces.

285. In Wisconsin, the number of stone and brick school houses, in 1861, was 376; of framed, 2478; of log, 1357; the average cost of these buildings was $309.50. What was the cost of all the school houses?

286. If $3\frac{1}{4}$ yds. of cloth, $1\frac{3}{5}$ yds. wide, cost $3.46\frac{2}{3}$, what will be the cost of $42\frac{1}{4}$ yds., $1\frac{1}{2}$ yds. wide?

287. A piece of land was divided into two parts, so that $\frac{1}{2}$ the first was equal to $\frac{1}{3}$ the second. The difference between the two parts was 10.7534 acres. What was the whole amount, and what were the parts?

288. What is the value of the following expression: $\frac{2}{3}$ of $\frac{7\frac{1}{2}}{5}+\frac{\frac{1}{4}}{3.7}\div\frac{2}{5}$ of $(9\frac{2}{7}-\frac{8}{2.15}+\frac{6.1}{\frac{4}{9}})-\frac{\frac{3}{11}}{4\frac{2}{13}}\times\frac{22}{39}$?

289. A garden whose breadth is 9 rods, and whose length is $1\frac{2}{3}$ its breadth, has a wall $3\frac{3}{4}$ feet thick around it. What was the cost of digging a trench $2\frac{1}{2}$ feet deep, in which to lay this wall, at $1\frac{2}{5}$ cents per cubic foot?

290. There were 38068 children attending school in 614 districts in California, in 1861. The whole cost of schools for the year was $470115.24. What was the average number attending in each district, and what the average expense per scholar?

291. Three horses start from the same point, and at the same time, upon a race-course 300 rods in circuit; the first horse passing over $\frac{1}{2}$ the circuit, the second $\frac{2}{5}$, the third $\frac{1}{3}$, in a minute. In how many minutes will they all be together again, and how far will each have traveled?

292. Bought 4 bushels of wheat, and $3\frac{1}{3}$ times as many bushels of corn; for the former I paid $\frac{1}{8}$ as many dollars per bushel as there were bushels of the latter, and for the latter $\frac{3}{5}$ as much per bushel as for the former. Required the price of each per bushel, and the whole cost?

CHAPTER IV.

1. The source of the river Volga is 550 feet above the level of the sea; after a course of 2000 miles it empties into the Caspian sea, which is 83 feet below the surface of the ocean. How much is the average fall, per mile, of the river?

2. A physician bought by Avoirdupois Weight, 15 lb. opium at 4 cents a dram, and sold the same by Apothecaries' Weight, in doses of 10 grains each, for 25 cents per dose. How much did he gain?

3. The amount of money in the Sub-Treasury in New York, Jan. 1st, 1864, was $12898926.89; the amount received in January, on account of Customs, was $6179605.51; of Loans, $37463895.94; of Internal Revenue, $2275409.67; of Transfers, $300000.00; of Patent Fees, $6613.65; of Miscellaneous, $4164352.27; of Post Office Department, $108982.51; and the amount paid out in Treasury Drafts was $48343806.66; in Post Office Drafts, $82663.06. How much remained in the Treasury, Feb. 1st, 1864?

4. How much land in New York at $2.25 per square foot will $200000 buy?

5. The population of London, in 1860, was 2300000; the number of deaths during the year was 63644; the population of New York, at the same time, was 805600, and the number of deaths, 18126. How many more deaths per million in London than in New York?

6. A man and his son walk from Hartford to New Haven, a distance of 36 miles; allowing that the man passes over a distance of 2 ft. 9 in. at each step, and the boy a distance of 1 ft. 10 in., how many more steps does the boy take than the man.

7. A school room, which is 36 ft. long, 30 ft. wide, and 12 ft. high, is occupied by 80 pupils, each breathing 10 cu. ft. of air in one minute. In how long a time will they breathe as much air as the room contains?

8. What is the sum of $\frac{.5 \times .006}{\frac{9}{15} \text{ of } \frac{4}{5} \times (\frac{1}{4})^2}$ and $\frac{\frac{1}{5} \text{ of } \frac{15}{16} \times (\frac{2}{3})^3}{1.6 \times .625}$?

9. A man having a hogshead of molasses, sold $\frac{4}{13}$ of it to A, $\frac{1}{3}$ of the remainder to B, and $\frac{1}{3}$ of the residue to C. How many gallons remained?

10. What is the value of $\frac{9\frac{7}{11}}{1\frac{2}{7}\frac{9}{7}}$ of a dollar?

11. Bought 78 A. 3 R. 15 P. 7 sq. yd. 5 sq. ft. 9 sq. in. of land at $80 per acre; I sold $\frac{2}{5}$ of it to A at $120 per acre; $\frac{2}{3}$ of the remainder to B at $1.00 per sq. rd., and the residue to C at $.005 per sq. ft. What was my whole gain?

12. A fruit dealer bought 4 barrels of cranberries, each containing $2\frac{1}{2}$ bushels at $8.00 per barrel; he retailed the same at $12\frac{1}{2}$ cents per quart, wine measure. How much was his profit?

13. $\frac{6}{7}$ of the muskets captured at the battle of Gettysburg by the U. S. army were loaded; $\frac{1}{5}$ of these contained one charge each; $\frac{1}{2}$, two charges each; $\frac{1}{4}$, from three to ten each; $\frac{29}{600}$, from ten to fifteen each, and the remainder, which was 40, from fifteen to twenty-three each. How many muskets were captured?

14. The distance from Albany to Buffalo is 298 miles; an express train from Albany, and a mail train from Buffalo, start at the same time; the express runs at the rate of 24 miles per hour, and the mail train, 20 miles; for each hour of running time the express stops 6 minutes, and the mail train, 12 minutes. How many hours before they meet, and how far from each city?

15. The total yield of nine copper mines in 1862, was 3942 T. 12 cwt. 1 qr. 1 lb.; in 1863, the same mines yielded

4101 T. 8 cwt. 3 qr. 3 lb.; if copper was worth 20 cents per pound, of how much greater value was the amount produced in 1863, than in 1862?

16. In the Maine House of Representatives in 1863, the number of lawyers was 5 more than the editors; the clergymen, 2 more than the lawyers; the merchants 17 more than the clergymen, and 17 less than the farmers, who were 1 more than $\frac{1}{2}$ the whole number. What was the number of each class?

17. A man took 5 loads of turnips to market, each load containing 16 bags, and each bag 3 bushels; he sold them for 20 cents a bushel, and received in payment 4 boxes of sugar, each box containing 8 papers, and each paper 15 lbs. What was the price of the sugar per pound?

18. Sold 72 yds. carpeting at $\$1.37\frac{1}{2}$ a yd., and gained thereby $18. How much did it cost me per yard?

19. A merchant carried on business three years; the first year he gained a sum equal to $\frac{1}{11}$ of his original capital; the second year he lost $\frac{1}{4}$ of what he had at the end of the first year; the third year he gained $\frac{3}{10}$ of what he had at the end of the second year; he then had $14625. How much had he gained in the three years?

20. A farmer exchanged 26 bu. 1 pk. 6 qts. of oats for 22 bu. 4 qts. of salt. What quantity of oats must be brought to the same market by a farmer who wishes to get 73 bu. 3 pks. of salt?

21. Divide 637 A. 3 R. 8 P. 11 sq. yds. 4 sq. ft. 16 sq. in. by 16.

22. A pedestrian, in training for a foot race, traveled 75 mi. 3 fur. 37 rd. 5 yd. 2 ft. 10 in. the first week; the second week, 89 mi. 3 fur. 9 rd. 2 yd. 1 ft. 10 in.; the third week, 127 mi. 6 fur. 9 rd. 1 yd. 3 ft. 10 in. How far did he travel in the three weeks?

23. If a person count 90 a minute for 10 hours each day, how long will it take him to count a million?

24. Bought a lot 25 rods long and 20 rods wide for $10-000, and sold the same at 25 cents per square foot. How much was my gain?

25. Simplify the following fractions:

$$\frac{\frac{2}{3}}{\frac{4}{5}} \times \frac{1}{\frac{7\frac{2}{3}}{\frac{1}{.0\frac{8}{9}}}} \times \frac{.00\frac{2}{3}}{\frac{7}{\frac{.003\frac{1}{3}}{25}}} \times \frac{207}{500}.$$

26. A cellar is 26 feet long, 18 feet wide, and 7 feet deep. How much earth must be removed to make it 28 feet long, 21 feet wide, and 8 feet deep?

27. How many square yards in the walls of a room 40 feet long, $31\frac{1}{2}$ feet wide and 12 feet high?

28. A person, being asked the time of day, replied: "$11\frac{2}{3}$ times the time past noon is equal to $4\frac{1}{3}$ times the time till midnight." What was the time?

29. I purchased some pens at two for a cent, and 1.5 times as many at 3 for 2 cents; I sold them all at the rate of one-half a cent each, and lost 15 cents by the transaction. How many of each kind did I buy?

30. The market value being the same in both States, a farmer from New Jersey exchanged 50 bushels of buckwheat, worth $\$1\frac{1}{3}$ a bushel, with a farmer in New York, for oats, worth $.40 a bushel, which he sold in his own State for cash. The exchange being made by weight, in whose favor was the difference, and how much in cash value?

31. What will $4\frac{3}{8}$ bales of cloth cost, each bale containing 43.75 yards, at $.75 a yard?

32. A man worked 3 months, 25 days each month, 10 hours each day, for $.08 an hour, and received in payment 2 loads of grain, each containing 15 bags of $2\frac{1}{2}$ bushels each. What was the price of the grain per bushel?

33. I bought 397 barrels of flour, at $9.625 per barrel; 290 bushels of corn, at $.93 per bushel; 48 barrels of beef,

at \$.09 per lb.; 170 barrels of pork, at \$.08$\frac{1}{3}$ per lb.; and 225 cords of wood, at \$.87$\frac{1}{2}$ per cord foot. What was the difference in value between the sum of the cost of the flour and the corn, and the sum of the cost of the other articles?

34. How many tons of hay, at \$.75 per cwt., must be given for 35 cords of wood, at \$.60 per cord foot?

35. It is estimated that the Falls of Niagara have receded 50 yards within the last 40 years. How long at this rate has it taken them to recede from Lewiston, 6 miles below their present site?

36. The amount expended in work upon the canals in New York, in 1863, was as follows, viz.: Champlain Canal, \$48-195.95; Black River, \$3261.77; Erie, \$151435.42; Oswego, \$15456.02; Cayuga, \$19755.58; Baldwinsville, \$25615.88; Chemung, \$15083.20; Crooked Lake, \$28895.62; Chenango, \$16935.21; Genesee Valley, \$88292.75; for work done by Canal Superintendents, \$107626.51. What was the whole amount?

37. The total cost of engineering upon the above mentioned canals was \$31223.11. How much was expended in work for \$1 in engineering?

38. What part of 5 da. 23 h. 58 min. is 4 da. 6 h. 50 min.?

39. Bought 7000 bushels of corn in Chicago at \$.80 a bushel. I shipped the same to Buffalo, and sold it at an advance of 20 cents per bushel; the expenses for freight and handling the grain were \$500: the corn being bought and sold by weight, how much did I gain or lose?

40. Nineteen lots of equal size contain 159 A. 2 R. 17 sq. rd. 25 sq. yd. 8 sq. ft. 130 sq. in. What is the value of one lot, the land being worth half a dollar per square foot?

41. A spent $\frac{1}{6}$ his money and gave away \$20; he then spent $\frac{1}{5}$ the remainder and gave away \$10 less than $\frac{1}{4}$ of what then remained, and found he had \$48 left. How much had he at first?

42. The amount of cheese made in the State of New York, in 1860, was 48548288 lbs. Suppose each cheese to weigh 64 lbs., and to be 20 in. in diameter, how many miles in length would they extend if placed in a line?

43. Thirty-two men agree to build 14 mi. 5 fur. 34 rd. 6 ft. of road; when the work is $\frac{1}{6}$ done they employ 8 more men. What distance does each man construct?

44. The total vote for Governor in Kentucky, in 1863, was 85695, of which Bramlette, the successful candidate, received 50917 more than Wickliffe, his rival? How many votes did each receive?

45. A housebreaker, having been brought before a judge, it was proved that he had stolen property to the value of £9 12s. 9d. 3 far.; he was sentenced to pay at the rate of £9 12s. 9d. 3 far. for every pound stolen. How much was the fine?

46. A and B started together by railroad from Philadelphia for Pittsburg, the distance being 356 miles; A traveled by express, at the rate of 30 miles per hour; B by mail train, at the rate of 25 miles per hour; C left Pittsburg for Philadelphia, at the same time, by fast line, at the rate of 32 miles per hour. How far from Philadelphia were A and B respectively, when C passed them?

47. What is the value of .6923828125 cwt. of coffee at $38\frac{2}{5}$ cents pound?

48. A wood-dealer delivered a quantity of wood at a factory; it was in three piles, the first was 18 ft. 6 in. long, 7 ft. 6 in. high, and 4 ft. wide; the second was 16 ft. 9 in. long, 6 ft. 9 in. high, and 4 ft. 6 in. wide; the third was 20 ft. 3 in. long, 7 ft. 4 in. high, and 4 ft. 6 in. wide. How many cords were delivered?

49. A farmer sold 19 bushels of rye and 23 bushels of barley for $44.85; he received for the rye 15 cents more per bushel than for the barley. What was the price of each per bushel?

50. Sold 4 village lots; the first contained $\frac{1}{3}$ of $\frac{2}{5}$ of an

acre; the second $40\frac{2}{3}$ rods; the third $\frac{1}{7}$ of an acre, and the fourth $\frac{3}{7}$ of $\frac{5}{8}$ of an acre. How much land in the four lots?

51. A man bought a horse and two carriages; for the first carriage he paid $250; if this sum were added to what he paid for the horse, it would amount to $\frac{2}{3}$ of the sum he paid for the second carriage; if the sum he paid for the horse were added to the sum paid for the second carriage, it would amount to three times the sum paid for the first carriage. What did he pay for each?

52. How far does a team walk in plowing an acre, allowing 10 inches for each furrow?

53. The aggregate receipts of the railroads in Pennsylvania for 1863 were $40523571; the expenses were $20602804. How much were the net earnings?

54. How much beef, at 7d. per pound, ought I to receive for 27 lb. 12 oz. of butter at 1s. 9d. per pound?

55. A ship at the equator in 20° 30′ W. longitude, sailed due West, until its longitude was 36° 18′ W. How many statute miles did the ship sail?

56. There were three candidates for the office of Mayor in the city of New York, Dec. 1863, and there were 71101 votes polled; the successful candidate received 6524 votes more than one competitor, and 9738 more than the other. How many votes did each receive?

57. If a town, 10 miles square, be divided equally into 300 farms, what will be the size of each farm?

58. How much must be paid for a pile of wood $12\frac{3}{4}$ ft. long, $3\frac{3}{4}$ ft. wide, and $3\frac{1}{2}$ ft. high, at $.64 per cord foot?

59. In the city of Springfield, Mass., for the year 1863 the number of scholars in the mixed schools was 272, which was $\frac{16}{99}$ of the number in the primary schools; $\frac{25}{33}$ of the number in the primary schools were equal to the number in the intermediate schools, which was $2\frac{7}{9}$ times the number in the grammar schools; the number in the high school was 1 less than

$\frac{8}{27}$ the number in the grammar schools; required the number in each grade of schools.

60. The annual expense of the schools in the above-mentioned city was $23362.50. Now if the expense per scholar was the same in the mixed schools as in the primary, and in the intermediate $1\frac{3}{4}$ times as much; in the grammar schools $1\frac{2}{3}$ times as much as in the intermediate; and in the high school $2\frac{1}{3}$ times as much as in the grammar school. What was the expense of each grade of school for the year?

61. A gentleman travelling west from Boston, which is 71° 3′ W. longitude, finds, on his arrival at St. Louis, that his watch is 1 h. 17 m. 24 sec. faster than the time at the latter place; if his watch has kept accurate time, what is the longitude of St. Louis?

62. What will be the cost of 9 gal. 3 qt. 1 pt. 2 gi. of kerosene oil at 6s. 8d. per gal., New York currency?

63. Express in acres and the decimal of an acre the area of 49 square lots, each measuring 5 rd. 8 ft. 3 in. on a side.

64. The number of cents coined at the U. S. mint in Philadelphia during the month of January, 1864, was 220800; the silver coinage was $\frac{1}{3}$ the value of the cents, and also $\frac{8}{9}$ the value of the silver deposits; the deposits of silver were 20 dollars more than $\frac{1}{17}$ of the gold coinage, which was $\frac{68}{83}$ of the gold deposits. Required the sum of the deposits and of the coinage.

65. Bought 48 bushels corn at 6s. 6d. per bushel, New York currency, and sold the same at 5s. per bushel, New England currency. How much did I gain on the whole?

66. What is the value of a field 15 ch. 75 l. long, and 12 ch. 50 l. wide, at $64 per acre?

67. The popular vote for president in 1860 was 4680193; Lincoln received 491295 more votes than Douglas, who received 527204 more than Breckinridge; and Breckinridge received 257322 more than Bell. How many did each receive?

68. Reduce $\frac{3}{7}$ of $\frac{2}{3}$ of $45\frac{1}{2}$ lb. to the decimal of a short ton.

69. Suppose the Erie canal to be 60 feet wide, and 6 feet deep, how many miles in length will it require to make one cubic mile of water?

70. In the packing-yards of New York there were, Feb. 1, 1864, 88180 bbl. of pork, and 107643 bbl. of beef; the average value of the pork per barrel was $\$20.12\frac{1}{2}$; of the beef, $\$14.75$. What was the difference in their entire values?

71. There is a house 40 feet long, and each side of the roof is 20 feet wide; allowing each shingle to be 4 inches wide, and 18 inches long, and to lie one-third to the weather, how many half-thousand bunches will be required to cover the roof?

72. How many bushels of grain will a bin contain that is 7.5 ft. long, 6.25 ft. wide, and 3.75 ft. deep?

73. The difference in longitude between London and St. Louis is 90° 20′; at a certain time each day it is as much past noon in London as it lacks of noon in St. Louis. What is the time in St. Louis?

74. At what time between 8 and 9 o'clock is the minute-hand as far beyond the V mark as the hour-hand is beyond the VIII mark?

75. A gentleman having $\$60$, paid in Boston 14s. 8d. for a hat, 18s. 6d. for a vest, and $\$17.375$ for a coat; going to New York, he paid $\$5.00$ for his fare, and in the city bought 10 books at 7s. 6d. each; gave 3s. 9d. to a blind man; and paid 17s. 3d. hotel bill. How much money had he left?

76. On an acre of ground there were erected 21 buildings, occupying on an average 3 sq. rd. 112 sq. ft. 8 sq. in. How much of the acre remained unoccupied?

77. Colt's Armory, Hartford, Conn., which was destroyed by fire, February 4, 1864, was insured in New Haven to the amount of $\$20000$, which was $\frac{2}{3}$ the insurance in Providence, and $\frac{1}{2}$ the insurance in Springfield; the amount insured in these three cities was $\frac{3}{7}$ the insurance in Hartford; and the

insurance in New York was $1\frac{1}{5}$ times all the others. How much was the total insurance?

NEW HAVEN, Feb. 1, 1864.

78. T. M. CURTISS,

Bought of BISHOP & BROTHERS,

450 lb.	A. Sugar . . .	@	$ .12$\frac{1}{2}$
240 "	B. " . . .	@	.11$\frac{3}{4}$
320 "	Rice . . .	@	.10$\frac{1}{2}$
220 "	O. J. Coffee . .	@	.22$\frac{1}{2}$
30 boxes	Oranges . . .	@	3.75
16 "	Lemons . . .	@	3.37$\frac{1}{2}$
15 "	Raisins . . .	@	4.12$\frac{1}{2}$

What was the amount of the bill?

79. A person lived in Massachusetts until he was 18 years 8 mo. 24 da. old; in New York $\frac{1}{3}$ as long; in Pennsylvania $\frac{2}{3}$ as long as in New York, and $\frac{1}{2}$ as long in Tennessee as in Pennsylvania. What was his age?

80. If 14 casks of raisins, each weighing 125 lbs., be carried 6 miles for $6.25, what will be the cost of carrying 56 casks, each weighing 100 lbs., 66 miles?

81. What cost .01975 of a ton of steel at 20 cents per pound?

82. A vessel setting sail from Boston, proceeded in a southeasterly direction for 18 days; the captain then took an observation upon the sun, and found the local time at the ship's meridian to be 9 h. 53 min. 27.6 sec.; at the moment of the observation, his chronometer, which had been set for Boston time, showed 7 h. 17 m. 45 sec.; allowing that the chronometer had lost 2.52 sec. per day, how much had the ship changed its longitude?

83. A man labors for $\$16\frac{2}{3}$ per month, what will his wages amount to for $7\frac{2}{5}$ months?

84. If $\frac{1}{7}$ of a yard of cloth cost $\frac{3}{8}$ of a dollar, what is the price per yard?

85. Bought 300 bushels of wheat in New Jersey at 8s. per bushel, and sold the same in New York at 8s. 6d. per bushel. How much did I lose?

86. From $\frac{3}{7}$ of $365\frac{1}{4}$ da., and $\frac{3}{7}$ of $5\frac{4}{9}$ wk., take $\frac{3}{7}$ of $8\frac{2}{5}$ min.

87. In 1863 the imports of sperm oil were 65055 gal.; of whale oil, 62974 gal.; of whalebone, 488750 lb.; the average price per gallon of the sperm oil was $\$1.61\frac{1}{2}$; of the whale oil, $\$.95\frac{1}{4}$, and of the whalebone, $1.52 per pound. What was the total value of the whaling business for the year?

88. A man having a field 30 rods square, sold 25 square rods to one of his neighbors, and 20 rods square to another. What is the value of the remainder at $175 per acre?

89. If corn be rated at 7s. 6d. per bushel in Maine, at what price in the currency of New Jersey must it be sold to gain $13.50 on 90 bushels?

90. A grocer bought 15 bbl. of dried cherries, each barrel containing 3 bushels, at $6 per barrel, and directed his clerk to retail them at 10 cents a quart. By mistake he used a beer measure. How much did the grocer lose by this mistake?

91. What part of a leap year is past at noon on the Fourth of July?

92. How many bales of cotton, of 400 lb. each, at 36 cents per lb., are equal in value to 18 hhd. of sugar of 1500 lb. each, at 8 cents per pound?

93. There is a park 300 feet square; if a walk 4 feet wide be made around it, within the inclosure, how many square yards will it contain?

94. If a gallon of distilled water weigh 8 lb. 5 oz. 6.74 dr., what is the weight of 17 gal. 3 qt. 1 pt. 1 gi.?

95. If, when wheat is worth 6s. 3d. per bushel, a 5-cent loaf weighs 24 oz., and allows the baker $1\frac{1}{2}$ cents a loaf for his labor, what should it weigh when wheat is 8s. 4d. per bushel, to afford him the same profit on a loaf?

96. The distributing reservoir of Croton water is 425 feet square on the top, and 45 feet high. If the walls were perpendicular, what would be its capacity in wine gallons?

97. At $3\frac{1}{2}$ cents per foot, what will be the cost of 12 planks, each measuring 56 ft. 9′?

98. There is a garden 6 rods long and 5 rods wide, with a ditch around it 5 ft. wide and $6\frac{1}{2}$ ft. deep, the earth from which was thrown upon the garden in uniform thickness. How much was the surface elevated?

99. In the battle of Antietam, the number killed in the Union army was 101 less than $\frac{1}{6}$ the whole loss; the prisoners were 35 more than $\frac{1}{2}$ the killed, and the wounded were 144 less than $3\frac{1}{5}$ times the sum of the killed and prisoners. What was the total loss?

100. In the same battle it was estimated that the number killed in the rebel army was equal to the number taken prisoners; and the sum of these was $\frac{3}{8}\frac{5}{2}$ of the wounded; the total rebel loss was 1932 less than twice the Union loss. What was the number killed, wounded and prisoners?

101. Divide 100 into two such parts that one shall be $12\frac{1}{2}$ greater than the other?

102. A man paid $46.50 for a certain pile of wood. Measuring it he found that it contained 5 Cd. 6 cd. ft., 12 cu. ft. What did the wood cost him per cord?

103. A room is 18 ft. 6 in. long, 14 ft. 6 in. wide, and 9 ft. 9 in. high; there are four windows in the room, each 6 ft. long by 3 ft. 3 in. wide, and two doors, each 6 ft. 9 in. high by 2 ft. 10 in. wide; the base is 9 in. wide. What will be the cost of plastering the room at $.15 per square yard?

104. An estate worth £3680 is to be divided as follows: The widow has $\frac{1}{3}$ of the whole, and the remainder is to be equally divided among 6 children. How much does each child receive?

105. If 6 lb. of tea be worth 14 lb. of coffee, and 7 lb. of

coffee be worth 24 lb. of sugar, how many pounds of tea can be bought for 16 lb. of sugar?

106. A person was commissioned to lay out equal sums in the purchase of spelling books, grammars, algebras and geometries, and to expend as little money as possible; he found spelling books at $\$.12\frac{1}{2}$ each, grammars at $\$.37\frac{1}{2}$, algebras at $\$.87\frac{1}{2}$, and geometries of two styles of binding; one at \$1.10, the other at \$1.25, of which he imprudently chose the cheaper. How much money was thereby unnecessarily expended, and how many more books than was necessary did he purchase?

107. A blacksmith bought 20 tons of iron at \$80 per ton; he sold 6 T. 15 cwt. 3 qr. 9 lb., at \$.05 per pound; having made 3522 horse shoes, averaging 2 lb. 8 oz. in weight, and sold them at \$.25 each, he disposed of the remaining iron at \$98 per ton. How much was his gain?

108. How much will it cost to carpet a room 21 ft. long, 15 ft. wide, with carpeting $\frac{3}{4}$ of a yard wide, at $\$1.62\frac{1}{2}$ per yd?

109. A goldsmith manufactured 1 lb. 10 oz. 15 pwt. of gold, which cost him \$16 per oz., into rings, each weighing 2 pwt. 12 gr., which he sold at $\$3.12\frac{1}{2}$ each. How much did he receive for his labor?

110. What decimal expression is equivalent to

$$\frac{3\frac{1}{3}}{8}+.62\tfrac{1}{2}+\tfrac{1}{3}\text{ of }\frac{7\frac{2}{5}}{.05}\text{ of }4-1.05?$$

111. Bought 12 T. 3 cwt. 2 qr. 20 lb. of sugar at \$8.25 per cwt. What was the cost?

112. If a man could walk around the earth in 4 yr. 137 da. 15 h. 48 min., how long would it take him to walk one degree, allowing $365\frac{1}{4}$ days to a year?

113. A merchant owned $\frac{11}{16}$ of a stock of goods; $\frac{4}{5}$ of the whole stock were destroyed by fire, and $\frac{7}{12}$ of the remainder damaged by water. How much did the merchant lose, provided the uninjured goods were sold at cost, for \$4200, and the damaged at half the cost?

114. My farm consists of 8 fields, containing $4\frac{3}{4}$, $5\frac{3}{5}$, $10\frac{5}{16}$, 9, $22\frac{7}{8}$, $17\frac{19}{20}$, $15\frac{33}{40}$, and $12\frac{39}{80}$ acres, respectively. How many acres in my farm?

115. $\frac{3}{5}$ of $\frac{10}{9}$ of what number, diminished by $\frac{\frac{1}{2}\text{ of }\frac{3}{10}}{2\frac{1}{6}+\frac{7}{30}}$, leaves $\frac{(4\frac{1}{3})^3-1}{(4\frac{1}{3})^2-1}$?

116. My garden, which is 180 ft. long, and 150 ft. wide, is surrounded by a tight-board fence $5\frac{1}{3}$ ft. high. How much will it cost to paint the fence on both sides at $.12 per square yard?

117. Bought 37 T. 15 cwt. 3 qr. 15 lb. of copperas, at $.04 per lb.; sold at one time 8 T. 12 cwt. 3 qr. 3 lb. at $.05 per lb.; at another time 14 T. 3 cwt. 2 qr. 20 lb. at $.06 per lb.; James Bond bought $\frac{1}{4}$ the remainder at $.06 per lb.; and John Gaines $\frac{1}{2}$ of what still remained at $.10 per lb.; George Root, who bought the residue at $.12 per lb., becoming a bankrupt, paid but 50 cents on a dollar of his debt. What was my whole gain?

118. A farmer has $16\frac{7}{8}$ bushels of corn, $33\frac{3}{4}$ bushels of rye, $35\frac{7}{16}$ bushels of wheat; he wishes to put the grain, without mixing, into the largest possible bags, of equal size. Required the number of bags, and the capacity of each.

119. A man bought 35 bushels of barley, and sold the whole for $30. He made $5.50 in the trade. What did he give per bushel?

120. A tailor has $67\frac{2}{5}$ yds. of cloth, from which he wishes to cut an equal number of coats, pants, and vests. What number of each can he cut, if they contain, respectively, $3\frac{7}{8}$, $2\frac{3}{4}$, $1\frac{4}{5}$ yards?

121. From the annual report for 1863, the tolls collected on the canals of New York for that year were as follows: On wood and lumber, $715059; on animals, $88426; on vegetable, $3012823; on other farm products, $14114; on manufactures, $137107; on merchandise, $137253; and on

other articles enough to make the whole amount $4645207. What was the amount collected on articles not specified?

122. How many bricks, 8 in. long, 4 in. wide, and $2\frac{1}{2}$ in. thick, are required to build the front of a house whose wall is 30 ft. long, 24 ft. high, and 2 ft. thick, allowing the doors and windows to occupy $\frac{1}{4}$ the surface?

123. A merchant purchased in Liverpool 34 bales of cloth for £8 19s. 5d. per bale; he disposed of the cloth at Havana for 212 cwt. of sugar, at £1 5s. per cwt. What balance was due him in cash?

124. A company of 36 persons purchased a tract of land containing 2766 A. 3 R. 12 P.; J. Jenks, who was one of the company, and owned an equal share with the others, sold $\frac{2}{3}$ of his part for 1s. 9d. 2 far. per sq. rd. What sum did he receive?

125. How many silver dollars, each weighing $412\frac{1}{2}$ grains, could be made from the silver taken at the doors of the great London exhibition, the weight of the silver being 35 English tons?

126. During the last half of the year 1863 there were 189 fires in the city of New York, and the average loss by each fire was $2238.40; the insurances amounted to $5\frac{5}{16}$ times the losses, and the amount paid by the underwriters was $38307.50 less than $\frac{1}{7}$ the amount of insurance. How much was the actual loss?

127. What is the value of a pile of wood that is 10 rods long, 4 feet wide, and $1\frac{1}{2}$ yards high, at $5.75 per cord?

128. If a person spends in 6 months what he earns in $4\frac{1}{2}$ months; how many dollars can he lay by in a year, supposing he earns $325 in $2\frac{1}{2}$ months?

129. A man has two kinds of flour; the first is worth $2.50 per barrel more than the second, and 9 barrels of the second are worth as much as 7 of the first. What is the price of each per barrel?

130. What part of $365\frac{1}{4}$ days are 349 da. 8 h. 52 m. $10\frac{10}{23}$ sec. ?

131. The Connecticut river, which is 60 rd. 10 ft. wide at a certain place, has an average depth of 10 ft., and runs at the rate of $3\frac{3}{4}$ miles per hour. In what time will it discharge a cubic mile of water ?

132. If a man's property is worth $1500, and he owes $1800; how many cents can he pay on the dollar ?

133. If a man can pay his creditors only 48 cents on a dollar, how much can he pay on a debt of $52.50 ?

134. A boy, having been sent to market to buy a certain number of pounds of meat, found that if he bought beef at $10\frac{3}{4}$ cents a pound, he would have $6\frac{1}{2}$ cents remaining; but if he bought pork at $13\frac{2}{3}$ cents a pound, he would lack 46 cents of having money enough to pay for it. How much money had he ? and how many pounds was he directed to buy ?

135. A farmer wishes to build a bin 8 ft. long, 6 ft. wide, and high enough to hold 200 bushels of corn. How high must he build it ?

136. How long from the Declaration of Independence, July 4, 1776, to the firing upon Fort Sumter, April 12, 1861 ?

137. The value of the products of Massachusetts in 1860, with a population of 1231065, was $289300275; of Maryland, with a population of 687034, $65955264. How much more per capita, was the value of the annual products of the former than the latter State ?

138. The total population of the Slave States in 1860 was 12229727; allowing the average annual products per head to have been the same as in Maryland, how much would the value of the products of the Southern States have been increased had the ratio of production been the same as in Massachusetts ?

139. How many bushels of coal will a boat 90 ft. long, 42

ft. wide, and $5\frac{1}{2}$ ft. deep contain, a bushel of coal being $1\frac{3}{4}$ cu. feet?

140. A person having $\frac{7}{8}$ of a hogshead of wine, sold at one time $\frac{4}{5}$ of a gallon, at another, $\frac{5}{6}$ of a quart. How many gallons, expressed decimally, did he sell, and how much remained?

141. How many seconds has a person lived who is 32 yr. 197 da. old, allowing for 8 leap years?

142. Paid 3 debts successively, each of which took $\frac{1}{2}$ the money I had before paying it, and \$.75 more; after which I had \$25 remaining. How much had I at first?

143. A man in Ohio bought $.82\frac{1}{7}$ of a firkin of butter at \$.28 per pound; $.857\frac{1}{7}$ bushels of corn at $\$.01\frac{3}{4}$ per pound; $.783\frac{1}{3}$ bushels of wheat at $\$.03\frac{1}{2}$ per pound. What was the amount of his bill?

144. What would be the expense of paper for a room 15 ft. 9 in. long, 14 ft. 6 in. wide, and 10 ft. 3 in. high, which contains 3 windows, each 6 ft. 2 in. long, 3 ft. 10 in. wide, and 2 doors, each 6 ft. 10 in. by 3 ft., a roll of paper being 8 yds. in length, and $\frac{5}{8}$ yd. in width, and costing $\$.62\frac{1}{2}$?

145. If I buy 120 gallons of rum for \$75, how much water must be added to it that I may sell it at 60 cents per gallon, and gain \$15 in the sale of it?

146. Of the poor people assisted by the State of New York in 1863, 486 were natives of Wales; 52 less than 4 times this number were Canadians; and the Frenchmen were 140 less than 3 times the same number; the Scotch were 270 more than the Canadians; the English, 9 less than the sum of the Welsh and twice the Scots; the Germans were 190 less than 4 times the English; and the Irish were 64 more than the sum of the Welsh, twice the Canadians and $5\frac{1}{2}$ times the Germans; the native born were 7394 less than the Irish, and the nationality of 21151 was unknown. Required the number relieved.

147. The whole expense for the support of the poor for the

same year was $1463103.04. What was the average amount expended for each person relieved?

148. What are the contents of a field $38\frac{7}{50}$ rods in length and $37\frac{1}{2}$ rods in width?

149. Bought a barrel of flour for $11.50; 4 bu. corn, at $1.12\frac{1}{2}$; 26.25 lb. sugar, at $12\frac{1}{2}$; 6 gal. molasses, at $.62\frac{1}{2}$; 3 lb. tea, at $1.25; 9 lb. coffee, at $.33\frac{1}{3}$; $12\frac{1}{2}$ lb. rice, at $.12\frac{1}{2}$; and 8 lb. butter, at $.28. What did the whole cost?

150. How many bricks are required to build the front of a house 50 ft. 8 in. in length, 15 ft. 8 in. in height, and 1 ft. 6 in. in thickness, the dimensions of a brick being 8, 4 and 2 inches?

151. The largest bell in the world is that of Moscow, which weighs 192 tons 17 cwt. 16 lb.; the great bell of St. Paul's weighs 5 tons 2 cwt. 1 qr. 22 lb. How many bells of the latter weight could be made from the former?

152. If a train of cars move with an average velocity of 32 mi. 5 fur. 20 rd. in 1 h. 20 min., how far will it move in 3 h. 36 min.?

153. What are the prime factors of 1400?

154. How many integral divisors has 1400?

155. When $207 are paid for $10\frac{7}{20}$ months' labor, what wages shall be paid for $17\frac{7}{10}$ months' work?

156. In Webster's Unabridged Dictionary, Pictorial Edition, there are 1750 pages of three columns each, and in each column there are on an average 100 lines, $2\frac{1}{16}$ inches long. How many miles of lines in the book?

157. There are on an average 45 letters and points in each line; if the hand moved over a distance of 3 feet in setting each type, how far did the compositor's hand travel in setting up the book?

158. If a compositor worked 10 hours each day, and on an average set 50 types in a minute, when would he have finished setting up the book, provided he began it Jan. 1, 1856, ob-

served the Sabbath, and was allowed the Fourth of July and Thanksgiving as holidays?

159. What is the amount of the following bill:

CLEVELAND, Jan. 1, 1864.

MR. PETER JONES

Bought of SAMUEL CARTER & Co.

20 lb.	Rio Coffee	@	$ .40
35 "	W. India Sugar	@	" .16⅔
24 "	Pearl Starch	@	" .14
6 gal.	Molasses	@	" .75
75 lb.	Cream Crackers	@	" .11
20 "	Soda "	@	" .10½

160. Sold 125 equal loads of wood, measuring 115 Cd. 3 cd. ft. 7 cu. ft. for $492.50. What is the quantity per load, and price per cord?

161. Bought 14 lots of land, each containing 37 P. 200 sq. ft.; from this purchase I sold 2 A. 2 R. 25 P. 60 sq. ft., and the remainder I disposed of at 2s. 3½d. per sq. ft. How much did I receive for the last sale?

162. What is the value of 719630 pounds of wheat at $1.80 per bushel?

163. How many half-dimes would it take to pay for 18 doz. of eggs, at $.30 per doz.?

164. A farmer, having harvested his crops, finds that he has corn enough to fill the first of the following boxes; wheat enough to fill the second, and rye enough to fill the third. The outer dimensions of the boxes are as follows: of the first, 10⅓ ft. long, 6½ ft. wide and 6 ft. high; of the second, 9⅔ ft. long, 7⅓ ft. wide and 5½ ft. high; of the third, 12 ft. long, 10 ft. wide and 7 ft. high; they are made of plank 2 in. thick. He sells the corn at $.75 a bushel, the wheat at $1.12½, the rye at $.95. How many bushels of 2150.5 cu. in. had he of each kind of grain, and how much money did the whole bring him?

165. A man has a field 37⅘ rods wide. What length must he cut off from the end to set off 5 A. 3 R. 25 P.?

166. The Mississippi River flows directly south, through 19° 15′ of latitude. The earth is an oblate spheroid, and the equatorial diameter is 13 miles more than the polar diameter. How much farther from the centre of the earth is the mouth of the river than its source?

167. The above river, on account of its numerous windings, is 3160 miles long. What is the average rise of the river per mile?

168. If the factors of a certain number are $16\frac{1}{8}$, $30\frac{3}{7}$ and $9\frac{9}{10}$; what is $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{4}{6}$ of the number?

169. Josephus relates that the battering ram employed by Titus against the walls of Jerusalem weighed 100000 pounds. Now if his men could move it with a velocity of 6 ft. a second, how many cannon balls of 100 pounds each, discharged with a velocity of 1200 ft. a second, would be necessary to strike the walls with equal force?

170. How many francs must a merchant in Paris send to New York in payment for a debt of $15989.862?

171. I have a field 96 rods long and 50 rods wide. How much would it cost to build a fence around it, at $.12\frac{1}{2}$ per foot?

172. Reduce $.1\dot{8}$, $.\dot{3}6\dot{9}$, $.\dot{3}07692\dot{3}$ and $6.7\dot{5}$ to equivalent common fractions.

173. Gen. McClellan estimated the rebel forces engaged in the battle of Antietam as follows: Gen. Jackson's corps, 24-778 men; Gen. Longstreet's, 1436 less than Gen. Jackson's; Gen. Hill's, 15525; Gen. Stuart's cavalry, 6400; Gen. Jenkins', 200 more than $\frac{1}{2}$ of Gen. Stuart's; reserves, 18400, and artillery 400 guns, with 15 men each. What was the estimate of the rebel force?

174. The Union army in the same battle numbered as follows: 1st corps, 14856; 2d corps, 18813; 5th and 6th corps, 12615 men each; 9th corps, 13819; 12th corps, 3693 less than the 9th; and the cavalry 115 more than $\frac{1}{3}$ the 5th corps. What was the strength of the Union army?

175. If a man fill $\frac{1}{3}$ of a cask with brandy, $\frac{1}{4}$ with wine, and $\frac{1}{5}$ with water, and it lack $21\frac{2}{3}$ gallons of being full, how many gallons will that cask contain?

176. A man, having $\frac{11}{18}$ of 5 tons of iron, sold $\frac{3}{7}$ of 9 cwt. What was the value of the remainder at $12\frac{3}{5}$ cents per pound?

177. Light moves 192000 miles per second; sound, 1142 feet per second, and a cannon ball, with an average velocity of 800 feet per second. If a ball is discharged from a cannon 6 miles distant from a person, how long after the flash is seen will the sound reach his ear, and how long after the sound will the ball arrive?

178. The average distance of the planet Neptune from the earth is 2864000000 miles; should it be blotted out, how long thereafter would its light be visible from the earth, the velocity of light being 192000 miles per second?

179. Exchanged 5 firkins of butter of 50 lb. each, at $\$\frac{5}{16}$ per pound, for 50 bags of guano, of $116\frac{2}{3}$ lb. each. What was the price of the guano per short ton?

180. What weight of water in a cistern 10 ft. 6 in. square, and 8 ft. 4 in. deep, a cubic foot of water weighing 1000 ounces?

181. Great Britain, with a population of 29334788, had in 1861 a national debt of $3917945913, the annual interest of which was $127665701. What was the average debt and annual interest to each person?

182. France, with a population estimated at 36000000, had at the same time a debt of $2206000000, the annual interest of which was $110000000. What was the average debt and interest to each person?

183. What will it cost to construct 8 mi. 6 fur. 16 rd. of plank road at $1325.65 per mile?

184. What part of a short ton is $\frac{5}{7}$ of a long ton?

185. How much copper and tin in the great bell of Mos-

cow, which weighs 192 tons 17 cwt. 16 lb., bell metal consisting of 3 parts copper to 1 of tin?

186. A gentleman buys 2 lots of land containing 110 acres each, for $1500. What is the value of an acre of land in each lot, if an acre in one lot be worth $1\frac{1}{2}$ acres in the other?

187. A farmer borrows 20 bushels of corn when it is 56 cents per bushel. How many bushels must he return when it is worth 75 cents a bushel, to pay the value of what he borrowed?

188. The army of Gen. Banks in its retreat down the Shenandoah Valley, May, 1862, marched $37\frac{1}{3}$ miles in 11 h. 24 min. $26\frac{2}{3}$ sec. How many steps of 2 ft. 8 in. each did his men take per minute?

189. What number multiplied by $3\frac{1}{6}$ times itself will produce 114?

190. Bought 425.75 lbs. wool at $.75 per lb., which was manufactured into cloth at an expense of $75.50. For how much must it be sold to gain $48.25?

191. How many feet of boards will be required to make 8 boxes, whose interior dimensions are 6 ft. 5 in., 5 ft. 7 in., and 3 ft. 6 in. respectively, the boards being $1\frac{1}{2}$ in. in thickness?

192. How many feet less are required to make 8 boxes whose *exterior* dimensions are like the *interior* of those in the last example, the boards being of the same thickness?

193. What is the difference in the capacity of the two sets of boxes?

194. There were sold in New York, in one week, 4678 beeves, 156 cows, 367 veals, 12281 sheep and lambs, and 6297 swine. The average price of the beeves was $80 per head; the cows, $44.25; the veals, $12.50; the sheep and lambs, $7.50, and swine, $18.25. What was the whole number of animals sold, and for how much?

195. A merchant bought 18 hogsheads of sugar, each containing .725 of a long ton, at the rate of $170 per ton, and

sold the same at 10 cents per pound. How much was his gain?

196. F. F. Smith has coffee at $\$.37\frac{1}{2}$ per pound cash, but in trading with Seth Bishop, he charges $\$.42$. What must Bishop charge him for potatoes that he sells at $\$.62\frac{1}{2}$ cash?

197. On $\frac{2}{3}$ of my field I raise tobacco; on $\frac{1}{3}$ of the remainder I sow oats; potatoes are planted on $\frac{4}{7}$ of what still remains, and carrots on $\frac{4}{9}$ of the residue; I have left two small pieces, one of which is 4 rods square, and the other contains 4 square rods. How large is my field?

198. There were 4419216 bales of cotton, each 400 lbs., exported from the United States in 1860, at an average price of $\$.108$ per pound, and 167248 hogsheads of tobacco at $\$95.12\frac{1}{2}$ per hogshead. What was the value of cotton and tobacco exported?

199. If by selling cloth at 10s. 6d., $\frac{1}{3}$ of the price is gain, what part of the cost would be gained by selling it at 13 shillings?

200. From 10 years subtract 9 yr. 9 mo. 9 wk. 9 da. 9 h. 9 min. 9 sec.

201. A merchant bought 15 barrels of salt, of 4 bushels each, at $\$1\frac{3}{5}$ a barrel, and retailed it at $\frac{2}{3}$ of a cent a pint. How much was his whole gain?

202. The Pennsylvania Central Railroad is 356 miles long: 4 passenger trains and six freight trains pass over it both ways each day of the year, Sundays excepted. How many miles do the trains run each year? and how many times the circumference of the earth, which is about 25000 miles?

203. A ship's chronometer, set at Greenwich, points to 5 h. 45 min. 24 sec. P. M., when the sun is on the meridian. What is the ship's longitude?

204. Bought 7.88125 A. of land at $_2\frac{1}{5}$ of £2 11s. 6d., New England currency, per square rod. How many dollars did it cost?

205. The salary of the President of the United States is $25000 per annum. How much can he spend each week, and yet save $27200 in one term of office?

206. Required the quotients of 1169 divided by its two prime factors next larger than 1.

207. A farmer bought some oxen, cows, and sheep for $1860, paying $45, $25, and $4 per head, respectively. There were 5 times as many cows as oxen, and 7 times as many sheep as cows. How many of each did he purchase?

208. A owns $\frac{5}{13}$ of a field, and B the remainder; $\frac{3}{4}$ of the difference between their shares is 5 A. 3 R. $16\frac{1}{2}$ P. What is B's share?

209. The average fall of rain at Worcester, Mass., is 48.92 in.; of snow 53.5 in.; allowing 5 in. of snow to make one of rain, how many hogsheads of water fall annually upon a flat roof 40 ft. long by 30 wide?

210. A wine merchant wished twice as many quart bottles as pint; twice as many pint as half-pint, and twice as many half-pint as gill bottles filled from a cask of wine containing 58 gal. 1 qt. 1 pt. 2 gi. How many bottles of each kind could he fill?

211. Peter Jones was born Sept. 7, 1830; he was 27 yr. 3 mo. 23 da. old when married; and 3 yr. 21 da. after marriage his first child was born. What was the date of his marriage? and what his child's birth-day?

212. How much more is the cost of 39 A. 2 R. 15 P. of land at $87.375 per acre, than the expense of making 5 mi. 6 fur. 24 rd. of road at $587.75 per mile?

213. There were shipped over the Erie Canal in 1863 1603065 barrels of flour, 22336433 bushels of wheat, 19918-464 bushels of corn, and 3816548 bushels of barley; the toll for the flour was $.375 per barrel, and for the grain $.075 per bushel; oats were shipped in such a quantity that the tolls from the oats, barley, and corn were equal to the tolls

from the flour and wheat. How many bushels of oats were shipped?

214. Two boys purchased a pair of skates in company; one paid $\$\frac{7}{8}$, and the other $\$1\frac{5}{16}$; they sold them so as to gain $\$\frac{7}{16}$. What did they sell them for? and how much was each one's share of the gain?

215. How long before the voting is ended in San Francisco, Lon. 122° 13′ W., can the voters of Eastport, Me., Lon. 67° W., telegraph to San Francisco the result of their election, the polls closing in both places at sunset?

216. At what time between 11 and 12 o'clock is the minute-hand as far beyond the XI as the hour-hand lacks of being up to the XII mark?

217. A man started from Portland, Maine, with $100; he paid $3.25 for his fare to Boston; in that city he bought a book for 5s. 6d., paid 8s. 3d. hotel bill and 3s. 3d. for amusements; he then took passage in a steamer for Charleston, S. C., paying $32; in that city he purchased 8 yards of cloth at 13s. 6d. per yard, and paid 18s. 9d. for having the cloth made up; he then went to Philadelphia, at an expense of $25, and there he purchased some pictures for 15s. 11d., some presents for 18s. 5d., and spent 17s. 8d. at a hotel; the Camden and Amboy Railroad Company agreed to carry him to New York for the rest of his money; the regular fare being $3.00, how much did the company lose?

218. At $1000 per acre, what is the value of a strip of land 44 yards long and 20 feet wide?

219. The value of exports from the United States, in 1861, was as follows: the products of the sea, $4451515; of the forest, $10260809; of agriculture, $101655833; tobacco, $13784710; cotton, $34051483; manufactures, $36418254; raw produce, $3543695; specie and bullion, $23799870. How much did the exports of the products of agriculture and manufacture exceed all others in value?

220. The hour and minute hands of a clock being together

at 12 o'clock, how long before they will be at right angles with each other?

221. A cistern has three receiving and three discharging pipes; the first three will fill it in 24, 36 and 48 minutes respectively, and the last three will empty it in 30, 40 and 60 minutes each. If the cistern is empty, and the pipes are opened in succession, each three minutes after the other, in the order given, how long after the last pipe is opened will the cistern be filled?

222. By selling wheat at 12s. 6d. per bushel, I gain £30 on the quantity purchased; but if I sell it for 13s. 6d. a bushel, I shall gain £42 on the same quantity. How many bushels were bought?

223. I had $\frac{1}{3}$ of a yard of broadcloth, for which I paid at the rate of $\$8\frac{1}{2}$ per yard; I gave the broadcloth and 50 cents for $1\frac{1}{4}$ yards of cassimere. What did the cassimere cost me per yard?

224. A liquor agent has 50 gallons of wine of a superior quality, worth $7.50 a gallon; he wishes to reduce its quality by the addition of water, so that he may sell it at $5.25 a gallon. How much water must he add?

225. The loans of all the banks in the city of New York, for two successive years, were: for the first, $165090329; for the second, $168302935. The deposits for the same periods were $140464616 and $148014106 respectively. How much did the increase of deposits exceed that of loans?

226. William Shakspeare was born April 23, 1564. How many years since?

227. A man and a boy start from the same place at the same time, and travel in the same direction; the man advances as far in three steps as the boy in five, but the boy takes 4 steps while the man takes 3; after a certain time they are $\frac{1}{2}$ mile apart. Allowing the man's steps to be 3 feet in length, how far has each traveled?

228. If 1 cubic foot of water weigh .625 cwt., what will be

the weight of water in a cistern containing 500 cu. ft. 864 cu. in.?

229. What are the values of a bushel of peas, sold at 10 cents a quart, by wine, beer and dry measure, respectively?

230. The total loss of the Federal army in the battle of Fair Oaks was 5739; the prisoners were 332 more than the killed, and the wounded were 459 more than $1\frac{1}{2}$ times both the killed and prisoners. What were the various losses?

231. What is the cost of a great gross of pens, at $6\frac{1}{4}$ cents for $\frac{3}{4}$ of a dozen?

232. A person desirous of giving 1s. 6d. apiece to some needy boys, found that he had not money enough in his pocket by 5d.; he therefore gave them each 1s. 4d., and had 9d. left. Required the number of boys.

233. A housewife exchanged old silver for a feather bed worth $24; the feathers were valued at $.80 a pound, and the silver at 25 times the value of its own weight of feathers. What was the Troy weight of the silver?

234. If a man can paint 4 sq. yd. in one hour, and is 31 h. 6 min. 40 sec. in painting two sides of a wall 7 feet high, how long is the wall?

235. The earth moves through 59.14′ daily, how far did it move during the month of February, 1864?

236. The average cost of the school houses in Ohio, in 1861, was $289.20. The total cost of the same was $4794-357.60. Required the number.

237. The value of the common school libraries at the same time was $233499.76; the books were worth on an average $.68 each, and were distributed in libraries averaging 47 vols. each. Required the number of libraries.

238. In the same state 27106 teachers were examined during the year 1861; three times the number rejected were 934 more than the number considered qualified to teach. How many passed examination, and how many were rejected?

239. A person bought a watch, chain and pencil, for £30; the chain cost twice as much as the pencil, and the watch twice as much as the chain and pencil. What did he give for each?

240. If I exchange 4 bu. $1\frac{1}{2}$ pk. of potatoes for 2 bu. 2 pk. of apples; how many bushels of apples ought I to receive in exchange for 33 bu. 1 pk. of potatoes at the same rate?

241. A man chopping wood at \$.75 per cord, earned \$35.25 during the working days of January, 1864, and was idle $2\frac{1}{2}$ days. How much wood did he cut, on an average, per day?

242. A boy having been sent to the store with $5\frac{1}{2}$ doz. of eggs, was directed to purchase with them equal quantities of sugar, coffee, butter and tea; he disposed of his eggs at the rate of 2 for 5 cents, and paid for the articles purchased 17, 28, $37\frac{1}{2}$ and $137\frac{1}{2}$ cents per pound respectively. What amount of each did he purchase?

243. A bowlder, containing $\frac{2}{3}$ of $\frac{6}{9}$ of $23\frac{4}{7}$ cu. ft., is what fraction of a perch?

244. A grocer bought 10 bushels of beans at \$3 per bushel, and ordered his shop boy to retail them at 15 cents a quart. By mistake the boy used a wine quart. How much more was the grocer's gain than he expected?

245. What part of 12 yd. 1 ft. 6 in. is $\frac{1}{21\frac{1}{12}}$ of a mile?

246. Four men receive \$27.27 for hauling coal; the first hauled 2 T. 3 cwt. 3 qr. 18 lb.; the second, 5 T. 16 cwt. 7 lb.; the third, 4 T., 18 cwt. 2 qr.; the fourth, 14 cwt. 20 lb. How must the money be divided?

247. What is the difference in weight between 8 lb. of gold and 8 lb. of lead?

248. A speculator purchased 10,000 bushels of corn in Chicago, at 5s. 6d. per bushel, and sold one-half of it in New Jersey at 8s. 4d. per bushel, and the other half in New York at 9s. 6d. per bushel; the freight was \$.10 a bushel, and other charges amounted to \$230. The corn being bought and sold by weight, how much did he gain?

249. My garden is $10\frac{3}{4}$ rods long, and $8\frac{2}{3}$ rods wide, and surrounded by a fence $7\frac{2}{5}$ feet high; I have laid out a walk around it, within the fence, $7\frac{1}{2}$ feet wide on the two sides, and $5\frac{1}{2}$ feet wide on the ends. How much remains for cultivation?

250. What part of a cord of wood is a load $7\frac{1}{5}$ ft. long, $2\frac{1}{3}$ ft. high, $3\frac{1}{3}$ ft. wide?

251. It is estimated that England uses annually, 1000000 pounds of ivory. The average product of ivory from each elephant is 120 lb.; and for every 25 elephants captured 12 men are killed. Required the number of men killed annually in hunting the elephants that supply England with ivory?

252. How many dollars, Canada currency, are equal to $150 United States currency?

253. If $\frac{3}{13}$ of an acre produce 28 bushels of potatoes, how many bushels will 4 acres produce, at the same rate?

254. Bought 78 A. 3 R. 15 P. 7 sq. yd. 5 sq. ft. 9 sq. in., at $80 per acre; I sold $\frac{2}{5}$ of it to A, at $120 per acre; $\frac{2}{3}$ of the remainder to B, at $1.00 per square rod; and the residue to C, at $.005 per square foot. How much did I gain?

255. How thick is a cubic inch of gold, beaten so as to cover a space 83 ft. 4 in. long and and 23 ft. 5 in. wide?

256. During 1861, the Dead Letter Post Office sent out for delivery 10580 money letters, and 10235 letters containing other articles of value; 8998 of the former and 9552 of the latter were delivered; 1214 money letters and 475 others were returned, unclaimed; and nothing was heard from the rest. How many were unreported?

257. The money letters contained $53565.90, of which $46-880.26 was delivered, and $4782.99 was returned; of the remainder, $297.30 belonged in the loyal States, and the rest in the disloyal. What amount belonged in the rebel States?

258. At $3.87\frac{1}{2}$ per square, what will be the expense of flooring a house in which there are 4 rooms, 14 ft. 6 in. by 15

ft. 3 in.; 6 rooms 9 ft. 9 in. by 11 ft. 4 in., and 3 rooms 12 ft. 3 in. by 8 ft. 2 in.?

259. What is the value of $\frac{4}{9}\frac{9}{6}$ Cong.?

260. Bought 1500 bushels of oats in Iowa, at $.40 a bushel. For how much per bushel must I sell them in Connecticut, so that, after paying $75 expenses, I shall neither gain nor lose by the transaction, the buying and selling being by weight?

261. Bought 140 yards of cloth at 14s. 8d. a yard, New York currency, and gave in payment 75 bushels of barley at 7s. 4d., New England currency, and 100 bushels of oats at 6s. 9d. per bushel, New Jersey currency, and the balance in money. How much money did I pay?

262. A steamer, going from New York to Hamburg, traversed $10\frac{1}{2}$ degrees of longitude daily. What length of time was it from one noon to the next?

263. A certain number is divided by 9, and the quotient multiplied by 17; the product is then divided by 300, and 33 is added to the quotient; the result is next divided by 3, and from this quotient 31 is subtracted, and the resulting difference divided by $12\frac{1}{2}$. Now $\frac{1}{2}$ of $\frac{3}{5}$ of $\frac{4}{7}$ of this last quotient is $2\frac{2}{3}\frac{2}{5}$. Required the original number.

264. What is the value in statute miles of $\frac{7}{1}\frac{7}{6}$ of a Great Circle of the earth?

265. The military expenses of England, during the last war with the United States, were as follows: for 1811, £52859-025; for 1812, £56615577; for 1813, £71316435; and for 1814, £71686706. A pound being valued at $4.84, what were the average daily expenses in U. S. currency?

266. A clothier has 920 soldiers' coats to make, each coat containing $2\frac{1}{4}$ yd. of cloth $1\frac{5}{8}$ yd. wide, and lined with drilling $\frac{3}{4}$ yd. wide. How many yards of lining will be required?

267. Reduce $\frac{3}{3}\frac{1}{5}$ of a long ton to the decimal of a short ton.

268. Two persons traveling in the same direction, the first at the rate of $9\frac{3}{4}$ miles per hour, the second $14\frac{1}{2}$ miles, pass

the same mile-stone at an interval of 5 hours. How long and how far must the second travel, after passing the mile-stone, to overtake the first?

269. What is the length of the shortest piece of cloth from which a number of garments can be cut, without waste, containing a yard, an ell Flemish, an ell English, and an ell French, respectively?

270. The shadow of a cloud was observed to move 600 ft. in $23\frac{3}{4}$ sec. What was the wind's velocity per hour?

271. From 1838 to 1863, 3858 patients were admitted into the Central Lunatic Asylum, Ohio; of these, 2000 were discharged as fully recovered, 412 as improved, 724 as incurable, and 470 died. How many remained in the asylum, Jan. 1, 1863?

272. A gentleman bought 95 yards of cloth, $\frac{3}{4}$ of a yard wide, for $100, and gave the same and $25 for cloth of the same quality, 1 yard wide. How many yards did he buy?

273. If a vessel sail 80 leagues in a day, how many statute miles does she sail?

274. A farmer exchanged 11 loads of potatoes, each load containing 12 barrels of $2\frac{1}{2}$ bushels each, at $.50 per bushel, for a number of pieces of cloth, each containing 12 yards, worth $2.75 per yard. How many pieces did he receive?

275. How many feet of boards will it require to inclose a barn 40 ft. 6 in. long, 30 ft. 10 in. wide, 18 ft. 4 in. high, and each side of the roof 16 ft., allowing 385 ft. 3 in. for the gables?

276. What is the value of .05751953125 Cong.

277. A degree of longitude, in the latitude of Boston, measures $44\frac{1}{2}$ geographic miles. How many more statute miles in 10° of longitude at the equator than in the latitude of Boston?

278. Rhode Island in 1862 expended $168365 in educating 27750 children. What was the average expense per child?

279. In the same year Ohio spent $2834066 for the educa-

tion of 717726 children. How much more did Rhode Island expend per child than Ohio?

280. Massachusetts, during the same period, paid out $1612824 for the instruction of 220010 children. How much did the average expense per child in Massachusetts lack of being twice the expense incurred by Ohio for each child?

281. How many inches higher is a horse that measures $16\frac{1}{2}$ hands than one that stands $14\frac{3}{4}$ hands high?

282. A person, dying, left in cash $6250, and 4 houses, valued at $3456.785 each; his indebtedness was $2261.60, and he left directions that $100 should be expended for a monument; the residue was to be divided among his 4 sons, so that each should receive $\frac{3}{4}$ as much as his next older brother. Required the share of each.

283. If there are 31181 verses in the Bible, and a person reads 88 verses on Sunday, how many must he read each week-day to complete it in a common year?

284. A tract of land measuring 4059 A. 2 R. 16 P. was divided among a regiment of men, consisting of one colonel, 1 major, 6 captains, 8 lieutenants, 24 sergeants, and 220 privates, so that a private had one share, a sergeant twice as much, a lieutenant 6 shares, a captain 8, the major 14, and the colonel 20 shares. Required the share of each?

285. From the sum of $\frac{2}{5}$ lb. $2\frac{5}{12}$ oz. $15\frac{3}{3}$ pwt, take the difference between $\frac{4}{5}$ oz. and $\frac{2}{3}$ pwt.

286. The earnings of the Toledo and Wabash Railroad Company in 1862 were $1374517, which was $\frac{19}{20}$ of the earnings in 1863; the expenses each year were $47721 more than half the earnings in 1863. How much more were the net earnings of 1863 than of 1862?

287. What is the least number, which, being divided by 3, 5, 7, 9, and 10, leaves a remainder of one?

288. What part of a hogshead of wine is 3 gal. 1 qt. $2\frac{2}{19}$ gills?

289. A speculator in New York bought 1000 bushels of grain at $1.10 per bushel, and shipped the same to England, paying $125 transportation; he sold the grain at $1.40 per Imperial bushel. What was his gain?

290. If the diameter of the sun be 884000 miles, and that of the earth 8000 miles, how many bodies of the size of the earth, placed in a line, would reach across the sun's diameter?

291. Reduce 6 leagues, 2 mi. 3 fur. 17 rd. 4 ft. $1\frac{1}{2}$ in. to statute miles.

292. The Austrian empire contains 7889925 Germans, 15027646 Slavi, 5632689 Roumanians, 4947134 Magyars, and of other races a number making the entire population 34714326. How many belong to nationalities not mentioned?

293. Paid in London £$195\frac{1}{7}$ for 12 bales of cloth. How many bales should be received for £$536\frac{9}{14}$?

294. A farmer sold 8 loads of potatoes, averaging 27 bu. 3 pk. 5 qt. each, for $.45 a bushel. How much did he receive?

295. Divide $897.43 among A, B and C, so that B may have $93.40 less than A, and $69.18 more than C.

296. If the population of the world be as follows, viz.: Asia, 630700000; Europe, 265494300; Africa, 61700000; America, 57600000; Oceanica, 23400000; and the average length of life be $33\frac{3}{10}$ years, what is the average number of deaths each day?

297. How many more bushels will a cubical box contain, whose sides measure 8 ft., than one that is 10 ft. long, 8 ft. wide, and 6 ft. deep?

298. How many seconds in 40 tropical years, 340 da. 22 h. 37 min. 45 sec.?

299. A surveyor, measuring a piece of land in the form of a rectangle, found one side to be 55 ch. 50 l., and the other, 63 ch. 24 l. How many acres did it contain?

300. In Ohio there are 997 miles of canals, the aggregate

receipts from which for a period of 15 years, were $8521660.42. Required the average annual receipts per mile.

301. A block of granite containing 126 ft. 10′ 11″, is 2 ft. 6′ wide, and 3 ft. 7′ thick, what is its length?

302. If a young man, by early rising, can save $2\frac{1}{2}$ hours each day for study and improvement, how many years of study can be gained in 25 years, allowing 365 days in a year, and 12 hours in a day?

303. Alexander Wilson estimated that a flock of pigeons which was 6 hours in passing, was one mile in breadth and flew at the rate of 40 miles per hour; allowing 3 pigeons to a square yard, what was the estimated number of pigeons in the flock?

304. How much cloth at $4.00 per yd., must be given for 9 tons, 8 cwt. 3 qr. $12\frac{1}{2}$ lb. of sugar at $9.50 per cwt.?

305. If $22\frac{4}{9}$ cords of wood last as long as $15\frac{7}{13}$ tons of coal, how many cords of wood will last as long as $11\frac{9}{26}$ tons of coal?

306. A fruit grower put 178 bu. 1 pk. 6 qt. 1 pt. of cherries into casks, each containing 2 bu. 3 pk. 6 qt., and sold them for $315.90. How much did he receive per cask?

307. The Post Office receipts in New York for the year ending June 30, 1861, were as follows: Letter postage, $191879.63; newspaper postage, $80153.42; registered letters, $2679.10; stamps sold, $1460955.89; the expenditures for the same period were $344757.04 for salaries of postmasters; $328661.44, incidental expenses; $444166.75, transportation of mails. What was the net income to the Post Office Department for that year from the State?

308. If a grocer use scales that weigh 15 oz. 4 dr. for a pound, how much does he cheat in selling $55.04 worth of sugar?

309. Three men cut $15\frac{1}{2}$ cords of wood in $2\frac{3}{4}$ days, for which they received $11.62\frac{1}{2}$. What were the average daily wages of each man?

310. A merchant bought 150 gallons of molasses at $.60 a gallon, and intended to have it sold at $.75 a gallon, but his clerk, by mistake, sold half of it by beer measure at $.15 a quart; discovering the blunder he directed him to sell the remainder at $.18 a quart, wine measure. How much more than the cost did he receive for the molasses?

311. A meteorological observer, in Cayuga County, New York, registered the total fall of rain, in 1861, of 34.86 in.; of snow, 40.495 in., and 3.5 in. of snow made one inch of water. How many hogsheads of water fell, during the year, in the town of Genoa, which is 10 miles square?

312. The whole length of railroads in the United States Jan. 1, 1852, was 10900 miles; ten years after, the number of miles open for traffic was 23 less than $3\frac{1}{20}$ times this number of miles; the total cost of the roads and equipments, at the last period mentioned, was $1192400424. What was the average cost per mile in 1862?

313. How many pipes of Port are equal to 23 of Sherry?

314. If there are 371.25 grains of pure silver in one dollar, how many silver dollars are equivalent in value to 5.6 lb. of English standard gold?

315. What cost 4 bundles, 1 ream, 6 quires, 12 sheets of paper at $45.72 per bundle?

316. The Austrian army, in 1863, was composed of 160316 active infantry; 424000 reserve; the active cavalry was $\frac{1}{4}$ the active infantry, less 235; the reserve cavalry, 2490 less than $\frac{1}{8}$ the reserve infantry; all other active troops, 5674 more than the active cavalry; and all other reserve troops were 169 less than all the cavalry; the population being 34714326, what proportion of the people were soldiers?

317. Gunpowder made according to the government receipt, is a compound of $\frac{3}{4}$ nitre, and equal parts of sulphur and charcoal. How much of each in 1 ton of powder?

318. How many cubic quarter inches in a slab of marble 2 yd. long, 1 ft. 6 in. wide, 3 in. thick?

319. A ship captain, sailing from London to New York, found, on taking an observation, that the sun at noon was 3 h. 25 min. 40 sec. later than the London time, as shown by his chronometer. How many degrees west had he sailed?

320. In 1855 the U. S. Government sold 15729524 acres of public lands, for $11246609.66. How much did John Smith pay for a quarter section, at the average price per acre?

321. A farmer planted a field, 30 rods long and 20 rods wide, with corn; the hills were in squares, 3 feet apart, and the outside rows 1 ft. 6 in. from the fence; allowing each hill to produce 5 ears, and 8 ears to make a quart, how much was the corn raised on the field worth at $.80 a bushel?

322. The five different races number as follows: American, 11000000; Malay, twice as many + 1500000; Ethiopian, 30000000 more than the Malays; Caucassian, $\frac{1}{2}$ the whole population of the earth—19400000; and the Mongolians, 450800000. How many more Caucassians than Mongolians, and what is the total population of the earth?

323. If the longitude of Boston is 70° 4′ West, what will be the time in that place when it is 3 h. 35 min. A. M. in London?

324. Albert Tucker, owning 80 acres of land, cultivated $1\frac{1}{2}$ acres potatoes, $3\frac{3}{4}$ corn, $2\frac{1}{4}$ rye, $1\frac{3}{4}$ oats, $\frac{1}{2}$ carrots, $\frac{1}{4}$ turnips, from which he harvested 160 bushels potatoes, $48\frac{2}{3}$ corn, 28 rye, $56\frac{1}{2}$ oats, 650 carrots, and 720 turnips per acre, respectively. He cut $1\frac{3}{4}$ tons hay on each of $12\frac{3}{4}$ acres, and upon the remainder he pastured 30 sheep, 5 cows, 2 horses and 8 steers, for 24 weeks. He sold his potatoes, corn, rye, oats, carrots and turnips at $.75, 1.12\frac{1}{2}$, $1.25, $.40, $.25 and $.15 per bushel, respectively; he sold his hay at $16 per ton, and received 3, 20, 45 and 15 cents each per week, respectively, for pasturing the sheep, cows, horses and steers. What were the net profits of the farm, supposing he paid $25 taxes, and $30, $28, $16, $16, $40, $32 and $5 per acre, respectively, for cultivating and harvesting the potatoes, corn, rye, oats, carrots, turnips and hay?

CHAPTER V.

1. My salary is $800 a year. I pay 35% of it for board, 11% for clothing, 12% for books, and 7% for incidentals. How much are my yearly expenses?

2. If $13\frac{1}{2}$ bushels of wheat make 3 barrels of flour, how many bushels of wheat will be required to make 40 barrels of flour?

3. A farmer raised 20% more of wool this year than last; the amount raised during the two years was 1320 lbs. What amount of wool was raised each year?

4. A horse which cost me $135 I sold for $150, on 9 months' credit. How much did I gain, money being worth 6%?

5. The debt created by the U. S. Government from March 7, 1861, to July 1, 1862, was $451456866; $125090 more than $\frac{1}{14}$ of this pertained to civil affairs; the remainder was caused by the war. How much did the rebellion expenses average per day?

6. I purchased 6000 bushels of wheat in Chicago at 1.37\frac{1}{2}$, and shipped the same to my agent in Albany, who sold it at 1.62\frac{1}{2}$. How much did I make, after paying $543 for expenses and a commission of $2\frac{2}{5}$%?

7. A man sleeps $7\frac{1}{2}$ hours each day. What per cent. of his time does he sleep?

8. The amount of money deposited in the savings banks of New York, in 1863, was $54557500; the amount withdrawn from the same during the year was $11347960. What per cent. of the amount deposited was withdrawn, and how much was the annual interest at 5% on the money remaining?

9. If 24 men, in 9 days of 12 hours each, build a wall 200

feet long, 6 feet high and 2 feet thick, how many men, in 72 days of 10 hours each, can build a wall 950 feet long, 8 feet high and 5 feet thick?

10. A man drew 30% of his bank deposits, and expended 25% of the money thus drawn to purchase a horse, worth $97.50. How much money had he in bank?

11. A grocer bought 2 T. 14½ cwt of cheese at $240 per ton, and retailed the same at 16 cents per pound. What per cent. was his profit?

12. The capital of an insurance company is $250000; its receipts for one year are $58760; its losses and expenses are $40010. What rate of dividend can it declare?

13. If 360 bushels of oats will last 12 horses 15 days, how long will 636 bushels last 18 horses?

14. I own 25 shares of $50 each in the Ætna Insurance Co., which has declared a semi-annual dividend of 3½%. How much do I receive?

15. If 4½ bushels of potatoes are sold for $1.50, how much are 27.25 bushels worth?

16. A railroad jobber contracted to build 20 mi. 5 fur. 25 rd. of railroad for $25000 per mile; after finishing the work, he found the actual cost was $75 per rod. How much did he clear by the job, and what was the rate of his profit?

17. A man, wishing to sell a horse, asked 25% more than it cost; he finally sold it for 15% less than his asking price, and gained $7.50. How much did the horse cost him, and what was his asking price?

18. Required the average maturity of the following account:

A. Z. Armour.

Dr.						Cr.		
1859.				1859.				
Feb. 12	To Mdse	85	75	March 15	By bal. old acc't.	97	36
" 25	" "	36	24	April 17	" cash	56	00
April 16	" "	174	96	May 25	" "	25	00
May 20	" "	94	78	June 8	" sundries	94	75

19. The expenses of a school for one year were $2000 for salary of teachers, $105.50 for fuel, $56.25 for incidentals; the public money was $750.75, and the remainder was paid by a rate bill. If the aggregate attendance was 35275 days, how much must John Spencer pay, who sent 3 pupils 175 days each?

20. Sold $\frac{4}{5}$ of a hhd. of molasses for what the whole cost me. What was my gain per cent.?

21. When does the amount of the following bill become due, per average?

GEORGE BARBOUR,

1864.				To J. B. HALE & Co., *Dr.*		
Jan.	20	To	100 yd.	Broadcloth	@	$3.25
"	25	"	2500 "	Sheeting	@	.12
March	20	"	3000 "	Merrimac Prints	@	.18
April	1	"	300 "	French Silk	@	1.75

22. If a man, by laboring 12 hours each day, can perform a piece of work in 3 weeks, by laboring 6 days in a week, how long would it take him to do the same, if he labor 10 hours each day?

23. Bought 4 hhd. of sugar, each containing 1825 lbs., at $6\frac{1}{4}$ cents per pound, and paid $31.975 for freight, storage and cartage. Allowing 5% for leakage and waste, for how much per pound must I sell the remainder to gain 25%?

24. Bought a house for $4500, and paid $500 cash; the balance is to be paid in 8 equal annual installments. What is the mean time for paying the balance?

25. What is the difference between the interest and discount of $337.50 for 1 yr. 4 mo., at 6%?

26. Sold a horse at $33\frac{1}{3}$% gain, and with the money bought another horse, which I sold for $120, and lost 25%. Did I gain or lose by my trading? and how much?

27. An insurance agent, whose commission was 10% on all

sums received for the company, cleared $1524.45 in one year. What were the company's net receipts from the agent?

28. In 1862 the cavalry in the French army were $19\frac{1}{21}\%$ of the infantry; the artillery were 66% of the cavalry; the engineers were $22\frac{8}{11}\%$ of the artillery; and the gens-d'armes .39 of the artillery. If the engineer corps numbered 15000 men, what was the strength of each of the other arms?

29. The Financial Committee of a graded school invested $33901. in U. S. $7\frac{3}{10}$ Treasury Notes, which were at a premium of $4\frac{3}{8}\%$, as a fund for the support of the school; the salaries of teachers amounted to $1975, and $227.04 was paid for incidentals. What sum was annually left unexpended?

30. If 12 boarders eat $25 worth of bread in 2 mo., when flour is $9.50 per barrel, in how many months will 15 boarders eat $60 worth of bread, when flour is $12 per barrel?

31. A shipment of wheat was insured at $2\frac{3}{5}\%$, to cover $\frac{3}{4}$ of its value; the premium paid was 44.07; the wheat being worth $.80 per bushel, how many bushels were shipped?

32. Which is the more profitable to buy 7's at 105%, or 5's at 80%?

33. The cash capital of the West Roxbury Horse Railroad Company is $40400; the net receipts for one year were $3312. If $\frac{5}{207}$ of the net receipts be reserved in favor of the Company, how large a dividend may be declared?

34. A, who is worth $6845, is taxed $55.14; what is B worth, who is taxed $256.18?

35. J. BURNS *in account with* TYLER & Co.

Dr.					Cr.			
1860.					1860.			
Feb. 25	To Mdse. on 3 mo.	360	75		March 1	By Cash on acct.	250	00
March 20	" " " 3 "	240	56		April 20	" Accept. at 30 da.	300	00
April 26	" " " 3 "	875	24		June 12	" Sundries,	375	00
June 24	" " " 2 "	235	25		" 27	" Cash on acct.	400	00

Required the cash value of the above account, July 1, 1860, interest at 6%.

36. The loans and discounts of all the banks of Philadelphia amounted to $29705200, Oct. 19, 1861; the specie in vaults was $6375750; the deposits $21100085; and the capital stock paid in, $11811500. On the first of Jan., 1863, the loans and discounts had increased $26\frac{3}{4}$ per cent.; the specie had diminished $29\frac{1}{3}$ per cent.; the deposits were $\frac{8}{23}$ more; and the capital stock paid in, $\frac{3}{5}$ of one per cent. less than in Oct. 1861: loans, discounts, and specie being resources; deposits and capital stock being liabilities, how much were the resources in excess of the liabilities, Jan. 1, 1863?

37. A stack of hay will keep 24 cows or 18 horses one week. How many days will it keep 5 cows and 5 horses?

38. A merchant pays $10050 for a stock of goods; he sells them at an advance of $33\frac{1}{3}\%$; the expenses connected with the business are $1750. How much does he gain?

39. The value of real estate and personal property in Kentucky in 1850 was $301628456; in 1860 it was $666043112. What was the increase per cent. in 10 years?

40. The value of real estate and personal property in Illinois in 1850 was $1562655006; in 1860, $871860282. What was the increase per cent. in 10 years? How many times as great was the increase of property in Illinois than in Kentucky?

41. $\overline{\$1200\frac{76}{100}}$. BOSTON, Feb. 1, 1863.

Six months after date I promise to pay Knowles, Leland, & Co., or order, twelve hundred and $\frac{76}{100}$ dollars, with interest, for value received. S. M. SMITH.

Indorsed as follows: April 16, 1863, $215.77; Aug. 1, 1863, $317.50; Dec. 16, 1863, $315.75. How much was due April 1, 1864?

42. A farmer bought 100 oxen, cows, and sheep for $1160; there were 6 times as many cows as oxen, and 3 times as many sheep as cows; the oxen cost twice as much per head,

and the sheep $\frac{1}{5}$ as much, as the cows. How many oxen, cows, and sheep were bought? and at what price?

43. What per cent. is gained by buying oil at 80 cents a gallon, and selling it at 12 cents a pint?

44. A man bought a farm of 160 acres at $32 per acre; he paid $200 for fencing, $150 for repair of buildings, and $18 for improving the grounds; at what price per acre must it be sold to gain 25% on the entire cost?

45. The taxable property of a School District is $756000; a Union School-house is to be built, worth $24956.16; the number of taxable polls is 520, each of which is assessed $1.50. Allowing 3% for collecting, what will be the tax upon $1.00? and how much will be the tax of S. P. Norton, who pays for 2 polls, and is worth $15420?

46. If 6 men in 8 days, working 10 hours each day, can cut 40 acres of grass, how many men in 12 days, by working 8 hours a day, can cut 96 acres?

47. If the use of $250 for 1 yr. 8 mo. is worth $30, how much is the use of $425.50 for 3 yr. 7 mo. 25 da. worth?

48. What must be the face of a note at 60 days, the proceeds of which, when discounted at Bank at 6%, are $100?

49. A western grain-dealer bought wheat as follows, viz.: 400 bushels of red wheat at $1.40; 800 bushels of white wheat at 1.62\frac{1}{2}$; and 300 bushels of spring wheat at $1.20: he shipped the whole to his correspondent in Albany, who sold the first kind at an advance of 15%, the second at an advance of 20%, and the third at $1.15 per bushel: deducting from the gross proceeds, his commission at 3%, $108.23 for expenses, he remitted to the consignor the net proceeds. What was the rate of the grain-dealer's gain?

50. If $400 gain $16 in 8 months, what is the rate of interest?

51. A town levies a tax for building a bridge, which costs

$2520; allowing 4% for collecting, for what sum must the tax be levied?

52. A merchant tailor bought 4 pieces of cloth, each containing 30 yd. 3.75 qr., at $2.00 per yd.; he sold $\frac{1}{3}$ of it at $2.20 per yard, and made up the remainder into suits, each containing 7 yd. 2 qr., which he sold for $18.50 each. How much did he gain?

53. What sum must I invest in United States 6's, selling at $2\frac{1}{2}\%$ premium, to secure an annual income of $840?

54. What is the rate of income upon money invested in 6 per cent. bonds, purchased at a discount of 10 per cent.?

55. If it require 192 reams of paper to print 2400 copies of an 8vo book, containing 440 pages, how many reams will be required to print 6000 copies of a 16mo book, containing 220 pages?

56. Goodman and Barbour bought bills of goods of Mellen, Claflin, and Co., New York, as follows, viz.: Jan. 1, 1863, $750; June 1, 1863, $1250; Sept. 16, $2525; Dec. 31, 1863, $895.65: they bought on time, paying legal interest. What was their whole indebtedness, May 1, 1864?

57. What must I pay for U. S. 6 per cents, that the investment may yield 8 per cent.?

58. A man, dying, left $3565 to be placed at interest for his son, who was 16 yr. 5 mo. 15 da. old; how much will he receive when he is 21 years old, allowing 7% interest?

59. The population of New York city, in 1860, was 805650; it was estimated to have increased 20 per cent. Jan. 1, 1864. Suppose at this last date the whole population were drawn up in single file, each person occupying a space of $2\frac{1}{2}$ ft., and the whole line should begin to march at the rate of $2\frac{1}{2}$ miles per hour, what would be the length of the line, and how long would the procession be in passing any given point?

60. A house being rented for $12 a month pays $7\frac{1}{2}$ per cent. interest, what is the value of the house?

61. Bought 5000 bushels of wheat on 6 months' credit, at $\$1.37\frac{1}{2}$; I immediately sold it at $1.35 cash, and put out the money at 6%; at the end of 6 months I paid for the wheat. Did I gain or lose by the transaction, and how much?

62. Thomas Baker bought a farm for $20000 cash, or $10000 payable in 6 months, and $12000 in 1 yr. 6 mo.; he chose the latter mode of payment. Money being worth 7% did he gain or lose, and how much?

63. The earnings of the Chicago and Northwestern R. R. for the week ending Jan. 14, 1864, were $6926.12 more than for the same period in 1863; the earnings for the week mentioned, in 1864, being an increase of 48% over the earnings of the corresponding week of the previous year, what were the earnings for the week in 1864?

64. A's money is 50% more than B's. How many per cent. less is B's than A's?

65. Bought 450 barrels of flour at $8.50, which I paid for in iron at 3 cts. per pound; the purchaser of the iron afterwards sold $\frac{1}{3}$ of it to a scythe manufacturer. What quantity did he sell?

66. What is the difference between the simple and compound interest of $700 in 3 years at 5 per cent. per annum?

67. Reduce 9 sq. rd. 9 sq. yd. 7 sq. ft. 120 sq. in. to the decimal of $\frac{1}{2}$ of $\frac{3}{5}$ of $\frac{2}{7}$ of 35 A. 2R.

68. A man dying left $33\frac{1}{3}$% of his property to his wife; 50% of the remainder to his son; 75% cent of the residue to daughter, and the balance, $120, to a faithful servant. How much did each receive?

69. A house that cost $3125, was rented for $\$328.12\frac{1}{2}$. What per cent. did it pay on the investment?

70. A grocer bought 60 gallons of milk by beer measure at 4 cents a quart, and sold it by wine measure at 5 cents a quart. How much was his gain?

71. If I borrow $1000 in Mass. and lend it in New York, how much do I gain in 1 yr. 3 mo. 20 da.?

72. The total population of America is 70415000, 39% of which are Protestants; the total population of Europe is 282823000, 23% of which are Protestants. How many more Protestants in Europe than in America?

73. If 300 sheep require 150 A. 3 R. 36 P. of pasture, how many acres will 450 sheep require?

74. I sent $12300 to my agent in New York, with which to purchase flour at $10 per barrel, after deducting his commission of $2\frac{1}{2}\%$. How many barrels of flour did I receive?

75. A manufacturer effected an insurance upon his factory and machinery, valued at $20000, paying an annual premium of 2%; in the second year the establishment was damaged by fire to the amount of $1560. How much did he save by the insurance?

76. Average the following account:

JOHN LYMAN.

Dr.							Cr.
1860.				1860.			
June 12	To Mdse.	530	00	June 24	By draft at 30 da.	480	00
Sept. 12	" "	428	00	Aug. 20	" cash,	280	00
Oct. 28	" "	440	00	Oct. 8	" "	140	00

77. Three persons purchased a block of tenements for $350000, of which A paid $150000; B, $80000; C, $120000; the net proceeds of the rent were $21000. How much should each receive?

78. How much gold, silver and copper in an eagle, its weight being 10 pwts. 18 gr.?

79. A capitalist invested $\frac{2}{3}$ of his money in R. R. stock, which depreciated $6\frac{1}{4}\%$; the remainder he invested in real estate, which advanced 15%, and thereby he gained $1500. How much did he gain in both investments?

80. Boise, Smith & Co. failed in business; their indebtedness was $75000; their assets were, Cash, $3000; Mdse., $15500; Store, $28000; Bills Receivable, $5500; the expenses of

settling were 4% of the amount distributed to the creditors. What per cent. of their indebtedness can they pay?

81. If 3 yd. 3 qr. 1 na. cost $12.20, how much will 18 yd. 2 qr. 1 na. of the same cloth cost?

82. Bought a hogshead of molasses for a certain sum, but 16 gallons having leaked out, the remainder was sold for $1.87\frac{1}{2}$ per gallon, at a loss of 6% on the cost. How much was the cost?

83. A merchant bo't 400 yds. broadcloth @ $3.00; he sold A 60 yds. @ $3.50; B, 125 yds. @ $3.40; C, 75 yds. @ $3.20; and the balance to D @ $2.95. What per cent. profit did he make on the whole?

84. Jan. 1, 1863, Rhode Island had sent 14626 men to the war; Connecticut 1033 less than twice as many; Maine, 4886 more than Connecticut; New Hampshire and Vermont together, 3639 more than Maine; and Massachusetts, 1189 more than Maine, New Hampshire and Vermont. How many men had the New England States sent to the army?

85. An agent for a Hartford nurseryman sells 5000 apple trees at $24 per hundred; 3000 pear trees at $40 per hundred; 2000 peach trees at $18 per hundred; 1500 cherry trees at $45 per hundred; 500 plum trees at $45 per hundred, and 1000 ornamental trees at $50 per hundred. What is his commission, at 25%, and how much should he return to his employer, as the net proceeds after deducting $300 for expenses?

86. How much is gained by investing $5250 in government bonds at 105%, brokerage $1\frac{3}{4}$%, and selling the same at 116%, brokerage $1\frac{3}{4}$%?

87. A man traveled $19\frac{3}{7}$ miles the first day, $22\frac{11}{7}$ miles the second day, and 19 mi. 1 fur. 20 rds. $15\frac{5}{7}$ feet the third day. How far did he travel in the three days?

88. A broker charges me $1\frac{1}{8}$% for purchasing some uncurrent bank bills at 25% discount; of these bills, three of $10

each, and one of $50 became worthless; I dispose of the remainder at par, and thus make $520. What was the amount of bills purchased?

89. I bought 2345 bushels of wheat at $1.20, and immediately sold it at $1.30, on a note of 6 months, which I got discounted at bank at 7 per cent. How much did I gain?

90. I sent $9020 to my agent in Chicago, who purchased grain at an average price of $1.10 per bushel, and charged $2\frac{1}{2}\%$ commission. How many bushels did he buy?

91. On the first of Jan., 1862, there were 10869 miles of railroad in operation in Great Britain, and the total receipts for the year were £28565355; the expenses were £878681 less than the net receipts. How many dollars U. S. currency were the net receipts per mile, sterling bills being quoted at 189%?

92. The number of men sent into the army, up to Jan. 1, 1863, from Illinois, Ohio, Pennsylvania, and New York, was proportional respectively to the numbers $27\frac{1}{16}$, 34, 40 and $44\frac{1}{2}$; Ohio sent 34743 more men than Illinois. What number of men did each State furnish?

93. A farmer exchanged 25 bu. 3 pk. 3 qt. of corn at $.80 per bushel, for 32 yds. sheeting and $8\frac{2}{3}$ yds. broadcloth. Allowing 1 yd. of broadcloth to equal in value 24 yds. of sheeting, what was the amount paid for each?

94. If I make a profit of $15\frac{5}{11}\%$ by selling Worcester's Dictionaries for $.85 above the cost, how much must I advance on the price to realize a profit of $32\frac{1}{2}\%$?

95. A farmer sold 4 loads of oats, averaging 35 bu. 3 pk. 7 qt. each, for 120.85\frac{1}{2}$. How much are 100 bu. 3 pk. worth at the same rate?

96. Three men engaged in the manufacture of pails; A put in $2550 for 8 months; B, a sum not specified for 12 months; C, $1089 for a time not specified. A received for his stock and profit $3400; B, $4200 for his; C, $1485 for his. Required B's stock and C's time.

97. A man has two sons, one living in New York, the other in Massachusetts; he wishes to place at interest $1000 for each, so that the amounts shall be the same in 5 yr. 7 mo.; he supposes he has accomplished his object by loaning the given principals, one in New York at simple interest; the other in Massachusetts at compound interest, payable semi-annually. What is the difference between their respective amounts?

98. Bought 42 lb. of coffee at the rate of $3\frac{1}{2}$ lb. for $1.00, and 75 lb. more at the rate of 7 lb. for 2.33\frac{1}{3}$; sold the whole at the rate of 9 lb. for $3.25. How much did I gain or lose?

99. If 7 cwt. 2 qr. 18 lb. of sugar cost $90.24, how much sugar can be purchased for $300.80?

100. For what sum must a store and contents, valued at $25640, be insured, so as, in case of its destruction, to recover the entire value of the building and contents and the premium of 2 per cent.?

101. A person traveled from New York to Harrisburg in 12 days, walking 4 miles the first day, 6 miles the second, 8 miles the third, and so on. How far is Harrisburg from New York?

102. The total length of mail routes in the U. S., June 1, 1861, was 140349 miles; the total annual transportation was 54455412 miles. Allowing that no mails were carried on Sunday, how many times per day, on an average, were the mails carried over each route?

103. A commission merchant receives 125 bbls. of flour from A, 150 bbls. from B, 225 bbls. from C; he finds on inspection that A's is 10% better than B's, and C's is $5\frac{5}{11}$% better than A's; he sells the whole lot at $7.00 per barrel, and charges 4% commission. How much must he remit to each?

104. A man sold a farm of 165 A. 2 R. 32 P. at $33.50

per acre, and took a note payable in 5 mo. 15 da., at 7% interest; wishing the money for immediate use, he got the note discounted at a bank. How much did he receive?

105. I wish to line the carpet of a room, $6\frac{1}{3}$ yd. long and $5\frac{1}{2}$ yd. wide, with duck, $\frac{7}{8}$ yd. wide. How many yds. of lining must I purchase, if it will shrink 4% in length and 5% in width?

106. Bought cloth at $4.00 per yard. What must be my asking price, that I may fall on it 12%, and still make 21% on my purchase?

107. A, B and C engaged in partnership with a joint capital of $3000; A putting in stock for 8 months, B for 9 months, C for 12 months; A's part of the profits was $64, B's $81, and C's $84. Required the capital of each.

108. What is the net value in Chicago of a sum due in Paris of 6300 francs, which is sent to Liverpool, at 1% commission; exchange, 25.20 francs to £1; a draft for the net amount in Liverpool is drawn on Boston at 7% premium, after deducting $\frac{1}{2}$% commission; the proceeds of this bill being remitted to Chicago in a check at $\frac{1}{2}$% discount?

109. What is the cash balance of the following account on Dec. 31, at 7 per cent.?

JAMES HANSON.

Dr.				Cr.			
1859.				1859.			
Sept. 3	To Sundries	478	36	Sept. 17	By Sundries	96	54
Oct. 2	" Mdse. on 3 mo.	256	37	" 20	" Cash on acct.	200	00
" 21	" " " 3 "	375	26	Oct. 3	" " "	325	00
Nov. 12	" " " 3 "	80	00	Nov. 17	" " "	50	00
Dec. 15	" Sundries	148	76	Dec. 27	" " "	84	00

110. In the battle of Shiloh, April, 1863, 4% of the Federal army engaged were slain upon the field; $19\frac{1}{3}$% were wounded; and the prisoners were 77 more than 50% of the wounded, also 2355 more than the killed. How many men were in the engagement?

111. A merchant bought 64 yd. broadcloth, which was $1\frac{7}{8}$ yd. wide, for $5 per yard; but the cloth being wet, shrunk

$4\frac{1}{2}$ per cent. in width, and the same in length. For what must the cloth be sold per square yard to gain 20 per cent?

112. The population of the United States in 1860 was 31446400, and the number of deaths reported was 1 for every 80 citizens; $\frac{9\frac{1}{2}}{20}$ of the deaths were of females. How many of each sex died during the year?

113. I can sell a certain piece of property for \$9000 cash, or for \$4750 payable in 9 months, and \$5200 payable in 1 year; how much shall I gain by accepting the second offer, if money is worth 9%?

114. A gentleman deposited \$100 in a savings bank for the benefit of his son, at compound interest, at a semi-annual rate of $2\frac{1}{2}\%$; he was to receive the amount as soon as it became \$268.50; allowing that the deposit was made when the son was one year old, what was his age when he received the money?

115. One-fifth is what per cent. of three-fourths?

116. The receipts of the Post Office department in Kentucky for the year ending June 30, 1861, were as follows: letter postage, \$8029.59; newspaper postage, \$13981.36; registered letters, \$388.00; stamps sold, \$136453.98. The expenses were \$59612.19 for compensation of postmasters, \$16423.14 incidentals, \$270273.23 for transportation of mails. What was the net expense to the Government of carrying the mails in Kentucky during the year?

117. I exchanged 60 Ohio State bonds of \$1000 each, at $8\frac{1}{2}\%$ premium, for Indiana bonds of \$200 each, at 5% premium. How many of the latter did I receive?

118. If 12 oz. of wool make $2\frac{7}{8}$ yd. of cloth, $1\frac{1}{4}$ wide, how many pounds of wool are required to make 115 yds. of cloth 1 yd. wide?

119. A and B contracted with Gwinn and Co. to erect a cotton-mill for \$50000. Not wishing to be burdened with

the salary of a book-keeper, it was arranged that each partner should keep a strict account of all his expenditures and receipts, and report at the completion of the job, at which time they would have a general settlement. At the time of settlement they found their affairs standing as follows, viz.: A had paid out for building material and wages $16750.50, and had received from Gwinn & Co. $12790; B had paid out for building material and wages $20186.75, and had received of Gwinn and Co. $15842. There was due the hands and for material, $4729.38. What was their entire profit? How much was due from Gwinn & Co? How much should be paid to A and B respectively?

120. Bought a bill of goods for $1500, $\frac{1}{3}$ payable in 3 months, $\frac{1}{3}$ in 6 months, and the remainder in 9 months. How much ready cash ought I to pay for the goods, money being worth 6 per cent.?

121. If a ship sail 5 mi. 3 fur. $9\frac{1}{8}$ rd. per hour, how long will it be in going 1618 mi. 2 fur. 18.254 rd.?

122. A house that cost $15725, rents for $1478.15; the insurance is $\frac{4}{5}$ %, and the repairs $\frac{6}{10}$% each year. What rate of interest does it pay?

123. A merchant, having sold a number of yards from a piece of cloth, found there were 8.75 yards left, which was 65 per cent. less than the quantity cut off. Required the number of yards in the piece at first.

124. The capital stock of the Boston and Worcester Railroad Company is $4500000, and its debt $126000. Its gross earnings in 1861 were $928932, and its expenses $520338. If the company paid expenses, interest on its debt of 6%, and reserved $18534, what dividend would a stockholder receive who owned 25 shares of $100?

125. If $990.73 gain $55.67 in 9 mo. 19 da., what principal is required to gain $31.12 in 2 yr. 5 mo. 26 da.?

126. Find a number between 893 and 931, which shall

have with each the same greatest common divisor that they have with each other.

127. A merchant has $216 due him, to be paid in 7 months; but the debtor agrees to pay one-half ready money, and $\frac{3}{4}$ of the remainder in 6 months. What time should he be allowed for paying the balance?

128. Imported from Havre 120 baskets of champagne, 12 bottles each, 5% breakage, duty 40%, freight and other charges $134.10; and the whole cost $1166.42. How much did it cost per bottle in Havre? how much in store? and what must I charge per bottle to clear 20%?

129. How much butter at $.37$\frac{1}{2}$ a pound, must be given for 12 gal. 3 qt. of molasses, at. $.75 a gallon?

130. The paid-in capital of the United States Insurance Company in 1863, was $879720; its receipts for the year were $314470; and its losses and expenses $138526. What rate of dividend could it declare?

131. How many feet of boards will it take to inclose a garden 40 ft. 6 in. long, and 30 ft. 3 in. wide, with a close fence 7 ft. 6 in. high?

132. A pork merchant charged 12% commission, and cleared $2251.30, after paying out $1565.24 for all expenses of packing; if the pork cost him $.06$\frac{1}{2}$ a pound, how many pounds did he pack?

133. How much more can a bank make in 528 days, with $10000, by discounting notes on 45 days' time, than by discounting them on 30 days, the rate of discount being 6%, and the profits in both cases retained in bank till the expiration of the time?

134. Sold Hiram Jones goods to the amount of $2084, on credit for 6 mo. from Sept. 20, 1862; Oct. 8 he paid me $520; Nov. 20, $340; Dec. 25, $800; Jan. 12, 1863, $100. When, in equity, ought I to receive the balance?

135. When a bill on Paris for 28965 francs costs $7183.32, what per cent. is the rate of exchange above par?

136. The average dividends of all the savings banks in Mass. in 1861, were $4\frac{1}{2}\%$, and $1943532 was distributed among the depositors. What were the aggregate deposits in the savings banks?

137. A sells goods which had cost $800, to B at an advance of $12\frac{1}{2}\%$; B sells them to C, and gains $11\frac{1}{9}\%$ of what he had paid. What per cent. would A have gained had he sold the goods to C for the same which B received?

138. There was paid in New Orleans $7840 for £1600 draft on Liverpool. At what per cent. premium was it purchased?

139. If it require $900 to support a family of 12 persons, 41 weeks and 1 day, how much at the same rate will be required to support a family of 24 persons 20 weeks $6\frac{1}{2}$ days?

140. Subtract 2 fur. 10 rd. 5 yd. 2 ft. from 2 fur. 11 rd. 1 ft. 5 in.

141. The Cleveland, Columbus and Cincinnati Railroad reported its earnings for 1863 to be $2145080; and its expenses, $961785; the company invested in new depots, engines, cars and railroad stock, $551739; Aug. 1, 1863, it declared a 6% dividend of its paid-in capital of $5000000, and Jan. 1, 1864, another 5% dividend. What surplus revenue still remained?

142. The stock of three partners, A, B and C, was $2400, $2000, and $1800, and their gain $768, $960, and $1152 respectively; C's stock continued in trade 4 months longer than B's. How long was the money of each in trade?

143. If 12% of what is received for goods is gain, what is the gain %?

144. I sold $\frac{1}{4}$ of my goods at an advance of 25%; $\frac{3}{10}$ of them at a loss of 8%; $\frac{1}{20}$ of them at a profit of 30%, and $\frac{1}{5}$ of them at a discount of 20%. For what % of the cost must the remainder be sold in order to lose 5% on the whole?

145. The charter of a new railroad company limits the stock to $1500000, of which 3 installments of 10%, 20%, and 40%, respectively, have been paid in; the cost of construction has

reached $850000, and the estimated cost of completion is $850000. If the company call in the final installment of its stock, and assess the stockholders for the remaining outlay, what will be the rate %?

146. At the surrender of Island No. 10, the privates taken were 60% of the number of arms taken; the line officers were 34% of the privates, and the field officers and generals, 30 in number, were $\frac{1}{2}$ % of the privates. How many privates, and what number of arms were captured?

147. The greatest common divisor of three numbers is 18, each of the numbers exceeds 18, and their least common multiple is 540. What are the numbers?

148. If 97 sheep are bought for $100\frac{2}{5}$, how much should be paid for 25 sheep at the same rate?

149. I sold goods at an advance of 20%, and invested the money received in goods which I sold at a loss of 10%, and with the sum received purchased goods which were sold at a discount of $16\frac{2}{3}$%. What was the gain or loss per cent.?

150. Borrowed of my neighbor $500, for 1 yr. 3 mo., at 6%; not being able to pay at the end of the time, my neighbor agreed to let it run till the end of the second year at simple interest, but he was obliged to borrow 535.88\frac{1}{2}$ for 9 mo. at the same rate. How much more did my neighbor owe at the end of the year than I?

151. The earth moves 19 miles per second in her orbit. How far does she travel from 7 h. 30 min. A. M. till 5 h. 15 min. P. M.?

152. $1000.

COLLINSVILLE, Conn., Mar. 1, 1863.

Six months after date I promise to pay James Gray, or order, one thousand dollars, for value received.

T. M. CURTISS.

On this note were the following indorsements: Sept. 1, 1863, $300; Jan. 16, 1864, $200; March 1, 1864, $200; May 1, 1864, $200. How much was due July 4, 1864?

153. The Milwaukee and Prairie du Chien Railroad reported, for the year 1863, gross earnings, $1184840; total expenses, $793747; the interest on sinking fund was $204480, and $31613 was expended for various items of construction; the balance was a 5% dividend on the capital stock. Required the capital stock.

154. Having used my carriage three years, I sold it for $66, which was 40% less than the cost. What was the cost?

155. What is the value of 25 hhd. sugar, each weighing 12 cwt. 3 qr. 16 lb.; draft, 3 lb. per cwt., and tare 10 lb. per cwt., at $11.625 per cwt. net?

156. A man having $28\frac{1}{3}$, gave $\frac{2}{3}$ of it for $5\frac{2}{3}$ bushels of clover seed. What was the price per pound?

157. A merchant imported from Bremen 40 pieces of linen of 35 yards each, on which he paid for duties, at 26%, $218.40, and other charges to the amount of $131.60. What was the invoiced value per yard? and the cost per yard after duties and charges were paid?

158. At the battle of Fredericksburg, Dec. 13, 1862, the losses of the Federal army in killed, wounded and prisoners, were in the proportion of 12, 22 and 97 respectively, and there were 7990 more prisoners than killed. Required the total loss.

159. How many sacks of coffee, each containing 108 lb., at 1s. 6d. per pound, New York currency, will pay for 135 yards of broadcloth, at $3\frac{3}{5}$ per yard?

160. A buyer expended equal sums of money in the purchase of wheat, rye and oats; in the sales he cleared 7% on the wheat, 5% on the rye, but lost 15% on the oats; the whole amount received was $1782. What sum did he expend for each kind of grain?

161. I received an 8% dividend on New York city railroad stock, and invested the money in the same stock at 80%. My stock having increased to $13750, what was the amount of my dividend

162. Great Britain and Ireland have an area of 112190 square miles, and a population of 29169400. Supposing the families to average 5 persons, and the whole area to be equally divided among them, how much land could each family possess?

163. If molasses cost 20% less than $.75 a gallon, and it be sold at a profit of 25%, at what price is it sold?

164. The quick step in marching being 2 paces of 28 inches each, per second, what is the rate per hour?

165. How much time must a general allow for a detachment of soldiers, marching quick step, to reach a place 50 miles distant, giving the men a halt of $1\frac{1}{3}$ hours?

166. A capitalist holding bonds of the Columbus and Indianapolis Railroad, to the amount of $27000, exchanged them at the market price of 96%, for capital stock of the same company, worth 81%; the bonds drew 8% annually, while the stockholders received two dividends during the year; the first of $3\frac{1}{2}$ %, and the second of 4%. How much did the capitalist gain annually by the exchange?

167. The population of Mass. in 1850 was 994500; in 1860, 1131191; of Penn. in 1850, 2311800, and in 1860, 2901309. How much more was the increase per cent. in Penn. than in Mass. for the ten years?

168. If the interest of $6786.24 for 1 yr. 10 mo. 16 da. is $1273.89, what will be the amount of $5772 from Oct. 26, 1859, to Apr. 12, 1864?

169. Find the day of maturity, the time to run, and the proceeds of the following note:

$\overline{\$575\frac{63}{100}}$ CHICAGO, March 2, 1864.

Six months after date, I promise to pay to the order of Marks & Willis, five hundred seventy-five $\frac{63}{100}$ dollars, value received.

HIRAM BENNET.

Discounted at a bank, Apr. 10, at 6%.

170. If 8 men can perform a piece of work in 32 days, how many men must be added to the number to perform the work in 8 days?

171. The total value of all the property, real and personal, of the Free States in 1860, was $10852081600; and of the Slave States, $5225307000. The products of the Free States for the same year were valued at $4178051416; of the Slave States, $1149567540. How much greater per cent. of the capital invested, were the products of the Free States, than of Slave States?

172. In what time will any sum of money amount to 10 times itself at 7 per cent.?

173. A merchant sold a quantity of goods for $480, and loses at the rate of 9 per cent. What ought he to have sold them for to realize a profit of 7 per cent.?

174. If a man dig a cellar 8 feet square and 6 feet deep in 2 days, how long will it take him to dig a similar one 12 feet square and 7 feet deep?

175. The cost in store of 40 puncheons of Jamaica rum, 84 gal. each, was $1262.86; duty 15%; leakage 2%, and charges $106.68. What was the cost per gallon in Jamaica?

176. In the examination of a class, 160 questions were submitted to each of the five members; A answered 130; B, 125; C, 115; D, 122; and E, 158. What was the standing of the class?

177. If an army of 5000 men have provisions for 15 days, at the rate of 20 oz. a day to each man, and they be reinforced with 3000 men, upon what daily allowance must each man be put that the same provision may last 20 days?

178. The British Industrial Exhibition remained open 141 days, and the average number of daily visitors was 42831; the whole amount received for admission was £6039171. What was the price of admission?

179. What per cent. of 24% is $\frac{1}{3}$ of 54%?

180. A liquor dealer receives an invoice of 300 dozen bottles of porter, rated at $1.50 per dozen; allowing 2% for breakage, what will be the duty at 24%?

181. If the transportation of 8 hhd. sugar, each weighing $12\frac{1}{2}$ cwt. 25 leagues, cost $65, what must be paid for the transportation of 80 tierces of $2\frac{1}{2}$ cwt. each, 75 leagues?

182. I wish to obtain at a bank $840.25; for what sum must I give my note payable in 5 months and 21 days?

183. A portion of a cargo of tea being damaged, was sold at $1.20 per pound, and at a loss of $16\frac{2}{3}\%$. At what rate must the remainder be sold to gain 25%?

184. A merchant bought 2 pieces of goods containing 60 yds. each, at $.75 a yard; he also paid $\frac{3}{4}$ of a cent per yard for freight. For what must he sell the goods per yard to make a profit of 25%, if the pieces fall short in measuring $2\frac{1}{2}\%$?

185. A person paid a tax of 5 per cent. on his income. What must his income have been if, after he had paid the tax, there was $5671.50 remaining?

186. If 11 lb. of cheese are equivalent in value to 7 lb. of meat, and 21 lb. of meat to 4 bu. of corn, and 20 bu. of corn to 22 bu. of rye, and 9 bu. of rye to 2 cords of wood, how many pounds of cheese must be given in exchange for 12 cords of wood?

187. What is the compound interest of $512.50 for 3 yr. 6 mo. 21 da., at 8%?

188. A store and its goods are worth $12740. What sum must be insured at 2% to cover both property and premium?

189. The value of flour and meal produced in the United States, in 1860, was $225000000; of cotton during the same year, $115500000. The value of cotton was what % of the value of the flour?

190. How many square feet in the four walls of a room 36 ft. long, 30 ft. wide, and $10\frac{1}{2}$ high?

191. A merchant sold flour at $6.50 per barrel, and gained

10%; he afterwards sold the same kind of flour at $8.25 per barrel. What per cent. did he gain at the latter price?

192. How shall a merchant tailor mark coats that cost $8.00 so as to fall 20% from the marked price, and yet make 25% on the coats?

193. What must $2\frac{1}{4}$ lb. of tea be sold for, if $22\frac{1}{2}$ lb. cost $14, and the retail profit is 20%?

194. The area of Rhode Island is 519698 acres, the cash value of which in 1860 was $19488675; the area of Delaware is 1004295 acres, of which the cash value was $31426357; at the same time there were 2290 slaves in Delaware. Now, if by freeing the slaves in the latter State the cash value of the farms would become the same per acre as in Rhode Island, how much would the State gain, reckoning the slaves at an average value of $250?

195. $\frac{3}{7}$ of 28 is $\frac{4}{11}$ of how many % of 55?

196. A man owed $420, due Oct. 1, 1863; he payed part of it, Aug. 15, 1863, and the rest Jan. 1, 1864. What were the payments?

197. If 372 men in $7\frac{1}{3}$ days, of 11 hours each, dig a canal of 7 degrees of hardness, 310 yards long, $5\frac{1}{2}$ yards wide, and $2\frac{1}{3}$ yards deep, in how many days, of 8 hours each, will 27 men dig a canal of 4 degrees of hardness, 270 yards long, 7 yards wide and $3\frac{1}{2}$ yards deep?

198. The net proceeds of the sale of 1000 tons of hay, at $20 per ton, after deducting $875 for charges, were $18325. What rate of commission was charged?

199. What principal will gain $213, at $7\frac{1}{2}$ per cent., in 2 yr. 4 mo. 12 da.?

200. The area drained by the ponds and lakes which supply the city of Brooklyn with water is $62\frac{1}{2}$ square miles, upon which the average annual fall of rain is $38\frac{1}{2}$ inches; the average daily supply to the city is 20000000 gallons. How much water falls for every gallon conveyed to the city?

201. What is the least common multiple of $6\frac{1}{2}$, $9\frac{3}{4}$, $10\frac{5}{6}$ and $7\frac{5}{16}$?

202. An army which has been three times decimated in battle now numbers only 14580 men. What was the original number in the army?

203. Sold 2978 bushels of wheat at $2.00 per bushel; invested the proceeds in sugar, as per order, reserving my commission of 5% for selling and $1\frac{1}{2}$% for buying, and the expense of shipping, $53.37. How much did I invest in sugar?

204. A and B had the same amount of money; A spent 76% of his money for land, and B lost by gambling a sum equal to $28\frac{1}{2}$% of what both had at first, when both together had $50.25. What sum had each at first, and how much had each left?

205. There are 20 colleges in New York, having an aggregate of 118060 volumes in all their libraries. What is the average value of these libraries, at $\$\frac{7}{8}$ per volume?

206. What per cent. of a number is 40% of $\frac{3}{5}$ of it?

207. How far does a man walk in planting a field of corn 207 ft. square, the rows being 3 feet apart and 3 feet from the fence?

208. A merchant owes $440, payable in 20 months, and $896, payable in 24 months; the first he pays in 5 months, and the second in one month after that. How much should he pay, allowing 8 per cent. per annum?

209. Willis, Markham, & Co. of New Orleans import from Liverpool 8 pieces of Turkey Carpeting, 35 yd. each, at 6s. per yd., duty $33\frac{1}{3}$%; 300 yd. woolen goods at 4s. per yd., duty 18%, and 25 pieces of silk, 18 yds. each, at 2s. 6d. per yard, duty 24%. Required the whole amount of duty, allowing the value of the pound sterling to be $4.84?

210. Paid $63.90 duties at the rate of 9 per cent. on 50 casks of raisins, tare 15 lb. per cask; allowing the gross weight of each cask to have been 115 lb., what was the invoice value per pound?

211. The total value of real estate and personal property in California in 1850 was $22161872; in 1860, $207874613. What was the total increase, and increase per cent.?

212. Divide $435 among A, B, and C, so that $\frac{1}{2}$ of A's money shall be equal to $\frac{2}{3}$ of B's, or $\frac{3}{4}$ of C's.

213. James Haynes buys a bill of merchandise in New York, at cash price, to the amount of $2973.80, and gives in payment his note at 3 months at 7$\frac{1}{2}$%. What must be the face of the note?

214. If 6 men do as much work as 14 women, and 10 women as much as 27 boys, and 14 boys as much as 25 girls, and 18 girls bind 250 sheaves in an hour, how many sheaves can 24 men bind in the same time?

215. If A owes $500 due in 6 months, $400 due in 4 months, and $300 due in 7 months, and pays $\frac{2}{3}$ of the whole in 3 months, when ought the remainder to be paid?

216. The population of Charleston, S. C., in 1850 was 42982, and in 1860, 40575; the population of New Haven, Conn., at the same dates was 20345, and 39266, respectively. What was the increase per cent. in New Haven, and what the loss per cent. in Charleston, during this time?

217. The interest of $4000 for 1 month and 6 days is $36, what is the rate per cent.

218. William Hatch, born Feb. 29, 1844, received from his father a present of $50 on each birthday till he became of age. What was the amount received?

219. If $\frac{3}{7}$ of a hogshead of oil is worth $48, what is the value of $\frac{5}{8}$ of the remainder?

220. Bought a quantity of wine for 675.32$\frac{1}{2}$, at $.85 per gallon; but a part having leaked out, the remainder was sold at 40% advance, and the original cost was realized. What quantity leaked out?

221. In 1860 there were 7766 manufacturing establishments in Massachusetts, with an aggregate capital of $133-

000000; these establishments employed 210000 hands, and consumed during the year $140000000 worth of raw material, which, when manufactured, increased in value to $266000000. How much did each dollar of capital produce? each dollar of raw material? and what was the average value produced by each hand?

222. *Bought of* M. J. & Co. as follows:

April 1, 1863, on 60 days' credit, a bill of $250
" 20, " " 90 " " " 600
July 5, " " 30 " " " 400

Also, sold to M. J. & Co.:

April 5, 1863, on 2 months' credit, a bill of $450
May 20, " " 3 " " " 600

From what date ought the balance of the debt to draw interest?

223. Gave my note at a bank for $1255.38, payable in 4 mo. 12 da.; if discounted at 6%, what sum did I receive?

224. A merchant sold goods for $600, and gained 25%; he invested the proceeds in flour, on which he lost 20%; did he gain or lose by the transaction? and how much?

225. Four per cent. of 325 bushels is what per cent. of $3\frac{1}{2}$ per cent. of 200 bushels?

226. A owes B $600 due in 4 months, and $840 due in 6 months; B owes A $1600 due in 7 months. If A should make present payment of his debts, when ought B in justice to pay A?

227. The manufacturing establishments in all the Southern States in 1860 numbered 1806, in which $100655000 capital was invested; these establishments employed 110110 hands, and consumed $82609000 worth of raw material; the products for the year were valued at $145360260. How much did each dollar of capital produce? each dollar of raw material? and what was the average value produced by each hand?

228. Bought a number of bales of velvet, each containing 126 yards, at the rate of $10 for 7 yards, and immediately sold the whole at the rate of $13 for 9 yards, thereby making $26. Required the number of bales?

229. If eggs are bought at the rate of 10 for $.25, and sold at the rate of 6 for $.16, how many dozen must be sold to gain $20?

230. In what time at 12% will $240 amount to $720?

231. I have $58650 to invest, and can buy New York Central 6's at 102%, or New York Central 7's at 115%. How much more profitable will the latter investment be than the former per year?

232. In 1862 there were 38 instructors in Harvard University, and the ratio of teachers to students was 1 to 22; of teachers to alumni, 1 to 189; of alumni to the volumes in the library, 9 to 190. Required the number of students, alumni, and volumes in library.

233. One thousand dollars was to be divided among A, B and C, in the ratio of $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$, but C relinquished his share; how much did A and B each receive?

234. A wholesale merchant sent a quantity of goods into the country to be sold at auction, on a commission of $4\frac{1}{2}\%$. What amount of goods must be sold, that his agent may buy produce with the avails to the amount of $1910, after retaining a commission of 2%?

235. How many yards of cloth, $1\frac{1}{3}$ yards wide, are required for a garment containing 23 square yards, if the cloth in being sponged shrinks 10% in length and 8% in width?

236. The products of Rhode Island in 1860, were valued at $52440000, or $300 per capita; of Delaware, $16159000, or $143 per head. What was the difference in population in the two States?

237. If $\frac{3}{4}$ of A's money equals $\frac{5}{7}$ of B's, what part of B's money equals $\frac{7}{9}$ of A's?

238. What are the proceeds of a note of $5600, payable in 6 months, discounted at $7\frac{1}{4}\%$?

239. If the annual rent of 23 A. 1 R. 27 P. of land be $187.35, how much will be the rent of 71 A. 20 P.?

240. The Julian Calendar assumed the year, 365 da. 6 h., instead of 365 da. 5 h. 48 min. 49.7 sec., its true length. In how many years was 1 day gained?

241. I got a note of $800, payable in 4 months, discounted at a bank at 6%, and put the money received, upon interest at the rate of $7\frac{1}{5}\%$. When the note became due I renewed it for 5 months by paying the discount, and when this note became due I renewed it as before for such a time that it became due in one year from the date of the original note, at which time I collected the sum due, and paid the bank note. What did I gain by the transaction?

242. If the interest of £179 12s. 11d. for 1 yr. 7 mos., is £14 4s. $5\frac{1}{4}$d., what is the rate per cent.?

243. Three persons found $120, which they agreed to share in the proportions of 5, 7 and 8. How much did each receive?

244. A commission merchant sold goods to the amount of $59376.50, for which he charged a commission of $\frac{5}{6}$ of one per cent. What was his commission?

245. The public debt of the United States, March 1, 1864, was as follows: Immediate Liabilities, $48725728.68; Old Public Debt, $67447412.55; 7-30 Bonds, $138772300; U. S. Notes, $449119548.10; Fractional Currency, $18745720.15; Twenty Years Loans and Bonds, $51227000; Treasury Notes, $101362031.22; Oregon War Debt, $1016000; Certificates of Indebtedness, $136121650; and 5-20 Bonds $510165446.92; the amount in the Treasury being $9411795.27, what was the debt?

246. A has $12000 loaned in Connnecticut, and $10600 loaned in New York. On which sum is the legal interest the greater, and how much per year?

247. A man took out a life policy for $3000, at the rate of $21.50 per $1000. What sum must he deposit in a savings bank, the compound interest of which at 5%, payable semi-annually, shall discharge his annual premium?

248. A merchant bought 500 barrels of flour at $6.50 a barrel, and sold it immediately at $7.25 a barrel, receiving in payment a note due three months hence, which he had discounted at a bank at 6%. What did he gain on the flour?

249. If a staff 2 ft. 9 in. long, cast a shadow 1 ft. $1\frac{1}{2}$ in., what is the hight of a pole which casts a shadow 63 ft.?

250. The gross earnings of the Michigan Southern Railroad, for the year ending March 1, 1864, were $3308011; the expenditures, $1669006. It paid interest to the amount of $690000, and a 10% dividend upon its preferred stock of $2893600. How much remained for a sinking fund?

251. If $\frac{3}{7}$ of a ton of coal be sold for what $\frac{2}{3}$ of it cost, what is the gain per cent.?

252. A's money is to B's as 3 to 4; $\frac{1}{2}$ of A's money placed at interest for 3 yr. 8 mo. 15 da., at 6 per cent, will amount to $418.095. How much money has each?

253. Sold wheat at 1.64\frac{3}{7}$ per bushel, and gained 12%. For what should it have been sold to have lost 15%?

254. What is the cost of a 90 days' bill on Philadelphia, to the amount of $1000, at $\frac{5}{8}$% premium, and interest off at 6%?

255. The interest of a certain sum for 1 mo. 19 da. at $13\frac{1}{2}$ per cent. is $.866. What is the principal?

256. The Illinois Central Railroad sold in one month 26780 acres of land at an average price of $10.95 per acre, and an average credit of 3 yr. 6 mo. What was the cash value of the sales, money being worth 6%?

257. A and B are partners; A's stock is to B's as 5 to 8; after 4 months A withdraws $\frac{2}{5}$ of his, and B $\frac{3}{4}$ of his. How shall the year's gain, $920, be divided?

258. If a garden of a certain length and 4 rd. 8 ft. 3 in. wide contain $\frac{7}{8}$ of an acre, how much would it contain if it were 9 rods wide?

259. When is the balance of the following account due, per average?

CHARLES DERBY.

Dr.					Cr.			
1859.				1859.				
Jan. 21	To Mdse.	32	00	Jan. 1	By Cash,	84	00
Mar. 5	" "	145	00	Feb. 4	" "	40	00
" 22	" "	194	00	Mar 30	" "	12	00

260. A owed $2520, due July 18, 1863; he paid $720 before, and the rest after it became due. When were the payments made if they were 49 days apart?

261. If $500 dollars is deposited for a child at birth, at 7% compound interest, payable semi-annually, what will it amount to when the child is 21 years of age?

262. Bought fish at $6.37\frac{1}{2}$ per quintal, and sold the same at $7.39\frac{1}{2}$. What was the gain per cent.?

263. The amount of specie in Sub-Treasury, New York, Feb. 1, 1864, was $39963000; during the month two steamers from California brought in $1250069; $88150 was imported from foreign ports, and $4825748 was gathered in from hoarded specie; the amount of gold exported for the same time was $3015367. How much remained in the Sub-Treasury, March 1, 1864?

264. J. S. Sanborn purchased 80 acres of land of the Illinois Central Railroad Company, on the following terms: Cash payment, $48; payment at the end of the first, second and third years, $48 each; payment at the end of the fourth year, $236; at the end of the fifth year, $224; at the end of the sixth year, $212; and at the end of the seventh year, $200. What was the cash price per acre?

265. Bought a watch for $60, and sold it for $100. What per cent of the cost was the gain?

266. If 3 pounds of tobacco cost $.84, and 5 pounds to-

bacco are worth $10\frac{1}{2}$ pounds of sugar, what will 90 pounds of sugar cost?

267. What must be paid in Boston for a draft on New York at 30 days, for $4500, exchange being at $\frac{1}{2}\%$ premium?

268. The cost of producing fine salt at the Onondaga Salt Works, is $11\frac{1}{2}$ cents per bushel, and coarse salt 5 cents; in 1862, 1884697 bushels of coarse, and 5315694 bushels of fine salt were produced, and sold at an average price of 19 cents per bushel. What was the per cent. of profit?

269. At what rate must a note, payable in one year, without grace, be discounted to produce 6% interest?

270. The factors of a certain number are $16\frac{1}{8}$, $30\frac{3}{7}$, and $19\frac{4}{5}$; what is $\frac{3}{5}$ of $\frac{5}{7}$ of $\frac{7}{9}$ of the number?

271. A bank has $20000 loaned on call at 5%; how much is the daily interest, reckoning 365 days in a year?

272. Bought a horse for $110; for how much must he be sold to gain $37\frac{1}{2}\%$?

273. The total value of real estate and personal property in the United States in 1850 was $7135780228; in 1862, $16159616068. What was the actual increase in property? and the increase per cent. in 12 years?

274. A man, engaged in business with a capital of $25000 is making $10\frac{1}{2}$ per cent. per annum on his capital; but on account of failing health, he is obliged to quit business, and loan his money at 7 per cent. How much does he lose in 2 yr. 7 mo. 20 da.?

275. If one cubic foot of anthracite coal weighs 56 lb., what must be the length of a bin 8 ft. wide and 6 ft. deep, to hold 14 long tons of coal?

276. A and B invested equal sums in trade; A lost 20% of his money, and B gained $50.05; A's money was then 75% of B's; what sum did each invest?

277. In what time will $4500 gain $181.25 at 5 per cent.?

278. A merchant bought goods in Chicago to the amount of $850, and gave his note, July 1, 1860, on interest after 2 months; 4 months after the note was given, he paid $400, and 6 months after the first payment, he paid $360. What was there due Sept. 19, 1862?

279. Iowa produced in one year 18350000 bushels of wheat, valued at $7200000; 60000000 bushels of corn, worth $.12 per bushel; 10000000 bushels of oats, valued at $1500000; 3000000 bushels of potatoes, worth $.25 per bushel. Required the whole number of bushels and their total value.

280. If the price of a farm of 160 A. 2 R. 20 P. be $7850.25, what will be the price of another farm, containing 120 A. 30 P., if 3 acres of the latter be worth 4 of the former?

281. A man bought 840 bushels of oats in New York at $.35 per bushel, and sold them in Connecticut for $349.44. The transactions being made by weight, how much advance upon the cost was the selling price per bushel?

282. A gentleman, traveling east from Lawrence, Kansas, in 95° 10′ W. Long. found, on arriving at Boston, that his watch, an excellent time-keeper, was 1 h. 36 min. 28 sec. slower than the time at Boston. What is the longitude of Boston?

283. The revenue of the English Government for the year 1861 was $332142625, and the expenditures for the same year exceeded the revenue by $3\frac{1}{5}\%$. How much was the national debt increased during the year?

284. A and B can do a work in $10\frac{10}{11}$ days; B and C in $13\frac{1}{3}$ days; and A and C in 12 days. In what time would each do the work alone? and how long would it take them, working all together, to do it?

285. The net proceeds of a shipment of hay, sold at $14 per ton, after deducting a commission of 3%, and $500 for other charges, were $6290. How many tons of hay were shipped?

286. In how many years is a day gained by the Gregorian Calendar, which allows for the fraction of a day by adding 97 days in 400 years?

287. How many shares of $50 each must be bought at 25% discount, brokerage $1\frac{3}{8}$%, and sold at 16% discount, brokerage $1\frac{1}{4}$%, to gain $134?

288. Bonds at 25% premium, brokerage $\frac{4}{5}$% cost $527.93 more than the face; what is the face?

289. In the United Kingdom of Great Britain 593284200 letters were delivered in the year 1861, of which 486679200 belonged to England and Wales, or 24 to each inhabitant; 50049000 belonged to Ireland, or 9 to each inhabitant; and 56556000 to Scotland, or 18 to each inhabitant. What was the population of the United Kingdom?

290. A factor receives $30056, and is directed to purchase cotton at $289 per bale; he is to receive 4% commission. How many bales does he buy?

291. B. F. Sears bought a house and lot, Apr. 1, 1863, for which he agreed to pay $2500 on the 16th of the following Nov., and $1800, Apr. 1, 1864. If he could have got a discount of 9% for present payment, how much would he have gained by borrowing the sum at 7%, and how much would he have borrowed?

292. Three men engaged in the lumber trade; A furnished $4000, and B $6000; they gained $1680, of which C's share was $840. Required C's stock and A's and B's gain.

293. If a cistern $19\frac{1}{2}$ ft. long, $10\frac{1}{2}$ ft. wide, and 12 ft. deep, hold 546 barrels, how many barrels will a cistern contain that is 18 ft. long, 9 ft. wide and 15 ft. deep?

294. A speculator gained 25% on $\frac{4}{5}$ of his investment, and lost 5% on the remainder; his net profits were $1140. Had he gained 25% on $\frac{3}{5}$, and lost 5% on the remainder, what would have been his net profits?

295. A lady bought 23 yards of sheeting and $57\frac{1}{2}$ yards of

calico; she paid $2\frac{1}{2}$ cents more per yard for the sheeting than for the calico, and the entire cost of the calico was twice as much as the sheeting. What was the price of each per yard?

296. $\frac{3}{8}$ is how many per cent. of $\frac{1}{4}$?

297. The national debt of England, Mar. 1, 1862, was £805000000. If this debt were paid in silver, of which there are 3 oz. 7 pwt. 12 gr. to a £, how long a train of cars, allowing each car to occupy a space 30 ft. in length, and to carry 10 short tons, would be required to carry it?

298. One pound of gold is equal in value to 14.29 pounds of silver. If the above debt were paid in gold, how long a train would be required to carry it?

299. A merchant bought a quantity of butter at $24 per cwt., cash. For how much per pound must he sell it to gain 15%, and allow 8% discount for cash?

300. If a stone 20 inches long, 15 inches broad, and 8 inches thick, weigh 217 pounds, what will be the length, breadth and thickness of a similar stone that weighs 13888 pounds?

301. Twenty-five workmen have agreed to labor 12 hours a day for 24 days, to pay an advance made to them of $900, but having lost each an hour per day, five of them engage to fulfill the agreement by working 12 days. How many hours per day must these labor?

302. Says B to C: "$\frac{1}{3}$ of my money is equal to $\frac{2}{5}$ of yours, and the difference between your money and mine is $10." What sum had each?

303. What is the amount of $872.50 for 3 yr. 6 mo. 18 da., at $7\frac{1}{2}\%$?

304. Four men hire a pasture of 125 A. 48 P. at $1.75 per acre; A puts in 125, B 150, C 200 and D 225 sheep. How much rent ought each to pay?

305. Sept. 15, 1862, 11460 men, forming 12 regiments of infantry and 6 batteries, surrendered at Harper's Ferry; the

average number of men attached to each battery was $\frac{11}{90}$ of the average number in each regiment; there were 123 prisoners unclassified. Required the number of infantry and artillery and the total surrender.

306. Gave \$533.33$\frac{1}{3}$ of notes at 4% discount for \$500 gold. What rate of premium was the gold?

307. A and B made a joint stock of \$1666, and gained \$204, of which B had \$60 more than A. How much did each contribute to the stock?

308. A grocer bought 11 bushels of chestnuts at \$3.00 a bushel, and retailed them at 3 cents a half pint. What % profit was his gain?

309. July 1, 1859, four balloonists left St. Louis at 4 h. 30 min. P. M., and landed in Jefferson Co., N. Y., 1150 miles from St. Louis, at 20 minutes past noon of July 2nd. What was the average velocity per minute?

310. If the use of \$6919.32 for 7 yr. 6 mo. is worth \$3113.694, what sum is that whose use for 10 yr. 10 mo. 20 d. is worth \$3266.66$\frac{2}{3}$?

311. Forty per cent. of brandy is alcohol. How much alcohol does a man drink in 52 years, if he take $\frac{3}{4}$ of a gill of brandy 3 times a day?

312. A house that rents for \$848.25 cost \$8700. What % does it pay on the investment?

313. When shall a note be made payable to balance the following account?

JAMES TYLER.

Dr.						Cr.			
1860.					1860.				
June	12	To Mdse. on 3 mo.	530	84	Sept.	14	By Cash,	436	00
"	20	" " " "	236	48	"	25	" "	320	00
"	30	" " " "	739	56	Oct.	3	" "	560	00
July	5	" " " "	273	44	"	17	" "	370	00
"	16	" " " "	194	78	Nov.	16	" "	840	00
"	29	" " " "	536	42	"	24	" "	560	00

314. M, N, and S, are partners. On closing business, they have the following resources and liabilities; cash on

hand, $5430; shop and fixtures valued at $2560; bills receivable, $956; Barns & Co. owe them $865; ten shares in Canal R. R. stock, $1000. They owe on notes unredeemed, $1865. M invested $2400; N, $3000, and S, $2700. What is the net gain?

315. What per cent. of an acre is 2 R. 20 P.?

316. In the battle of Perryville, Ky., Oct. 8, 1862, the Rebel loss in killed and prisoners together was 50% of the loss in wounded, and the prisoners were $\frac{2}{1\frac{1}{3}}$ of the killed. What per cent. of the loss were prisoners? The prisoners numbered 200. What was the whole Rebel loss?

317. The Federal loss in the same battle was 350 more than $\frac{8}{9}$ the rebel loss; the prisoners were 16% of the entire loss; and the killed 50 more than 20% of the entire Federal loss; the remainder being wounded, what was their number?

318. At $11.75 per cwt., how much sugar can be bought for $90.25?

319. If it require 2250 bricks, 8 in. long by 4 in. wide, to pave a court 25 ft. by 20 ft., how many tiles, 10 in. long by 5 in. wide, will be required to pave a walk 300 ft. by 8 ft.?

320. My salary is $800 a year. If I pay 25% for board, 10% of the remainder for rent, 20% of the residue for clothes, $32 for books, and loan $\frac{1}{2}$ the remainder, what % of my salary is unexpended?

321. Invested $3432 in Government bonds at 106%, paying $1\frac{1}{4}$% brokerage, and afterward sold the stock at 12% premium, brokerage $1\frac{1}{2}$%. What was my gain?

322. A merchant bought a quantity of flour at $8.00 per barrel on a credit of 3 months, and kept it 6 months; then sold it on 3 months' credit, and gained 5%. Money being worth 6%, for how much did he sell the flour per barrel?

323. 1 qt. $1\frac{3}{4}$ pt. is what per cent. of 2 gal. $3\frac{1}{4}$ qt.?

324. I own $12500 in a Mutual Insurance Company. How

many shares shall I possess after a dividend of 8% has been declared, payable in stock?

325. Twelve million gallons of petroleum were sent to Europe from the United States in 1862 for $3600000; the cost of production being $.20 a gallon, what was the rate of profit?

326. What is the value of 40 casks of sugar, each weighing 12 cwt. 3 qr. 5 lb., draft 5%, tare 10%, at $8.75 per cwt. net?

327. At what rate of discount must the Illinois State 6% bonds be purchased that the person investing may receive $6\frac{2}{3}$% upon his money?

328. Jones, Brown, Hall & Smith are partners; Jones takes $\frac{1}{3}$ of the gains or losses; Brown $\frac{1}{4}$, Hall $\frac{1}{5}$, and Smith the remainder. At the close of the year the resources of the firm are: Cash $6875, Merchandise $8965, Bonds and Mortgages $7650, Bank Stock $3000; Jones has drawn from the business $600, Brown $350, and Hall $190; the liabilities are: Notes outstanding $3640; Balance in favor of Reed & Co., $750; Balance in favor of Suffolk, $2645; Jones invested $6365, Brown $5270, Hall $4180, and Smith $2320. What is each partner's *interest* in the business at the close of the year?

329. What will be the duty at $4\frac{1}{2}$% on a case of jewelry and watches amounting to $2780?

330. A merchant bought 16 barrels of salt at $\$1\frac{1}{4}$ per barrel, and put it into sacks of 10 and 25 lb., each an equal number, selling them for $.08 and $.20 each. What % was his profit?

331. In the series of battles from Aug. 27 to Sept. 1, 1862, fought before Washington, the killed of the Union army were 50% of the prisoners, and the prisoners $33\frac{1}{3}$% of the wounded. What per cent. of the wounded, and what per cent. of the whole loss were the killed?

332. The total Union loss in the above-mentioned battles being 9000; how many were killed, wounded, and taken prisoners, respectively?

333. Where $\$37.70\frac{5}{16}$ will purchase 7 yd. $3\frac{3}{4}$ qr. of cloth, what is the price per yard?

334. If a horse trot 2 miles in 5 min. 55 sec., how far would he trot in an hour at the same rate?

335. A ship has a leak that will fill and sink her in 24 hours; all her pumps are capable of emptying her in 25 hours. If the pumps are worked after the vessel has been leaking 3 hours, how long before the ship will sink?

336. How much wine can be bought for $1.82, when a hogshead is worth $70.56?

337. Three shafts together make 465 revolutions in a minute; the first makes a certain number, the second 3 times as many, and 10 more, and the third 15 less than twice as many as the second. How many revolutions does each make?

338. A farmer sold at one time 35 bushels of corn and 60 bushels of wheat for $157.50; at another time 56 bushels of corn and 42 bushels of wheat for the same sum of money. What was the price of each per bushel?

339. A hired a house for one year for $500; at the end of three months he takes in H; and after 3 months more, M; and at the end of 9 months, K. At the end of the year how much rent must each pay?

340. The longitude of Paris is 2° 20′ 22″ E., and of Constantinople, 8° 59′ E. When it is 1 A. M. at the latter place, what time is it at the former?

341. How much gold at $68\frac{5}{8}\%$ premium can be bought for $5396 currency?

342. If 12 pipes, each delivering 12 gal. a minute, fill a cistern in 3 h. 24 min., how many pipes, each delivering 16

gal. a minute, will fill a cistern 6 times as large in 6 hours 48 minutes?

343. The earnings of the Hudson River R. R. for Feb. 1864 were $472240, which was an increase of $11\frac{1}{9}\%$ over the earnings for the same month in 1863. How much was the increase?

344. A town, 6 miles square, is divided into 325 equal farms. What must A. G. Dickey pay for one of these farms at $21.25 per acre?

345. If $1500 in 7 mo. 20 da. produce $95.833, what principal must be loaned to gain $58 in 10 mo. 26 da.?

346. M and N enter into a partnership for 2 years; M puts in $8000, and N $2500; N is to do the business, and his services are regarded as worth the use of $5500; after 6 months M increases his stock to $12000; at the end of 2 years the partnership is closed, and there is a net gain of $4750. Required each partner's share of the gain.

347. A merchant bought 500 barrels of flour at $5.00 a barrel, payable in 3 months; after keeping it 30 days, he sold it for $5.50 a barrel, receiving a note payable in 3 months; the purchase money becoming due, he got the note discounted at a bank to meet it. How much did he gain by the transaction?

348. What was the cost of 12 Ohio State Bonds of $500 each at 12% premium, $\frac{3}{4}\%$ brokerage?

349. At the battle of Pea Ridge, March 7, 1862, $\frac{4}{13}$ of the whole loss of the Rebel army were prisoners; the killed were 500 less than the prisoners, and the wounded were 300 more than twice the killed. What was the total Rebel loss?

350. If a man, by traveling 9 hours each day, can go 234 miles in 15 days how far can he travel in 30 days of 8 hours each?

351. How many shares of mining stock at 80% must be

sold in order that the proceeds invested in California 8's at 108% may yield a profit of $960 ?

352. The duty on 1000 drums of figs, each containing 14 lb., invoiced at $6\frac{1}{4}$ cents per pound, was $74.37\frac{1}{2}$. What was the rate of duty ?

353. How much was the New England currency depreciated at the adoption of United States money, when £1 was worth $\$4\frac{4}{9}$?

354. How much had New York currency depreciated at the same time ?

355. How much had New York currency depreciated below New England ?

356. Sold goods to a certain amount on a commission of 5%, and having remitted the net proceeds to the owner, received for prompt payment $\frac{1}{3}\%$ which amounted to $16.15. What was the amount of commission ?

357. What is the difference in cost between a draft on Boston of $17302.80, at $1\frac{1}{4}\%$ premium, and one on Chicago, for the same amount, at $\frac{1}{2}\%$ discount ?

358. A man, engaging in trade with $9600, found at the end of 3 years that he had gained $138.75 more than $\frac{1}{4}$ of his capital. What was his average annual gain ?

359. In 1837, the silver dollar contained $412\frac{1}{2}$ grains of standard silver, but in 1853 the weight was changed to 384 grains. The fineness remaining the same, one dollar of the old coinage was worth how much of the new ?

360. A man has a piece of land $95\frac{5}{6}$ rods long and $58\frac{1}{3}$ rods wide, which he wishes to lay out in the largest possible square lots of equal size. How many lots will there be ?

361. A owes $1500, of which $400 is to be paid in 4 months, $500 in 5 months, and $600 in 6 months. If he pays the whole at once, at what time must he make the payment ?

362. What is the duty at 25% on 27 tons 8 cwt. 3 qr. 20 lb. of iron, invoiced at $48 per ton ?

363. S. F. Root has cloth at $3.50 per yard, and S. Smith has hay at $14.70 per ton. If in trading Root puts his cloth at $4.50, what should Smith charge for his hay?

364. The Erie Railroad earned from all sources, during the year 1863, $10469480, and the expenses of operating the road were 61% of the earnings. It paid for interest, rent of other roads, taxes and sinking fund, $1986315. July 1, 1863, it paid a 4½% dividend upon its paid-in capital of $14000000, and a 5% dividend upon the same, Jan. 1, 1864. There was a surplus of $26621.28, Jan. 1, 1863. What was the balance to the credit of the road, Jan. 1, 1864?

365. The cargo of a ship is worth $96000, and $\frac{4}{7}$ of $\frac{1}{2}$ of $\frac{7}{12}$ of the cargo is worth $\frac{3}{4}$ of $\frac{8}{9}$ of $\frac{6}{7}$ of the value of the ship. What is the value of the ship?

366. A Boston merchant, having received an importation of wine from Lisbon, invoiced at 3008 milrees, 470 reis, allows his correspondent in Lisbon to draw on him for the necessary sum, exchange on the United States being in Lisbon 940 reis=$1. How much would the merchant have saved by remitting a draft on Lisbon purchased at $1.055 per milree?

367. How many eagles, each containing 9 pwt. 16.2 gr. of pure gold can I get for 2278.269 oz. pure gold at the mint, allowing 1½% for coining expenses?

368. A owes B $500, payable in 4 months; at the close of 2 months he wishes to make such a payment as will extend the time of the balance to one year. What must be the payment?

369. Massachusetts paid $2750 internal revenue tax, in 1863, on gold plate, at the rate of $.50 per ounce Troy. What was the value of the gold plate, allowing it to average 18 carats fine, an ounce of pure gold being worth $20.672?

370. A, M and S form a partnership, with capitals of $5000, $10000 and $15000, respectively; A draws out $500

at the end of each year, M, $800, and S, $900; at the end of 5 years their joint capital is $28600. How much of it does each own?

371. An agent received $65 for collecting a debt of $1300. What was the rate of his commission?

372. If 6 A. 3 R. 3 rd. of land are worth £65 4s. 9d., what is the value of 47 A. 1 R. 21 rd., U. States money, sterling money being $10\frac{1}{4}\%$ above the par value?

373. If the net earnings of a bank with $250000 capital are enough to pay an annual dividend of 10%, and reserve a surplus of $2500, also to pay $8\frac{1}{3}\%$ of its net earnings to the State instead of taxes, what is the rate of taxation on its capital?

374. The Lackawanna and Bloomsburg Railroad paid $254384 expenses for one year, and $141985 interest, leaving a surplus equal to $8\frac{6}{10}\%$ of the capital stock of $1342500. What were the gross earnings for the year?

375. A's gain was $840, B's $1125, C's $1820; A's capital was in trade 7 months, B's 9 months, and C's 1 yr. 2 months. How much of the capital, $13875, did each own?

376. A merchant marked a piece of goods 25% above the cost, but its season passing, he determined to sell it 20% below the marked price, supposing he should make 5%. Did he make or lose?

377. Exchanged 156 bu. 3 pk. 7 qt. 1 pt. of wheat, at $\$.93\frac{3}{4}$ per bushel, for $87\frac{1}{2}$ yd. of silk at $\$87\frac{1}{2}$ per yard, and the balance in cash. How much money was received?

378. James Fitch owes three notes to George Holmes; one of $200, due in 8 months; another of $200, due in 16 months; and the third of $400, due in 2 years. Should the three notes be converted into two notes of equal amount, one to run one-half as long as the other, when ought they to be made payable?

379. The cost of constructing all the canals in New York,

up to 1862, was $62292500; the amount of tolls collected from these, in 1861, was $3908785. How much less were the tolls than the legal interest upon the sum invested in building the canals?

380. $\frac{1}{5}$ of a quarter is what per cent. of $\frac{2}{5}$ of a cwt.?

381. The sales of a clothing house amount to $100000 a year; $\frac{1}{4}$ of the sales are made at a profit of 25%, $\frac{2}{5}$ at a profit of 20%, and the remainder at a loss of 4%. Required the cost of the goods.

382. A company of 50 men drank wine at 2s. 6d. per bottle, to the amount of £10. How many men at the same rate will £18 worth of wine supply, when wine is worth 2s. 3d. per bottle?

383. What must be paid in Philadelphia for a draft on St. Louis, drawn at 90 days, for $5000, at a premium of $1\frac{3}{4}$%?

384. A merchant in Cincinnati wishes to remit $14331.60 to New York. Exchange on New York is $\frac{3}{4}$% premium, but on St. Louis $\frac{1}{2}$% premium, from St. Louis to New Orleans $\frac{1}{2}$% discount, and from New Orleans to New York 1% discount. What will be the value in New York by each method, and how much better is the circular?

385. The gross earnings of the Erie Railroad for 1861 were $5590916, and the expenses were $4067391.39; the gross earnings of the same road for 1863 were $10469480, and the expenses $6386382.80. How much greater % were the net earnings of the gross earnings in 1863 than in 1861?

386. What is 20% of 30% of 50% of $66.66\frac{2}{3}$?

387. A man can sell his farm for $4000 cash, or for $5000, payable in 2 years. If he accept the last offer, and receive instead its present worth, at 10% discount, how much more would he receive than by the former?

388. If he accept the first offer, and loan the $4000 at 10% interest, how much less would he receive at the end of 2 years than by the second offer?

389. What is the interest of $193.68 from Nov. 27, 1859, to July 3, 1862, at $7\frac{1}{2}\%$?

390. When $2.57 are paid for 8 gal. 1 pt. of milk, what is the price per quart?

391. The manufacturers of Massachusetts paid in one year $3251325 internal revenue, which was $23\frac{1}{10}$ per cent. of the sum paid by all the manufacturers in the United States. Required the entire revenue from this source.

392. If I gain $46.27 on $578.37\frac{1}{2}$ worth of sugar, how many dollars' worth must I sell to gain $134.64?

393. A man obtained an insurance for life at the age of 37, and died when 51 years old. The policy required annual payments during life, at $2.8674 per $100, and secured to the heirs $1709.69 more than the amount of all the premiums paid. What was the face of the policy?

394. $3250. HARTFORD, March 6, 1859.

On demand we promise to pay Brown & Gross, or order, three thousand two hundred and fifty dollars, for value received.

CHURCH & BROTHERS.

Indorsed as follows: July 1, 1859, $406.87\frac{1}{2}$; Nov. 7, 1859, $50; Jan 1, 1860, $285; Aug. 10, 1860, $400.62; July 1, 1861, $125; Nov. 4, 1862, $544.60; Apr. 22, 1863, $473.76; July 1, 1863, $600. What was due Apr. 1, 1864?

395. A grocer bought 760 lb. of Java coffee, at 26 cents per pound. Allowing 16% for shrinkage in roasting and grinding, at what price per pound must he sell it to gain 25%?

396. If it require 50,000 bricks to build a house whose walls are 1 ft. 6 in. thick, 20 ft. high, and 108 ft. long, how many will build one whose walls are 2 ft. thick, 30 ft. high, and 324 ft. long?

397. A man 33 years old, takes out a policy for $2000, the payments to cease at 50, the annual premium being $3.50 per

$100. If he survive that age, how much more money will he receive from the company than he pays them?

398. In the year 1860, $66\frac{1}{3}\%$ of all the printing in the New England States was done in Massachusetts; $14\frac{2}{3}\%$ in Connecticut; $6\frac{2}{3}\%$ in Maine; $2\frac{5}{18}\%$ in Vermont; Rhode Island performed $\frac{17}{20}$ as much as New Hampshire; the cost of the printing done in Rhode Island was $107360 more than the cost of what was done in Vermont. Required the value of all the printing done in the New England States for the year 1860.

399. Paid $5392.35 in New York for a 30 days' draft on Boston, exchange being at $\frac{1}{2}\%$ premium. Required the face of the draft.

400. Smith & Boise traded in company with a joint stock of $8400. Smith's money was invested 14 months, and Boise 10 months. The profits being equally divided, how much of the capital did each furnish?

401. A man with the proceeds of a note for $4164.22 on 60 days, discounted at 6%, purchased flour at $10.25 per barrel, allowing $\frac{1}{2}\%$ commission to a factor for buying it. At the end of 1 month he sold the flour on 90 days' credit for $11.50 per barrel; when his note at the bank matured, he had the note received for the flour discounted, and paid his own note. How much did he gain by the transaction?

402. If 4 gal. 1 qt. 1 pt. of oil is bought for $1.235, what is the price per gallon?

403. The total sales of Wheeler & Wilson's sewing machines for seven years ending Jan. 1, 1860, were 38991; of Grover & Baker's, 24818; of Singer's, 23353, and of all others such a number that the aggregate sales of all kinds were 103372. What was the value of the miscellaneous class at an average price of $30 a machine?

404. A farmer had a dairy of 48 cows, each furnishing 18 qt. of milk a day, from which he made 40 cheeses of 60 lb. each in 30 days. He made a contract to deliver 100 cheeses of 96 pounds each in 80 days. How many cows must he

add to his dairy provided each additional cow furnish 4 gallons of milk daily?

405. In what time will \$3045.20 gain \$190.32 if the gain of \$2494.75 for 1 yr. 13 d., is \$258.48, and what is the rate per annum?

406. Marks, Willis & Sterrett were partners in the flouring business; Marks had invested $\frac{1}{3}$, Willis $\frac{1}{5}$, and Sterrett $\frac{7}{15}$ of the capital. They were to share equally the gains or losses. The business not being successful, the partnership was dissolved at the close of the year, when the resources of the firm were found to be: Cash, \$1785; wheat on hand, \$2500; corn, \$1752; rye, \$350; flour, \$1650; mill and fixtures, \$5000. The liabilities were: Notes outstanding, \$1562; they owed Milo Chidsey, \$1200, and S. Combs, \$1875. The net losses were \$750. What was the net capital of the firm at commencing, and what was each partner's net capital?

407. What is the distance around a rectangular field, whose length is twice its breadth, if one end measures 35 rd. 5 yd. 2 ft. 6 in.?

408. The average number of horse cars running daily on the railroads of Boston and vicinity, is 132; and each car carries an average of 2000 passengers per week; the average fare being 4d. N. E. currency, what is the net income of all the roads per year, the expense of working the roads being \$624936, supposing 1000 passengers do not pay fare?

409. When exchange at New York on Paris is 5 francs 25 centimes per \$1, and at Paris on Hamburg $2\frac{1}{4}$ francs per mark banco, what will be the arbitrated price in New York of 6580 mark bancos?

410. The value of real estate and personal property in the United States in 1860 was \$16159616068; the debt of the United States Jan. 1, 1864, was \$1373567365.78; if a direct tax were levied to cancel the debt, what would be the rate of taxation, and how much would John Smith pay who is worth \$5000?

411. How many bushels of corn in Illinois are equal to 3000 bushels in New York?

412. What is the value of a house and lot that pays a profit of 9 per cent. by renting it at $50 per month?

413. A draft was purchased in New York on Chicago for $3000, drawn at 60 days, for $2850. What was the course of exchange?

414. How many bushels of oats in Connecticut are equal to 5000 bushels in Iowa?

415. A farmer sold three hogs, one weighing 275 pounds, at 5 cents per pound; a second, weighing 310 pounds, at $5\frac{1}{2}$ cents per pound; and the third, weighing 345 pounds, for $25. What was the average price per pound for the whole?

416. At what rate of premium is Prussian coin, when $352.92 in United States silver coinage of 1837, is paid for 500 thalers?

417. A father left his four sons, whose ages are 15, 11, 7 and 6 years, $57770, to be so divided that the respective parts placed at simple interest in Connecticut shall amount to equal sums when they become 21 years of age. What are these parts?

418. It is estimated that a sewing machine does the work of six persons, and that its use in making boots and shoes in Massachusetts annually saves $7500000; allowing 300 working days in a year, and $1.25 as the average daily wages of shoemakers, how many persons engaged in this trade does the use of sewing machines leave free to follow other pursuits?

419. A grocer sold 12 hams, each weighing 15 lb., at $12\frac{1}{2}$ cents per pound, and took in payment 1 load of apples, consisting of 18 bags, each containing $2\frac{1}{2}$ bushels. Required the price of the apples per bushel.

420. A merchant in New York wishes to pay £3000 in London. Exchange on London is $9\frac{1}{2}\%$ premium; on Paris, 5 francs 25 centimes per $1, and on Amsterdam 40 cents to

a guilder. The exchange between France and England at the same time is 25 francs to £1, and that of Amsterdam on England $12\frac{1}{5}$ guilders to £1. Which is the most advantageous, the direct exchange, or through Paris, or through Amsterdam?

421. Received from Charleston 500 bales of cotton, each weighing 560 lb., invoiced at 9d. per lb. Georgia currency; sold it at an advance of 20%, commission $1\frac{1}{3}$%, and remitted the net proceeds by draft. What was the face of the draft, exchange being $1\frac{1}{2}$% discount?

422. There were 153366425 bushels of bituminous coal, and 9416333 tons of anthracite coal mined in the U. S. in 1860, and 25 bushels of the bituminous made one ton; the average cost of the coal at the mines being $1.30 per ton, what was the total value of all the coal mined? The value in 1850 being $7173750, what was the rate of increase in ten years?

423. A merchant in Syracuse, N. Y., purchased a draft on Chicago for $2660, drawn at 60 days, paying $2570.89. What was the course of exchange?

424. A horse which was bought for 20% less than his real value, became injured, and was sold for 40% less than his cost, at a price $130 below his original value. For how much was he sold?

425. A gentleman sent a silver cake basket, weighing 3 pounds 9 ounces, to a jeweler, and ordered him to take $3\frac{1}{3}$% of it for his work, and manufacture the remainder into small dessert spoons, each weighing 1 oz. 9 pwt. How many dozen spoons ought he to receive?

426. My agent purchased for me in Liverpool a cargo of iron costing £8500; when the ship arrived in New York I purchased a bill on Liverpool for the amount, exchange being 184%; also paid 30% duties, gold being $172\frac{1}{8}$%. For how much must I sell the cargo to gain 25% on the entire cost, provided I have U. S. currency with which I purchase the bill on Liverpool, and the gold for paying the duty?

CHAPTER VI.

1. The Winchester bushel is of cylindrical form, 18.5 in. in diameter, and 8 in. deep. What must be the dimensions of a cubical box which shall contain 27 bushels?

2. A gentleman deposited in a savings bank for his son, 15 years of age, a sum of money, which, at 5% compound interest, payable semi-annually, amounted to $10000 at his majority. What was the sum deposited?

3. A grocer mixed 5 lbs. of sugar, at $8\frac{3}{4}$ cts. per pound, with 80 lbs., at $7\frac{3}{4}$ cts. per pound, and 60 lbs. at such a price that the mixture was worth $9\frac{3}{4}$ cts. per pound. Required the price per pound of the last kind of sugar.

4. How much less will it cost to fence 32 A. 64 P. in the form of a circle, than in the form of a square? and how much less in a square form than in the form of a rectangle, whose length is 4 times its width, the price in each case being $1.50 per rod?

5. One-third of a quantity of goods was sold to gain a certain %, one-fourth to gain $1\frac{1}{2}$ times as much %, and the remainder to gain $2\frac{1}{2}$ times as much %. What is the gain % on each part, the gain upon the whole being 21%?

6. If a cask, 45 inches long and 36 inches bung diameter, contain 167 gallons of wine, what must be the length and bung diameter of a cask of the same shape, containing 314 gallons?

7. If $600 gain $72 in 1 yr. 6 mo., in what time will $850 gain $189.83\frac{1}{3}$?

8. Two mechanics work together; for 10 days' work of the first and 8 days' work of the second they receive $50; and for 15 days' work of the first and 14 days' work of the second they received $81. What is each man's daily wages?

9. It is 80 rods between the opposite corners of a square field. How many acres in the field?

10. Four towers—A 125 feet high, B 25 yards high, C 160 feet high, and D 70 feet high—stand upon the same plane; B directly south, and 40 rods from A; C east from B; and D south from C. The distance from A to C plus the distance from C to B is $\frac{1}{2}$ a mile, and the distance from D to B is $82\frac{1}{2}$ yards farther than the distance from C to D. Required the length of a line to connect the tops of A and D.

11. A farmer took some butter to the store and received therefor $12.25, the price per pound being as many cents as there were pounds. How many pounds were there?

12. A miller is required to grind 160 bushels of provender, worth $1.00 a bushel, from oats worth $.40, corn worth $.80, barley worth $.90, and rye worth $1.10, and wheat worth $1.30 per bushel. How many bushels of each kind may he take?

13. There is a park containing 15 A. 3 R. 30 P., and the breadth is $\frac{3}{4}$ the length. If two men start from the same corner and travel at the rate of 4 miles per hour, one going around the park, and the other taking the diagonal, how much sooner will the latter reach the opposite corner than the former?

14. If I own $\frac{5}{9}$ of a farm, and sell $\frac{2}{3}$ of my share for $3460, what part remains to me? and what is the whole farm worth?

15. G and H trade in company; G's capital is $\frac{3}{5}$ of H's: at the end of 5 months H draws out $\frac{1}{4}$ of his capital; and at the end of 9 months G draws out $\frac{1}{3}$ of his. What part of the gain, which is $4222.50, should each have at the end of the year?

16. I owe a man the following notes: one of $500, due April 1; one of $750, due July 15; and one of $1750, due Sept. 10. The holder wishes to exchange them for two notes of $1500 each, and wants one to fall due May 10; when should the other be made payable?

17. A and B traded together; A put in $400 for 512 days, and received $\frac{1}{3}$ of the gain; the number of dollars which B put in was equal to the number of days it was employed in trade. What was B's capital?

18. The longitude of Springfield, Mass., is 72° 35′ 45″ W., and of Constantinople, 28° 49′ E. When it is 9 o'clock A. M. at the latter place, what time is it at the former?

19. A note was given for $500, with interest payable annually, at 7%. Nothing having been paid for 10 years, how much did the total amount of interest due exceed the simple interest of the principal?

20. A rectangular piece of land, containing 8 A. 1 R. 32 sq. rd. is $\frac{1}{2}$ as wide as it is long. What is the distance around it?

21. Bought a quantity of goods for $2500 cash, and sold them for $3125 on 3 months' credit. What did I gain, money being worth 9%?

22. What is the difference between the interest and discount of $730, for 5 yr. 9 mo., at 8 per cent.?

23. Wishing to ascertain the height of a tower, I erected near it a stick $2\frac{1}{2}$ feet high; by measurement I found the shadow of the tower to be $36\frac{3}{4}$ ft., and of the stick 9 in. at the same time. Required the height of the tower.

24. A man agreed to work for a blacksmith for $1.50 per day and his board; for each day lost he was to allow $.40. At the end of 11 weeks he received $77.15. How many days did he lose?

25. What is the daily interest on $63300 in U. S. demand notes, bearing $7\frac{3}{10}$% interest?

26. A ship sailed due south and due east on alternate days, at the same rate each day; at the end of six days it was found to be 203.646 miles south-east from the place of starting. What was the daily rate of sailing?

27. If a body put in motion move $\frac{1}{4}$ of an inch the first second, $\frac{1}{2}$ an inch the second, 1 inch the third, and so continue to increase its velocity in geometrical ratio, how far would it move in $\frac{2}{3}$ of a minute?

28. An importer sold cloth to a wholesale dealer at 10% advance; the wholesale dealer sold it to a clothier at $12\frac{1}{2}$% advance; the clothier sold it at a farther advance of 25%, and received $1452. How much did it cost the importer?

29. The Federal debt, Feb. 16, 1864, was officially stated to be $1482600000. What per cent. is that of the whole taxable property of the loyal States, the latter being estimated at $14000000000?

30. What is the balance of the following account, and when is it due?

THOMAS LARDNER.

Dr.							Cr.
1860.				1860.			
March 1	To Sundries,	436	00	March 25	By Draft at 60 da.	400	00
April 12	" Mdse.	548	00	April 6	" " 30 "	650	00
July 16	" "	312	00	June 20	" Cash,	200	00
Sept. 14	" "	536	00	Aug. 3	"	84	00

31. When shall a draft for the settlement of the following account be made payable?

DAVID SANFORD.

Dr.							Cr.
1859.				1859.			
Jan. 1	To Mdse. on 3 mo	54	36	April 1	By Cash,	50	00
Feb. 12	" " " 2 "	28	45	May 16	" Draft at 30 da.	30	00
March 16	" Sundries	95	75	June 12	" "	125	00
June 25	" Mdse.	26	32	" 20	" Cash,	150	00

32. Three contractors engaged to build a piece of road for $8775; A employed 20 hands 24 days, 10 hours a day; B, 25 hands 20 days, 12 hours a day; and C, 30 hands 25 days, 9 hours a day. How much should each contractor receive?

33. A quantity of wheat was heaped up in a corner of a square room forming a portion of a cone, of which the perpendicular height was 4 ft. 3 in. and the slant height 7 ft. 1 in. What was its value at \$1.66⅔ a bushel?

34. OLIVER WAINWRIGHT.

Dr.				Cr.			
1853.				1858.			
Jan. 1	To Mdse.	36	72	Jan. 10	By Cash,	93	72
Feb. 1	" "	48	25	" 21	" "	25	84
March 17	" "	72	36	March 23	" Sundries,	15	17
April 1	" "	93	48	April 6	" "	8	96

If the above account were settled April 6, 1858, by draft on time, how many days' credit should be given?

35. \$1200. CHICAGO, Jan. 1, 1858.

For value received, I promise to pay Stephen Hopkins, or order, twelve hundred dollars, on demand, with interest at 7%.

THOMAS ROBBINS.

Indorsed as follows: Jan. 1, 1859, \$300; March 16, 1860, \$350; Jan. 1, 1862, \$250. What was due February 20, 1864?

36. A church is 80 ft. long and 50 ft. wide, and the elevation of the roof is 14 ft.; the rafters extend 2 ft. beyond the plates, and the boarding projects 2 ft. at each end. How many feet of boards will be required to cover the roof, allowing ¼ for waste?

37. Divide $\frac{15}{16}$ of a piece of cloth, which contains 45⅗ yd., into equal parts, each of which shall contain $\frac{5}{32}$ of the whole piece. How many yards in each part?

38. If it cost \$85.60 to inclose a circular field containing 2 A. 28 P., how much will it cost to inclose another containing 26 A. 23 P.?

39. A merchant in New York gave \$1000 for a bill on London of £200. What was the rate of exchange?

40. A grocer desires to mix teas worth \$1.50 and \$1.20, with 140 pounds worth \$.75, that the mixture may be worth \$1.00. What quantities of each must he take?

41. A, B and C traded in company; A put in $1400; B, $2500, and C, 300 barrels of flour; they gained $2300, of which C took $1000. What were the shares of A and B, and what was the price of C's flour per barrel?

42. An orchard containing 6 A. 12 sq. rd. is 3 times as long as it is wide. Required the length and breadth.

43. If from 68 and 82 respectively, a certain number be subtracted, $\frac{1}{7}$ of the first remainder will be equal to $\frac{1}{9}$ of the last. What is the number subtracted?

44. A man left $10000 to be divided between his three sons, whose ages were 10 yr., 13 yr. 4 mo., 17 yr. 6 mo., respectively, in such proportions that the share of each at simple interest at 6%, should amount to the same sum when they should arrive at the age of 21 years. What was each one's share?

45. A grocer sells a farmer 150 lb. of sugar at 14 cents a pound and makes 5%; the farmer sells him 150 lb. of meat at 12 cents a pound, and makes a profit of 8%. Which gains the more by the trade and how much?

46. A mechanic received $3 a day for his labor, and paid $5 a week for his board; at the end of 8 weeks he had saved $74. How many days did he work?

47. The great pyramid built by Cheops has a square base 746 ft. on each side, and its perpendicular hight is 450 feet. What is the area of the base, of each side, and how many cubic feet of masonry does it contain?

48. A trader bought merchandise as follows: Apr. 8, $150.22; May 23, $55.64, on 30 da.; June 2, $82.60 on 2 mo., and July 14, $90. What was due on the account Sept. 26, money being worth 7%?

49. A plot of ground is 80 rods square. What is the breadth of a graveled walk around it, covering an area equal to $\frac{1}{6}$ the area of the field?

50. A gentleman bought an annuity of £500 in English

consols, bearing 3% interest for 20 years. What was the present worth?

51. An importer sold a quantity of goods to a wholesale merchant at an advance of 10 %; the latter sold them to a retailer, gaining $12\frac{1}{2}$%, and the retail merchant sold them for $3093.75, gaining thereby 25%. How much did the goods cost the importer?

52. There are three houses so situated that the lines connecting them form an equilateral triangle, the sides of which are 70 rods in length. How many acres are included in the triangle?

53. A merchant failing in business can pay 76 cents on a dollar. He offers to pay his whole indebtedness without interest in five years if his creditors will allow him to go on with his business; his offer being accepted, how much will his creditors lose in the five years, money being worth 7%?

54. In how many different positions may a family of 7 persons seat themselves at a table?

55. A triangular orchard has 1 tree in the first row, 3 in the second, 5 in the third, and so on in arithmetical progression. How many trees in the orchard, there being 50 rows?

56. What are the interior dimensions of a cubical box that contains 40 bushels of grain?

57. How many strokes of a common clock are struck in 24 hours?

58. A man wishes to enclose a circular field which shall contain $\frac{1}{24}$ as many acres as it will require rails to build a fence around it. The rails being 15 feet long, and the fence 6 rails high, how many acres must there be in the field?

59. J. Bagg & Co., becoming insolvent, their indebtedness was $11666\frac{2}{3}$ their assets were $9012.50. What % of their indebtedness can they pay, allowing to the assignees 3% on the amount distributed to the creditors?

60. The Treasurer of the State of Pennsylvania, Nov. 30,

1863, made the following report of the finances of the State: Balance in treasury, Nov. 30, 1861, $1592637.72; receipts from ordinary sources, to Nov. 30, 1862, $4047822.39; from extraordinary sources, $1163925.24; payments to the same date, $4590509.25. Required the balance in treasury, Nov. 30, 1862.

61. Receipts for the year ending Nov. 30, 1863, $4289-451.65; payments to the same date, $4314964.05. How much less in the treasury, Nov. 30, 1863, than Nov. 30, 1862?

62. I wish to pay a bill in Naples of 1500 ducats; the direct exchange is $1.40=1 ducat; the exchange on London is 171%; of London on Paris is £1=26 francs; of Paris on Naples is $4\frac{1}{4}$ francs=1 ducat. What is the difference between the direct and circuitous exchange?

63. A square pyramid of cannon-balls has 12 on each side at the base. How many balls in the pyramid?

64. How many pounds of sugar at 8, 13, and 14 cts. per pound, may be mixed with 3 pounds at $9\frac{1}{4}$ cts., 2 pounds at $8\frac{1}{2}$ cts., and 4 pounds at 14 cts. a pound, so as to gain 16% by selling the mixture at $14\frac{1}{2}$ cts. per pound?

65. What is the difference between the true and bank discount of $3000, payable in 120 days at $8\frac{1}{2}$%?

66. Two churches stand on opposite sides of a street 120 feet wide; the height of the towers is 70 and 95 feet, respectively. What is the distance from the top of one tower to the top of the other? and what is the distance from the top of each to the base of the opposite church?

67. What is the hour when $\frac{2}{3}$ of the time past noon is $\frac{2}{5}$ of the time till midnight?

68. E, F, and G start from the same point and in the same direction to walk around a trotting course 1 mile in circumference; E takes 60 steps, of 26 inches each, a minute; F, 90 steps, each 28 inches in length; and G, 120 steps, each 32 inches in length. What distance must each travel, and how

long, before they will be together again at the point of starting?

69. A man wishes to tether his horse to a stake, so that it may graze on $\frac{1}{4}$ of an acre. What must be the length of rope?

70. A bought a house of B, and gave him his bond for $6000, dated April 1, 1860, payable in 5 equal annual installments of $1200, the first to be paid April 1, 1861; A took up his bond April 1, 1863, semi-annual discount at the rate of 7% per annum on the payments due after April 1, 1863, being deducted. What sum canceled the bond?

71. What is the compound interest of $1 for 143 years, allowing it to double once in 11 yr. 11 mo?

72. A servant being ordered to purchase 40 animals for $40, brought home calves at $4, lambs at $1.00, and kids at $.50 each. How many of each kind did he purchase?

73. If I borrow $1000, and agree to pay 6% at the end of each year for the use of it, and at the end of 18 months it is called for, how much do I strictly owe?

74. If a cannon-ball, 8 in. in diameter, weigh 128 pounds, what is the diameter of a ball weighing 250 pounds?

75. I have sugars worth 12, 14, 16, and 18 cents a pound. How many pounds of each kind may I mix to make a barrel of 260 pounds, which I can sell at $.16\frac{1}{2}$ per pound, and gain 10%?

76. A and B gain in business $5040, of which A is to have 10% more than B. Required the share of each?

77. What length of fence will inclose a circular field containing 10 acres?

78. An ox, whose girth is 8 ft., weighs 1500 lb; what is the girth of another ox that weighs 632 lb. 13 oz.?

79. X and Y entering into partnership, X at first put in $1600, and after 1 year added $400 to his capital; Y put in $2000, and after 6 months withdrew $800; at the end of 2

years they have gained $6960. Required each one's share of the gain?

80. How many miles of furrow, 1 ft. 3 in. wide, must be turned in plowing a rectangular field, whose width is 30 rods, and whose length is 10 rods less than its diagonal?

81. The wholesale price of coffee in New York in 1863 was $33\frac{1}{2}$ cents per pound, and the price in 1847 was $\frac{4}{5}$ of a cent more than $\frac{1}{5}$ the price in 1863. The price of 1 pound in the latter year would have bought how many pounds in the former year?

82. The pressure of air being 15 pounds to a square inch, what is the pressure upon a pair of Magdeburg hemispheres, 8 inches in diameter?

83. In the city of New York in 1862, 3198 marriages were reported to the city inspector, and he estimated the number reported to be 26% of the actual number. What was his estimate of the whole number?

84. A park, 8 rods square, has a gravel walk around it of the same width on all sides, the area of which is $\frac{3}{25}\frac{1}{6}$ the area of the park. Required the width of the walk.

85. A merchant in New York purchased 350 bales of cotton, each containing 450 pounds, at $.80 a pound, and shipped it to Liverpool at a cost of 16% for freight and duties. How much in U. S. currency did he gain by selling it at 2s. 10d. a pound, rate of exchange 171%?

86. What is the cash balance of the following account, Jan. 1, 1864, interest at 6%?

RICHARD RATHBURN.

Dr.			Cr.		
1863.			1863.		
Jan. 20	To Mdse.	$400	March 1	By Cash	$300
Feb. 25	" "	250	April 3	" Sundries	500
April 1	" "	600	June 5	" "	200
June 10	" "	850	Sept. 1	" Cash	350
Sept. 12	" "	575	Dec. 2	" "	500
Nov. 30	" "	280			

87. A merchant mixes 13 pounds of tea with 7 pounds of an inferior quality, and gains 20% by selling the mixture at $1.05\frac{3}{5}$ per pound. Allowing one kind of tea to be worth 20 cents a pound more than the other, what is the cost of each per pound?

88. How much less will the fencing of 20 acres cost in the square form than in the form of a rectangle, whose breadth is $\frac{1}{5}$ the length, the price being $2.25 per rod?

89. A. Smith, 34 years old, insures his life for $5000, at the rate of $2.5232 per $100; he dies at the age of 53. Allowing 6% compound interest on all premiums paid, how much has his policy actually cost?

90. How much bank stock, at $3\frac{1}{2}\%$ premium, can be purchased for $6240, brokerage $\frac{1}{2}\%$?

91. A merchant bought 200 bbl. of flour for $1665, paying $9 per barrel for first quality, $8 for second, and $7.50 for third. How many barrels of each quality did he buy.

92. A cistern 15 feet deep will hold 5640.192 gallons. What is its diameter?

93. A young man inherited an estate of $40000; after spending $\frac{1}{5}$ of it, he invested the remainder in an unsuccessful business, losing $33\frac{1}{3}\%$ of the investment; with his remaining money he purchased 5-20 United States bonds at par, bearing 6% interest, payable in gold. How much was his yearly income in currency, gold being 175%?

94. A Chicago merchant shipped 1000 barrels of flour to his agent in New Orleans, directing him to sell it, and invest the proceeds in cotton; his agent sold the flour at $14 per bbl., paid $275 charges, and bought cotton at $.65 per pound, charging 3% commission for selling the flour and 5% for buying the cotton. How many pounds of cotton did he buy?

95. M and N are joint tenants of a house, paying $62.50 and $87.50, respectively, each quarter for rent. The land-

lord having raised the annual rent $100, what rent must each now pay quarterly?

96. Having placed a bill of $775 in the hands of a collector, who succeeded in obtaining 75% of it, and charged 8% commission, how much did I receive?

97. How much larger is a square circumscribing a circle 40 rods in diameter, than a square inscribed in the same circle?

98. A grocer sold 2000 gallons of molasses for $1880, and gained on each gallon sold the cost of $1\frac{2}{4}\frac{1}{7}$ pints, beer measure. What did the molasses cost per gallon?

99. By the fortification bill of 1863, Congress appropriated for forts as follows: Maryland, $200000; Mississippi River, $1\frac{7}{8}$ times as much; Pacific coast, $\frac{2}{2}\frac{0}{3}$ of the two preceding appropriations; Florida, $1\frac{9}{4}\frac{}{3}$ times the three preceding appropriations; New York, $\frac{5}{9}\frac{3}{5}$ of the four appropriations already mentioned; and New England $\frac{3}{7}\frac{5}{4}$ of all the others. How much was the amount of the bill?

100. A's money was to B's as 2 to 3; when A had spent $40, and B had spent 40% more than A, A's money, minus $20, was to B's money, plus $2, as 4 to 9. How much had each at first?

101. A merchant bought a certain quantity of corn, for which he paid a certain sum of money; but on measuring, he found only $\frac{3}{4}\frac{9}{0}$ of the quantity he expected. He sold it, gaining $\frac{1}{8}$ the cost, and received $2160, which was at the rate of $12\frac{4}{1}\frac{}{3}$ cents per bushel more than he would have paid had he received the quantity he expected. How many bushels did he suppose he had bought, and at what price?

102. How many thousand shingles, averaging 4 in. wide, and lying 6 inches to the weather, are required to cover both sides of a roof 36 ft. long, whose rafters are 20 feet in length?

103. Andrew Combs purchased of H. Alexander wheat on 3 months credit, as follows: Apr. 5, 500 bu., @ $\$.87\frac{1}{2}$; Apr.

25, 300 bu., @ $.95; June 20, 350 bu., @ $1.10; July 10, 250 bu., @ $1.05. When was the account due by average?

104. A, B and C entered into partnership. A put in $12000, B $8000, and C $7000. At the end of the first year A drew out $2000, B $1000, and C put in $3000. At the close of the second year A and B each drew out $1000, and C put in $2000 more. At the end of the third year they dissolved partnership, and found that their joint property was $28500. What was each partner's share?

105. If a pipe 3 inches in diameter discharge 12 hogsheads of water in a certain time, what must be the diameter of a pipe which will discharge 48 hogsheads in the same time?

106. If I buy 50 shares Hudson River R. R. stock at 141%, and 50 shares Michigan Central R. R. stock at 139%, the former paying a semi-annual dividend of $4\frac{1}{10}\%$, the latter of 5%; what rate of interest shall I realize on my investment?

107. The horizontal distance between the eaves of a certain building is 40 ft.; the elevation of the ridge above the eaves is 15 ft. What is the length of the rafters?

108. If a man by laboring 15 hours a day do a work in 8 days, how many hours a day must he labor to do the same in 10 days?

109. A speculator purchased $255\frac{7}{8}$ acres of land at $\$45\frac{3}{8}$ per acre, but was obliged to sell it at $\$23\frac{3}{5}$ per acre. For how much more than his loss did he sell it?

110. What number, increased by $\frac{1}{5}$, $\frac{1}{6}$ and $\frac{1}{7}$ of itself, equals 317?

111. A wine dealer desires to mix 20 gallons of wine, worth $3.50 per. gal., with wines worth $3.25 and $1.80 per gal., so as to form a mixture of 96 gallons, worth $3.00 a gallon. How much of each kind may he take?

112. J. Smith bought of Ivison, Phinney, Blakeman & Co., the following bills of goods; Nov. 1, 1863, a bill of $750, on 6 mo. credit; Dec. 15, 1863, a bill of $300, on 5 mo.; Jan. 1,

1864, a bill of $425, on 4 mo.; Feb. 5, 1864, a bill of $275, on 2 mo. What sum would settle the account, May 29, 1864, interest at 7%?

113. A gentleman wishes to set out a rectangular orchard of 1260 trees, so placed that the number of rows shall be to the number of trees in a row as 5 to 7. If the trees are 8 yards apart, how much ground will the orchard occupy?

114. A merchant insures a ship and cargo for $79325, at $4\frac{3}{8}\%$, the policy covering both property and premium. What is the value of the ship and cargo?

115. A, B and C formed a partnership for 2 years; A put in $10000, B $5000, and C $2500; it was agreed that C should receive $1500 a year for superintending the business. A drew out $1000 at the end of each quarter for one year, and at the end of 13 months put in $15000 more; B withdrew $600 at the end of each quarter. At the time of settlement the net gain was $22500. Required each one's share.

116. If 496 men, in 5 days of 11 hours each, can dig a trench 620 yd. long, 3 yd. wide and 2 yd. deep, in how many days of 12 hours each will 48 men dig a trench 210 yd. long, 6 yd. wide and 3 yd. deep?

117. When exchange on England is at 10% premium, and freight at 1s. 3d. per United States bushel, how much can be paid in Philadelphia for wheat per bushel, in answering an order from London limited to £3 10s. per Imperial quarter?

118. In a pair of scales a body weighed 32 pounds in one scale, and only $24\frac{1}{2}$ pounds in the other. What was its true weight?

119. Suppose a number of stones were laid a rod apart for 30 miles, the first stone by the side of a basket. What distance will a man travel who gathers them up one by one, returning with each one to the basket?

120. A merchant shipped a cargo of flour, worth $23940, from Racine to Liverpool. To insure it from Racine to Buf-

falo he paid $1\frac{1}{2}\%$; from Buffalo to New York, $\frac{1}{4}\%$; and from New York to Liverpool, $3\frac{1}{4}\%$. For what sum must it be insured to cover the value of the flour and premium for the voyage?

121. A man in Cleveland purchased a draft on St. Louis, Missouri, for $10640, drawn at 60 days, paying $10283.56. What was the course of exchange?

122. A merchant sold 350 barrels of pork for $8662.50, and gained 10%. What did the pork cost him per barrel?

123. A gentleman insures his house, worth $9000, and his furniture, worth $3500, for $\frac{7}{8}$ of their value at $\frac{5}{8}\%$. What premium did he pay?

124. I have a circular field 600 rods in circumference. What must be the side of a square field that shall contain the same area?

125. A's age is double that of B, and B is three times as old as C, and the sum of their ages is 70. What is the age of each one?

126. A and B having the same income, A spends $\frac{5}{6}$ of his. and B, by spending $200 a year more than A, finds himself at the end of 5 years $450 in debt. How much was their income?

127. Insert 7 geometrical means between 5 and 1280.

128. What sum of money must be invested in 5-20's, bearing 6% interest in gold, and purchased at 105%, to produce a semi-annual income of $600 U. S. currency, gold being $172\frac{3}{4}\%$?

129. A merchant bought, on 10 mo. credit, 25 pieces of cloth, each containing 30 yards, at $\$4.66\frac{2}{3}$ per yard; after keeping the goods 3 mo. he sold them at $5 per yard on a credit of 9 mo.; money being worth 6%, what was his net cash gain at the time of the sale?

130. An irregular piece of land containing 305 A. 41 P., was exchanged for a square piece containing the same area. What was the length of one of its sides? If divided into

169 square building lots, what will be the length of a side of each?

131. Bought wheat at \$1.75, \$1.80 and \$2.00 per bushel. In what proportion may they be mixed so as to sell the mixture at \$2.15¼ per bushel, on 3 mo. credit, when money is worth 10%, and make a present gain of 12%?

132. A man purchased a farm for \$3000, and agreed to pay principal and interest in 4 equal annual installments. What was the annual payment, interest being 6%?

133. At a certain time between one and two o'clock, the minute hand is between 2 and 3, and within an hour the hands will exactly change places. What is the first mentioned time?

134. What sum of money, with its semi-annual dividends of 4% invested with it, will amount to \$25000 in 3 years?

135. When gold is quoted at 162%, what is the value in gold of a U. S. note of the denomination of \$10?

136. Account sales of 100 pipes of gin, received per ship Hispaniola, from Havana, on % of Tyler, Jones, & Co.

1860.				
April 15	Sold 32 Pipes, 4160 gal. at \$1.05, on 30 days,.....		4368	00
May 5	" 40 " 5240 " at 1.02, cash,.....		5344	80
June 28	" 28 " 3650 " at 1.00, "		3650	00
	100 "		13362	80
	CHARGES.			
April 1	To Freight and Primage.....	\$136.76		
" 1	" Wharfage and Cartage.....	48.54		
" 1	" Duty Bonds, at 60 days.....	3207.07		
June 28	" Storage from April 1, viz.:			
	On 32 Pipes, 2 wks.. 64 wks.			
	" 40 " 5 " ..200 "			
	" 28 " 13 " ..364 "			
	100 " equal to 628 " at 6c.....	37.68		
	" Commission on \$13362.80, at 2½ per cent	334 07		
	" Guaranty on \$4368, at 2½ per cent.....	109.20	3873	32

What are the net proceeds of the above account, and when due?

NOTE.—The time for which storage is charged on each part of the shipment is the interval, reduced to weeks, between Apr. 1, when the pipes were received into store, and the date of sale. Every fraction of a week is reckoned a full week.

137. A walk 9 ft. wide surrounds a square garden; the area of the walk being $\frac{1}{4}$ of an acre, what is a side of the inclosed square?

138. A man in Worcester, Mass., has $2400 due him in Chicago. How much more will he realize by making a draft for this sum on Chicago, and selling it at $\frac{1}{2}\%$ discount, than by having a draft on Worcester remitted to him, purchased in Chicago for this sum at $\frac{3}{4}\%$ premium?

139. A father divides an estate worth $5555.66 between his two sons, giving the elder $\frac{1}{5}$ more than the younger. How much is each son's share?

140. M began business with $1000; four months after, S entered into partnership with him, and put in 6 houses, each of the same value; at the close of the year their profits were $3000, of which S's share was $2000. What were his houses each valued at?

141. A grocer mixed 4 pounds of tea at $1.20 with 3 pounds at $1.40, 1 pound at $2.20, and 2 pounds at $2.40. What per cent. profit will he make by selling the mixture at $2.00 per pound?

142. A farmer has sheep worth $4, $6 and $8 a head respectively. How many of each kind must he sell to realize an average price of $6.25 a head?

143. What is the distance from one corner of a cubical block to the opposite diagonal corner, the side of the cube being 5 feet?

144. A and B traded in company. A put in $845 for 300 days, and received $\frac{3}{8}$ of the gain. The number of dollars which B put in was equal to the number of days it was employed in trade. What was B's capital?

145. Insert 5 arithmetical means between 2 and 4.

146. If a stack of hay 8 ft. in hight weigh 8 cwt., what is the weight of a similar stack that is 24 ft. in hight?

147. Allowing 5% of the hay in the stack last mentioned to

be worthless, what is the value of the remainder at $14 per ton?

148. There is a circular field 100 rods in circumference. How far will a person have traveled, in setting the border with trees 1 rod apart, when the last tree is set, provided he returns to the point of starting for each tree, and always travels around in the same direction?

149. A man engaged a boy at the rate of $.25 for the first day, $.30 for the second, $.35 for the third, and so on, increasing his wages 5 cents per day. How many days must the boy work that his average wages may be $.60 per day?

150. The triangular gable of a certain building has a base of 44 ft. and an altitude of 18 ft. How many square feet of boards will cover the two gables?

151. If I rent a house which cost $9000, for $900 a year, and lay out $150 in repairs, what % interest do I receive?

152. A man bought $\frac{3}{8}$ of a vessel, and sold $\frac{4}{5}$ of his share for $11700, which was 30% above the cost. What was the cost of the vessel?

153. A merchant sold 238 hhd. of sugar, each containing 963 pounds net weight, at 13 cents a pound, on 4 months' time, and immediately got the paper discounted at a bank at 7%. How much money did he receive?

154. If $6\frac{1}{4}$ oz. of bread can be bought for $4\frac{2}{3}$d. when corn is 5s. 6d. per bushel, what weight of bread can be bought for 1s. 3d. when the price per bushel is 6s. 3d.?

155. A captain, commanding a company of 100 men who had performed a daring exploit, being asked what reward could satisfy him, replied, "a cent for every different *file* of ten men that can be made with my company." What did his demand amount to?

156. H. Jones & Co. failed in business. They owed A $4000, B $5000, and C $7000; their assets amounted to $11200, and the charges of the assignees were 3% on the

amount distributed. What % did they pay? and how much did each creditor receive?

157. A lot of land, containing 15 acres, is 30 rods wide, and is a plane inclining in the direction of its length; one end being 120 feet higher than the other. How many acres of surface does the inclined plane contain?

158. By selling sugar at $15 per cwt. I gain 20%; what % should I gain by selling it at $13.50 per cwt.?

159. A man paid annually $10 for tobacco from the age of 14 until he was 50, when he died, and left $1000 for his heirs. What sum might he have left them had he dispensed with tobacco, and loaned the money thus saved at the end of each year at 6% compound interest?

160. Two ships start from New York at the same time; one sails due south at the rate of 12 miles an hour, and the other due east at the rate of $9\frac{1}{2}$ miles an hour. How far apart are they in 48 hours?

161. A. Banks received a legacy of $3000, $800 of which was payable in 9 months, $800 in one year, and the balance in two years; but the executor being willing to make present payment, discounting at 7%, what ought he to receive?

162. A merchant receives 10000 barrels of flour to sell on commission, and is directed to invest the proceeds in United States demand notes bearing $7\frac{3}{10}$% interest; he pays $759 charges, and sells the flour at $9 per barrel; his commission is 3% on the sales. What amount of Treasury Notes can he buy at 36% premium, brokerage $\frac{1}{2}$%?

163. The fore wheels of a carriage are 3 ft. 6 in. in diameter, and the hind wheels 4 ft. 9 in. How many times must each revolve in running from Springfield to Chicago, a distance of 204 miles?

164. The exterior diameter of a spherical shell is 12 in., and the shell is 1 in. thick. What is the difference between the exterior and interior surfaces?

165. What was the balance of the following account, Jan. 1, 1864, money being worth 7%?

B. NEWTON in account current with J. DAILEY.

Dr.					Cr.			
1863.					1863.			
Jan. 1	To Mdse.	$225	00		Feb. 10	By Cash,	$150	00
Mar. 10	" "	370	50		Mar. 25	" "	300	00
June 15	" "	550	00		July 1	" Mdse.	430	50
Sept. 1	" "	720	25		Sept. 1	" Cash,	500	
Nov. 5	" "	160	25					

166. What is the present worth of an annuity of $960 in perpetuity at 6%?

167. If $97\frac{7}{8}$ acres of land are bought for $\$301\frac{3}{16}$, what will be the cost of $196\frac{3}{4}$ acres of land, worth $\frac{2}{3}$ as much per acre?

168. A ball falling from a height of 12 ft. bounds 6 ft. by its elasticity, and again falling, bounds 3 ft., and so on, bounding each time $\frac{1}{2}$ as high as it falls. How far will the ball fall before coming to a state of rest? and what will be the distance of all the successive bounds?

169. For what sum must a note be drawn at 3 mo. that the proceeds, when discounted at a bank at 7%, shall be $\$981.91\frac{2}{3}$?

170. A Cincinnati merchant bought a quantity of pork for $6000, and forwarded it to New York, paying 9% of the cost for freight and charges; it was then sold by an agent at an advance of 30% on the original cost, commission 5%. How much was the net gain?

171. A broker bought 90 shares of $100 each of New York Central R. R. stock at 127%, and sold the same at $136\frac{1}{2}$%. How much was the net gain?

172. A circular cistern 7 ft. in diameter has a capacity of 2400.06 gallons. What is its depth?

173. How many pupils in a school when $\frac{1}{5}$ attend the grammar department, $\frac{1}{3}$ the intermediate, and the remainder, which is 34 less than $\frac{1}{2}$ the whole number of scholars, attend the primary?

174. A man insured his house, valued at $18000, and fur-

niture, worth $7000, for $\frac{7}{16}$ of their value, at $\frac{5}{8}\%$. What premium did he pay?

175. H and J traded in company; H put in $8000, and J $20000; they were to share the gains or losses equally; at the end of two years they dissolved partnership, and found their net capital to be $22500. What was each one's share?

176. A person exchanged 180 shares of 6 per cent. stocks, at 80%, for 10 per cent. stocks, at 125%. How much was his yearly income increased?

177. If a man dig a square cellar that measures 5 ft. each way in one day, how long will it take him to dig one measuring 10 ft. each way?

178. Sold coffee at $13\frac{1}{3}$ cents a pound, and thereby lost 20% on the cost; afterward sold a quantity of the same for $455, and gained 30%. What quantity was sold? and at what price?

179. The diameter of the sun is 110 times as large as that of the earth. The volume of the sun is how many times as large as the volume of the earth?

180. Received an invoice of crockery, 5 per cent. of which was broken; paid a duty of 20 per cent. upon the remainder. For what per cent. above the invoiced value must it be sold to gain 25 per cent. on the whole cost?

181. The length of a rectangular field containing 13 A. 3 R. 5 P. is to its breadth as 9 to 5. What are its dimensions?

182. A merchant in New York in 1863 gave 5044.72\frac{2}{3}$ for a bill of exchange on London for £650. What was the rate of exchange?

183. A gentleman laid out a garden in the form of an ellipse, its longer diameter being 8 rods, and its shorter 5 rods. What was the area of the garden?

184. If stock, bought at 20% premium, pay $6\frac{1}{4}\%$ on the investment, what % will it pay if bought at 5% discount?

185. How many yards of plastering in a room 21 ft. 9 in.

long, 16 ft. 6 in. wide, and 10 ft. 8 in. high, there being 3 doors, each 8 ft. 3 in. by 4 ft. 3 in.; 2 windows, each 7 ft. 6 in. by 4 ft. 6 in.; 1 fire-place 5 ft. 2 in. by 3 ft. 6 in., and a base-board 8 in. wide?

186. A produce dealer bought 30000 bushels of corn at $1.55 per bushel, paying $450 charges, and $225 storage; he immediately sold it at 25% advance on the entire cost on 90 days' time. At what price per bushel did he sell the corn? and what % did he gain at the time of the sale, money being worth 7%?

187. If 76 pounds of sugar cost £4 3s. 11d., how many pounds of sugar worth $\frac{4}{5}$ as much per pound can be purchased with £2 17s. 5d.?

188. The present worth of an annuity to be continued 10 years at 6 per cent., compound interest, compounded annually, is $7360.08. What is the annuity?

189. A pipe $1\frac{1}{4}$ inches in diameter will fill a cistern in 40 minutes. In what time will 6 pipes, each $\frac{3}{4}$ of an inch in diameter, fill a cistern of three times the capacity?

190. What will the gilding of a ball 1 ft. 9 in. in diameter cost, at 2s. 6d. per square inch?

191. A cubic inch of lead weighs $\frac{2}{3}$ of a pound. How many feet of lead pipe can be made from 100 pounds of lead, the caliber of the pipe being $\frac{3}{4}$ of an inch, and its thickness $\frac{1}{8}$ of an inch?

192. Divide $1048.80 among 3 persons, in such a manner that the share of the second may be $\frac{1}{2}$ greater than that of the first, and the share of the third $\frac{1}{2}$ greater than that of the second.

193. A, L and W bought a vessel, A taking $\frac{1}{5}$ interest, L $\frac{1}{3}$, and W the remainder; during the year following A paid for expenses $1850, and received $3325 cash returns; L paid out $1320, and received $4500; W paid $2600, and received $1570. At the close of the year, L sold the vessel for

$24500. Interest not being reckoned on receipts and expenditures, how much must L pay to A and W?

194. The contents of a cubical block of granite are 4913 solid feet. What are the superficial contents?

195. A offers to loan to B $1000 for 6 mo., at 10%; the legal rate is 7%. For what sum must the note be drawn that the amount of it at 7% will equal the amount of $1000 at 10% for the given time?

196. The duty at 30% on a quantity of coffee in bags, each weighing 175 pounds gross, and invoiced at $.14 a pound, was $3491.25. Tare being 5%, how many bags were imported?

197. A father divided his property among his four sons, directing that A should have $6 as often as B $5, C $3 as often as A $4, and D $8 as often as B $9. What was the amount of property, D's share being $6000?

198. J. Ellis & Co. sold Thomas Strong goods to the amount of $2500, on 6 months' credit; Strong paid $350 in 2 months, $600 in 4 months, $500 in 7 months, and the balance in 12 months. What amount was due at the time of settlement, interest 7%?

199. What % in advance of the cost must a merchant mark his goods so that, allowing 4% of his sales for bad debts, an average credit of 3 months, and 8% of the goods for expenses, his net gain may be 15% of the first cost of the goods, money being worth 7%?

200. What is the present worth of an annuity of $1200 in reversion 7 years, and continuing 13 years, at 6%?

201. The perpendicular height of a conical glass is 8 in., and its diameter at the top is 5 in. How much water will it hold?

202. What costs a bill on London for £800 17s. 6d., when the rate of exchange is 9⅞% premium?

203. A miller grinds 500 bushels of provender, worth 75

cents a bushel, from 40 bushels of rye, worth 90 cents a bushel, and from oats worth 60 cents, corn worth 85 cents, and barley worth 80 cents a bushel. How many bushels of oats, corn, and barley may he take?

204. A gentleman purchased an annuity of $1000, to continue 20 years, at 6%, compound interest. What did it cost him?

205. A and B engage in trade; A puts in $10000, and at the end of 5 months takes out a certain sum; B puts in $6000, and after 3 months puts in $4000 more; at the end of the year, A's gain is $1800, and B's $2250. What sum did A withdraw at the end of 5 months?

206. A merchant sold 48 yards of gingham at $33\frac{1}{3}$ cents per yard, 12 pieces of sheeting, each containing 33 yards, at 25 cents per yard, and received in payment 40 bushels of oats at $62\frac{1}{2}$ cents per bushel, and the balance in money. How much money did he receive?

207. If the interest of $691.04 for 1 mo. 3 da. is $3.167, what will be the interest of $640.50 for 10 mo. 26 da., at twice the rate?

208. S. F. Root bought 50 shares of bank stock at an advance of 5% on the par value of $100. From the time of purchase until the end of 3 yr. 9 mo. he received a semi-annual dividend of $3\frac{1}{2}$%, when he sold the stock at a premium of 10%. Money being 6% compound interest, how much did he gain?

209. My garden is 11 rods $7\frac{1}{4}$ feet long, and 9 rods $15\frac{1}{12}$ feet wide. What is the length of the longest rails that can be used in fencing it, allowing the end of each rail to lap by the other 5 in., and all the panels to be of equal length? How many rails will fence the garden, if 6 rails are allowed to each panel?

210. If 4096 men are formed into an oblong, with 4 times as many men in rank as in file, how many will there be in rank and file?

211. A gentleman purchases a farm for $10000, which he sells after a certain number of years for $14071, making on the investment 5% compound interest. He now invests his money in a perpetuity, which is in reversion 11 years from the date of purchasing the farm. Allowing 6% compound interest for the use of money, find the annuity and the length of time he owns the farm.

212. Three numbers are to each other as 3, 5 and 7, and their continued product is 2835. Required the numbers.

213. What sum must be invested in 8 per cent. stocks, at 130%, to produce an annual income of $2000?

214. The shadow of a steeple measured 8 rd. 3 yd. 1 ft. and 6 in. in length, at the same time when the shadow of a man 6 ft. high measured 4 ft. 9 in. Required the height of the steeple.

215. J. Smith owes C. Brown $2000, to be paid in equal annual payments of $400 each; Smith, not being able to meet these payments at their maturities, and having an estate 12 years in reversion, arranges with Brown to wait till he enters upon his estate, when he is to pay him the whole sum with compound interest at 7%. What sum will Brown then receive?

216. J. Clarke bought of Claflin & Mellen the following bill of goods: June 1, a bill of $650, on 4 months; Sept. 15, a bill of $800, on 3 months; Oct. 10, a bill of $1200, on 1 month. What was the equated time of payment?

217. If a cable 3 inches in diameter will sustain a weight of 18000 pounds, what weight can be sustained by a cable 15.708 inches in circumference?

218. Divide $2000 between A and B, so that A's money shall be $\frac{3}{5}$ of B's.

219. An estate of $60000 was to be divided among a wife, son and two daughters, as follows: The wife was to have $5000 more than the son, the son $10000 more than the elder

daughter, and the elder daughter $5000 more than the younger. How much should each receive?

220. How many acres in a triangular field whose sides are respectively 40, 48 and 54 rods in length?

221. A son, having asked his father of his age, was answered, "$\frac{5}{8}$ of my age is twice your age, and the difference of our ages is 22 years." Required their respective ages.

222. A boy in flying his kite got it entangled in the vane of a steeple; the string broke close to the kite; by measuring he found that he stood 450 feet from a point directly under the vane, and had out 485 feet of string. What was the height of the steeple?

223. In digging a circular pond, 70 yards in diameter, 294-407.19 cubic feet of earth were excavated.. To what depth was the pond dug?

224. A grocer mixed 300 pounds of sugar at 14 cents a pound, with 200 pounds worth 15 cents a pound, and 250 pounds at 12 cents a pound. What must be his price per pound to gain 25% on the cost?

225. If the sum produced by adding $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{2}{3}$ of a number to itself be multiplied by 3, the product will be 6834. What is the number?

226. A merchant in New York imports from Havana 200 hhd. of W. I. molasses, each containing 63 gallons, invoiced at $.30 per gallon; 150 hhd. of B. coffee sugar, each containing 500 pounds, invoiced at $.05 per pound; 80 boxes of lemons, invoiced at $2.50 per box; and 75 boxes of sweet oranges, invoiced at $3.00 per box. What was the whole amount of duty, estimated at 24% on molasses and sugar, and at 8% on lemons and oranges?

227. Sight exchange on New Orleans for $5000 cost $5075. What was the course of exchange?

228. A man paid $165 to 55 laborers, consisting of men, women and boys; to the men he paid $5 a week, to the wo-

men \$1 a week, and to the boys \$$\frac{1}{2}$ a week. How many were there of each?

229. A and B traded together; A put in \$540 for 480 days, and received $\frac{1}{3}$ of the gain; and the number of dollars which B put in was equal to the number of days it was employed in trade. What was B's capital?

230. What is the present value of a reversionary lease of \$100, commencing 14 years hence, and to continue 20 years, compound interest at 5 per cent.?

231. If a cistern 6 feet in diameter hold 80 barrels of water, what must be the diameter of a cistern of the same depth to hold 1280 barrels?

232. A gentleman in Boston drew on Wurtemberg for 6000 gilders at \$.415 per gilder. How much more would he have received if he had ordered remittance to London, and thence to New York, exchange at Wurtemberg on London being $11\frac{1}{4}$ gilders per £1, and at London on New York $9\frac{1}{4}\%$ in favor of sterling, brokerage at $1\frac{1}{4}\%$ in London for remitting?

233. Two boys, each 12 years old, have certain sums of money left to them; the sum left to one is put out at 7% simple interest, the sum left the other at 6% compound interest, compounded semi-annually, and the amount of each boy's money will be \$2000 when he is 21 years old. What is the sum left to each boy?

234. Find the sum of 21 terms of the series, 5, $4\frac{3}{4}$, $4\frac{1}{2}$, etc.

235. A man traveled 13 days; his last day's journey was 80 miles, and each day he traveled 5 miles more than on the preceding day. How far did he travel, and what was his first day's journey?

236. Find the 12th term of the series, 30, 15, $7\frac{1}{2}$, etc.

237. Bought 12 yards of cloth for \$15. How many yards must I buy at \$$1\frac{3}{4}$ and \$$\frac{3}{4}$ a yard, that the average price of the whole may be \$$1\frac{1}{5}$?

238. A man bequeathed his property, amounting to $30000, to his wife and three children as follows: The wife was to have $\frac{1}{3}$, and the remainder was to be divided so that the shares of the children at simple interest at 6% should all amount to the same sum when they were 18 years old; the ages of the children were respectively 4 yr., 5 yr. 6 mo., and 7 yr. 3 mo. What was the share of each child?

239. What sum must be invested in United States 10-40's, bearing 5% interest, payable in gold, purchased at par, to produce a semi-annual income of $400 U. S. currency, when gold is quoted at 175%?

240. Imported 12 casks of wine, each containing 42 gallons invoiced at $3.25 per gallon; paid $96 for freight, and a duty of 40%. How much shall I gain % in selling the whole for $2747.58?

241. H. Derby contracted to dig a trench 1000 yd. long, in 24 days. Having employed 54 men for 15 days, he found that only 450 yd. had been dug. How many more men must he employ to finish the trench according to the contract?

242. The duty of a garrison, consisting of 5 companies, containing respectively 40, 50, 60, 70 and 80 men, requires 90 men each day. What number must each company furnish?

243. $750. MIDDLEFIELD, Sept. 1, 1858.

Six months after date I promise to pay H. Harger or order, seven hundred fifty dollars, for value received, with interest.

JOHN JOSLYN.

Indorsed as follows: March 1, 1859, $200; June 16, 1859, $100; Jan. 1, 1860, $225. What was due Oct. 19, 1862?

244. The duty on an invoice of 300 dozen London porter, at 30%, was $190.512; breakage, 2%. Required the invoiced price per dozen.

245. In how many different ways may the letters of the alphabet be arranged, taking 15 each time?

246. What is the equated time for paying the balance of the following account?

J. JONES, *in account with* B. DAY.

Dr.			Cr.		
1862.			1862.		
Jan. 1	To Mdse. on 6 mo.	$350 00	April 1	By Cash,	$250 00
March 1	" " " "	240 00	May 6	" "	200 00
April 15	" " 4 "	175 00	June 30	" "	300 00
June 20	" " 3 "	280 00			
Aug. 1	" " 2 "	400			

247. How much sugar, at 4, 5 and 9 cents a pound, must be mixed with 72 pounds at 12 cents a pound, so that the mixture may be worth 8 cents a pound?

248. Insert four arithmetical means between 2 and 79.

249. A person wishes to discharge a debt of $1125 in 18 annual payments, which shall increase in arithmetical progression. How much must his first payment be in order that the last may be 120?

250. Three merchants have an interest in a steam vessel; A puts in $960 for six months; B, a sum unknown, for 12 months; C, $640 for a time not known when the accounts were settled; A received $1200 for his share, stock and profit; B, $2400 for his, and C, $1040 for his. What was B's stock, and C's time?

251. In the foregoing question A's gain was $240 during 6 months; B's, $800 during 12 months, and C's, $400 during 15 months, and the sum of the products of their stocks and times was 34560. What were their stocks?

252. In the same question the sum of the stocks is $3200; A's stock was in trade 6 months; B's, 12 months, and C's, 15 months; at the settling of accounts, A is paid $240 of the gain; B, $800, and C, $400. What was each person's stock?

253. A man bought a piece of property for $10500, and agreed to pay principal and interest in 3 equal annual installments. How much was the annual payment, interest being 7%?

ANSWERS.

P.	Ex.	Answers.
19	1	$34420.30.
"	2	$1101.82.
"	3	$130200.
"	4	$3917660937.40.
"	5	$4.35.
"	6	$94353.54.
20	7	691904 acres.
"	8	$24574740.
"	9	7710.
"	10	476 vessels.
"	11	$1443394.34.
"	12	$115.77.
"	13	23171 mi.
21	14	10051 mi.
"	15	2535 mi.
"	16	$14250.
"	17	2358162.
"	18	105.
"	19	Loss 6742; Strength, 28888.
"	20	3135283.
22	21	Length, 2098 mi. Cost, $115555000.
"	22	863035 volumes. 365795 more vol. in Mass.
"	23	53 scholars.
"	24	$7000.
"	25	29300 charts and maps.
"	26	480.
"	27	$2206080000.
23	28	$3.06.
"	29	66880000 Acres. 104500 sq. mi.
23	30	$12772.81.
"	31	$19294.
"	32	No. of stamps 96-847073. Value of the same, $3676218.52.
"	33	$101.72.
"	34	30 representatives.
"	35	36.
"	36	318 men.
24	37	17 mi.
"	38	No. of pieces, 880-896255. Value, $889635497.-32.
"	39	$220.
"	40	63678 sq. mi.
"	41	140320 men.
"	42	Gain $6 per head. Bought 220.
"	43	67702280 bu.
25	44	$126.
"	45	3 times greater.
"	46	524 banks.
"	47	33191 men.
"	48	$711000.
"	49	31017921.
"	50	23110 vol.
"	51	8 years.
26	52	32 boxes.
"	53	6200 schoolhouses.
"	54	$81016.
"	55	6670.
"	56	$16548531.
"	57	$3923373.

P.	Ex.	Answer.
26	58	$58524335.
"	59	$3.23.
27	60	2736 years.
"	61	$116000.
"	62	$460.
"	63	$350.
"	64	$5656705.49.
"	65	$1099262.78.
"	66	$2444628.14.
"	67	$1086600.
"	68	20213 men.
28	69	139180.
"	70	A, 5; B, 9, and C, 12.
"	71	60 males, 207 females.
"	72	$888082128.
"	73	$895796630.98.
"	74	$5329044.02.
"	75	$37424.99.
29	76	No. of pieces, 186-502. Value $3184892.
"	77	No. of pieces, 1076-900. Value, $358217.80.
"	78	No. of pieces, 895-923. Value, $17510960.
"	79	No. of pieces, 1976-250. Value, $815875.
"	80	$24688477.12.
"	81	$400.
"	82	$21680355.50.
30	83	Greater, 1520; less, 967.
"	84	$359312.63.
"	85	21 hours.
"	86	3750 lb.
"	87	970 men.
"	88	128 men.
"	89	476.
30	90	1st year, 626; 2d, 676; 3d, 726; 4th, 776 pairs.
31	91	$827270.38.
"	92	Jan. 1, 1863, $1-472000. Jan. 1, 1864, $2-422000.
"	93	462 lb.
"	94	$18.
"	95	727038 more females.
"	96	425.
"	97	$93.87½.
"	98	3.
"	99	62000.
32	100	$62.
"	101	3015 men.
"	102	Average value, $4-000. Average No. acres, 80.
"	103	10 of each.
"	104	4720 prisoners.
"	105	225, or 75 of each kind.
"	106	1517706.
"	107	A, $1350; B, $2-250; C, $1440; D, $2160.
"	108	$150417.25.
"	109	25 men.
"	110	5500 killed, 21000 wounded, and 13-621 prisoners.
"	111	785 yd.; gain, $5 per yd.
"	112	$6.
"	113	23849.
"	114	Steamboat, 15 cts.; coaches, 24 cts.; railroad, 11 cts.
"	115	2834 killed; 13709

P.	Ex.	Answer.
		wounded; and 6-643 prisoners.
34	116	109 bu.
"	117	595997.
"	118	95864.
"	119	30 oxen; 10 horses.
"	120	7962032 sq. mi.
"	121	$22 per hhd.; $4 gain.
"	122	1644 killed; 9262 wounded; and 4-945 missing.
"	123	$12340.
"	124	13659 pensioners. Sum paid, $1227-643.
35	125	20 cents.
"	126	$82.11.
"	127	$5000.
"	128	430042.
"	129	383717.
"	130	183855.
"	131	Those who left, 20 bu.; the others, 70 bu.
36	132	Lost, $1265.
"	133	$1895643.
"	134	$11470.
"	135	Pensioners, 1132. Amt. paid, $143-527.
"	136	15 barrels.
"	137	$90450000.
"	138	75148690.
"	139	640 sheep.
"	140	138 years.
37	141	$13.20.
"	142	$1530.
"	143	4022 bu.
"	144	No. of stamps, 251-307105. Value, $7078188.
"	145	$5884.
37	146	$7835102.
"	147	$1144868.27.
"	148	10 cents.
"	149	96 tons.
38	150	37500 rations.
"	151	8179 persons.
"	152	$2350000.
"	153	One, 13 mi.; the other, 7 mi.
"	154	43534245.
"	155	1st, $960; 2d, $640; 3d, $320.
"	156	6782.
39	157	Killed, 545; wounded, 3688; missing, 303.
"	158	Fore wheels, 31-680; hind wheels, 22176.
"	159	5 of each.
"	160	$533.01.
"	161	$43.66.
40	162	120 mi.; meet in 6 hours.
"	163	$1354300.
"	164	360.
"	165	Vessels, 161; guns, 1175; tonnage, 127931.
"	166	212138570.
"	167	36.
"	168	49 cents less.
"	169	745452.
"	170	A owes B $7\frac{1}{2}$ cents.
41	171	20 melodeons.
"	172	$906250000.
"	173	41000.
"	174	1300 votes.
"	175	$961.50.
"	176	32 vessels of 15985 tonnage, and 166 guns.
"	177	$34309600.

P.	Ex.	Answer.
41	178	74.
"	179	800 and 200.
42	180	$25.95.
"	181	$26742019.
"	182	1877620 letters.
"	183	$212607.36.
"	184	$622241.04.
"	185	76.
"	186	7 school-houses.
"	187	$2.10.
43	188	2076 men.
"	189	$1078432.
"	190	9 classes of ladies, 8 of gentlemen.
43	191	$9977784.50.
"	192	Oats, 90; corn, $1.25.
"	193	$6797420.
"	194	6145821 letters.
44	195	$122433.75.
"	196	2557 men.
"	197	5000 men.
"	198	One, 187562; the other, 288641.
"	199	Cost, $190; selling price, $175.
"	200	21 yd. each.

CHAPTER III.

45	1	$9.10.
"	2	$\frac{2}{7}\frac{5}{5}$.
"	3	56.25 yd. in length.
"	4	No. of scholars, 84. No. unoc. desks, 24.
"	5	1001.
"	6	$6.
"	7	$25.
"	8	$6\frac{9}{16}$ bbl.
"	9	$3\frac{13}{49}$.
46	10	$\frac{4}{65}$.
"	11	$\frac{3}{10}$ of a day.
"	12	$5.50.
"	13	$1597.36\frac{7}{8}$.

P.	Ex.	Answer.
46	14	12734 car loads.
"	15	60 mi., 1550 feet.
"	16	A, $2656; B, $3414\frac{6}{7}$.
"	17	84 times.
"	18	$6\frac{16}{105}$.
"	19	$15.82\frac{13}{16}$.
"	20	200 at 2 cents each. 150 at 3 " "
46	21	$1\frac{1}{2}$ days.
47	22	$16\frac{5}{6}$.
"	23	2541212537.5.
"	24	31 cents.
"	25	$\frac{25}{36}$ of a day.
"	26	10 horses.
"	27	.9999998.
"	28	.75.
"	29	$29692.
"	30	$2\frac{9}{16}$ pounds.
"	31	30 bu.
"	32	$456.
48	33	$\frac{7}{11}$.
"	34	65.
"	35	30 yd.
"	36	$13\frac{1}{2}$ lb. butter, 12 dozen eggs.
"	37	$50.
"	38	$228.66\frac{2}{3}$.
"	39	$6000.
"	40	$188.64.
"	41	133.3322 acres.
"	42	$261.75.
"	43	.2679745.
"	44	27 pairs.
"	45	$48.775.
49	46	$5400.
"	47	$7\frac{1}{5}$ days.
"	48	.574751.
"	49	4320544.8215.
"	50	$\frac{5}{8}$ and $\frac{9}{20}$.
"	51	B, $\frac{5}{154}\frac{9}{}$; C, $\frac{19}{77}$.
"	52	X, $2250; Y, $14250.

P.	Ex.	Answer.
49	53	75 of one party, 102 of the other.
"	54	$1\frac{5}{12}$.
50	55	A, \$21: B, \$23; C, \$25; D, \$27.
"	56	\$2050900.67.
"	57	$\frac{1}{10}$.
"	58	\$700.
"	59	\$3448318.50.
"	60	191300070000000.
"	61	$\$2.94\frac{11}{24}$.
"	62	1249.0259107.
"	63	$\$17.67\frac{9}{10}$.
"	64	Value of the rem. $\$12.72\frac{11}{12}$; Gain on the whole, $\$20.56\frac{1}{4}$.
51	65	$\$1.66\frac{2}{3}$.
"	66	$3\frac{1}{2}$T.
"	67	150 ft.
"	68	A, 74 mi.; B, 59 mi.
"	69	\$5.20.
"	70	$\frac{1}{7}$.
"	71	$\frac{12}{13}$, $\frac{7}{11}$, $\frac{421}{431}$, $\frac{3}{8}$.
"	72	$157\frac{1}{2}$ days; A, 35 times; B, 18 times; C, 20 times.
"	73	76116.48 strokes.
52	74	51975 times.
"	75	Enumeration, 82-853. Enrollment, 120-322. Attendance, 82476.
"	76	\$51.50.
"	77	160 sheep.
"	78	57 lb.
"	79	\$224.
"	80	John, 16; James, 28.
"	81	7 yd.
"	82	\$1226.64.
52	83	$41\frac{102}{143}$ mi.
53	84	50.
"	85	\$145.50.
"	86	\$250.
"	87	$\$34.03\frac{1}{8}$.
"	88	$17\frac{17}{18}$ bu.
"	89	$\$21\frac{7}{9}$.
"	90	$10\frac{9}{10}$ cents.
"	91	21 bu.
"	92	$\frac{3}{5}$ of a bu.
"	93	$\$5\frac{1}{3}$.
"	94	28.365 tons.
"	95	\$26.25.
"	96	51 men.
"	97	$\frac{3}{7}$.
54	98	$21\frac{11}{17}$ mi.
"	99	$39\frac{5}{6}$ yd.
"	100	154.
"	101	\$82.875.
"	102	\$550.
"	103	$\frac{67}{92}$ of a day.
"	104	$10\frac{13}{16}$ yd.
"	105	$1\frac{19}{76}$.
"	106	190806 men on duty. 14363 men in hospital. 2917 men in confinement. 14110 men on furlough. 223776 total strength.
55	107	$\frac{21}{22}$ of a yd.
"	108	$\frac{1}{16}$.
"	109	\$10570.
"	110	Horse, $\$116\frac{2}{3}$. Saddle, $\$33\frac{1}{3}$. Buggy, $\$103\frac{19}{27}$.
"	111	$3\frac{1}{3}$ times larger.
"	112	$49\frac{1}{2}$ days.
"	113	7 days.

P.	Ex.	Answer.
55	114	Buchanan, 1839642 votes. Fremont, 1342069 votes. Fillmore, 874760.
"	115	$93\frac{1}{3}$ bu.
"	116	$5\frac{5}{11}$ days.
56	117	$729\frac{1}{12}$ bu. for $\$465\frac{1}{2}$.
"	118	$3.69.
"	119	6 acres.
"	120	$13.95.
"	121	$\frac{2}{3}$ yd.
"	122	$4\frac{9}{11}$ hours.
"	123	$\$6846\frac{2}{3}$.
"	124	$\frac{1}{44}$.
"	125	B, $62\frac{5}{8}$ bu.; C, $41\frac{3}{4}$ bu.; D, $10\frac{7}{16}$ bu.
57	126	$1\frac{3}{5}\frac{3}{5}$ days.
"	127	$14\frac{1}{4}$ doz.
"	128	$7\frac{1}{2}$ oz.
"	129	$2828.51.
"	130	17.
"	131	4 times.
"	132	280 pupils.
"	133	$36.57.
"	134	Boy, $\$71\frac{3}{7}$; Girl, $\$55\frac{5}{9}$.
"	135	$12\frac{5}{8}\frac{8}{5}$ days.
"	136	A, $825; B, $1650. C, $2475; D, $3300.
"	137	$1141983.22.
58	138	$37\frac{2}{5}$ mi.
"	139	$4008\frac{8}{9}$ yd.
"	140	5 times.
"	141	Cow, $3\frac{1}{3}$ mo.; horse, $2\frac{5}{8}$ mo.
"	142	$.90.
"	143	$13285.
"	144	23190 men.
"	145	Slate, 25 cents; book, 45 cents.
58	146	A, $360; B, $270; C, $240.
59	147	$158.12\frac{1}{2}$.
"	148	$1479.
"	149	40 lb.
"	150	18 cents.
"	151	Denmark, 1600551; Holstein, 544419; Schleswig, 409900.
"	152	$.53 + 15 lbs. nails.
"	153	$3\frac{3}{14}$ days.
"	154	$\frac{15\,47}{77\,58\,06\,00\,00}$.
"	155	.0425.
"	156	60 ft.
"	157	$12.
60	158	No. of pieces, 211788518. Value, $5908522.60.
"	159	10 days.
"	160	Graduates, 60; males,
"	161	$34.77.
"	162	Horse, $140; No. of tickets, 40.
"	163	9 hours.
"	164	1, 2, 4, 5, 7, 8, 10, 14, 16, 20, 28, 35, 40, 56, 70, 80, 112, 140, 280, 560.
"	165	$700.
61	166	$21518200.
"	167	128 gallons.
"	168	36 years.
"	169	$210841.
"	170	$107359.36.
"	171	$1379.84.
"	172	333 times nearly.
"	173	$47\frac{13}{16}$ ounces.
62	174	49.995045.
"	175	$203.59.

P.	Ex.	Answer.
62	176	300 oranges.
"	177	$.30.
"	178	Exterior ring, 10573 mi. Interior ring, 17176.
"	179	A, 3 d.; B. 4 d.; C, 6 d. All together, $1\frac{1}{3}$ d.
"	180	$800.92—
"	181	Failed, 39; admitted, 154.
"	182	$130.
63	183	$300 each.
"	184	11402382 gal.; value, $3524847.
"	185	$210.
"	186	A, $36; B, $52.
"	187	Greatest, 96851760 mi. Least, 93148240 mi.
"	188	1488.375 gal.
"	189	B, $170; C, $1562.
"	190	120 bu.
"	191	No. 26027300; value, $87109.60.
64	192	$\frac{780.672.286.189.210}{1092.}$
"	193	B in $2\frac{1}{6}$ h.; C in $3\frac{7}{15}$ h.
"	194	Killed, 1644; wounded, 9272; missing, 4945.
"	195	125 bu.
"	196	B, 41.075 acres; C, 20.825 acres.
"	197	$541.50.
"	198	4 bu.
"	199	$\frac{2}{3}\frac{8}{1}\frac{3}{7}$.
"	200	John, 5; Henry, 7; Charles, 9.
65	201	$106\frac{5}{7}\frac{2}{2}\frac{1}{6}$.
"	202	$.213.
"	203	One 46.55 mi., the other, 38.125 mi.
"	204	$10\frac{2}{7}$ bu.
"	205	$23563.86.
65	206	$12\frac{5}{6}$ hours.
"	207	$25\frac{2}{3}$.
"	208	5 times.
"	209	$1.40.
66	210	17 tons.
"	211	$2231.93\frac{1}{4}$.
"	212	Accidents, 99; killed, 264.
"	213	243 chestnuts.
"	214	22326224 bushels.
"	215	288.
"	216	$\frac{4}{21}$ of the cost.
"	217	A, 56 d.; B, 84 d.; C, 126 d.; D, 252 d.
67	218	3.03203125 times.
"	219	$139708.80.
"	220	$9\frac{1}{11}$ tons of coal.
"	221	16 yd.
"	222	16560 rails.
"	223	Brick, 996; framed, 9970; stone, 578; log, 216.
"	224	48.
"	225	$7350.
"	226	No. of lb., 100; cost, $.26.
68	227	2 times.
"	228	1939322 letters.
"	229	$383851.62.
"	230	6 days.
"	231	$11\frac{1}{9}$ cents.
"	232	379.5 mi.
"	233	22 and 14.
"	234	$30.
69	235	20 days.
"	236	.28 nearly.
"	237	$57\frac{6}{7}$ lb. of tea. Coffee $.45 per lb.
"	238	120 ft.
"	239	$8\frac{4}{7}$ mi.
"	240	$2.
"	241	$211\frac{2}{3}\frac{3}{8}$.
"	242	7 mi.

P.	Ex.	Answer.
69	243	10 mi.
70	244	70 days.
	245	470232 children.
"	246	$\frac{19}{27}$ of a day.
"	247	860 A. at $13 per acre.
"	248	1260 times.
"	249	$6 in gold, $.43 in frac. cur.
"	250	60 rd. in advance. Fox ran 140 rd.
"	251	11130 school-houses.
71	252	$6\frac{11}{60}$ da.
"	253	137 and a rem., $7777.50.
"	254	150 cents.
"	255	A, $8100; B, $6400.
"	256	50-cent-pieces, 6; 25-cent-pieces, 24; and 25 of each of the others.
"	257	30970.836. lb.
"	258	Area, 937398 sq. mi. Population, 237406-301.
"	259	$1\frac{1}{11\,6}$
"	260	$4\frac{1}{17}$ rd.
72	261	A, $480; B, $240; C, $160; D, $100.
"	262	18 da.
"	263	$307863.50.
"	264	160 da.
"	265	$1396508.08.
"	266	Fortune, $11900; gain, $2350.
"	267	$416.70.
73	268	Saddle, $40; horse, $80.
"	269	1556244390 acres.
"	270	$6897239190.
"	271	$32\frac{1}{4}$ yd.
"	272	Brandy, 94 gal.; water, 26 gal.
73	273	$35379.
"	274	$.27\frac{1}{2}$.
"	275	1068779 men.
"	276	$360, $160, and $150.
74	277	72 sheep; $687\frac{1}{2}$ lb. butter.
"	278	$1.67\frac{1}{2}$.
"	279	$17000000.
"	280	2751.5—
"	281	$97\frac{1}{2}$ A.
"	282	Home, 143628; India, 75899.
"	283	240 peaches.
75	284	80 and 84 ft.
"	285	$1303304.50.
"	286	$42.25.
"	287	Whole amt., 53.767 acres. One part, 21.5068 A., the other, 32.2602 acres.
"	288	$\frac{2}{2}\frac{2}{3}\frac{5}{0}\frac{4}{1}\frac{5}{6}\frac{5}{7}\frac{2}{5}$.
"	289	$121.05.
"	290	Average No. 62; expense, $12.35—
"	291	30 min. 1st horse, 4500 rd.; 2d horse, 3600 rd.; 3d horse, 3000 rd.
"	292	Wheat, 1.66\frac{2}{3}$; corn, $1; whole cost, $20

CHAPTER IV.

P.	Ex.	Answer.
76	1	$3\frac{399}{500}$ in.
"	2	$2471.40.
"	3	$14971316.72.
"	4	2 A., 6 P., 15 sq. yd., $\frac{7}{18}$ sq. ft.
"	5	230.
"	6	34560 steps.
77	7	16 m. 12 sec.

P.	Ex.	Answer.
77	8	$\frac{7}{4\frac{5}{5}}$.
"	9	19 gal. 1 qt. 1 pt. $\frac{4}{1\frac{}{3}}$ gi.
"	10	$7.
"	11	$5958.91.
"	12	$14.54\frac{6}{11}$.
"	13	28000.
"	14	Time, 7 h. 44 m. $35\frac{1\frac{5}{2}7}{}$ sec.; dis. from Alb., $168\frac{1\frac{2}{7}0}{}$; dis. from Buff., $129\frac{7}{1\frac{}{2}7}$ mi.
"	15	$63530.40.
78	16	Editor, 1; lawyers, 6; merchants, 25; farmers, 42; clergymen, 8.
"	17	10 cents.
"	18	$1.12\frac{1}{2}$.
"	19	$3625.
"	20	88 bu. 4 qt.
"	21	39 A. 3 R. 18 P. 0 sq. yd. 6 sq. ft. 64 sq. in.
"	22	292 mi. 5 fur. 16 rd. 5 yd. 1 ft.
"	23	18 da. 5 h. 11 min. $6\frac{2}{3}$ sec.
79	24	$24031.25.
"	25	$\frac{1}{3\frac{}{5}}$.
"	26	1428 solid ft.
"	27	$190\frac{2}{3}$ sq. yd.
"	28	3 h. 15 m. P. M.
"	29	60, at $\frac{1}{2}$ a cent each. 90, at 3 for 2 cents.
"	30	N. J. farmer gained $18\frac{1\frac{4}{2}}{7}$ bu. of oats, worth $7.40\frac{2\frac{0}{2}}{7}$.
"	31	$143.55—
"	32	$.80.
"	33	$1238.17\frac{1}{2}$.
80	34	$11\frac{1}{5}$. tons.
"	35	8448 years.
"	36	$520553.91.
"	37	$16.67.
80	38	$\frac{5}{7}$.
"	39	$175.86 + gain.
"	40	$182965.32.
"	41	$100.
81	42	239 mi. 3 fur. 22 rd. 5 yd. 4 in.
"	43	32 men, each 3 fur. 2 rd. $12\frac{4\frac{5}{6}}{4}$ ft. 8 men, each 2 fur. 18 rd. $3\frac{9}{1\frac{}{6}}$ ft.
"	44	Bramlette, 68306 votes, Wickliffe, 17389 "
"	45	£92 18s. 9d. $3\frac{6\frac{3}{4}}{6}$ far.
"	46	A, $172\frac{8}{3\frac{}{1}}$ mi.; B, $156\frac{8}{5\frac{}{7}}$ mi.
"	47	$26.58\frac{3}{4}$.
"	48	13 C, $68\frac{1}{3\frac{}{2}}$ cu. ft.
"	49	Rye, $1.15; barley, $1.00.
"	50	3 R. $7\frac{5}{7}$ P.
82	51	Horse, $150; carriage, $600.
"	52	9 mi. 7 fur. 8 rd.
"	53	$19920767.
"	54	$83\frac{1}{4}$ lb.
"	55	1092.728 mi.
"	56	1st, 29121; 2d, 22597; 3d, 19383.
"	57	$213\frac{1}{3}$ acres.
"	58	$6.69\frac{3}{8}$.
"	59	Primary, 1683; Int., 1275; Gr. School, 459; High School, 135.
83	60	Mixed, $1020; Pri., $6311.25; Int., $7968.75; Gr., $4781.25; High School, $3281.25.
"	61	90° 24′ W. Lon.
"	62	$8.28\frac{1}{8}$.
"	63	9.2640625 A.

P.	Ex.	Answer.
83	64	Coinage, $16680; dep., $17594.
"	65	$1.00.
"	66	$1260.
"	67	Lincoln, 1866452. Douglas, 1375157. Breckinridge, 847953. Bell, 590631.
84	68	.0065 of a ton.
"	69	408883200 mi.
"	70	$186888.25.
"	71	$19\frac{1}{5}$ bunches.
"	72	141.25—bu.
"	73	8 h. 59 m. 20 sec. A. M.
"	74	$27\frac{3}{11}$ min. past 8.
"	75	$\$20.09\frac{13}{15}$.
"	76	88 P. 97 sq. ft. 12 sq. in.
"	77	$660000.
85	78	$\$395.92\frac{1}{2}$.
"	79	31 yr. 2 mo. 20 da.
"	80	$220.
"	81	$7.90.
"	82	38° 44′ 18.75″.
"	83	$\$123\frac{1}{3}$.
"	84	$2.625.
86	85	$1.25.
"	86	172 d. 20 h. 47 min. $49\frac{5}{7}$ sec.
"	87	$907946.56.
"	88	$\$519.53\frac{1}{8}$.
"	89	10s. 6d.
"	90	$6.74.
"	91	$\frac{3}{7}\frac{7}{3}\frac{1}{2}$.
"	92	15.
"	93	$526\frac{2}{9}$ sq. yd.
"	94	149 lb. 5 oz. 1.19—dr.
"	95	18 oz.
87	96	$60802597\frac{3}{7}\frac{1}{7}$ gal.
"	97	$\$23\ 83\frac{1}{8}$.
"	98	1ft. $6\frac{3}{10}\frac{1}{8}\frac{3}{9}$ in.
"	99	12666 men.

P.	Ex.	Answer.
87	100	Killed and prisoners each, 3500. Wounded, 16400.
"	101	56.25, and 43.75.
"	102	$7.957+
"	103	$\$12.50\frac{5}{12}$.
"	104	£408 17s. $9\frac{1}{3}$d.
"	105	2 lb.
88	106	$357 spent unnecessarily. 1138 books.
"	107	$950.36+
"	108	$\$75.83\frac{1}{3}$.
"	109	$204.75.
"	110	197.325.
"	111	$\$2010.52\frac{1}{2}$.
"	112	4 d. 10 h. 34 min. 38 sec.
"	113	$29741.25.
89	114	98.8 acres.
"	115	$6\frac{7}{8}$.
"	116	$\$93.86\frac{2}{3}$.
"	117	$1788.15.
"	118	51 bags; capacity, $1\frac{11}{16}$ bu.
"	119	$.70.
"	120	8.
"	121	$540425.
90	122	23328 bricks.
"	123	£40 0s. 2d.
"	124	£734 8s. 1d.
"	125	$\$1330424.\dot{2}\dot{4}$.
"	126	$102521.60.
"	127	$133.42.
"	128	$390.
"	129	$11.25 and $8.75.
91	130	$\frac{2}{5}\frac{2}{3}$.
"	131	30 d. 23 h. 25 m. $26\frac{2}{5}$ sec.
"	132	$\$.83\frac{1}{3}$.
"	133	$25.20.
"	134	$2.00; 18 lb.
"	135	5 ft. $2\frac{2}{9}$ in.

P.	Ex.	Answer.
91	136	84 yr. 9 m. 8 d.
"	137	$139.
"	138	$1699932053.
"	139	11880 bu.
92	140	1.008$\dot{3}$ were sold. 54.11$\dot{6}$ remained.
"	141	1026864000.
"	142	$210.50.
"	143	15.36\frac{1}{2}$.
"	144	$7.07+
"	145	30 gal.
"	146	261252 persons.
"	147	$5.60+
93	148	8 A. 3 R. 30$\frac{1}{4}$ P.
"	149	33.58\frac{3}{8}$.
"	150	32148.
"	151	37 bells, and 6577 lb. remaining.
"	152	88 mi. 2 fur. 2 rd.
"	153	$2\times2\times2\times5\times5\times7$.
"	154	24.
"	155	$354.
"	156	17 mi. 28 rd. 12 ft. 4$\frac{1}{3}$ in.
"	157	13423 mi. 2 fur. 14 rd. 9 ft.
"	158	July 14, 1858, at noon.
94	159	32.04\frac{1}{3}$.
"	160	118$\frac{1}{5}$ cu. ft. each load. Price per cord, 4.26\frac{2}{3}$.
"	161	£3215 2s. 5$\frac{3}{8}$d.
"	162	$21588.90.
"	163	108.
"	164	Corn, $280\frac{3400}{4301}$ bu.; wheat, $271\frac{1021}{4301}$ bu.; rye, $604\frac{596}{4301}$ bu.; money, $1089.66-$\frac{2834}{4301}$.
"	165	25 rd.
95	166	1 mi. 2060 ft. 8 in.
95	167	2 ft. 3$\frac{346}{395}$ in.
"	168	1611$\frac{51}{140}$.
"	169	5.
"	170	85967 francs.
"	171	$602.25.
"	172	$\frac{2}{11}$, $\frac{41}{111}$, $\frac{4}{13}$, and $\frac{250}{37}$.
"	173	97845 men.
"	174	87164 men.
96	175	100 gal.
"	176	$721.40.
"	177	Sound after flash, $27\frac{135}{18}\frac{35}{27}\frac{35}{20}\frac{42}{00}\frac{9}{0}$ sec. Ball after sound, $11\frac{24}{38}\frac{45}{55}\frac{3}{5}$ sec.
"	178	4 h. 8 m. 36$\frac{2}{3}$ sec.
"	179	26\frac{11}{14}$.
"	180	28 T. 14 cwt. 21 lb. 14 oz.
"	181	Debt, $133.56—Interest, $4.35+
"	182	Debt, $61.28—Interest, $3.05.
"	183	$11665.72.
"	184	$\frac{4}{5}$.
"	185	Copper, 289287 lb. Tin, 96429 lb.
97	186	One, 5.45\frac{5}{11}$; other, 8.18\frac{2}{11}$.
"	187	14$\frac{14}{15}$ bu.
"	188	108 steps.
"	189	6.
"	190	443.06\frac{1}{4}$.
"	191	1308 ft. 2′ 8″.
"	192	124 ft.
"	193	148 cu. ft. 0′ 4″.
"	194	23779 animals for $592758.25.
"	195	$704.70.
98	196	$.70.
"	197	2 A. 1 R. 18 P.
"	198	$206819597.20.
"	199	$\frac{6}{7}$.

P.	Ex.	Answer.
98	200	1 w. 4 d. 14 h. 50 m. 51 sec.
"	201	$4.60.
"	202	2228560 mi.; $89\frac{89}{625}$ times.
"	203	86° 21′ W. long.
"	204	$432.94\frac{1}{3}$
99	205	$348.80+
"	206	167 and 7.
"	207	6 oxen, 30 cows, 210 sheep.
"	208	20 A. 3 R. $9\frac{7}{9}$ P.
"	209	707 hhd. $57\frac{6}{7}$ gal.
"	210	22 gill, 44 half-pint, 88 pint, and 176 quart bottles.
"	211	Marriage, Dec. 30, 1857. Child's birthday, Jan. 20, 1861.
"	212	$35.86+
"	213	6616746 bu.
100	214	Sold $2.62\frac{1}{2}$. One's gain, $.17\frac{1}{2}$; the other's gain, $.26\frac{1}{4}$.
"	215	3 h. 40 min. 52 sec.
"	216	$4\frac{8}{13}$ min. before twelve.
"	217	$.17\frac{31}{45}$.
"	218	$60\frac{20}{33}$.
"	219	$48182005.
"	220	16 min. $21\frac{9}{11}$ sec.
101	221	$8\frac{5}{11}$ min.
"	222	240 bu.
"	223	$2.66\frac{2}{3}$.
"	224	$21\frac{3}{7}$ gal.
"	225	$4336884.
"	226	
"	227	Man, $2\frac{1}{2}$ mi.; Boy 2 mi.
"	228	15 T. 12 cwt. $81\frac{1}{4}$ lb.
102	229	$3.72+$3.05, $3.20.
102	230	Killed, 890; wounded, 3627; prisoners, 1222.
"	231	$12.
"	232	7.
"	233	1 lb. $5\frac{1}{2}$ oz.
"	234	80 ft.
"	235	28° 35.06′.
"	236	16578 school-houses.
"	237	7306 libraries.
"	238	Passed ex. 20096. Rejected, 7010.
103	239	Chain, £6 13s. 4d. Pencil, £3 6s. 8d. Watch, £20.
"	240	19 bu.
"	241	2 cords.
"	242	$\frac{3}{4}$ of a pound of each.
"	243	$\frac{80}{1859}$.
"	244	$7.85\frac{5}{11}$.
"	245	$\frac{1}{15}$.
"	246	1st, $4.393; 2d, $11.607; 3d, $9.85; 4th, $1.42.
"	247	$1\frac{73}{175}$ lb. avoirdupois.
"	248	$85\frac{1}{3}+
104	249	21296 sq. ft.
"	250	$\frac{7}{16}$ of a cord.
"	251	4000 men.
"	252	$150.
"	253	$485\frac{1}{3}$ bu.
"	254	$5957.55—
"	255	$\frac{1}{2511000}$ of an inch.
"	256	576.
"	257	$1605.35.
"	258	$71.59\frac{45}{64}$.
105	259	4 O. 1 f$\overline{3}$. 2 f3. 40 m.
"	260	36 cents.
"	261	$75.
"	262	23 h. 18 m.
"	263	181000.
"	264	10892.7 mi.

P.	Ex.	Answer.
105	265	$836408.13—
"	266	4485 yd.
"	267	.992 of a short ton.
"	268	$10\frac{5}{19}$ hours, and $148\frac{31}{38}$ mi.
106	269	15 yd.
"	270	$17\frac{47}{209}$ mi.
"	271	252.
"	272	$89\frac{1}{16}$ yd.
"	273	276.64 statute mi.
"	274	5 pieces.
"	275	4296 ft. 9′ 8″.
"	276	7f 3. 2f 3. 54 m.
"	277	178 mi. 5 fur. 8 rd. 4 ft. $4\frac{4}{5}$ in.
"	278	$6.07—
"	279	$2.12—
107	280	$.57—
"	281	7 in.
"	282	Eldest, $6478.83— 2d, $4859.12— 3d, $3644.34— 4th, $2733.25+
"	283	85 verses.
"	284	Private, $10\frac{1}{5}$ acres; Sergeant, $20\frac{2}{5}$; Lieut., $61\frac{1}{5}$; Capt., $81\frac{3}{5}$; Maj., $142\frac{4}{5}$; Col., 204 acres.
"	285	7 oz. 4 pwt. 16 gr.
"	286	$72343.
"	287	631.
"	288	$\frac{1}{19}$ of a hhd.
108	289	$132.21—
"	290	$110\frac{1}{2}$.
"	291	23.17690625 mi.
"	292	1216932.
"	293	33 bales.
"	294	$100.46\frac{1}{4}$.
"	295	A, $384.47; B, $291.07; C, $221.89.
"	296	85416—
108	297	$25\frac{5}{7}$ bu.
"	298	1291734653 sec.
"	299	350 A. 3 R. 37.12 P.
109	300	$569.82+
"	301	14 ft. 2′.
"	302	5 yr. 76 d. $\frac{1}{2}$ h.
"	303	2230272000 pigeons
"	304	448 yd. $2\frac{5}{16}$ qr.
"	305	$16\frac{7}{18}$ cords.
"	306	$5.20.
"	307	$618082.81.
"	308	$2.58.
"	309	$1.40\frac{10}{11}$.
110	310	$.86—
"	311	1280785763 hhd. $16\frac{5}{7}$ gal.
"	312	$35891.89+
"	313	$21\frac{2}{3}$ pipes of Port.
"	314	$1148.29—
"	315	$213.11—
"	316	1 to every $42\frac{4}{5}$ nearly
"	317	Nitre, 1500 lb., sulphur and charcoal, 250 lb. each.
"	318	248832 cu. quarter in.
111	319	51° 25′.
"	320	$114.40.
"	321	$279.31\frac{1}{4}$.
"	322	Can. more than Mo., 49200000. Total, 1038800000.
"	323	10 h. 54 m. 44 sec. P. M. of the previous day.
"	324	$734.11\frac{1}{4}$.

CHAPTER V.

112	1	$520.
"	2	180 bu.

P.	Ex.	Answer.
112	3	1st yr. 600 lb.
		2d " 720 "
"	4	$8.54+
"	5	$871278.29
"	6	$723.
"	7	$31\frac{1}{4}\%$.
"	8	$20\frac{4}{5}\%$.
		Annual int. $2160477
"	9	57 men.
113	10	$1300.
"	11	$33\frac{1}{3}\%$.
"	12	$7\frac{1}{2}\%$.
"	13	$17\frac{2}{3}$ d.
"	14	$43.75.
"	15	$9.08\frac{1}{3}$.
"	16	Gain, $20703\frac{1}{8}$; rate of gain, $4\frac{1}{6}\%$.
"	17	Cost, $120; asking price, $150.
"	18	Feb. 17, 1859.
114	19	$21.
"	20	25%.
"	21	March 2d, 1864.
"	22	3 wk. 3 d. 6 h.
"	23	$8\frac{4}{5}$ cents.
"	24	$4\frac{1}{2}$ yr.
"	25	$2.00.
"	26	Neither.
"	27	$13720.05.
115	28	Infantry, 525000.
		Cavalry, 100000.
		Artillery, 66000.
		Gens d'armes, 26000.
"	29	$169.
"	30	$3\frac{1}{2\frac{1}{5}}$ months.
"	31	2825 bu.
"	32	7's at 105%, by $\frac{5}{12}\%$.
"	33	8%.
"	34	$31801.82—
"	35	$375.05.
116	36	$1976995.
"	37	$14\frac{2}{5}$ days.
"	38	$1600.

P.	Ex	Answer.
116	39	120.82—%
"	40	457.94—%
		1964—times as great.
"	41	$407.
"	42	4 oxen, at $50; 24 cows, at $25; and 72 sheep, at $5.
117	43	20%.
"	44	$42.875.
"	45	$.033 on $1; S. P. Norton's tax, $511.86.
"	46	12 men.
"	47	$111.906+
"	48	$101.06+
"	49	$6\frac{1}{2}\%$.
"	50	6 per cent.
"	51	$2625.
118	52	$46.75.
"	53	$14350.
"	54	$6\frac{3}{5}\%$.
"	55	120 reams.
"	56	$5702.23—
"	57	75% of par value.
"	58	$4698.37+
"	59	457 mi. 3990 ft. long. Time, 183 h. $6\frac{3}{22}$ min.
"	60	$1920.
119	61	Gained $77.50.
"	62	Lost, $521.56.
"	63	$21355.54.
"	64	$33\frac{1}{3}\%$.
"	65	21 T. 5 cwt.
"	66	$5.34.
"	67	.0192—
"	68	Wife and son, $480 each; daughter, $360.
"	69	$10\frac{1}{2}\%$.
"	70	$5.05—
120	71	$13.06—
"	72	37587440.
"	73	226 A. 1 R. 34 P.

P.	Ex.	Answer.
120	74	1200 barrels.
"	75	$760.
"	76	Sept. 4, 1860, bal. due.
"	77	A, $9000; B, $4800; C, $7200.
"	78	Gold, 9 pwt. $16\frac{1}{5}$ gr. Silver and copper, $12\frac{9}{10}$ gr. each.
"	79	$250.
"	80	$66\frac{14}{5}\%$.
121	81	$59.40.
"	82	$93.75.
"	83	$7\frac{1}{3}\%$.
"	84	183732.
"	85	Commission, $1040. Net proceeds, $2820.
"	86	$368.85+
"	87	61 mi.
"	88	$2500.
122	89	$126.02+
"	90	8000 bu.
"	91	$11377.77—
"	92	New York, 222856; Pa., 200320; Ill., 135529; Ohio, 170272.
"	93	Cost of sh., $2.75\frac{2}{3}$. " broadcloth, $17.91\frac{5}{6}$.
"	94	$.93\frac{3}{4}$.
"	95	$84.63+
"	96	B's stock, $2800; C's time, 9 mo.
123	97	$.322—
"	98	Gain, $5.25.
"	99	25 cwt. 2 qr. 10 lb.
"	100	$26163.265+
"	101	180 mi.
"	102	$1\frac{37}{157}$.
"	103	A, $842.30; B, $918.87; C, $1598.83.
"	104	$5369.62—
124	105	$43\frac{41}{63}$ yd.
"	106	$5.50 per yd.
"	107	A, $1000; B, $1125; C, $875.
"	108	$1177.
"	109	$580.38.
"	110	40200 men.
"	111	$3.51—
125	112	Males. 206367. Females, 186713.
"	113	$220.29+
"	114	21 years old.
"	115	$26\frac{2}{3}\%$.
"	116	$187454.63.
"	117	310.
"	118	24 lb.
"	119	Entire profit, $8333.37. Due from Gwin & Co., $21368. Paid to A, $8127.$18\frac{1}{2}$. Paid to B, $8511.$43\frac{1}{2}$.
126	120	$1456.52—
"	121	12 d. 11 h. 29 m. 29+sec.
"	122	8%.
"	123	33.75 yd.
"	124	$212.50.
"	125	$178.63.
"	126	912.
127	127	3 yr. 2 mo.
"	128	$.52—in Hav; $.853—in store; selling price, $1.023+
"	129	$25\frac{1}{2}$ lb.
"	130	20%.
"	131	$1061\frac{1}{4}$ sq. ft.
"	132	489200 lb.
"	133	$2.23.
"	134	Oct. 19, 1864.
"	135	$33\frac{1}{3}\%$.

P.	Ex.	Answer.
128	136	$43189600.
"	137	25%.
"	138	$10\frac{1}{4}$%.
"	139	$1003.12\frac{1}{2}$.
"	140	11 in.
"	141	$81556.
"	142	A's, 8; B's, 12; C's, 16 months.
"	143	$13\frac{7}{11}$%.
"	144	$68\frac{1}{4}$%.
"	145	$13\frac{1}{3}$%.
129	146	6000 privates, 100-000 arms.
"	147	36, 54, 90.
"	148	$26.
"	149	10% loss.
"	150	No more.
"	151	666900 mi.
"	152	$124.10.
130	153	$3100000.
"	154	$110.
"	155	$3264.21+
"	156	$5\frac{5}{9}$ cents.
"	157	Invoiced value, $.60 per yd. Cost after duties, etc. $.85 per yd.
"	158	12314 men.
"	159	24 sacks.
"	160	$600.
"	161	$1000.
131	162	12.308 acres nearly.
"	163	$.75.
"	164	$3\frac{2}{11}$ mi.
"	165	17 h. $2\frac{6}{7}$ min.
"	166	$240.
"	167	11.76—%
"	168	$8346.11.
"	169	Due Sept. 2d|5th, 148 days to run. Proceeds, $561.43.
132	170	24.
"	171	$16\frac{1}{2}$%.
132	172	$128\frac{4}{7}$ yr.
"	173	$564.40—
"	174	$5\frac{1}{4}$ da.
"	175	$.30.
"	176	81.25%.
"	177	$9\frac{3}{8}$ oz.
"	178	£1.
"	179	75%.
133	180	$105.84.
"	181	$390.
"	182	$865.45.
"	183	$1.80.
"	184	$.971+
"	185	$5970.
"	186	405 lb.
"	187	$161.94.
"	188	$13000.
"	189	$51\frac{1}{3}$%.
"	190	1386 sq. ft.
"	191	$39\frac{8}{13}$%.
134	192	$12.50.
"	193	$1.68.
"	194	$5591205.50.
"	195	60%.
"	196	Aug. 15, $277.99. Jan. 1, $142.01.
"	197	132 da.
"	198	4%.
"	199	$1200.
"	200	5.729+gal.
135	201	$292\frac{1}{2}$.
"	202	20000 men.
"	203	$5522.
	204	$75 at first. A had $18; B, $32.25.
"	205	5165.12\frac{1}{2}$.
"	206	24 per cent.
"	207	2 m. 5 f. 12 rd. 13 ft.
"	208	$1200.
"	209	$253.132.
"	210	$.14\frac{1}{5}$.
136	211	Act. in., $185712741. In. per ct. 837.98+%

P.	Ex.	Answer.
136	212	A's, $180; B's, $135; C's, $120.
"	213	$3032.56—
"	214	3750.
"	215	$10\frac{3}{4}$ mo.
"	216	Charleston, loss, 5.6% New Haven, gain 93%
"	217	9%.
"	218	$250.
"	219	$40.
"	220	227 gal.
137	221	Capital, $2; raw material, $1.90. Amount produced by each, $600.
"	222	June 23, 1863.
"	223	$1227.13.
"	224	Neither.
"	225	$185\frac{5}{7}$%.
"	226	2 m. $10\frac{1}{2}$ da.
"	227	Capital, $1.444 nearly. Raw material, $1.76— Each hd., $569.90—
138	228	13 bales.
"	229	1000 doz.
"	230	16 y. 8 mo.
"	231	$120.
"	232	Students, 836; Alumni, 7182. Vols., 151620.
"	233	A, $571\frac{3}{7}$; B, $428\frac{4}{7}$.
"	234	$2040.
"	235	$20\frac{5}{6}$ yd.
"	236	61800.
"	237	$\frac{8}{9}$.
139	238	$5393.61\frac{3}{8}$.
"	239	$569.
"	240	128.898—yr.
"	241	$3.66—
"	242	5%.
"	243	$30, $42, $48.
"	244	$494.80.
139	245	$1513291042.35.
"	246	N. Y. loan, $22.
140	247	$1274.074.
"	248	$318.81\frac{1}{4}$.
"	249	154 ft.
"	250	$659645.
"	251	$55\frac{5}{9}$%.
"	252	A's, $684; B, $912.
"	253	$1.25 per bu.
"	254	$990.75.
"	255	$47.13—
"	256	$242347.93+
"	257	A's, $440; B's, $480.
141	258	1 A. 3 R.
"	259	April 8, 1859.
"	260	June 13, and Aug. 1.
"	261	$2120.63—
"	262	16%.
"	263	$43111600.
"	264	$10.45+
"	265	$66\frac{2}{3}$%.
"	266	$12.00.
142	267	$4497.75.
"	268	$93\frac{9}{10}$% nearly.
"	269	$5\frac{3}{8}$%.
"	270	$3223\frac{11}{70}$.
"	271	$2.74—
"	272	$151.25.
"	273	Actual increase, $9023835840. Increase, per cent., 12646—%
"	274	$2309.03—
"	275	11 ft. 8 in.
"	276	$750.75.
"	277	9 m. 20 d.
143	278	$121.57.
"	279	Bushels. 91350000. Value, $16650000.
"	280	$7831.92.
"	281	4%.
"	282	71° 3′ W. Long.
"	283	$10628564.

P.	Ex.	Answer.
143	284	A, 20 d.; B, 24 d.; C, 30 d.; all, 8 d.
"	285	500 tons.
144	286	$3874\frac{98}{223}$ yrs.
"	287	40 shares.
"	288	$2030.50.
"	289	28981300.
"	290	100 bales.
"	291	$4018.24 bor., $62.-61 gain.
"	292	C's stock, $10000. A's gain, $336; B's, $504.
"	293	540.
"	294	$780.
"	295	Sheeting, $.12½; calico, $.10.
145	296	150%.
"	297	64 mi. $1689\frac{3}{8}$ ft.
"	298	4 mi. 2645.5+ft.
"	299	$.30.
"	300	80 in. long, 60 in. wide; 32 in. thick.
"	301	10 hours.
"	302	B, $60; C, $50.
"	303	$1104.80.
"	304	A, $39.156¼; B, $46.987½; C, $62.-65; D, $70.481¼.
"	305	Inf. 10800, art. 660. Total surrender, 11-583.
146	306	$2\frac{2}{5}$%.
"	307	A, $588; B, $1078.
"	308	28%.
"	309	$\frac{115}{119}$ mi.
"	310	$5000.
"	311	8 hhd. 30 gal. 1 pt. 1.7 gi.
"	312	$9\frac{3}{4}$%.
"	313	Feb. 4, 1860.
"	314	$846.
147	315	62½%.
147	316	$4\frac{4}{9}$%; total loss, 4500.
"	317	2734.
"	318	7 cwt. 2 qr. 18+lb.
"	319	6912.
"	320	25%.
"	321	$104.
"	322	$8.654—
"	323	$16\frac{2}{3}$%.
"	324	135.
148	325	50%.
"	326	$3808.
"	327	10%.
"	328	Jones, $6585; Brown, $5535; Hall, $4482; Smith, $2853.
"	329	$125.10.
"	330	$79\frac{1}{5}$%.
"	331	$16\frac{2}{3}$% of the wounded. $11\frac{1}{9}$% " whole loss.
149	332	Killed, 1000; Wounded, 6000. Prisoners, 2000.
"	333	$4.75.
"	334	20 mi. 2 fur. 10 rd. $2\frac{23}{71}$ ft.
"	335	525 hours.
"	336	1 gal. 2 qt. 1 pt.
"	337	1st, 45; 2d, 145; 3d, 275.
"	338	Corn, $1.50; wheat, $1.75.
"	339	A, $260.42; H, $135.42; M, $72.-92; K, $31.25.
"	340	33 min. $25\frac{7}{15}$ sec. past midnight.
"	341	$3200.
"	342	27.
150	343	$47224.
"	344	$1506\frac{6}{13}$.
"	345	$640.49.

P.	Ex	Answer.
150	346	M, \$2750; N, \$2000.
"	347	\$234.87½.
"	348	\$6765.
"	349	5200 men.
"	350	416 mi.
"	351	162.
151	352	8½%.
"	353	25%.
"	354	43¾%.
"	355	25%.
"	356	\$255.
"	357	\$302.80—
"	358	\$846.25.
"	359	\$1.07²⁷⁄₆₄.
"	360	322.
"	361	5 m. 4 d.
"	362	\$329.37.
152	363	\$18.90.
"	364	\$793403.48.
"	365	\$28000.
"	366	\$26.56.
"	367	4640.
"	368	\$400.
"	369	\$85272.
"	370	A's, \$4156.25; M's, \$9228⅛; S's, \$15215.62½.
153	371	5%.
"	372	\$2237.646.
"	373	1%.
"	374	\$511824.
"	375	A's, \$4440; B's, \$4625; C's, \$4810.
"	376	Neither.
"	377	\$70.61.
"	378	1 yr. and 2 yrs.
154	379	\$451690.
"	380	12½%.
"	381	\$88750.
"	382	100 men.
"	383	\$5010.
"	384	Direct, \$14224.91; circular, \$14476.73; gain, \$251.82.
"	385	11¾%.
"	386	\$2.
"	387	\$166.66⅔.
"	388	\$200.
155	389	\$37.77—
"	390	8 cents.
"	391	\$14075000.
"	392	\$1683 worth of sugar.
"	393	\$3000+
"	394	\$958.55.
"	395	\$.387.
"	396	300000.
"	397	\$740.
156	398	\$4392000.
"	399	\$5400.
"	400	Smith's, \$3500; Boise's, \$4900.
"	401	\$386.48.
"	402	28 cents.
"	403	\$486300.
"	404	33.
157	405	7 m. 15 d.; rate, 10%
"	406	Firm, \$9150; Marks, \$3050; Willis, \$1830; Sterrett, \$4270.
"	407	216 rd. 2 yd.
"	408	\$137675⅓.
"	409	\$2820.
"	410	8½%; J. Smith, \$425.
158	411	3346⅔.
"	412	\$6666⅔.
"	413	3 3⁄10% discount.
"	414	6250.
"	415	6 cents.
"	416	2%.
"	417	\$17480, \$14858, \$12920, \$12512.
"	418	20000.
"	419	\$.50.

P.	Ex.	Answer.
158	420	Paris, \$14285.71$\frac{3}{7}$; London, \$14600; Amsterdam, \$14640.
159	421	\$54091.37+
"	422	Total value, \$20216.287. Rate of increase, 181.8%.
"	423	$2\frac{1}{8}$% discount.
"	424	\$120.
"	425	$2\frac{1}{3}$ doz.
"	426	\$131756.15.

CHAPTER VI.

160	1	3 ft. 2.72 in.
"	2	\$7435.56.
"	3	$12\frac{1}{2}$ cents.
"	4	Cir. less than sq., \$48.16. Sq. less than Rect., \$108.
"	5	1st, 12%; 2d, 18%; 3d, 30%.
"	6	Length, 55.54+ in.; bung di., 44.43+in.
"	7	2 y. 9 m. 15 d.
161	8	\$2.60, \$3.00.
"	9	20 acres.
"	10	232.457 rds.
"	11	35lb.
"	12	20, 20, 20, 60, and 40, respectively.
"	13	1 m. 21.99 sec.
"	14	$\frac{5}{27}$; farm worth, \$9342.
"	15	H, \$2568.58+ G, \$1653.91+
162	16	Oct. 20.
"	17	\$640.
"	18	2 h. 14 m. 21 s. A. M.
162	19	\$133.57+
"	20	156 rd.
"	21	\$556 23.
"	22	\$105.80.
"	23	$122\frac{1}{2}$ ft.
"	24	$11\frac{1}{2}$ d.
"	25	\$12.66.
163	26	48 miles.
"	27	4338350 m $50943\frac{3}{4}$ in.
"	28	\$938.66$\frac{2}{3}$.
"	29	10.59%.
"	30	Bal., \$498; due June 22, 1860.
"	31	Aug. 28, 1859.
"	32	A, \$2400; B, \$3000; C, \$3375.
164	33	\$47.86—
"	34	20 da.
"	35	\$640.50.
"	36	6866.29+ft.
"	37	6 yd.
"	38	\$296.78—
"	39	12% premium on London.
"	40	50 lb. of each.
165	41	A, \$466$\frac{2}{3}$; B, \$833$\frac{1}{3}$; C's flour, \$10 per bbl.
"	42	Length, 54 rd.; breadth, 18 rd.
"	43	19.
"	44	Oldest, \$3909.79; 2d, \$3240.30. Youngest, \$2849.91.
"	45	Farmer gains \$$\frac{1}{3}$ more
"	46	38 da.
"	47	Base, 12 A. 3 R. 1126 sq. ft. Side, 218014.91 sq. ft. Cubic ft., 83477400.
"	48	\$386.67.
"	49	3 rd. 8 ft.

P.	Ex.	Answer.
165	50	£7438 14s. 9d.
166	51	$2000.
"	52	13 A. 1 R. 1.763 + P.
"	53	$.026 on a dollar.
"	54	5040.
"	55	2500.
"	56	3 ft. 8.1429 + in.
"	57	156.
"	58	152.05—acres.
"	59	75%.
167	60	$2213876.10.
"	61	$25512.40.
"	62	$236 $\frac{7}{13}$.
"	63	650 balls.
"	64	1 lb. at 8; 8$\frac{1}{2}$ lb. at 13; 8 lb. at 14.
"	65	$4.467—
"	66	From top to top, 122.57 + ft.; from top to bottom, 153.05 + ft., and 138.92 + ft.
"	67	4 h. 30 min. P. M.
"	68	E, 13 miles; F, 21 miles; G, 32 miles; all together, in 8 h. 48 min.
168	69	3.568 + rd.
"	70	$3365.94+
"	71	$4095.
"	72	5 calves, 5 lambs, 30 kids.
"	73	$1029.13—
"	74	10 in.
"	75	32$\frac{1}{2}$ lb. at 14 and 16 cents, 97$\frac{1}{2}$ lb. at 12 and 18 cents.
"	76	A, $2640; B, $2400.
"	77	141.79 + rd.
"	78	6 ft.
"	79	X, $3915; Y, $3045.
169	80	49$\frac{1}{2}$ mi.
"	81	4 $\frac{7}{15}$ lb.
169	82	3015.936 lb.
"	83	12300.
"	84	4$\frac{1}{8}$ ft.
"	85	$23415.
"	86	$1154.99—.
170	87	75 cents and 95 cents per pound.
"	88	$173.93+.
"	89	$4640.88—.
"	90	$6000 of bank stock.
"	91	1st quality, 92 bbl.; 2d, 54 bbl.; 3d, 54 bbl.
"	92	8 ft.
"	93	$2240.
"	94	19494.5 + lb.
"	95	M, 72.91\frac{2}{3}$; N, 102.08\frac{1}{3}$.
171	96	$534.75.
"	97	Twice as large.
"	98	$.77.
"	99	$5456000.
"	100	A's, $108; B's, $162.
"	101	2400 bu. at 80 cents a bu.
"	102	8 $\frac{16}{25}$.
"	103	Aug. 18.
172	104	A's, $9574 $\frac{2}{27}$; B's, $6388 $\frac{8}{9}$; C's, $12537 $\frac{1}{27}$.
"	105	6 in.
"	106	6$\frac{1}{4}$%.
"	107	25 ft.
"	108	12.
"	109	$364 $\frac{19}{20}$.
"	110	210.
"	111	56 gal. at $3.25; 20 gal. at $1.80.
"	112	$1760.10.
173	113	15 A. 2 R. 1076 sq. yd.
"	114	$76000.

P.	Ex.	Answer.
173	115	A's, $16277.21; B's, $3341.87; C's, $2880.92.
"	116	$48\frac{1}{8}$ da.
"	117	$\$1.52\frac{7}{9}$.
"	118	28 lb.
"	119	288030 mi.
"	120	$25200.
174	121	$2\frac{3}{10}\%$ dis.
"	122	$22.50.
"	123	$68.36.
"	124	169.26—.
"	125	A's, 42; B's, 21.
"	126	$660.
"	127	10, 20, 40, 80, 160, 320, 640.
"	128	$12156.30.
"	129	$206.88—
"	130	221 rd., 17 rd.
175	131	25 bu. at $1.75; 25 bu. at $1.80; 40 bu. at $2.
"	132	$865.78.
"	133	10 min. $29\frac{53}{143}$ sec. after one.
"	134	$19757.863.
"	135	$6.17+.
"	136	Net proceeds, $9489.48; due May 20, 1860.
176	137	$293\frac{1}{2}$ ft.
"	138	$5.87—.
"	139	Elder, $3030.36; younger, $2525.30.
"	140	$500.
"	141	25%.
"	142	1 at $4; 5 at $6; 2 at $8.
"	143	8.66+ft.
"	144	$650.
"	145	$2\frac{1}{3}$, $2\frac{2}{3}$, 3, $3\frac{1}{3}$, $3\frac{2}{3}$.
"	146	10.8 tons.
"	147	$143.64.

P.	Ex	Answer.
177	148	9801 rd.
"	149	15 days.
"	150	792 sq. ft.
"	151	$8\frac{1}{3}\%$.
"	152	$30000.
"	153	$29082.62—.
"	154	$17\frac{19}{28}$ oz.
"	155	$173103094564.40.
"	156	$.70 on a dollar. A, $2800; B, $3500; C, $4900.
178	157	16.06+.
"	158	8%.
"	159	$2191.21—.
"	160	734.65—.
"	161	$2735.83—.
"	162	$62400.
"	163	Fore-wheels, 97959.495; hind-wheels, 72180.681 times.
"	164	138.2304 sq. in.
179	165	$669.92.—.
"	166	$16000.
"	167	$\$4000\frac{7}{12}$.
"	168	Falls 24 ft., bounds 12 ft.
"	169	$1000.
"	170	$870.
"	171	$855.
"	172	8 ft. 4+in.
"	173	1020.
"	174	$68.36—.
180	175	H's, $5250. J's, $17250.
"	176	$72.
"	177	8 days.
"	178	2100 lb. at $21\frac{2}{3}$ c. per lb.
"	179	1331000.
"	180	$48\frac{3}{4}\%$.
"	181	Length, 63 rd. Breadth, 35 rd.
"	182	$174\frac{5}{8}\%$.

P.	Ex.	Answer.
180	183	31.416 sq. rd.
"	184	$7\frac{17}{19}\%$.
"	185	$104\frac{2}{4}\frac{6}{3}\frac{9}{2}$ sq. yd.
181	186	Price per bu. $\$1.96\frac{9}{16}$ Gain %, 22.85+.
"	187	65 lb.
"	188	$1000.
"	189	$55\frac{5}{9}$ min.
"	190	£173 3s. 7.368d.
"	191	36.38−ft.
"	192	1st, $220.80; 2d, $331.20; 3d, $496.80.
"	193	A, $4150; W, $14155.
182	194	1734 sq. ft.
"	195	$101449+.
"	196	500 bags.
"	197	$26925.
"	198	$1074.50.
"	199	30.37−%.
"	200	$10407.106+.
"	201	1 pt. $3.25\frac{1}{3}$ gills.
"	202	$3910.94−.
"	203	Oats, 180 bu.; corn, 140 bu.; barley, 140 bu.
183	204	$629.426.
"	205	$4800.
"	206	$90.
"	207	$58.
"	208	$325.03.
"	209	13 ft. long; 336 rails.
"	210	128 in rank, 32 in file.
184	211	Annuity, $1065.85; owned farm, 7 years.
	212	9, 15, and 21.
"	213	$32500.
184	214	180 ft.
"	215	$3693.77−.
"	216	41 da. from Oct. 1, or Nov. 11.
"	217	50000 lb.
"	218	A's money, $750. B's " $1250.
"	219	Wife, $25000; son, $20000; elder daughter, $10000; younger daughter, $5000.
185	220	5 A. 3 R. 7.68 P.
"	221	Father, 32 years; son, 10 years.
"	222	180.9+.ft.
"	223	$8\frac{1}{2}$ ft.
"	224	17 cents per lb.
"	225	816.
"	226	$1841.20.
"	227	$1\frac{1}{2}\%$ premium.
"	228	30 men, 5 women, and 20 boys.
186	229	$720.
"	230	$629.426.
"	231	24 ft.
"	232	$67.66.
"	233	$1226.994, at 7%. $1174.789 at 6%, C. I.
"	234	$52\frac{1}{2}$.
"	235	He traveled 650 mi.
"	236	$\frac{15}{1024}$.
"	237	12 yd., at $\$1\frac{3}{4}$; 16 yd., at $\$\frac{3}{4}$.
187	238	Eldest, $7057.11; Second son, $6633.68; youngest, $6309.21.
"	239	$9142.857.
"	240	15%.
"	241	56 men.
"	242	12, 15, 18, 21, & 24 men, respectively.

P.	Ex.	Answer.
187	243	$319.10—.
"	244	$2.16.
"	245	3863080.
188	246	Dec. 16, 1862.
"	247	$41\frac{1}{2}$ lb. at 4 cents; 41 lb. at 5 cents, and 1 lb. at 9 cts.
"	248	$17\frac{2}{5}, 32\frac{4}{5}, 48\frac{1}{5}$, & $63\frac{3}{5}$.
188	249	$5.
"	250	B's stock, $1600; C's time, 15 mo.
"	251	A's, $960; B's, $1600; C's, $640.
"	252	Same as in 251.
"	253	$4001.042.

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