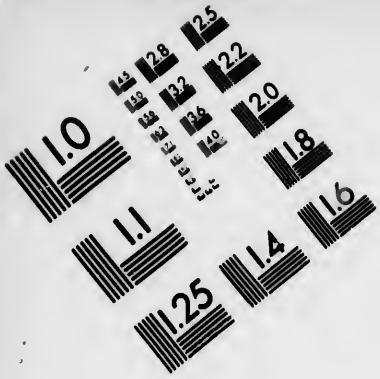

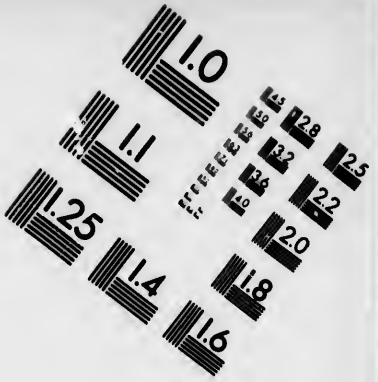

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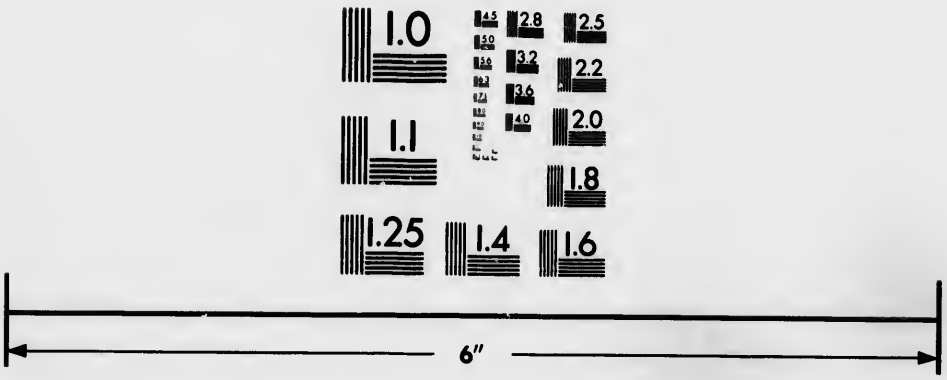

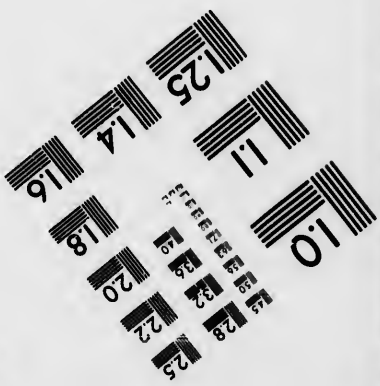

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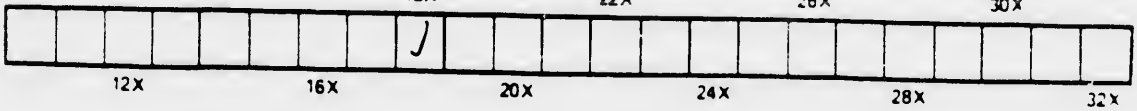

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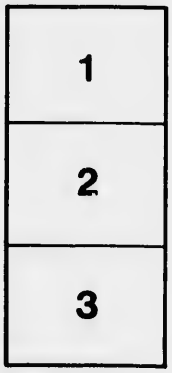

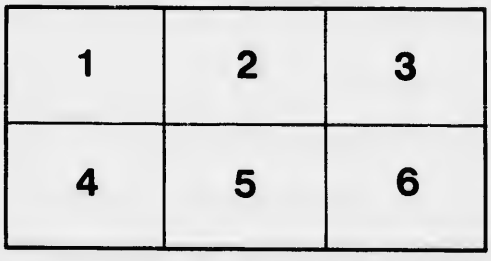

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GRADED EXERCISES

—IN—

ARITHMETIC

—FOR THE USE OF—

Third & Fourth Public School Classes,

—BY—

R. K. ROW,

ROSEMOND SCHOOL.

London, Ont.:

JAS. I. ANDERSON & CO., 175 DUNDAS ST.

1883.

QA 139
R69

PREFACE.

A long experience in Public School work has convinced the author of the necessity of something to supplement our text books on Elementary Arithmetic. To supply a varied collection of graded exercises in a suitable form for Third and Fourth Classes, in an inexpensive form, is the object of this work.

The generally acknowledged evil of the unrestrained use of answers in these classes has induced me to issue only a part of the answers.

Hoping this little work may aid both teachers and pupils.

I am, yours very truly,

R. K. R.

Entered according to Act of Parliament of the Dominion of Canada, in the year One Thousand Eight Hundred and Eighty-three, by R. K. Row, in the office of the Minister of Agriculture.

MISCELLANEOUS.

EXERCISE I.

1. I owed a man $3.79, and gave him a $5 bill; how much change should I get back?

2. A boy went to the store with $9, and paid $2 for tea, $1.50 for sugar, 84c. for meat, and $2.85 for a pair of boots; how much has he left?

3. A boy earns $11 a month, and spends $5.50; how much does he save each month?

4. Mr. S. had $316.14, and paid out $79.65; how much has he now?

5. Bought a pig for $9.25 and a cow for $28, and paid $35 down; how much is yet to pay?

6. Jones had $200, he paid out $85.70, and received $104; how much has he now?

7. Out of $764.81, I paid $398.49; how much have I left?

8. Take $17.64 from $41.25; $124.02 from $317.14; $875.01 from $1,000.

9. Out of a 50-dollar bill, I paid $9.87, $4.26, $17.71; how much have I left?

10. A lady had $62.50, and paid $8 for a dress, $4.25 for a hat, $13.75 for a jacket, $4 for boots, and $7.86 on an old account; how much has she left?

Miscellaneous—Continued.

EXERCISE II.

1. Bought 125 lambs at $3.25 each, and 64 pigs at $5 each; which cost the greater sum, and how much?

2. A man has $1,000, he buys 8 cows at $33 each, a span of horses for $115 each, 45 sheep at $5.50 each; how much has he left?

3. At $9 each, how many pigs can I buy for $1,881?

4. How many calves, at $13.25 each, can be bought for $159.

5. Mr. S. has $1323; he can buy pigs at $7 each or sheep at $9 each; how many more pigs can he get than sheep?

6. A man sold his farm of 75 acres at $45 per acre, and bought another at $30 per acre; how many acres could he get?

7. Mr. W. bought 56 acres of land for $2,688; what was the rate per acre?

8. A man pays $130 a year house rent; how much must he save a week to pay it?

9. A little boy has an equal number of 5, 10, 20, 25 and 50 cent pieces, amounting to $5.50; how many are there of each?

10. What will 11 yoke of oxen cost at $63.50 each ox?

Miscellaneous—Continued.

EXERCISE III.

1. If a man earn $325 a year; how long will it take him to earn $3,250? $4,550? $8,775?

2. A drover paid $8,442 for 67 horses; what did he pay for each? How much did he pay for 11 horses?

3. How many lbs. of butter at 16 cents a lb. will pay for 18 yards of linen at 24 cents a yard.

4. If 24 bush. of wheat weigh 1,440 pounds, find the weight of 1 bush.? Of 15 bush.? Of 946 bush.?

5. If a farmer can raise 258 bush. of wheat on 6 acres; how much has he per acre? On 14 acres?

6. How many bush. of apples at $2 per bush., must be given for 28 lambs at $3 each?

7. If nine cows cost $495, what is the price of 1 cow? Of 4? Of 17? How many can be bought for $1,760 at the same rate?

8. A father left $14,484 to be divided equally among his 6 sons; how much did each get?

9. Sold 7 pigs for $119; find the price of one? Of 3? Of 5?

10. A farmer drew 448 bushels of grain in 7 loads; how much did he take at a load?

11. At $84 each, how many horses can I buy for $924? For $2,184? For $10,164?

Miscellaneous—Continued.

EXERCISE IV.

1. If 16 sheep cost $112, find the value of 125.

2. When 9 cows cost $351, what is the value of 7? Of 19?

3. A man paid $3,016 for 58 acres of land; what is 12 acres worth at the same rate?

4. If 3 pounds of tea cost $2.25; find the value of 7 five-pound caddies.

5. If 9 men can lift 2,250 pounds, how much ought 20 men to lift?

6. I can buy 5 bags of apples for $6.75; how much must I give for 15 bags?

7. A man rents a house for $192 a year; how much ought he to pay for 5 months?

8. A train travels 576 miles in 24 hours; how far can a man ride on it in 5 hours?

9. When 6 pairs of ducks can be bought for $4.20? How much are 100 ducks worth?

10. If 14 dozen eggs cost $1.54; what is the value of 900 eggs?

11. When 6 three-pound cans of honey cost $2.16, find the value of 5 pounds.

12. Bought 17 cows for $578; for how much must I sell 5 of them to gain $25?

Miscellaneous—Continued.

EXERCISE V.

1. John had $136; he put $75 in the bank, and spent $22 for clothes; how many dollars had he left?

2. Simplify 34—14+12—100+14+16—8+346.

3. Sam had 112 marbles; he lost 79 and found 53 of them; how many has he now?

4. John goes east for 6 hours, walking four miles an hour; James goes west for 5 hours, walking 3 miles an hour; how far apart are they then?

5. Bought 136 sheep at $3 each, 25 cows at $25 each, 467 pigs at $1 each; sold 5 horses for $165 each. How much did I pay out more than I got?

6. At $98 each, how many horses could I buy for $1,375,592?

7. How far can a boy, who walks 4 miles an hour, 8 hours a day, and 6 days in the week, go in 6 weeks?

8. In how long will Willie count $1,260, counting $40 an hour, 6 hours a day?

9. Write 999 in Roman notation.

10. Write in words 95043605.

11. A man earns $23 a month, and spends $9; how much can he save in three years?

Miscellaneous—Continued.

EXERCISE VI.

1. Sam had 181 nuts, which he divided equally among his 11 classmates and himself and the remainder he gave to his cousin; how many did each get?

2. Mary has 42 beads, Sarah has 17 more than Mary, and Jennie has 23 less than both the others; how many has Jennie?

3. In a basket there are 283 peaches and plums, and there are 149 more plums than peaches; how many are there of each?

4. How many times can 189 be taken from 10,080?

5. Thirteen equal numbers added together make 2,808; find one of them.

6. By how much does the product of 79 and 183 exceed the quotient of 8 and 2688?

7. Find the product of the sum and difference of 144 and 156.

8. Sam had 114 marbles, sold 88, found 23, bought 54 and lost 19; how many has he now?

9. Divide 75 cents between James and Will so as to give James 15 cents more than Will.

10. How much must be added to 8,021 to make 10,000?

REDUCTION—AVOIRDUPOIS WEIGHT.

EXERCISE VII.

1. How many ozs. in 2 lbs.? In 4 lbs.? 19 lbs.?

2. How many lbs. in 40 oz.? In 128 ozs.? In 9,600 ozs.?

How many ozs. in each of the following:

(3.) 5 lbs., 9 ozs.? (7.) 3 cwt., 10 ozs.?

(4.) 17 lbs., 6 ozs.? (8.) 1 cwt., 18 lbs., 4 ozs.?

(5.) 1 qr., 3 lbs.? (9.) 2 cwt., 3 qrs., 18 lbs.?

(6.) 1 cwt. 1 qr. 7 lbs? (10.) 1 ton?

Express each of the following in lbs:

(11.) 1000 ozs. (14.) 7 cwt. and 14 lbs.

(12.) 47 ozs., 16 drs. (15.) 3 tons, 19 cwt.

(13.) 3 qrs., 9 lbs. (16.) 1 ton, 13 cwt., 19 lbs.

17. Reduce 100000 lbs. to cwts. To tons.

18. What is the cost of 13 lbs., 9 ozs. of butter, at 2c per oz.?

19. When wheat is worth $1.92 per cwt., find the value of 3 tons, 4 cwt.

20. At 8c a lb. find the value of a pig which weighs 2 cwt., 64 lbs.?

21. When coal is 35c a cwt., what is the cost of 3 tons 15 cwt.? Of 9 tons, 7 cwt.? Of 11 tons, 19 cwt.?

22. Find the cost of 12000 lbs of flour, at $3.25 per cwt. Of four barrels of flour at 3c. a lb.

LONG MEASURE.

EXERCISE VIII.

1. How many inches in 18 ft.? Feet in 24 yds.? Yards in 16 rods? Furlongs in 120 miles?

2. Harry walked to London, a distance of 10 miles, 7 fur.; how many yards did he walk?

3. Reduce 288 inches to feet; 147 feet to yds.; 484 yds. to rods; and 384 furlongs to leagues.

4. A tape measure has 4356 inches marked on it; how many rods long is it?

5. Find the number of inches in two miles, 3 fur., 16 rods, 1 ft. Prove correctness of answer.

6. How many halters 6 ft. long can be made from 12 rods, 4 yds. of rope?

7. The posts for a wire fence are 1 rod apart; across how many posts will 21180 feet of wire stretch

8. How many rails, 22 feet long, will be required for 21 miles of railway?

9. From A. to B., two towns, is 1 mile, 2 rods; from C. to D., two others, is 4,284 ft.; how many more yds. from A. to B. than from C. to D.?

10. A field is 84 rods long and 36 rods wide. The owner wishes to fence it with a straight fence, 6 rails high; how many more rails will he need if he cuts them 11 ft. long than if he cuts them 12 ft.?

LIQUID AND DRY MEASURE.

EXERCISE IX.

1. How many pints in 8 qts.? In 5 gals., 3 qts.? In 12 gals., 1 qt., 1 pt.? In 19 gals., 12 gills?

2. What is the value of 9 gals., 3 qts. of syrup, at 22c. a quart?

3. How many gals. in 4 bbls.? In 12 bbls.? In 26 bbls.? In 92 quarts? In 160 pts.?

Find the cost of each the following quantities of milk:

4. 2 gals., 1 qt. at 4c. a qt.
5. 4 gals, 2 qts., at 3c. a pint.
6. 9 gals., 3 qts., at 5c. a qt.
7. 21 gals., 1 pt., at $3\frac{1}{2}$c. a pt.
8. 13 gals., 2 qts., at $6\frac{1}{2}$c. a qt.
9. 7 gals., 3 qts., at $4\frac{1}{2}$c. a pt.
10. What is the cost of 14 barrels of vinegar, at 28c. a gal.?
11. How many qts. in 3 pks.? In 5 pks.? In 14 pks.?
12. At 7c. a qt., find the value of 2 pks., 5 qts. of peaches.
13. How many bush. in 16 pks.? In 64 qts.? In 160 qts.?

Express:

14. 9 bush., 3 pks., in qts. 13 bush., 1 pk. in pks.
15. 7 bush, in pints; 7 pks., 18 pts., in quarts.
16. 234 pts., in bushels; 40 qts., 0 pts., in pks.

MISCELLANEOUS.

EXERCISE X.

1. How many hours in 2 days? In 5 days? In 2 wks.? In 3 weeks, 3 days, 19 hrs.?

2. How many days in 3 wks.? In 1 year, 45 weeks? In 960 hrs.? In 86400 min.?

3. If the pulse beats 70 times in a minute, how many times does it beat in a year?

4. How many sq. inches in 4 sq. ft.? In 13 sq. ft.? In 2 sq. yds.? In 15 sq. yds.?

5. Reduce 14 acres to roods. To sq. rods.

6. How many acres in 28 roods? In 2400 sq. rods? In 1280 sq. rods

7. Express 3 acres in five different denominations.

8. Reduce 9 lbs., 4 ozs., 13 dwts. to grains.

Express:

9. 14320 farthings in £, s. and d.

10. 7 ozs., 5 drs., 2 scrs., in grains.

11. One million mills in dimes.

12. 12 cub. yds., 1 cub. ft., in cub. ft.

13. £121, 14s., 9d., in pence.

14. 1 cub. yd., 8 cub. ft., 1152 cub. in. in cub. inches.

15. 5760 grs. Troy in lbs.

COMPOUND ADDITION.

EXERCISE XI.

1. A owes $279.40 to B, $15.60 to C, 38765 cents to D and 139 dollars to E; how much does he owe all?

2. A farmer has three pigs; one weighs 2 cwt. 1 qr., 16 lbs.; another 3 cwt., 13 lbs., and the other 1 cwt., 3 qrs., 11 lbs.; how much do they all weigh?

3. A table is 5 ft., 4 in. long, and 2 ft., 10 in. wide; how far is it round the table?

4. It takes 2 lbs., 4 ozs., 10 dwts. of silver for a teapot, 1 lb., 8 ozs., 16 grs., for a cruet, and 2 lbs., 9 ozs., for a cakestand; how much silver in them all?

5. L is 19 mls., 7 furs., 23 yds. east from S, and P is 13 mls., 36 rods, 17 yds. west; how far are they apart?

6. I have 210 bus., 3 pks., 3 qts., of wheat; 49 bus., 1 pk., 1 gal. of oats; how much grain have I?

7. Add

wks.	days	hrs.	mins.
9	5	19	54
7	1	11	14
2	4	23	45
13	0	9	6

9. Add

ac.	ro.	per.
19	1	23
7	0	16
29	3	37
12	2	21

8. Add

lbs.	ozs.	drs.	scrs.
1	9	7	1
14	6	0	2
9	0	2	0
12	10	5	1

10. Add

gal.	qts.	pts.
26	3	1
105	1	0
127	2	1
55	1	1

COMPOUND SUBTRACTION.

EXERCISE XII.

1. Take $999.96 from $1234.50; $572.31 from $671.98; $1896.48 from $11000.

2.

cwt.	qrs.	lbs.
200	2	24
99	3	15

(3.)

tons	cwt.	qrs.	lbs.
26	0	2	23
6	16	3	5

(4.)

yds.	ft.	ins.
15	1	5
1	1	10

(5.)

mls.	furs.	rods	yds.
13	6	35	3½
1	5	36	5

(6.)

lbs.	ozs.	dwts.	grs.
554	9	19	4
457	9	2	13

(7)

lbs.	ozs.	drs.	scr.
23	11	7	1
17	9	6	2

(8.)

yrs.	dys.	hrs.	mins.	secs.
767	131	6	30	24
291	20	16	17	45

(9.)

gal.	qts.	pts.
119	1	0
64	3	1

10. A man has a farm of 769 ac., 3 ro., 20 rods, of which 193 ac., 37 rods is bush; how much is cleared?

11. A dealer had 234 tons, 17 cwt., 1 qr., 23 lbs. of coal, and sold 86 tons, 18 cwt, 2 qr., 24 lbs.; how much has he left?

12. Find the difference between 515 bus., 1 pk. and 445 bus., 1 pk., 1 gal.

13. What sum added to £987 19s 11d 3 far., will make £1000?

COMPOUND ADDITION AND SUBTRACTION.

EXERCISE XIII.

Add

(1.)

lbs.	ozs.	drs.
17	3	8
11	15	14
9	7	6

(2.)

cwt.	qr.	lbs.
9	1	14
13	3	23
7	2	8
11	0	17

(3.)

tons	cwt.	qrs.	lbs.
7	1	3	19
18	0	1	7
6	17	1	14

(4.)

tons	cwt.	lbs.
26	13	29
118	4	64
9	9	9

5. Add together 2 tons, 8 cwt., 3 qrs., 17 lbs., 5 ozs. and 13 cwt., 8 lbs., 13 drs.

6. From 11 tons, 12 cwt., 15 lbs., 2 ozs., 5 drs. take 9 tons, 18 cwt., 9 lbs., 13 drs.

7. A has 2 cwt., 19 lbs. of flour; B has 375 lbs.; C has 1 cwt., 3 qrs., 18 lbs., 8 ozs.; how much have they all?

8. I buy a bbl. of sugar containing 2 cwt., 2 qrs., 8 lbs., and sell 16 eleven-pound parcels; how many lbs. have I left?

9. Mr. B. made 7 cwt., 1 qr., 10 lbs. of maple sugar, and Mr. S. 539 lbs., 10 ozs.; how much did B. make more than S.?

10.—From the sum of 12 ft. and 18 in. take 3 yds. 1 ft.

11.—A man had 17 cwt. of sugar and sold 9 cwt. 56 lbs., find the value of the remainder @ 8½ cts. a lb.

COMPOUND MULTIPLICATION.

EXERCISE XIV.

Multiply

1. 3 yd., 2 ft., 11 in. by 4; by 12; by 32.
2. 182 gals., 3 qts., 1 pt., 1 gill by 3; by 9.
3. 64 bus., 1 pk., 3 qts., 1 pt. by 184.
4. 2 wks., 6 dys., 18 hrs., 14 secs. by 24; by 100
5. 44 ac., 2 ro., 27 per. by 15; by 121.
6. 24 lbs., 15 ozs., 13 drs. by 56; by 72.
7. $12946.84 by 4000; by 256.
8. 6 mls., 4 furs., 21 per., 4 yds., 1 ft. 4 ins. by 7.
9. 14 lbs., 9 ozs., 18 dwts. by 11; by 88.
10. 36 cub. yds., 21 c. ft., 96 c. in., by 48; by 84.
11. 11 ozs., 4 drs., 2 scrs., 16 grs. by 7; by 28.
12. 3 dys., 14 hrs., 35 mins., 45 secs., by 9; by 108.
13. 12 tons, 17 cwt., 75 lbs. by 16; by 64.
14. £104, 13s, 4d., 2 far., by 6; by 72.
15. 40 bus., 1 pk., 1 pt., by 400; by 20.
16. 100 ac., 1 ro., 21 rods, 16 yds., 5 ft., by 8.
17. Six men average 1 cwt. 2 qrs., 22 lbs., 8 ozs. each; how much do they all weigh?
18. Three brothers have 115 acres, 1 ro., 36 rods of land each; how much have they all?
19. A man works 10 hrs., 39 mins., 24 secs. a day; how many hours, &c., will he put in in a year (313 days)?

COMPOUND DIVISION.

EXERCISE XV.

Divide

1. $3572.16 by 4; by 12.
2. 129 cwt., 1 qr., 11 lbs., 7 ozs., 8 drs., by 8.
3. 33 tons, 2 cwt., 2 qrs., 22 lbs., 15 ozs. by 8.; by 24.
4. 2 furs., 10 rods, 1 yd., 1 ft, 10 ins. by 7; by 42.
5. 1 yr., 13 wks., 4 dys., 8 hrs., 34 mins. by 11.
6. 693 lbs., 2 ozs., 11 dwts., 16 grs. by 8.
7. 4571 acres, 1 ro., 24 rods by 12; by 60.
8. 1 ml., 1 fur., 14 rods, 1 ft., 2 ins. by 29.
9. 183 cwt., 3 qrs., 21 lbs. by 9; by 7; by 63.
10. 182 lbs., 10 ozs., 1 dwt., 6 grs., by 49.
11. 6297 lbs., 11 ozs., 4 drs. (Apoth.) by 84.
12. 8500 bus. by 800.
13. 3 yds., 1 ft., 6 ins. by 1 ft. 6 ins.
14. $188.75 by $3 25; by $9.
15. 12 tons, 9 cwt., 15 lbs. by 1 cwt., 5 lbs.
16. 2 dys., 2 hrs., 24 mins. by 2 hrs., 6 mins.
17. 25 lbs., 1 oz., 1 scr. by 1 lb., 6 ozs., 2 scrs., 10 grs.
18. 19 lbs. 6 ozs., 7 dwts. by 10 dwts., 18 grs.
19. 9487 bus., 2 pks., by 7 bus., 3 pks., 1 gal.
20. 2833 acres, 32 rods by 9 ac., 3 ro., 14 rods.

MULTIPLICATION & DIVISION.

EXERCISE XVI.

1. A bbl. of salt contains 2 cwt., 3 qrs., 5 lbs.; find the weight of 12 such bbls.

2. Multiply 9 tons, 16 cwt., 24 lbs. by 3; by 24.

3. A man gave 2 tons, 16 cwt., 3 qrs., 15 lbs. of coal to each of 20 poor families; how much did he give to all?

4. A brick weighs 6 lbs., 4 ozs., 8 drs; find the weight of a thousand of such bricks.

5. A car will hold 11 tons, 3 cwt., 50 lbs.: how much will 18 such cars hold?

6. Divide 24 lbs., 11 ozs. by 5, and 19 tons, 3 cwt., 1 qr., 10 lbs. by 7; by 24; by 12.

7. Twelve poor women receive 5 cwt., 1 qr., 25 lbs., 13 ozs. of meat; how much is there for each of them?

8. How many 8 pound parcels in 25 sacks, each containing 3 cwt., 1 qr., 3 lbs.?

9. How many times can 1 cwt., 15 lbs., 8 ozs. be taken from 1 ton, and how many ozs. will be left?

10. How many cattle, averaging 14 cwt., 1 qr., 7 lbs. will weigh 15 tons and 72 lbs.?

MISCELLANEOUS.

EXERCISE XVII.

1. Find the value of 79+384—567+9+89+3567—999.

2. Find the difference between 3067045 and 4000004.

3. From one billion take the sum of 645 and 1982.

4. John has 79 marbles, James has 14 more than John, Peter has 17 less than James, and Robert has as many as John and Peter; how many have they all?

5. Multiply the sum of 675 and 786 by the product of 98 and 47.

6; If a cow cost $28, a horse $54.75 more than a cow, and a house cost 18 times as much as both; find the value of all.

7. Write, in Roman Notation, 29, 38, 47, 83, 96, 249, 499, 508,789 and 994.

8. Express £43, 17s., 9d., 2 fars. in farthings.

9. How many ozs. in 17 tons, 14 cwt., 3 qrs.?

10. Bought cows for $27 each, and sold them for $44 each; how much do I gain on 19 cows?

11. Mr. T. has 214 bus. of spring wheat, 58 bus. of oats, and 375 bus. of winter wheat; how much is all his wheat worth at $1.09 per bus.?

12. What is the largest number that can be taken sever[illegible]times from 1090642?

Miscellaneous—Continued.

EXERCISE XVIII.

1. Write in words: 67009,780,065.

2. Express 4999 in Roman Notation.

3. Find the sum of all the numbers from 67587 to 67602 inclusive.

4. A farmer sold 57 hogs at $2 each, 48 sheep at $3½ each, 24 cows at $35 each, and 6 horses at $138 each; how much land at $4 an acre can he buy with the money?

5. Divide 21965 by the factors of 121, finding the true remainder.

6. Sam and Tom began to play marbles, Sam with 56 and Tom with 38 marbles. They put in 4 marbles at a time, and played 9 games. If Sam won 3 games and Tom the rest, how many has each?

7. A father divided $385 among his 3 children, giving Mary $25 more than Peter, and Peter $30 more than the baby. How much did each get?

8. How many times will a carriage wheel 9 ft. in circumference turn in going 1½ miles?

9. A woman bought 14 yds. of print at 12½c. a yd., and gave the merchant 7 lbs. of butter worth 22 cents a lb.; how much does she still owe him?

10. In 902 cents, 17 dollars, $39.50 how many dollars and cents?

Miscellaneous—Continued.

EXERCISE XIX.

The charge of sending a telegram is 25 cents for 12 words, and 2 cents for each additional word; how much would a despatch of 32 words cost?

2. What is the cost of 1 bus., 3 pks., 3 qts., 1 pt. at 5 cents per quart?

3. Four apples cost as much as 3 oranges, and 7 oranges cost 28c.; find the cost of one dozen apples and ½ dozen oranges.

4. Take 3 tons from 8640 lbs., and how many cwt. will remain?

5. Divide $394.75 between A and B, giving A $34.25 more than B.

6. Find all the exact divisors of 280; 675; 2700.

7. A horse and harness cost $288, and the horse cost three times as much as the harness; find the cost of each.

8. Divide a farm of 121 acres, 2 ro., 21 rods between A and B, giving B twice as much as A.

9. What number is composed of the following factors: 2, 2, 2, 2, 3, 3, 5, 7?

10. How long will it take a boy to walk round a field 22 rods long, 18 rods wide, who walks at the rate of 16 rods per minute?

Miscellaneous—Continued.

EXERCISE XX.

1. Find the cost of 87856 lbs. of oats at 42c. per bus.

2. A man owns a farm of 248 acres. He sells 148 acres, 3 ro., 27 per., 18 sq. yds. How much land has he left?

3. The quotient is 764, the divisor is 5760, and the remainder is 36; find the dividend.

4. Divide $4768.36 between two persons, giving one twice as much as the other.

5. How many ozs. of butter at 24c. a lb. will pay for 32 lbs. of sugar at 12c. a lb.?

6. Give the dimensions of a cord of wood. Of a cord-foot.

7. What is the value of a pile of wood 24 feet long, 16 feet wide, 4 feet high, at $2.25 per cord?

8. If I buy 11 lbs. of sugar at 12c. a lb., how many bars of soap at 17c. a bar can I get for the change due from a 2-dollar bill?

9. A merchant bought 7 pieces of cloth, each containing 45 yds., for $267.75; what did one yd. cost?

10. A drover bought 67 cows at $35 each, and sold them at $42.25 each; find his net gain after deducting $24 expenses.

Miscellaneous—Continued.

EXERCISE XXI.

1. Find the sum of $302.03; forty-six dollars and seven cents; $200; one dollar and ninety cents; eighty cents; and fifty seven dollars.

2. John bought 2 lbs., 8 ozs. of candy at 2c. per oz.; 2 gals., 1 qt. syrup at 16c. per qt.; and 3 bus. 3 pks. apples at 18c. per peck; how much did he pay for all?

3. I paid $4020 for 12 village lots and sold them at a loss of $70 each; how much did I get for seven?

4. There are 4840 sq. yds. in an acre, how many square yds in 7 farms of 129 acres each.

5. How many sq. inches in a blackboard 8 ft. long, 3 ft. wide?

6. How many bus. of wheat at $1.25 per bus. are worth as much as 22 cords of wood at $5 per cord?

7. If 18 men do a piece of work in 90 days, how long would it take 8 men to do as much?

8. A man gets $64 a month and spends $40½: how much will he save in 7 years?

9. Divide sixteen million, eighty-four thousand and four hundred and forty by five thousand and eight.

10. Divide the product of 759 and 806 by 906.

11. At 37½c. a pair, how many dozen pairs of mitts can be bought for $1008?

Miscellaneous—Continued.

EXERCISE XXII.

1. Bought an equal number of sheep at $9 each, and pigs at $5 each; how many could I get for $210?

2 Find the value of 24 lbs. of butter at 1½c. per oz.

3. Two hundred and forty pint bottles will hold how many gallons?

4. A boy steps 2 ft., and his father 2½ ft.; how many times will each step in going 1 mile?

5. A farmer had 1 ton of hay, and sold 8 cwt., 3 qrs., 5 lbs., at one-half cent a lb.; how much would he get for it, and how much had he left?

6. How many bus. of wheat at 90c. ought to be given for 60 bus. of oats at 30c.?

7. A man can dig a yard of ditch in 5 min.; how long will it take him to dig a mile?

8. Find the value of 10 acres of land at 25c per sq. rod.

9. What is the value of 3200 sq. rods of land at $40 per acre?

10. How many times will a half mile of cord go round a 4 by 4 in. scantling?

Miscellaneous—Continued.

EXERCISE XXIII.

1. Find the cost of 7 bus., 36 qts. of berries at 30c. per gal.; also the gain by selling them at 15 cents a quart.

2. At 90c. per yard, find the cost of 1 ml., 2 furs., 1 rod of sidewalk.

3. Sold 3 tons, 3 qrs., 3 lbs. of beef at 7 cents per lb.; find the price.

4. A milkman bought 36 gals. of milk at 15c. per gal.; after 1½ gal. leaked out he sold the remainder at 6c. a qt.; find the gain.

5. Two men start from the same place in opposite directions, one 3 and the other 4 miles an hour; how far apart will they be in 4 hrs.?

6. How many minutes in 8 hrs., 3 mins. and 240 secs.?

7. Find the value of 4 bbls. of sugar of 2 cwt., 3 qrs., 5 lbs. each, at 10c. per lb.

8. A farmer spent $289 for cows, giving $23 each for two and $27 each for the others; how many did he buy?

9. What would 14 cwt., 100 lbs. of hay cost at $10 per ton?

10. At 25c. per rod find the cost of digging 7 furlongs of ditch.

Miscellaneous—Continued.

EXERCISE XXIV.

1. How often is 9 contained in the difference between 30,765,423 and 47,324,362 ?

2. By what must 234 be multiplied to give 132678 for a product ?

3. A person bought 140 horses at $125 each and 575 sheep at $5.25 ; which cost the most, and how much ?

4. How many nines in 12 times 1024067 ?

5. How many lots at $145 each can be bought for $14355 ?

6. How many lbs. of butter at 15 cents per lb. will pay for 15 yards of cloth at $2 per yd.

7. A farmer paid $350 for horses, $240 for cows, $22.50 for a plow, and $475 for other implements, and had $425.75 left ; how much money had he at first ?

8. At $3.75 each, how many lambs can I buy for $150 ?

9. How many $17 plows can a man buy with $125 ? And how many 75-cent hoes can he buy with what he has left ?

10. How many times can 432 be taken from one million.

Miscellaneous—Continued.

EXERCISE XXV.

1. If 3 bus. be taken from 60 gallons, how many pks. will remain?

2. If a man has a salary of $1200 a year and spends $2 per day, how much will he save in five years?

3. How many sheep at the rate of three for $21 can a man buy for $763?

4. A field is 20 rods square, how many times must a boy walk round it to go 5 miles?

5. How many square feet of lumber are required to floor a room 23 ft. long, 18 ft. wide?

6. If a watch tick twice in a second, how many times will it tick in a week?

7. What is the cost of 13736 lbs. of oats at 52 cents per bus.

8. A man steps $2\frac{1}{2}$ ft. each time; how many times will he step in 1 mile?

9. If 14 yards of cloth cost $21.00, how many lbs of butter at 18c. a lb. will it take to pay for 4 yds.?

10. How many times can 3s., $6\frac{1}{4}$d. be subtracted from £1684, 12s., and what will remain?

Miscellaneous—Continued.

EXERCISE XXVI.

1. Find the price of 12 bus., 3 pks., 3 qts. of wheat at $1.28 per bushel.

2. How many half-pint bottles are necessary to bottle a hhd. of wine?

3. Reduce 382 furs., 80 pers., 0 yds., 0 in. to miles.

4. 75 bus. of oats, at 12c. per peck, will pay for how much cloth at $1.20 per yd.?

5. Find the value of 11 bus., 6 gals. of pease at 15c. a peck.

6. Find the cost of $1\frac{1}{2}$ miles of ditching at 50c. a rod.

7. How much is 2520 lbs. of wheat worth at 95c. a bus.?

8. A horse eats 4 qts. of oats and 5 lbs. of hay three times a day; find the cost of keeping him eight weeks: oats 40 cents a bus., hay $10 a ton.

9. Three sheep are worth 2 pigs, 5 pigs are worth 10 calves, and 15 calves are worth $37.50. Find the value of 6 sheep.

10. A woman bought:

22 lbs. of sugar at 11 lbs. for a dollar,
2 dozen spools at 4c. each spool,
27 yds of cotton at 9c. a yard.

How much change ought she to get from two $4 bills?

Miscellaneous—Continued.

EXERCISE XXVII.

1. How many cords of wood could be piled in a shed 50 feet long, 25 feet wide, and 10 feet high?

2. How many acres of city land at $2 a square foot can be bought for half a million dollars?

3. If Jan. 1st is Sunday, how much can a man earn in the first three months of a leap year, at $1.25 a day?

4. At 35 cts. a square yard, what would it cost to plaster a wall 15 feet high and 54 feet long?

5. If a load of wood is 8 ft. long, 3 ft. wide, how high must it be to contain a cord?

6. What will 250 miles of telegraph wire cost at 3 cts. a ft.?

7. A boy bought eggs at the rate of 3 for 5 cts. and sold them at the rate of 4 for 7 cts. He gained 9 cts.; how many did he buy?

8. The circumference of one carriage wheel is 13 ft., 9 ins.; that of another 16 ft., 6 ins.; how many more times will one turn than the other in going 30 miles?

9. How many seconds are there in the three summer months?

10. How many acres are there in a street 4 rods wide and $2\frac{1}{4}$ miles long?

Miscellaneous—Continued.

EXERCISE XXVIII.

1. What is the quotient of the sum of 769483 and 612375 divided by their difference?

2. How many £, s., and d. in 176,834,984 farthings?

3. What is the cost of fencing a railway for a distance of 4 miles, 2 furs. at 11c. per rod?

4. A load of wheat consists of 25 bags, each bag contains 110 lbs.; what is the value of it at $2.25 per cwt.?

5. What is the value of 4 acres, 3 ro. of land at 12s. 6d. per sq. rod?

6. What is the cost of fencing a field 33 rods long, 21 rods wide, at 12½c. per yd.

7. The product of two numbers is 188973422, the multiplier is 3278; what is the multiplicand?

8. Two boys start from the same place to walk in opposite directions, one at the rate of 3 miles per hour, and the other 3½ miles per hour; how long before they will be 22½ miles apart?

9. What is the cost of 3 pks., 2 qts., 2 pts. of berries, at 2½c. per pt.?

Miscellaneous—Continued.

EXERCISE XXIX.

1. Express 987654321 sq. ins. in acres, roods, &c.

2. Multiply the difference between £257, 17s., 9¾d. and £400., 6s., 3½d. by CMIX.

3. What number divided by 496 will give 49 for quotient and 207 for remainder?

4. The quotient is 17 acres, 27 pers., 19 yds; the dividend 970 acres, 39 perches; find the divisor.

5. If 7 yds. of cloth cost $35, how many bus. of potatoes at 35c. must be given for 5 yards of the cloth?

6. How often can the G. C. M. of 972 and 1440 be subtracted from the L. C. M. of 7, 8, 9, 10, 11, 12, 13, 14, 15?

7. How many minutes from 10.30 a. m., Jan. 20th, 1880, to 3.15 p. m., March 5th, of the same year?

8. Find the difference in grains between 6 oz. Avoir. and 6 ozs. Troy.

9. How far from the end must I cut a stick of timber 14 ins. wide, 17 ins. deep, so as to have a cub. yard.?

10. How many dozen straw hats at 8c. each can be bought with the price of 45 chickens at 40c. a pair?

GREATEST COMMON MEASURE.

EXERCISE XXX.

1. Find the G. C. Measure of 144 and 216; of 296 and 407; of 506 and 308.

2. What is the G. C. M. of 36, 84 and 132?

3. Find the G. C. M. of 527 and 1207.

4. What is the G. C. M. of 204, 1190, 1445 and 2006?

5. In a school there are 812 boys and 672 girls; find the largest number that can be put in a class so that boys and girls shall be separate and the same number in each class.

6. Mr. A. has $296 and Mr. S. has $468; if both have the same kind of bills, what is the highest denomination they could be?

7. A man has three trees which are respectively 42, 56 and 70 feet in length; what is the least number of logs of equal length into which he can cut them?

8. A grocer has 2 bus. of cherries, 2 bus., 1 pk. of berries, and 40 qts. of currants; find the least number of boxes of equal size necessaay to hold the fruit without mixing.

9. A triangular field has its sides 48, 60 and 75 rods, respectively; find the smallest number of trees that can be planted at equal distances round it.

10. Find the G. C. M. of 275, 143 and 209.

LEAST COMMON MULTIPLE.

EXERCISE XXXI.

1. Find the L. C. M. of 4, 6, 8, 9, 12 and 18.

2. What is the L. C. M. of 13, 24, 16. 26, and 36.

3. Find the L. C. M. of 4, 6, 10, 15, 25, 45, 75, and 100.

4. Find the L. C. M. of 27, 54, 81, 14, 63 and 9.

5. What is the least number that will give 9 for a remainder, when divided by 10, 12, or 15?

6. What is the least number to which if 11 be added, it will be divisible by 28, 36, or 18?

7. What number is that from which if 13 be subtracted the remainder will exactly contain 12, 18, 81, or 72?

8. Find the least number whose quotient when it is divided by 7 will contain 13, 24, 18 or 39.

9. What is the least number which after having been multiplied by 34 will be exactly divisible by 12, 16, or 24?

10. What is the smallest sum of money that can be made up of 4, 6 or 10 dollar bills?

11. What is the least sum of money with which I can buy sheep @ $5, cows @ $35, hogs at $14, or horses at $110?

12. The G. C. M. of two numbers is 4, the L. C. M. 23296, and one of the numbers is 364, find the other.

MISCELLANEOUS.

EXERCISE XXXII.

1. The sum of 113 equal numbers multiplied by 3 gives 16611; find one of them.

2. How many bus. of oats at 42c. a bus. ought to be given for 225 bus. of barley @ 63c. a bus.?

3. Find the cost of 3 fur. 36 ft. of sidewalk @ $1.40 per yd.

4. I have $1650 and wish to buy an equal number of sheep at $4 each, and pigs at $7 each; how many pigs may I get?

5. What is the value of 1 cwt. 96 ozs. of butter at 12½ c. a lb.?

6. A milkman bought 36 gal. of milk at 15c. a gal., and after mixing 10 gal. of water with it, sells it at 5c. a quart. Find the gain.

7. How many acres in a field 40 rods wide and 1½ times as long?

8. Bought 320 lambs @ $2.75 each, paid $64 for pasture, and sold them all at $3.40 each; find the gain.

9. Find the total cost of:

36 qts. of berries at 30c. a gal.
10 ac. of land at $15 a rood.
4230 lbs. of wheat at $1.15 a bus.

Miscellaneous—Continued.

EXERCISE XXXIII.

1. Express 8 lbs., 6 ozs., 5 drs., 16 grs., in grains.

2. Reduce 12 Fr. ells, 3 yds. to feet.

3. Divide the L. C. M. of 784 and 596 by the G. C. M. of 57, 87, 111, and 135.

4. What is the value of 3 dozen and 3 spoons if one spoon is worth 4s. $3\frac{3}{4}$d. ?

5. Add together $\frac{2}{10}$, $3\frac{3}{4}$, $\frac{7}{8}$ of $2\frac{2}{3}$, $5\frac{1}{8}$ and $4\frac{4}{5}$.

6. What number added to the sum of $6\frac{2}{3}$ and $7\frac{1}{3}$ will give 16 ?

7. A farmer sold $\frac{1}{4}$ of his farm for $1675 ; what is the remainder worth at the same rate ?

8. If 5 ac. of land produce 350 bus. of potatoes, how many could be raised on $\frac{1}{4}$ of 12 ac. ?

9. From 1 ton take 4 cwt., 40 lbs.

10. A man bought 4000 dozen eggs at 13c. a dozen, lost $\frac{1}{10}$ of them and sold the remainder at 17c. a dozen ; find his gain.

11. How much will be gained or lost by buying a sq. mile of land at $40 per acre and then selling it at 25c. per sq. rod ?

12. Bought a barrel of vinegar at 24c. a gal. ; 6 quarts leaked out ; but I sold the remainder at 30c. a gal. ; find the gain.

Miscellaneous—Continued.

EXERCISE XXXIV.

1. (a) Write in one number 306 billions 47 thousand and 19. (b) Express in words: 46,000,509,075.

2. The sides of a triangular field are 300, 240 and 180 yards respectively; find the length of the two longest tape-lines that will measure each of the sides exactly.

3. The divisor and quotient are each 345 and the remainder 344; find the dividend.

4. It takes 12 hrs., at 24 mls. per hr., to go from T. to M.; how long will it take to walk back, at 4 mls. an hour?

5. How many yds. in 8800 links?

6. If 5 apples cost 3c., how much will 3 bus., 3 pks. cost? Six apples fill a pint.

7. Four sheep are worth 2 pigs, 5 pigs are worth 10 calves, 15 calves cost $45; find the value of 2 pigs and 4 sheep.

8. 16 bus., 48 pints of apples at 10c. a pk., and 11 bus., 6 gals. of potatoes at 15c. a pk., are worth how much?

9. I can buy pigs at 14 dollars each, and cows at 25 dollars each; how many more pigs than cows can I get for $350 dollars?

10. Reduce $1\frac{1}{2}$ mls. to feet.

Miscellaneous—Continued.

EXERCISE XXXV.

1. From seventeen million and seventeen take eighty thousand and eight.

2. Eight head of cattle at $23 each, and 7 horses at $89 each, were given for 3 ac. of land; how much was the land worth per acre?

3. Half the sum of two numbers is 4331, and half their difference is 3353; find the numbers.

4. If 18 men can reap a field in 76 days, how long will it take 19 men?

5. A man spent $6300 in buying an equal number of sheep at $3.50 each, and cows at $21.50 each; how many did he get?

6. If 3 lbs. of tea are worth 9 lbs. of coffee, and 6 lbs. of coffee are worth 12 lbs. of sugar; how many lbs. of sugar are worth 1 cwt. of tea?

7. A horse is worth 11 times as much as a saddle, and both are worth $276; find the value of each.

8. Find the least number that, when divided by 13, 15 or 18, will leave 12 for remainder?

9. What is the smallest sum with which I can buy sheep at $6 each, cows at $27 or horses at $84.

10. What is the value of 12 firkins of butter at 24½c. per lb.? (36 lbs. to 1 firkin).

11. Express 83 ac., 3 ro., 17 per., 18 yds., 7 ft., 134 in., in sq. inches.

FRACTIONS.

EXERCISE XXXVI.

1. Reduce the following improper fractions to whole or mixed numbers: $\frac{17}{4}$, $\frac{19}{12}$, $\frac{32}{2}$, $\frac{27}{6}$, $\frac{192}{5}$, $\frac{63}{7}$, $\frac{1000}{12}$, $\frac{47021}{232}$, and $\frac{4066281}{8465}$.

2. Reduce the following mixed numbers to improper fractions: $2\frac{1}{3}$, $4\frac{4}{5}$, $18\frac{3}{7}$, $25\frac{11}{12}$, $164\frac{1}{3}$, $203\frac{19}{24}$, $1261\frac{8}{9}$, $763\frac{3}{4}$, and $15\frac{143}{144}$.

3. When is a fraction said to be in its lowest terms? Reduce the following to their lowest terms: $\frac{5}{125}$, $\frac{24}{60}$, $\frac{42}{63}$, $\frac{304}{780}$, and $\frac{1820}{2700}$.

4. Simplify $\frac{2}{3}$ of $\frac{3}{4}$, $\frac{5}{7}$ of $\frac{14}{15}$, $\frac{4}{5}$ of $\frac{21}{36}$ of 9, $\frac{2}{3}$ of $\frac{4}{7}$ of $\frac{3}{11}$ of $\frac{33}{17}$ and $\frac{2}{7}$ of $\frac{4}{11}$ of $5\frac{1}{2}$.

5. Express the following fractions in equivalent ones having a common denominator: $\frac{2}{3}$, $\frac{3}{4}$, $\frac{1}{6}$, $\frac{3}{2}$, $\frac{4}{5}$ and $1\frac{1}{2}$.

6. Find the greatest and least of $\frac{4}{7}$, $\frac{16}{21}$ and $\frac{7}{12}$.

7. Express $\frac{5}{12}$, $\frac{17}{60}$, $\frac{23}{30}$, $\frac{5}{8}$, $\frac{119}{120}$ in three hundred and sixtieths.

8. Add $\frac{1}{12}+\frac{7}{12}+\frac{13}{12}+\frac{25}{12}$.

9. Add $\frac{3}{4}+\frac{2}{3}+\frac{1}{2}+\frac{1}{6}$.

10. Add $\frac{11}{12}+\frac{13}{18}+\frac{17}{24}+\frac{29}{30}+1\frac{1}{4}$.

Fractions—Continued.

EXERCISE XXXVII.

1. Add $4\frac{3}{7}+11\frac{4}{7}+16\frac{2}{7}+21\frac{3}{7}+19\frac{6}{7}$.

2. Add $4\frac{1}{4}+1\frac{1}{8}+\frac{7}{11}+2\frac{1}{2}+\frac{9}{12}$.

3. Add $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+\frac{5}{6}+\frac{6}{7}+\frac{7}{8}+\frac{8}{9}$.

4. Add $\$4\frac{1}{2}+\$2\frac{2}{3}+5\frac{3}{4}+\$7\frac{4}{5}$.

5. I gave $\frac{1}{3}$ of an orange to Sam., $\frac{1}{6}$ to Tom., and $\frac{3}{8}$ to Mary; how much did I give to all?

6. A hotel used $2\frac{1}{2}$ lbs. of butter on Monday, $3\frac{1}{3}$ lbs. on Tuesday, $1\frac{3}{4}$ lbs. on Wednesday, $2\frac{1}{4}$ lbs. on Thursday, and 7 lbs. the rest of the week: how much was used during the week?

7. A boy has $\frac{1}{10}$ of a dollar, $\$\frac{1}{4}$, $\$\frac{1}{2}$ and $\$\frac{3}{20}$ how much money has he altogether?

8. A man leaves $\frac{1}{3}$ of his property to his wife, $\frac{1}{2}$ to his son, and the remainder to his daughter. What part did the daughter get?

9. How much must be added to he sum of $\frac{3}{4}$ and $\frac{3}{7}$ to make a whole number?

10. A man has five fields containing $9\frac{1}{2}$, $10\frac{1}{3}$, $8\frac{3}{4}$, 11 $\frac{5}{14}$ and 10 ac., respectively; how large is his farm?

Fractions—Continued.

EXERCISE XXXVIII.

1. From $\frac{3}{4}$ take $\frac{1}{2}$, and from $1\frac{7}{12}$ take $\frac{1}{3}$.

2. What is the difference between $\frac{1}{2}$ of $\frac{1}{3}$ and $1\frac{5}{12}$ of $\frac{3}{4}$?

3. How much must be added to $1\frac{1}{3}$ to make $3\frac{1}{3}$. To $4\frac{4}{7}$ to make $13\frac{1}{8}$?

4. A owns $\frac{1}{3}$ of a ship, B $\frac{1}{4}$ and C the remainder; how much more has C than A?

5. Find the sum and difference of ($5\frac{1}{3}$ of $3\frac{9}{12}$) and ($13\frac{1}{3}$ of $\frac{3}{8}$).

6. What number must be added to $\frac{3}{4}$ of ($\frac{1}{3}+\frac{1}{3}-1\frac{4}{15}+\frac{1}{5}$) to make $4\frac{1}{2}$?

7. Find the difference between the greatest and least of $\frac{2}{3}$, $\frac{5}{8}$, $1\frac{7}{12}$ and $\frac{3}{4}$; also the difference of the other two and the sum of these differences.

8. A man sold $\frac{1}{3}$ of his farm to A, and $\frac{3}{4}$ of the remainder to B; what part has he left?

9. Sam gave $\frac{1}{3}$ of his marbles to Tom, $\frac{1}{4}$ to Will, and $\frac{1}{6}$ to Fred and then had 14 left; how many had he at first.

10. Simplify $\frac{1}{2}-\frac{3}{4}+\frac{2}{3}+1\frac{7}{8}-2\frac{1}{4}+5$.

Fractions—Continued.

EXERCISE XXXIX.

1. Multiply $\frac{2}{3}$ by $\frac{5}{8}$; $\frac{4}{7}$ by $\frac{2}{3}\frac{1}{3}$; $\frac{1}{1}\frac{7}{9}$ by $1\frac{3}{3}\frac{5}{4}$.

2. Multiply $\frac{3}{8}$ of $\frac{4}{9}$ of $2\frac{7}{3}$ by $1\frac{1}{2}$ of $\frac{5}{6}$ of $13\frac{1}{3}$.

3. Multiply the sum of $3\frac{1}{7}$ and $2\frac{1}{3}$ by their difference.

4. Find the product of $\frac{1}{6}\frac{4}{4}$, $\frac{1}{4}\frac{2}{5}$, $\frac{1}{3}\frac{9}{1}$, $\frac{8}{9}\frac{3}{5}$ and $8\frac{1}{2}$.

5. Find the value of 24 ducks @ $\$\frac{3}{8}$ each.

6. What are $3\frac{1}{2}$ days' work worth @ $\$1\frac{1}{2}$ per day?

7. Find the total cost of $4\frac{1}{2}$ lbs. of raisins at $12\frac{1}{2}$c. per lb., $6\frac{1}{2}$ lbs. rice at $5\frac{3}{4}$c. per lb., $11\frac{1}{2}$ lbs. sugar at $9\frac{1}{2}$c. a lb., $3\frac{1}{3}$ yds. cloth at $37\frac{1}{2}$c. per yd., and $4\frac{3}{4}$ dozen buttons at 12c. per doz.

8. How much will a man earn in $15\frac{1}{2}$ days who gets $\$2\frac{1}{2}$ per day?

9. Find the cost of $\frac{3}{8}$ of a ton of coal at $\$5\frac{3}{8}$ per ton.

10. How much must I pay for a barrel of cider at $12\frac{1}{2}$c. per gallon.

11. A man walks $3\frac{3}{4}$ miles per hour; how far will he go in $2\frac{2}{3}$ hours?

12. Simplify $\frac{1}{3} \times \frac{7}{8} + 2\frac{1}{2} - 1\frac{1}{3}$ of $\frac{3}{1}\frac{3}{6} + \frac{1}{2} \times \frac{1}{3}$.

Fractions—Continued.

EXERCISE XL.

1. Divide 4 by $\frac{1}{3}$, 12 by $\frac{3}{4}$, 27 by $1\frac{2}{3}$.

2. Divide $\frac{1}{3}$ by 4, $\frac{3}{4}$ by 9, $1\frac{2}{3}$ by 48.

3. Divide $\frac{2}{3}$ by $\frac{1}{6}$, $\frac{3}{4}$ by $2\frac{1}{4}$, $1\frac{1}{7}$ by $4\frac{1}{2}$.

4. Divide $\frac{3}{7}$ of $\frac{1}{2}\frac{1}{1}$ of $2\frac{2}{3}$ by $\frac{1}{11}$ of $2\frac{1}{2}$ of $1\frac{1}{2}$.

5. How many times must $\frac{2}{3}$ be taken to make $21\frac{1}{3}$?

6. A boy earns $\$\frac{5}{8}$ per day; how long will it take him to pay for a $12 overcoat?

7. How much must a man save in a month that he may have $125 at the end of $8\frac{1}{2}$ mos.?

8. If lambs cost $\$4\frac{3}{4}$ each, how many can I buy with the price of 10 pigs @ $\$5\frac{7}{10}$ each?

9. How many cords of wood @ $\$4\frac{1}{2}$ per cord must be given for an $\$87\frac{1}{2}$ wagon?

10. If 1 man use $\frac{3}{4}$ lb. of meat in 1 day, how long will 7 cwt. last 14 men?

11. How much must be added to the product of $\frac{3}{4}$ and $\frac{7}{12}$ to make it equal their quotient?

Fractions—Continued.

EXERCISE XLI.

Find the respective values of

1. $\frac{3}{4}$ of \$12 ; $\frac{2}{3}$ of \$21 ; $\frac{4}{7}$ of \$112 ?

2. $\frac{2}{3}$ of 9 cwt. ; $\frac{3}{8}$ of 40 lbs. ; $\frac{5}{12}$ of $\frac{4}{5}$ qrs.

3. $2\frac{3}{7}$ of \$4.27 ; $1\frac{4}{5}$ of 1 ton, 7 cwt., 1 qr.

4. Add together $\frac{3}{8}$ of \$ 3.60 + $\frac{4}{7}$ of 91c + $\frac{5}{12}$ of \$108.

5. Add $\frac{3}{5}$ of a ton + $\frac{3}{5}$ of a cwt + $\frac{3}{5}$ of a qr. Answer in lbs.

6. Find the number of feet in $\frac{3}{8}$ of a mile + $\frac{3}{8}$ of a fur. + $\frac{2}{3}$ of a yard + $\frac{4}{11}$ of a rod.

7. How many quarts in $\frac{3}{4}$ of a bus. + $\frac{3}{8}$ of a pk. + $\frac{3}{2}$ of a gal. ?

8. Find the value of $\frac{3}{7}$ of 3 cwt., 1 qr., 11 lbs.

9. How much is $\frac{3}{7}$ of $\frac{1}{3}$ of $\frac{21}{10}$ of $\frac{7}{8}$ of 33 bus., 2 pk., 1 gal. ?

10. Find the value of $\frac{3}{4}$ of $\frac{5}{8}$ of $\frac{4}{15}$ of 125 ac. 2 ro., 20 rods of land.

11. Find the value of $\frac{3}{8}$ of $\frac{4}{5}$ of 27 bushels of wheat at \$1.12$\frac{1}{2}$ per bus.

MISCELLANEOUS.

EXERCISE XLII.

1. Two men are 450 miles apart; if they approach each other, one travelling 30 miles a day and the other 35 miles a day, how far apart will they be at the end of six days?

2. Bought two horses for $420, paying $48 more for the one than the other; find the price of each.

3. If two persons start from the same place, and travel in the same direction, one 7 and the other 11 miles an hour—an average of 9 hours per day, how far apart will they be at the end of the 17th day?

4. A grocer buys nuts at $1½ per bus., and sells them at 10 cts. a qt.; how much does he gain on 992 pts.?

5. How many pint bottles are necessary to hold 2 hogshead of wine (63 gals. each)?

6. How often will a mile of string go round a 3 by 4 scantling?

7. Find the cost of 1½ miles of ditching at $½ a rod.

Bought apples at 4 for a penny, and sold them at 3 for a penny; how much do I gain on 18½ dozen?

9. I feed my horse three times a day 2 qts. of oats and 6 lbs. of hay; find the cost of keeping him 4 wks., when oats sell at 40 cents a bush., and hay at $20 per ton?

Miscellaneous—Continued.

EXERCISE XLIII.

1. A merchant having 12 tons, 13 cwt., 2 qrs., 15 lbs., 3 oz. of flour, sells 10 tons, 10 cwt., 1 qr., 3 lbs., 2 oz., and the rest he sells in barrels, each containing 1 cwt., 2 qrs. 16 lbs, 13 oz.; how many barrels are there?

2. How many times will a wheel $8\frac{3}{4}$ feet in circumference turn in going $4\frac{1}{2}$ miles?

3. Bought nuts at 8 cts. a qt., and sold them at $3.50 a bus. I sold enough to gain $5.17; how many did I sell?

4. Add 1 rod, 1 fathom, 1 pole, 1 chain, 2 perches and 3 hands. Give the answer in feet.

5. Add 10 dozen, 10 units, 10 score and 10 gross. Take the sum from 1 million, 1 thousand, 1 hundred and 1.

6. If soldiers on a march take 85 paces of 33 in. each in a minute, how long will it take them to march $25\frac{1}{2}$ miles?

7. If from home to school and back again be $\frac{3}{4}$ of a mile, and a boy take 20 min. in walking this distance; how far will he have walked while attending school twice a day for 220 days? and how many hours will he have spent in walking?

8. How many inches taller is a horse $15\frac{1}{2}$ hands high than a pony $13\frac{3}{4}$ hands high?

Miscellaneous—Continued.

EXERCISE XLIV.

1. A farmer owning 100 acres, sold 17 ac., 2 ro., 20 per., 12 yds.; how much has he left?

2. How many cords in a pile of wood 36 feet long, 6 feet high, 4 feet wide?

3. How many gold coins, each weighing 11 dwts., 6 grs., may be coined from 31 lbs. 2 oz., 1 dwt., 6 grs. of standard gold?

4. A man has 42 cords of wood; how much can he get for four-sevenths of it, at $4 a cord?

5. Find the sum of $2\frac{1}{3}+4\frac{3}{8}+3\frac{3}{4}+8\frac{1}{3}$.

6. John had $11\frac{3}{4}$ and lent James $3\frac{1}{3}$; how much has John left?

7. A farmer had 600 bus. of wheat; he sold 7 loads each, containing 56 bus., 2 pks., 2 qts.; how much wheat has he left?

8. How many bus. of oats in 2725 lbs.?

9. Express in figures. one hundred and nine million, four thousand and eleven; and express in Roman Notation 476.

10. A man bought 1 horse for $63\frac{5}{8}$, and another for $86\frac{3}{8}$. He sold the span for $187\frac{1}{2}$; how much profit had he?

Miscellaneous—Continued.

EXERCISE XLV.

1. Sam. has \$1.89, Bill. has \$3.50 more than Sam., and Tom. has 62c. less than Sam. and Bill; how much more has Tom. than?

2. Multiply the sum of 264094 and 83720 by their difference.

3. A grocer bought 2 bushels of berries of A at 56c. a peck, and 9 pks. of B at 8c. a qt.; how much will he gain by selling all at 10c. a quart?

4. A walks $3\frac{1}{2}$ and B $4\frac{1}{4}$ miles per hour, they start from the same place in opposite directions; how far apart will they be in 18 hours?

5. In 17 mls., 16 fur., 48 perches, how many rods?

6. Find the L. C. M. of 45 and 27 and the G. C. M. of 217, 49 and 63.

7. Add together $2\frac{3}{4}+7\frac{1}{3}+4\frac{5}{6}+(\frac{3}{5}$ of $3\frac{1}{3})$.

8. B owns $\frac{4}{7}$ of a farm worth \$6,300; find the value of $\frac{1}{2}$ of his share.

9. A merchant has 9 barrels of sugar, each weighing 2 cwt., 53 lbs., which he sells at 11 lbs. for a dollar; how much is the whole worth?

10. Find the total value of:
2130 lbs., of wheat at \$1.14 per bush.
3 cwt., 3 qrs., 3 lbs., of beef at $4\frac{1}{2}$c. a lb.

Miscellaneous—Continued.

EXERCISE XLVI.

1. At what rate per foot is $21.45 for 10 rods?

2. Mr. B laid out $610 in buying cows; for two he paid $26 each, and for the others $31 each; how many did he buy?

3. Multiply 9,396,089,705 by 3,090,070. Prove.

4. How many strokes will a clock that goes regularly and constantly, strike in this year, (1880)?

5. Find the value of seven cwt., 25 lbs., 1008 ozs. of beef at 9½c. a lb.

6. What is the longest pole that will exactly measure two ropes 2,717 ft. and 1,441 ft., respectively?

7. 560 quills at 7c. per score, 918 at 4c. per dozen, and 950 at 34c. per hundred would buy how many slate pencils at 5 for 2 cents?

8. A bucket contains 4 cbc. ft., 10 cbc. in. of earth; how many such buckets in a box that contains 3 cbc. yards?

9. Allowing 24⅓c. to the sterling shilling, reduce £29, 17s, 0d sterling to dollars and cents.

10. Add ½, ⅔, ¾, and 4⅕.

11. If a man clears 5 mills on each book he prints, how many dollars will he make on one million books?

BILLS.

EXERCISE XLVII.

Make out in correct form, bills for the following purchases and receipt the last four.

1. Mr. Smith bought of Jones & Co., 2 lbs. of tea at 75c., 6 lbs rice at $4\frac{1}{2}$ c., $10\frac{1}{2}$ lbs sugar at 9c. a lb.

2. B bought of A $3\frac{1}{2}$ yds. flannel at 42c., 19 yds. print at $12\frac{1}{2}$c., $6\frac{1}{4}$ lbs. currents at $8\frac{1}{2}$c.

3. Miss Price bought of Miss Little 19 yds. lace at $12\frac{1}{2}$c., $15\frac{3}{4}$ yds. edging at 9c., $7\frac{1}{2}$ yds. silk ribbon at $18\frac{1}{2}$c. a yard, $9\frac{1}{4}$ yds. muslin at 13c. a yard.

4. M. bought of N, $1\frac{1}{2}$ lbs. of coffee at 45c, $2\frac{1}{2}$ lbs. tea at 55c., 1 broom 35c., 11 lbs. sugar for $1;

5. C bought of S. 25 lbs of flour at $3 per cwt., $8\frac{1}{3}$ lbs of oatmeal at 3c. a lb., 6 lbs. 4 oz., butter at 30c. a lb., and 1 pk. apples at 60c. a bus.

6. Mr. J. bought of Mr. F. 9 lbs of nails at $4\frac{1}{2}$c. a lb., 2 pairs of hinges at 35c. a pair, 1 chisel 75c. I saw $3\frac{1}{4}$, and 1 plane $1.50.

7. Mr. W. bought of Mr. C. $13\frac{1}{2}$ lbs. fish at $4\frac{1}{2}$c., $1\frac{1}{2}$ doz. buttons at $1\frac{1}{2}$c. each button, 3 bars of soap at $12\frac{1}{2}$ each, and 2 brooms at $3 a doz.

8. Mr. M. bought of Mr. R. 4 lbs. biscuit at $7\frac{1}{2}$c., 5 lbs. tea at 48c., and 1 dollars' worth of sugar at 9 lbs. for a dollar.

Miscellaneous—Continued.

EXERCISE XLVIII.

1. How much wheat is necessary to sow a field of 9 acres, if $\frac{2}{3}$ of an oz. be sown on every sq. yard?

2. A grocer buys sugar @ $8.50 per cwt., and sells it @ 11c. per lb.; what would he gain on 2250 lbs.?

3. A dealer buys 26500 ft. of lumber @ $11.40 per M, and retails it @ $2.50 per C.; find his gain.

4. A grocer bought a bbl. of vinegar, containing 36 gals, for $12.60; $\frac{1}{6}$ leaked out and he sold the rest @ 13c. per qt. Find his gain.

5. How many cords of wood in a pile 84 feet long, 5 ft. 8 in. high, and 4 ft. 6 in. wide?

6. One-half of the sum of two numbers is 2182, $\frac{1}{2}$ their difference is 461. Find the numbers.

7. A man divided his property among his three sons; to the eldest he gave $6,750, to the youngest $\frac{1}{2}$ as much and to the second $1\frac{1}{2}$ times as much as to the youngest. Find the value of all.

8. A field is 33 rods wide and $1\frac{1}{2}$ times as long; how many acres in it?

Miscellaneous—Continued.

EXERCISE XLIX.

1. Find the smallest number that will leave a remainder of 30 when divided by 155, 186 or 217.

2. How far from the end must I cut a board 13 in. wide, so as to have 6 square ft?

3. A field 119 yds. wide, and 136 yds. long, is divided into square plots of the largest possible size. How many will there be.

4. I owe $200 and pay $43.16. How many times must I pay $13.07 to cancel the debt?

5. Bought 40 gal. of wine at $2 per gal. How much water must be added so that $30 may be gained by retailing it at $1.30 per gal.

6. Reduce $\frac{2}{3}$, $\frac{4}{5}$, $\frac{7}{11}$ and $\frac{1}{12}$ to equal fractions having 3960 for a denominator.

7. A., B. and C. start on a trip with $20 each, they agree to divide the expenses equally. When they return, A. has $8, B., $6 and C. $10. Show how the account is to be made right.

8. Find the value of $3\frac{3}{4}+1\frac{1}{3}$ of $2\frac{1}{15}-5\frac{5}{8}$.

9. How many cords in a pile of wood 40 feet long, 6 feet high and 12 feet wide?

10. What is the time when $\frac{2}{3}$ of the time since noon is equal to the time until midnight?

Miscellaneous—Continued.

EXERCISE L.

1. Divide $1630 between two persons so that one may receive $\frac{2}{3}$ as much as the other.

2. $\frac{1}{2}$ of $\frac{5}{8}$ of a man's property is worth $6320, find the value of the whole of it.

3. If 36 men can do a work in 25 days, how long would it take 22 men?

4. What part of 2 miles is 480 rods?

5. A man gave $72 for a watch and $\frac{3}{4}$ as much for a chain; what did both cost?

6. A boy gave away $\frac{1}{2}$ of $\frac{2}{3}$ of his money and had 85c. left; how much had he at first?

7. A man earns $650 a year, he spends $\frac{1}{5}$ for board, $\frac{1}{3}$ for clothing and $\frac{1}{4}$ in other ways; how much has he left?

8. $\frac{1}{5}$ of 20 is how many times $\frac{1}{8}$?

9. A field containing 18 ac., 26 sq. rods, is sold for 581\frac{1}{5}$; find the value of a field of 8 ac., at the same rate.

10. Find the cost of plank for a sidewalk $\frac{1}{4}$ mile long, $3\frac{1}{2}$ yds. wide, @ $1.25 per C. (inch measure.)

11. Find the cost of 6725 lbs of hay at $14.25 per ton.

Miscellaneous—Continued.

EXERCISE LI.

Find total cost of:

1. 16,750 ft. of boards @ $12.50 per M.
   1,750 ft. of plank at $24.00 per M.
   3,500 ft of scantling at $25.00 per M.

2. How many steps of $2\frac{1}{2}$ ft. each would a man take in walking a mile?

3. A wheel makes 880 revolutions in passing over 2 miles, 1430 yds.; what is its circumference?

4. How many cords of wood in a pile 140 ft. long, $4\frac{1}{2}$ ft. wide and $6\frac{1}{2}$ ft. high?

5. A stationer bought one great gross of slates at 9 pence for each slate; what was the cost of the whole in pounds sterling?

6. How much will it cost to dig a cellar 40 ft. long, 32 feet wide and 5 ft. deep, at 25c. a cubic yard?

7. If 5 tons of coal are equal to 9 cords of wood and a family burns 27 cords of wood in a year, how much will they save by changing from wood to coal when wood is $4.25 a cord, and coal $6.80 a ton?

8. What is the cost of 4 fields containing $4\frac{1}{3}$ ac., $2\frac{1}{2}$ ac., $3\frac{2}{3}$ ac., and $1\frac{3}{4}\frac{3}{5}$ ac., at $25 an acre?

9. How many acres in a piece of land $\frac{1}{2}$ mile long and $\frac{1}{4}$ mile wide?

DECIMALS.

EXERCISE LII.

1. Reduce the following vulgar fractions to decimals:

1. $\frac{1}{4}$; $\frac{1}{5}$; $\frac{3}{4}$; $\frac{3}{5}$; $\frac{3}{8}$; $\frac{13}{16}$; $\frac{33}{125}$.

2. $\frac{13}{64}$; $\frac{19}{32}$; $\frac{24}{125}$; $\frac{231}{250}$; $\frac{121}{200}$ $\frac{49}{125}$.

3. $3\frac{9}{16}$; $18\frac{11}{25}$; $102\frac{16}{125}$; $1\frac{9}{10\,24}$.

4. $\frac{3}{4}+\frac{1}{2}+\frac{1}{16}+\frac{5}{32}$.

5. $5\frac{1}{8}$ of $4\frac{3}{5}$ of $\frac{1}{25}$.

6. $\frac{3}{5}+4\frac{1}{8}+4\frac{7}{40}+16\frac{11}{125}$.

7. $\frac{7}{16}$ of $\frac{3}{8}+3\frac{1}{2}$ of $\frac{9}{25}-1\frac{1}{8}+4$.

8. Express the following decimals as vulgar fractions:—·5; ·3; ·7; ·25.

9. 2·125; 16·75; ·0125.

10. ·19; 1·052; 37·2; 124·5.

11. 4·375; 126·0025; 1000·0001.

12. 396·07; 4004·312; 26·62.

Decimals—Continued.

EXERCISE LIII.

1. Write as decimals: one tenth; seven-tenths; nineteen-hundredths; and forty-eight thousandths.

2. Express the following decimals as vulgar fractions in their lowest terms: ·72, ·395; ·008; ·0625, ·073; 27·16; 1895·5 and ·00098.

3. Multiply ·316 by 10, by 1000, 1000000.

4. Divide 6·025 by 10, by 100, by 10,000.

5. Write as decimals; twenty-four hundredths; nine thousands; sixteen and nine-tenths; five millionths; one hundred and one hundredth.

6. Express the following decimals in words: ·3; ·22; ·106; 10·01; 7·93; 101·101; 16·0007; ·01009; 23·000201; 1065·00000001.

7. Add together: ·5+·02+·346+·3+·972+·25.

8. Add: 1·5+13·25+119·3+7·6854.

9. Find the sum of 725·1001+16·92+11·3921+374+·000375+15·1.

10. Find the sum of $\frac{3}{4}+\frac{3}{5}+\frac{17}{25}+\frac{9}{16}+\frac{13}{64}+121\frac{7}{10}$ when reduced to decimals.

11. What vulgar fraction represents the sum of 1·25+13·2+2·05+18·125?

12. Multiply ·0612 by 100 and by 10,000,000.

Decimals—Continued.

EXERCISE LIV.

1. Find the difference between 3·1047 and 2·101; 16·125 and 8·397; 132·5 and 69·25.

2. Find the value of (1) 37·162—26.84, (2) ·742—·375, (3) 17·5—13·06021.

3. Take ·03 from ·3; 63·721 from 162·29; 38·006402 from 45·078.

4. How much must be added to 1·5 to make 3? to 12·39 to make 25?

5. By how much does 762·125 exceed 139·5?

6. Find the value of 7·2+102·15—9+1056·9003—985·75.

7. Simplify ·0563+13·01—9·12—·614.

8. Find the difference between three and three-tenths; also between seven hundredths and seven-millionths; also between ninety-six+thirteen thousandths and one hundred and nine and 5 ten thousandths.

9. Simplify 1639·1—1·6391+163·91—16·391.

10. How much added to ·000062 will make 62?

Decimals—Continued.

EXERCISE LV.

Multiply together:

1. 1·69 by 1·3; by 13, by ·13 and by 130.
2. 2·25 by 22·5. by 2·25 and ·0225.
3. 1200·21 by ·00002 and by 20.
4. 191·047 by 1·83 and 9641 by ·0573.
5. 39264·571 by 87·243761.
6. Find the price of 3·375 lbs. of butter at 18·75c. a lb.
7. Find the total cost of 31·5 gals. of cider at 12·5c. a gal., 5·625 gals. of molasses at 62·5c. a gal., 7·75 yds. of cloth at $1·375 a yd.

Divide:

8. 159·6 by 42, by 4·2, by ·038.
9. 173·889 by ·417 and ·12376 by ·00026.
10. ·03611 by 7·85 and ·0006594 by ·0021.

Find the value of the following correct to three places of decimals:

11. 1·84÷91; 769·2÷12·3 and 17÷·0012.
12. ·07291÷1·8; 962·4÷11·92743.
13. There are 2218.192 cubic inches in the Imperial Bushel; how many in a gal.? In a pk.? In a qt.? In 2½ bush.?
14. At $0·375 each, how many hens can be bought for $24? For $3?

CIRCULATING DECIMALS.

EXERCISE LVI.

1. What kind of vulgar fractions will recur, and what kind will terminate when reduced to decimals?

Reduce the following to recurring decimals:

2. $\frac{4}{9}$; $\frac{5}{12}$; $\frac{7}{11}$; $\frac{1}{13}$; $\frac{17}{24}$ and $\frac{3}{7}$.

3. $\frac{13}{20}$; $\frac{5}{12}$; $\frac{312}{333}$; $7\frac{2}{3}$ and $9\frac{1}{30}$.

4. $26\frac{14}{125}$; $12\frac{119}{567}$; $4\frac{31}{99}$; $\frac{11}{100}$.

5. $\frac{1}{22}$; $\frac{1}{33}$; $\frac{1}{11}$; and $\frac{1}{13}$.

Reduce the following recurring decimals to vulgar fractions:

6. $\dot{4}$; $\cdot\dot{0}\dot{4}$; $\cdot 0\dot{2}\dot{4}$; $\cdot\dot{9}2\dot{3}$.

7. $7\dot{5}\dot{3}$; $\cdot\dot{2}1\dot{5}$; $\cdot 00\dot{6}\dot{3}$; $\cdot 1\dot{0}0\dot{7}$.

8. $\cdot 0602\dot{7}$; $2\cdot 0\dot{7}1$; $13\cdot 0\dot{2}\dot{4}$.

9. $\cdot 0371\dot{1}3\dot{2}$; $85\cdot 60\dot{8}0\dot{6}$; $\cdot 3\dot{0}9\dot{6}2\dot{5}$.

Find the value of the following correct to six places:

10. $2\cdot 3\dot{1}\dot{6}+14\cdot 2\dot{6}+1008\cdot\dot{7}2\dot{9}$.

11. $721\cdot 0\dot{6}1+2\cdot 8\dot{3}\dot{4}+12\cdot\dot{5}+181\cdot 2\dot{6}\dot{3}$.

12. $72\cdot 45+\cdot\dot{3}+20\cdot 0\dot{2}+186000\cdot 0\dot{7}2\dot{9}$.

13. $7\cdot 45-\cdot\dot{3}$; $26\cdot 2\dot{4}-7\cdot 0\dot{5}\dot{2}$; $44-1\cdot\dot{6}$.

14. $118\cdot 01-173\cdot 8\dot{6}\dot{4}-72\cdot\dot{4}$.

Circulating Decimals—Continued.

EXERCISE LVII.

1. Multiply $\dot{3}$ by $\dot{8}$; $1\dot{2}$ by $1\dot{2}$; $4\dot{7}$ by 45.

2. $9\dot{0}6$ by 142; $\dot{3}\dot{6}$ by 77; $3\dot{1}\dot{2}\dot{4}$ by 166.

3. 18.9 by $\dot{8}\dot{1}$; 706 by $3\dot{3}\dot{9}$; $9\dot{3}$ by $\dot{0}001$.

4. Divide $\dot{0}82$ by $12\dot{3}$; $64\dot{8}$ by $\dot{8}$.

5. $73\dot{2}$ by $2\dot{4}$; 198 by $1\dot{4}\dot{2}$

6. $172\dot{8}$ by $14\dot{4}$; $389\dot{1}8\dot{5}$ by $15\dot{7}$.

Find the values of

7. $\dot{2}5$ of \$1; $1\dot{3}5$ of \$2; $18\dot{1}25$ of \$5.

8. $\dot{7}5$ of 1 cwt.; $7\dot{5}$ of 1 lb. avoird.; $\dot{6}$ of 1 qr.

9. $13\dot{2}$ of 2 tons; $9\dot{8}75$ of 7 cwt.; $1\dot{2}5$ of 4 ozs.

10. $\dot{7}5$ of 1 foot; $1\dot{5}$ of 7 yds; $\dot{0}6$ of 125 mls.

11. $3\dot{6}25$ of 4 cwt.; $\dot{9}$ of 1 lb., troy.

12. $22\dot{5}$ of 1 rod; $16\dot{3}75$ of 3 lea, 1 ml.

13. $\dot{6}4$ of 1 cord, 72 cub. ft.; $\dot{4}$ of 1 qr. 6 lbs.

14. $13\dot{7}$ of 2 days, 7 hrs.; $5\dot{5}$ of $\frac{1}{2}$ cwt.

15. $7\dot{4}4$ of 100 ac.; $\dot{6}$ of 3 ac., 2 ro., 20 rods.

16. Find the difference between $5\dot{5}$ of £5 and $25\dot{5}$ of 5s.

17. By how much does $8\dot{3}$ of 7 dwt. exceed $\dot{8}3$ of 10 ozs. troy.

18. How many times can $2\dot{5}$ of 10s., 6d be taken from $4.2\dot{5}$ of £1, 5s?

FRACTIONS.

EXERCISE LVIII.

Simplify

1. $(\frac{1}{2}+\frac{1}{3})\times(1\frac{1}{3}+2\frac{3}{4})\times(2\frac{1}{14}-1\frac{1}{2})\times(3\frac{1}{10}-\frac{3}{7}.)$

2. $(1\frac{3}{4}\div 2\frac{1}{2})+(5\frac{1}{2}\div 3\frac{1}{8})+(4\frac{1}{7}\times 2\frac{3}{5})\times(\frac{5}{8}-\frac{1}{2}$ of $1\frac{1}{4}.)$

3. (a.) $\frac{2}{3}$ of $\frac{7}{8}+1\frac{1}{2}\div\frac{5}{7}-\frac{1}{2}\times 1\frac{1}{3}$.

(b.) $\frac{2}{3}$ of $(\frac{7}{8}+1\frac{1}{2})\div(\frac{5}{7}-\frac{1}{2})\times 1\frac{1}{3}$.

(c.) $\left\{(\frac{2}{3}\text{ of }\frac{7}{8})+1\frac{1}{2}\right\}\div\left\{\frac{5}{7}-(\frac{1}{2}\times 1\frac{1}{3}.)\right\}$

4. $\dfrac{5\frac{1}{3}-2\frac{1}{8}}{3\frac{3}{4}+\frac{9}{20}}$ of $\dfrac{4\frac{1}{2}+5\frac{1}{25}}{4\frac{1}{20}}$ of $\dfrac{2\frac{3}{5}+1\frac{2}{3}}{7\frac{19}{20}-2\frac{1}{4}}$

5. (a.) $\frac{3}{5}\div\frac{8}{9}+\dfrac{\frac{5}{8}}{2\frac{1}{2}+1\frac{1}{8}}\times\frac{1}{8}$ (b.) $2\frac{1}{2}\times\dfrac{1}{3\frac{1}{3}+\frac{1}{4\frac{1}{4}}}$.

6. $\dfrac{5\frac{5}{8}\div 6}{1\cdot 2\text{ of }\frac{5}{8}\div 10\cdot 3}\times 6\text{ of }\dfrac{1\frac{1}{2}\text{ of }4\cdot 1}{13\frac{7}{8}\text{ of }5\cdot 3}$.

7. $\dfrac{\cdot 375\times\cdot 375-\cdot 025\times\cdot 025}{3\cdot 75-\cdot 025}$

8. $\frac{1}{2}$ of $\frac{3}{4}$ of $\frac{1}{8}$ of 20 bush. $\times\cdot 5\times\cdot 6\times\frac{7}{8}$.

9. $\frac{1}{5}$ of $6\frac{1}{2}$ yds. $+\frac{3}{5}$ of $\frac{1}{7}$ of $8\frac{3}{4}$ ft. $+\frac{2}{7}$ of $\frac{3}{11}$ of $7\frac{7}{10}$ inches.

MISCELLANEOUS.

EXERCISE LIX.

2. Simplify $\left\{(1\frac{2}{5}+\frac{1}{3})\div(3-\frac{1}{3})\right\}\times(\frac{1}{3}+2\frac{1}{3})$.

2. Simplify $\dfrac{3\frac{1}{2}-2\frac{1}{6}}{\frac{1}{4}\text{ of }(\frac{1}{3}+\frac{1}{7})}\div 15\frac{5}{7}$.

3. A boy earns $\$2\frac{5}{8}$ in $2\frac{1}{2}$ days; how much will he earn in $5\frac{1}{3}$ days?

4. A man owns $\frac{2}{3}$ of a factory and sells $\frac{5}{7}$ of his share for \$31,500. Find the value of the factory.

5. A boy bought some peaches at 3 cents each; had he paid $5\frac{1}{2}$ cents each they would have cost \$2.40 more. How many did he buy?

6. Divide 200 into 3 parts, such that the second is 4 times the first and the third 5 times the second.

7. How many times does the sum of $12\frac{1}{2}$ and $8\frac{7}{8}$ contain their difference?

8. A merchant marks his goods $\frac{1}{5}$ above cash price; find the cash price of an article marked £1, 6s.

9. A boy paid 3c. each for oranges and had 6c. left; had he paid $3\frac{1}{2}$c. he would have been 6c. short. Find the number.

10. If 1 oz. av. cost £·03125, what would ·0625 of a lb cost?

Miscellaneous—Continued.

EXERCISE LX.

1. How many times can the product of 26 and 209 be taken from 2980473?

2. Find the value of a piece of land 3 miles long, 1 mile wide, at $23 per acre.

3. What is 4600 lbs. of wheat worth at $1.25 per bushel?

4. Show how to find the L.C.M. of all the prime numbers between 20 and 40.

5. Find the cost of making 1 ml., 3 fur, 22 rods of ditch at $6.75 per rod.

6. Bought 3 bus. cherries at $2.25 per bus. and sold half of them at 65c. a peck and the others at 10c. a quart. Find the gain.

7. Reduce $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{3}$ and $\frac{5}{6}$ to twelfths.

8. Bought 120 gals. of milk at 13$\frac{1}{2}$c. per gal.; at how much per quart must I sell it to gain $7.80 on the whole?

9. I gave $\frac{1}{6}$ of an orange to A; $\frac{1}{8}$ to B, and $\frac{1}{4}$ to C; how much have I left?

10. A horse, buggy and harness cost $280; the horse cost $20 more than both buggy and harness, and the harness $70 less than the buggy. Find the cost of each.

Miscellaneous—Continued.

EXERCISE LXI.

1. What must be added to 987,632 to make it exactly divisible by 865?

2. A circus ring is 120 yds. in circumference; 20 horses all go 15 times round; how many miles, &c, did they all travel?

3. Divide 123 mls., 3 fur., 12 rods., 2 yds., 11 in. by 121 using factors.

4. Divide $140 between A and B so that A's share shall be equal to $\frac{3}{4}$ of B's share.

5. A has $\frac{3}{5}$ of a sum of money, B $\frac{1}{3}$, and C the remainder, if A has $24 more than C, how much has each man?

6. Find the L. C. M. of all the composite numbers from 1 to 20.

7. If I had $400 more I could pay a debt of $1,500 and have $37 left; how much have I?

8. A man walks 3 mls. per hour; how long would it take him to go round a field 120 rods long, 80 rods wide?

9. A man having 500 ac. of land divided it into lots of 16 ac., 3rs. 17 per., 19 yds. each, and sold 17 of them; how many acres, &c., has he left?

10. When 98 mls., 7 fur., 13 per., 3 yds., 2 ft., 8 in. is repeated 87 times; what is the result?

11. A goes 13 mls. an hour, B 9 mls., if B has 2 hrs. the start; how long before A will overtake him?

ANALYSIS.

EXERCISE LXII.

1. There are 17 tons, 12 cwt. of hay on 16 loads; find the weight of 5 such loads.

2. If it cost \$2.70 to carry 18 cwt. 16 miles, find the cost of carrying 7 cwt. the same distance?

3. If 7 men can cut 84 cords of wood in 6 days, how long will it take 1 man to cut 1 cord?

4. If 18 boys make 459000 matches in 2 days, how many does 1 boy make in 1 day?

5. If 176 pails of sap make 100 lbs. of sugar, how much will 1128 pails make?

6. If $\frac{3}{5}$ of a farm be worth \$4500, find the value of $\frac{3}{4}$ of it.

7. If \$7.49 pay for $\frac{1}{3}$ of a ton of coal, what will $8\frac{1}{3}$ tons cost?

8. If $\$1\frac{1}{2}\frac{3}{3}$ will pay for $\frac{1}{3}$ of a bag of apples, for what part will $\$\frac{7}{2}\frac{7}{0}$ pay?

9. If $\frac{3}{8}$ of a ship cost \$9750, what will $\frac{2}{2}\frac{1}{5}$ of it be worth?

10. If $2\frac{3}{5}$ yds. of cloth cost \$14.21, what will $1\frac{1}{7}$ yds. cost.

11. If $\frac{1}{2}$ of $\frac{2}{3}$ of $3\frac{1}{3}$ lbs. of tea cost $\frac{3}{7}$ of $\frac{3}{1}\frac{7}{1}$ of $\$4\frac{2}{3}$, what will $\frac{3}{8}$ of $\frac{1}{2}$ of $\frac{5}{5}\frac{1}{6}$ of a lb. cost?

Analysis—Continued.

EXERCISE LXIII.

1. If 5 men can reap 19 acres in 3 days, how long will it take them to reap 30 acres?

2. If 3 lbs. of cotton weave 10 yards of stuff $1\frac{1}{2}$ yards wide, how many lbs. will weave 100 yards $1\frac{1}{4}$ yards wide?

3. If the price of a 3-lb. loaf is 10c., when wheat is 95c. a bus., find the price of a 4-lb. loaf, when wheat is $1.25 per bus.

4. A crew of 35 men have provisions for 30 days; how long will it last if 8 more men are taken aboard and all are put on half rations?

5. If 9 men build a wall 100 ft. long, 8 ft. high and $2\frac{1}{2}$ ft. thick, in 18 days of 10 hrs. each, in how many days of 9 hours would 12 men build a wall of double these dimensions?

6. If 25 sheep eat as much hay as 19 goats, and 33 goats eat as much as 10 cows, and 38 cows as much as 22 horses, how many horses will eat as much as 90 sheep?

7. If 6 lbs. of tea are worth 29 lbs. of sugar, 17 lbs. of sugar pay for 1 bus. of wheat, 27 bus. of wheat for 4 tons of coal, 34 tons of coal for 15 cows, and 29 cows cost $1160, how many lbs. of tea can be purchased for $20?

MISCELLANEOUS.

EXERCISE LXIV.

1. Find the difference between 4 hundred and 7 times 8 thousand and 40, and $3,582,267,648 \div 48$.

2. Divide $9 \times 7 \times 16 \times 16 \times 1$ by $21 \times 32 \times 2$.

3. What is the highest common factor of 144, 676, 720; also of 6006 and 3318?

4. Simplify $\frac{1}{3}$ of $\frac{8}{15}$ of $3\frac{1}{16}$ of 6.

5. Reduce the following fractions to their lowest common denominator: $22\frac{1}{4}$, $7\frac{1}{3}$, $3\frac{2}{3}$ and $4\frac{7}{12}$.

6. A boy had $\frac{9}{10}$ of a dollar, and spent $\frac{2}{3}$ of it; how many cents has he left?

7. A grocer sells 2000 boxes of strawberries at 4 for 25c., gaining $25 on all; how much did he pay for the berries?

8. When potatoes are 45c. a bag of $1\frac{1}{2}$ bus., and 150 bus. grow on 1 acre, how much are the potatoes on $1\frac{1}{2}$ ac. worth?

9. How many squares of shingles (100 sq. ft. to a square) will cover a barn roof, one of whose equal sides is 80 ft. long and 25 ft. wide.

10. How many yards must a seed drill 9 feet wide run to sow an acre?

11. Find the value of 448 cheese, each $62\frac{1}{2}$ lbs. at a York shilling per lb.

Miscellaneous—Continued.

EXERCISE LXV.

1. A piece of land is 45 rods, 22 yds., 33 ft. long, and 34 rods, 11 yds., $16\frac{1}{2}$ ft. wide; how many acres in it?

2. Compare the fractions $\frac{7}{10}$, $\frac{4}{15}$, $\frac{7}{20}$, $\frac{29}{30}$, $\frac{33}{25}$ and $\frac{255}{300}$.

3. Simplify $3\frac{1}{3}+7\frac{1}{2}-\frac{2\frac{1}{2}}{4\frac{1}{4}}+1\frac{1}{6}-\frac{3}{4}$ of $4\frac{4}{7}$.

4. Sold $\frac{1}{6}$ of a cheese, then $\frac{1}{5}$ of it, then $\frac{3}{10}$ of the remainder, and had 22lbs. left; find the weight of the whole cheese.

5. From the sum of $8\frac{7}{15}$ and $9\frac{1}{10}$ take the difference between $11\frac{1}{16}\frac{3}{6}$ and $14\frac{7}{10}$.

6. Find the value of:

(*a*) $\frac{4}{5}$ of 1 ton, 6 cwt., 10 lbs., 9 ozs.

(*b*) $\frac{3}{7}$ of 5 mls., 2 furs., 28 rods, 2 yds., 1 foot.

7. If $13\frac{1}{3}$ lbs. of butter are worth \$3.00, find the value of $\frac{3}{4}$ of a quarter.

8. What is the least number that will leave one when divided by 5, 7, 15, 21 or 30?

9. Two clocks are set right at 12 a. m. on Monday; one gains $1\frac{3}{4}$ min. a day, and the other loses $2\frac{1}{2}$ min. a day; how soon will there be one hour's difference?

10. A clerk copied $\frac{1}{5}$ of £1 instead of $\frac{1}{15}$; find the amount of the error.

11. Divide \$210.70 among A, B and C, giving B $\frac{1}{2}$ as much as A, and C $\frac{1}{2}$ as much as B.

PRICE OF GRAIN.

EXERCISE LXVI.

1. What is the price of 3300 lbs. of wheat at $1.09 per bus.? At $1.80 per cwt.?

2. Find the cost of 1785 lbs. of oats at 41c. per bus. At $1.28 per cwt.

3. How much will 2340 lbs. of pease cost at 65c. per bus.? At $1.08 per cwt.?

4. A man took 3600 lbs. of barley to market, and was offered 70c. per bus., or $1.45 per cwt.; which had he better take?

5. In the market reports I find the following quotations: Wheat per bus., $1.25 to $1.28; Barley 68c. to 72c.; Pease 65c. to 70c.; Oats 36c. to 40c.; Find the corresponding prices per cwt.

6. In another paper I find the following: Wheat, per cwt., $1.60 to $1.68; Barley, $1.15 to $1.22; Pease, $1.05 to $1.08; find the corresponding prices per bus.

7. Find the value of 2828 lbs. of clover seed, at $6.25 per bus.

8. How much has a farmer on 2500 lbs. of timothy seed, after paying 25c. per bus. for threshing, if he sells at 1.87\frac{1}{2}$ per bus.?

9. A load of potatoes weighs 3270 lbs; find its value at 48c. per bus.

PRICE OF LUMBER.

EXERCISE LXVII.

1. Find the value of 800 ft. of lumber, at $9.00 per M.

2. At $14 per M., what is the value of 4500 of lumber?

3. Bought 750 feet of siding at $12.50 per M., 340 ft. flooring at $8.50 per M., and 1600 ft. of scantling at $7.25 per M.; find the total cost.

4. What is the value of 150 boards 12 ft. long, 9 in. wide, at $11 per M?

5. Find the cost of 364 scantling 16 ft. long, 3 in. by 4 in., at $8.50 per M.

6. What is the value of 24 bunches of shingles (250 in a bunch) at $2.35 per M.?

7. Find the cost of flooring a barn 24 ft. wide, 36 ft. long, with 2-inch plank, at $9.25 per M.

8. What would be the cost of lumber for a tight board fence, 6 feet high, round a yard 10 rods long and 6 rods wide, at $8.75 per M?

9. Walnut lumber is worth $80 per M.; what is the value of a board 8 feet long, 9 inches wide, $1\frac{1}{2}$ inches thick?

10. Find the total cost of 24 scantlings, 3x2 in., and 14 ft. long; 19 boards, 12 ft. long, 10 in. wide; and 35 two-inch plank, 16 ft. long and 8 in. wide; all at $13.50 per M.

CARPETING ROOMS.

EXERCISE LXVIII.

1. A strip of carpet is 18 ft. long and 2 ft. wide, how many sq. ft. in it, and how many sq. ft. in each yard?

2. How many more sq. ft. will a piece of carpet 24 ft. long, and $2\frac{1}{3}$ ft. wide, cover than one 24 feet long, and 2 ft. wide?

3. How many sq. yds. in roll of carpet 216 ft. long and 27 in. wide? In a roll 216 ft. long, 30 in. wide?

4. How many sq. yds. of carpet 27 in. wide will be required for rooms whose dimensions are:

(1.) 18 ft. by 12 ft.? (4.) 26 ft. by 36 ft.?
(2.) 24 ft. by 18 ft.? (5.) 30 ft. by 24 ft.?
(3.) 27 ft. by 21 ft? (6.) 48 ft. by 36 ft.?

5. How many yards, 30 in. wide, would be required for rooms of the above dimensions?

6. Find the cost of carpeting rooms as follows:

1. 18 ft. by 24 ft., with carpet 24 in. wide, at 75c. a yd.
2. 24 ft. by 21 ft., with carpet 30 in. wide, at $1.25 per yd.
3. 26 ft. by 36 ft., with carpet 3 ft. wide, at $1.10 a yard.
4. $16\frac{1}{2}$ ft. by $18\frac{1}{2}$ ft., with carpet 2 ft. wide, at 90c. a yd.
5. 30 ft. by 24 ft., with carpet $\frac{3}{4}$ yd. wide, at 85c. a yd.
6. 27 ft., by 21 ft., with carpet $\frac{5}{7}$ yd. wide, at $1.00 a yd.

Carpeting Rooms—Continued.

EXERCISE LXIX.

1. If it cost $105.60 to carpet a room 27 ft. by 24 ft. with carpet at $1.10, find the width of the carpet.

2. Find the cost of carpeting a strip 2 ft., 3 in. wide, round a room 26 ft. by 24 ft., at 80c. per sq. yd.

3. The perimeter of a room is 84 ft., and the width is $\frac{3}{4}$ of the length; find the cost of covering the floor with carpet 2 feet wide, at $1.25 per yard.

4. The perimeter of a room is 120 ft., and the length is $\frac{3}{2}$ of width; find the cost of carpeting it with 30-inch carpet, at $1.35 per yd.

5. How many yds. of 30-inch carpet will cover a platform containing 14 planks 12 in. wide and 18 ft. long?

6. Find the cost of matting for 2 church aisles, 54 ft. long, and 3 others 42 ft. long, all 3 ft. wide, at 50c. per sq. yd.

7. If it costs $36 to carpet a room 18 ft. wide and 24 ft. long, what will it cost to carpet a room 28 ft. by 20 ft.?

8. A stairway has 16 steps, each 8 in. high and 12 in. wide; find the cost of the stair carpet at $1. per yd.

9. A piece of carpet is 2 ft. 9 in. wide; how long must it be to cover 44 sq. yds.?

SQUARE MEASURE.

EXERCISE LXX.

1. Find the cost of papering the walls of a room 20 ft. long, 16 ft. wide, 10 ft. high, at 12½c. a sq. yd.

2. Estimate the cost of plastering the walls and ceiling of the above mentioned room, at 7½c. a sq. yd.

3. How many yards of paper 2 ft. wide will cover the walls of a room 18 ft. long, 14 ft. 6 in. wide and 9 ft. 6 in. high?

4. Find the cost of plastering the walls and ceiling of a room 22 ft. 6 in. long, 16 ft. 6 in. wide, 11 ft. high, having four windows 6 ft. high, 3 ft. 6 in. wide, and 3 doors 7 ft. high and 4 ft. wide, and a base board 9 in. wide, at 11c. a sq. yd.

How much inch lumber will be required to make boxes of the following dimensions:

5. 4 ft. long, 2 ft. wide, 1½ ft. deep, outside measure, with cover.

6. 3½ ft. long, 1¾ ft. wide, 1⅓ ft. deep, outside measure, no cover.

7. 12 ft. long, 3 ft. 4 in. wide, 10 in. deep, outside measure, no cover.

8. 6½ ft. long, 4¼ ft. wide, 3⅓ ft. high, outside measure, with cover.

9. A box is 3 ft. long, 2¼ ft. wide, and 2¾ ft. deep, inside; find the cost of lining it with zinc at 6c. a sq. ft.

PRICE OF WOOD.

EXERCISE LXXI.

1. In a pile of wood 12 ft. long, 5 ft. high, 4 ft. wide, how many cords? Find its value at $4.75 per cord.

2. Find the value of a pile of wood 28 ft. long, 7 ft. high, 4 ft. wide, at $5.25 per cord.

3. How many loads 11 ft. long, 4 ft. wide, 5 ft. high, must a man draw for 50 cords? For 72 cords? For 1000 cords?

4. A pile of wood is 6 ft. high, 10 ft. wide and 300 ft. long; how much of it must be taken for 100 cords?

Find the values of piles of wood, at $4.12½c. a cord, whose dimensions are as follows:

5. 20 ft. long, 12 ft. wide, 7 ft. high.

6. 33 ft. long, 8 ft. wide 6 ft. high.

7. 45 ft. long, 21 ft. wide, 9 ft. high.

8. 140 ft. long, 12 ft. wide, 5 ft. high.

9. A man has 17 cords of 4-foot wood; how many cords of 2-foot wood will it make? and how many of 16 inch wood?

10. Which is more profitable to buy: 4-foot wood, at $4.50 per cord; or 20-inch wood, at $1.60 per cord?

MISCELLANEOUS.

EXERCISE LXXII.

1. A farmer sells four loads of oats, weighing respectively 1758, 2346, 1927 and 2593 lbs., at 42½c. per bush.; how many barrels of flour, at $6.50, can he buy with the money?

2. Bought 36 yds. cotton, at 9½c.; 14 yds. print, at 12½c.; 9 yds. lustre, at 26c.; 10 lbs. tea, at 46c.; how much butter, at 17½c. per lb., will pay for these?

3. How often must 706 be added to 116 to make 10 thousand?

4. Divide $250 among A, B & C so that A may have $2 more than B, and C as much as A and B together.

5. At what time between 10 and 11 o'clock are the hands of a watch opposite each other.

6. A storekeeper uses a yard measure one inch too short; how much does he cheat a customer who buys $9 worth of cloth?

7. Find the value of a pile of wood 22 ft. long, 12 feet wide and 6½ feet high, at $3.75 per cord.

8. A can run 11 yards while B runs 10; how much start may B have that A may win a half mile race by 2 yds.

9. If a cub. ft. of ice weighs 920 ozs., find the weight of ice on a tank 15 ft. long, 4 ft. wide, the ice being 3 in. thick.

10. Find the cost of 75 scantling, 2 in. by 4 in., and 18 ft. long, at $7.50 per M.

Miscellaneous—Continued.

EXERCISE LXXIII.

1. Find the product of the sum and difference of ·27 and 27.

2. On $\frac{1}{3}$ of a field I sow wheat; on $\frac{1}{2}$ of the remainder, oats; and on $\frac{1}{2}$ of what then remains, pease; and the remainder, 3 acres, I plant with corn; how many acres in the field?

3. How long would it take a man at the rate of 3 miles an hour to walk round a ten-acre field 40 rods long?

4. How far may a person ride going 10 miles an hour, so that by walking back at the rate of $3\frac{1}{3}$ miles an hour he may be gone just 5 hours?

5. The cost of papering a room 15 ft. long, 12 feet wide, with paper 2 ft. wide, at $5\frac{1}{2}$c. a yard, was \$4.95; find height of the room.

6. A exchanges sugar for flour, but only gives 15 ozs. for a lb.; how many lbs. of flour should he get for a cwt.?

7. How many bricks 8 in. long, 4 in. wide and 2 in. thick, will fill a waggon box 12 ft. long, 3 ft. 4 in. wide, 1 ft. deep?

8. By selling a horse for \$147 a man lost $\frac{1}{8}$ of the cost; how much would he have got had he gained $\frac{1}{8}$?

9. A can do a piece of work in 1 day, B in $\frac{3}{4}$ of a day, and C in $1\frac{1}{2}$ days; how long would it take them all working together?

10. Find the cost of a silver goblet weighing 3 lbs., 4 ozs., 15 grs., at £2 7s. 8d. per oz.

Miscellaneous—Continued.

EXERCISE LXXIV.

1. What is the cost of 17 tons, 18 cwt., 1 qr., 17 lbs. of potash, at $53.80 per ton?

2. What will it cost to dig a cellar 40 feet long, 7 yds. 6 in. wide, and 1 yd. 1 foot deep, at $0.75 a cub. yd.?

3. If it cost $84 to carpet a room 36 ft. long and 21 ft. wide, what will it cost to carpet a room 33 ft. long and 27 ft. wide?

4. If I own $\frac{4}{7}$ of a farm and sell $\frac{2}{3}$ of my share for $2300, what is the value of the whole farm?

5. The four walls of a room are each 16 ft. long and 9 ft. high; how much will it cost to plaster it at 14c. a sq. yd.?

6. Bought a box of soap containing 70 lbs., at 7c. a lb; keeping it all summer it dried away $\frac{1}{3}$, when I sold it at $8\frac{2}{3}$c. a lb., how much did I gain or lose?

7. What is the value of $\frac{1}{11}$ of $\frac{1}{12}$ of a vessel, if a person who owns $\frac{7}{8}$ of it sells $\frac{4}{5}$ of $\frac{7}{8}$ of his share for $1750?

8. How much carpet $\frac{3}{4}$ yds. wide is required for a room 27 feet 3 inches long and 22 feet, 6 in. wide?

Miscellaneous—Continued.

EXERCISE LXXV.

1. If a train pass 10 telegraph poles—which are 10 rods apart—in 25 seconds, and leaves London at 11:45 a. m., at what time will it reach Wingham, 60 miles from London?

2. A farmer sold 50 bus. 30 lbs. of wheat at $2.10 per cwt.; but by mistake received pay for 30 bus. 50 lbs.; how much did he lose?

3. A man plows a furrow 9 inches wide; how far will he have to go to plow an acre?

4. To what depth will 33000 cords of gravel cover a road 40 miles long and 20 feet wide?

5. A man can get his pile of 6-foot wood cut into 3-foot wood for $2.40; what will it cost to make 18-inch wood of it?

6. If 5 bus. of wheat and 9 bus. of oats cost $9.15, and 9 bus. of wheat and 5 bus. of oats cost $12.55, find the value of 1 bus. of each.

7. In a school there are half as many boys as girls; if 10 more boys come there will be $\frac{5}{6}$ as many boys as girls; find the number of each?

8. Find the cost of pickets for fencing a field 40 rods by 60 rods, the pickets 3 in. wide and 3 in. apart, at 4 for 5c.

SIMPLE INTEREST.

EXERCISE LXXVI.

Find the simple interest on:

1. $320 for 1 year, at 6 per cent.; at 5 per cent.; at 9 per cent.
2. $75 for 2 years at 4 per cent.; at 7 per cent; at 8 per cent.
3. $156 for 1 year at $4\frac{1}{2}$ per cent.; at $6\frac{1}{2}$ per cent.; at $12\frac{1}{2}$ per cent?
4. $224 at 7 per cent. for 3 years; for $4\frac{1}{2}$ years; for $1\frac{3}{4}$ years.
5. $125.50 for 4 years at 4 per cent.; at $5\frac{1}{2}$ per cent.; at 7 per cent,
6. $387\frac{1}{2}$ for $2\frac{1}{2}$ years at 3 per cent.; at $4\frac{1}{2}$ per cent.; at $3\frac{3}{4}$ per cent?
7. $49.25 for $\frac{3}{4}$ year at 8 per cent.; at 6 per cent.; at $7\frac{1}{2}$ per cent.
8. $1109.44 at $7\frac{1}{2}$ per cent. for $2\frac{1}{3}$ years; for 1 yr. 9 mo.; for 1 yr. 2 mo.
9. $180 at 7 per cent. for 90 days; for 145 days; for 277 days.
10. $550 from 10th Jan. to 25th May, 1880, at 6 per cent.
11. $32.75 from 15th March to 31st Dec., 1881, at 7 per cent.
12. $3625 from May 5th, 1880, to Nov. 19th, 1882, at 8 per cent.
13. $1234.56 for 8 yrs., 9 mo., 10 days, at 6 per cent.
14. $576 for 3 yrs., 5 mo., 7 days, at 5 per cent.

Simple Interest—Continued.

EXERCISE LXXVII.

1. What sum will amount to $84 in 2 yrs. at 6 per cent.?

2. What sum will amount to $1325 in 8 mos., at 9 per cent.?

3. The interest on a certain sum for 2 yrs., 8 mos., at 6 per cent. was $160; find the sum.

4. The interest on $8000 for 1 day is $2; find the rate per cent.

5. In what time will $225 amount to $297 at 8 per cent.?

6. What sum will amount to £425, 19s., 4½d, in 10 years, at 3½ per cent.? and in how many more years will it amount to £453, 11s., 7d.?

7. The amount of a sum at 7½ per cent. is $445, and at 10 per cent. it is $460; find the time and the principal.

8. The amount of a sum for 5 years is $450, and for 9 years it is $570; find the rate and the principal.

9. What is the bank discount on $75 for 4 mos., at 12 per cent.? at 5 per cent.? at 7½ per cent? at 10 per cent.?

10. At what rate will a given sum double itself in 10 years? in 20 years? in 25 years? in 15 years?

11. In what time will any sum double itself at 5 per cent.? at 8 per cent.? at 6 per cent.? at 4½ per cent.?

COMPOUND INTEREST.

EXERCISE LXXVIII.

1. At 6 per cent. find the compound interest and amount of $500 for 2 years; for 4 years.

2. Find the compound interest on $250 for 3 years at 7 per cent.; at 4 per cent.

3. What is the difference between the simple and compound interest on $420 for $2\frac{1}{2}$ years at 8 per cent.?

4. Find the compound interest on $125 for 2 years at 8 per cent., payable half-yearly.

5. Find the amount of $180 for $1\frac{1}{2}$ years, at 8 per cent. per annum, payable quarterly.

6. If a man can lay by $250 of his salary every year; how much will he have at the end of 5 years, money being worth 7 per cent.?

7. What sum at 5 per cent. will amount to $200 in 2 years, compound interest?

8. Find the present worth of a note for $265, payable in 3 years, and bearing interest at 7 per cent. per annum.

9. Tell approximately in how many years a sum of money will double itself at 10 per cent. per annum, compound interest.

10. What sum at simple interest will produce the same interest as $300 at compound interest, the time and rate being 3 years and 6 per cent., respectively?

PRESENT WORTH AND DISCOUNT.

EXERCISE LXXIX.

Find the present worth and discount of:

1. $177.12 due 1 year hence at 8 per cent.

2. $1612.50 due 1 year hence at $7\frac{1}{2}$ per cent.

3. $1725 due 2 years hence at $7\frac{1}{2}$ per cent.

4. $37.77 due 1 year hence at $4\frac{1}{4}$ per cent.

5. $351.54 due 2 years hence at $4\frac{1}{4}$ per cent.

6. I owe a man $78.25, due in 6 months, without interest; if money be worth 10 per cent. per annum, how much should I pay now?

7. A farm stock bill advertises 8 months' credit and 8 per cent. per annum off for cash; find the cash price of articles knocked down as follows: 1 horse, $124; 1 cow, $35; 1 colt, $64; 2 sheep, $18; and 12 pigs, at $6.50 each.

8. I go to the bank to borrow $500, and the banker says he will charge me 5 per cent. interest, and accordingly takes out $25; what per cent. does he really make on his money?

9. When a merchant is selling at a discount of 15 per cent., how much must I pay for the following articles: 1 suit of clothes, marked $18.00; 1 hat, $3.00; 1 pair gloves, $1.50?

Discount—Continued.

EXERCISE LXXX.

1. If the true discount on $100 be $10, find the discount on $200 for the same time and rate.

2. If $10 be allowed off $50, on what sum will the discount be $5, same time and rate?

3. If the discount on $100 be $10, on what sum will it be $20?

4. If the discount on $100 for 1 year be $10, in what time will the discount be $20, same sum and rate?

5. If the discount on $100 for 1 year be $10, what will be the discount for 2 years, same sum and rate?

6. If the discount on $100 for a certain time at 5 per cent. be $10, what will be the discount on the same sum, for same time, at twice the rate?

7. On twice the sum, at twice the rate, and half the time?

8. If the discount on $150 for $1\frac{1}{2}$ years be $25, in how many years would the discount on $240 be $60 at the same rate?

9. If the discount on $120 at 4 per cent. be $10, on what sum would it be $15, at 6 per cent., same time?

10. If the discount on $180 at 5 per cent. be $15, at what rate would discount on $200 be $40, same time?

11. A banker, in discounting a note at 6 per cent., really makes $6\frac{1}{2}$ per cent. on his money; find the time the note had to run.

PERCENTAGE.

EXERCISE LXXXI.

1. A storekeeper wishes to make a profit of 25 per cent.; find the selling price of articles which cost as follows: \$1.20; \$7.50; 13c.; 90c.; and \$5.10.

2. Bought 31½ gal. of vinegar, at 24c. a gal.; if 3 qts. leak out, find the gain per cent. by selling the rest at 30c. a gal.

3. A wholesale man deducts 25 per cent. from the retail price; what rate per cent. does the retailer make?

4. Bought 25 lbs. of tea at 40c. a lb., and sold it at 55c. a lb.; find the gain per cent.

5. By selling a farm for \$4500 I lost 5 per cent.; how much should I have got for it to gain 8 per cent.?

6. By selling hats at 48c. each a dealer lost a sum equal to 20 per cent. of the selling price; for how much must he have sold them to gain 20 per cent. of the cost?

7. Potatoes which cost 70c. a bus. are sold for 22c. per peck; find the gain per cent. per peck.

8. The cost of a book is 80c.; the wholesaler makes 20 per cent., and the retailer 25 per cent.; find the retail price of the book.

9. Bought wheat at \$1.15 per bus., and sold it at \$2.15 per cwt.; find the gain per cent.

10. 125 is what percentage of 150?

MISCELLANEOUS.

EXERCISE LXXXII.

1. How much will it cost to carpet a room 21 ft., 4 in. long, and 16 ft., 8 in. wide, with carpet 2 ft. 8 in. wide, at \$1.37½ per yard?

2. What part of a cord of wood is a pile 6 ft., 4 in. long, 3⅓ ft. high, 20 in. wide?

3. What fraction of 4 chains is 3⅓ rods?

4. Reduce 14 lbs., 10 ozs, Avoir., to Troy weight.

5. What will 1830 lbs. of hay cost at \$9 per ton?

6. Find the price of 3 loads of barley, each containing 56 bus., 20 lbs., at 56½c. per bus.

7. Find the interest on \$712.40, for 2½ years at 2¾ per cent.

8. Divide ·01295 by ·123.

Divide $\frac{1\frac{3}{4}}{4\frac{1}{2}}$ by $\frac{2\frac{1}{3}}{2\frac{1}{4}}$.

10. A cistern has 3 pipes which will fill it in 10, 20 and 40 minutes respectively; in what time will all three running together fill it?

11. If I copy ·5 of \$4.50 instead of ·5, find by how much I am wrong.

12. If it take 10¼ lbs. of milk for a lb. of cheese, which sells at 11¼c. a lb.; find the value of cheese made from 9650 lbs. of milk.

Miscellaneous—Continued.

EXERCISE LXXXIII.

1. How much will it cost to carpet a parlor 18 ft. square with carpet $\frac{3}{4}$ yard wide, at \$1.50 per yd.?

2. Standard silver is composed of 37 parts of pure silver and 3 parts copper; how much per cent. of the whole is each of the components?

3. If I buy cloth at \$1.20 per yd., how must I sell it so as to gain 25 per cent.?

4. How many sq. yds. of matting would cover a floor 20 ft. 10 in. long, and 15 ft. $5\frac{1}{7}$ in. wide.

5. A person owned $\frac{5}{8}$ of a mine, and sold $\frac{3}{4}$ of his share for \$1710; what was the value of the mine?

6. A yard contains 40 sq. yds.; how many stones 9 in. square will pave it?

7. A man owning $\frac{4}{5}$ of an iron foundry sold 35 per cent. of his share; what did he still own?

8. A body of 4800 troops has $\frac{1}{5}$ as many cavalry as infantry; what is the number of infantry?

9. For what must apples which cost \$1.25 per bus. be sold to gain 20 per cent.?

10. How many yds. of carpet $1\frac{1}{2}$ yds. wide will cover a floor 18 ft. square?

Miscellaneous—Continued.

EXERCISE LXXXIV.

1. A man had a yard 38 ft. long and 27 ft. wide; he reserved two two grass plots each 8 ft. square, and had the rest paved with stone at 45c. a sq. yd.; what did the paving cost?

2. Find the amount of the following bill:

2462	ft. of boards at	$ 7.25	per	1000	
600	" scantling "	11.75	"	1000.	
1012	" plank "	1.25	"	100.	
77	" timber "	0.15	"	1	ft.

3. A farmer puts a flock of sheep into three pastures; in the 1st he he puts $\frac{1}{3}$ of his flock; in the 2nd, $\frac{1}{2}$; and in the 3rd, 32 sheep; how many sheep has he?

4. A commission merchant sold 500 pieces of muslin, each piece containing 21 yards, for 23c. a yard; what is his commission at $2\frac{1}{2}$ per cent.?

5. Two men divided a lot of wood costing $81, one taking $5\frac{1}{2}$ cords, and the other the remaining 8; what must each pay?

6. A can mow 2 acres in 3 days, and B 5 acres in 6 days; in how many days can they both together mow 9 acres?

7. How many bricks will it require to build a wall 2 rods long, 6 ft. high and 18 in. thick, each brick being 8 in. long, 4 in. wide and $2\frac{1}{2}$ in. thick?

Miscellaneous—Continued.

EXERCISE LXXXV.

1. Taking a year as 365 days, 6 hours, how many years are there in 10 million minutes?

2. Divide 69 mls., 7 fur., 39 rods, 2 ft., by 492.

3. Add $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{5}{6}$, $\frac{6}{7}$ and subtract the result from $100\frac{1}{100}$.

4. What would be the price of $\frac{5}{8}$ of $\frac{6}{7}$ of $\frac{7}{9}$ of a ship, if $\frac{1}{3}$ of $\frac{3}{7}$ of $\frac{7}{11}$ of it cost \$68000?

5. If $\frac{4}{5}$ of a bushel of peaches cost $\$1\frac{2}{3}$, what part of a bushel may be bought for $\$\frac{7}{20}$?

6. What is the amount of \$1296 for 6 years, 9 mos., at $8\frac{1}{2}$ per cent.?

7. Find the cost of carpeting a floor 15 ft. 9 in. wide, 22 ft. 6 in. long, with carpet $\frac{3}{4}$ yd wide, worth \$2.50 per yd.?

8. A pile of wood is $3\frac{1}{2}$ ft. wide, $5\frac{1}{4}$ ft. high, and 147 ft. long; how many cords does it contain?

9. How many turns does a hoop 2 yds. 16 in. in circumference, make in a quarter of a mile?

10. A table is covered with cents, each 1 inch in diameter, and placed in rows so that none touches more than four others; if the table be 5 feet square, find the value of the cents.

11. Find the value of 32 scantling, 4 in. by 4 in., 16 ft. long, at \$9.25 per M.

Miscellaneous—Continued.

EXERCISE LXXXVI.

1. Divide $1444 among A, B and C, so that B may have 3 times as much as A, and C as much as A and B together.

2. In 161384 inches how many miles?

3. Bought 147½ gal. of molasses at 25c. per gal.; used 33 gal.; at how much per gal. must I sell the remainder to get the whole cost back?

4. Find the simple interest on $125.50 for 2½ years at 6 per cent.

5. A man gains $1.25 on the sale of $25 worth of stamps; how much would be made on 1,000 3-cent stamps?

6. Subtract $\frac{7\frac{1}{2}}{8\frac{1}{3}}$ bus. + $\frac{5}{8}$ of $\frac{4}{7}$ of 3⅓ qts. from 5 bus. + 3¾ qts.

7. A clock which is set right gains 15 min. a day; how soon will it again be right?

8. A gives $5 for hay at $9 per ton, B gives $7 for some at $12 per ton; how much does one get more than the other?

9. Mr. S. bought 4000 dozen eggs at 14c. a doz., lost one out of every 96, and sold the remainder at 23c. a doz.; find his gain per cent.

10. If there are 3 qts. of potatoes on every sq. yd. of a field, containing 5 acres, how much are they worth at 35c. a bushel?

11. Find the cost of lumber for a floor 16 ft. long, 12½ ft. wide, 1½ in. thick at $8.50 per M.

Miscellaneous—Continued.

EXERCISE LXXXVII.

1. Find the sum, difference and product of 2·926 and ·515.

2. Find the value of $\dfrac{\frac{1}{2}+\frac{1}{3}+\frac{1}{4}}{\frac{1}{2\frac{1}{2}}+\frac{1}{3\frac{1}{3}}+\frac{1}{4\frac{1}{4}}}$ of \$100.

3. What is the size of the smallest vessel that can be exactly filled by any one of the following measures: 2 pints, 3 qts., 7 qts., 2 gals., 5 gals.?

4. Find the value of $\frac{7}{6}\frac{3}{2}\frac{3}{5}$ of 5 cwts., and express the result as a fraction of $\frac{1}{2}$ a ton; answer to four decimals.

5. A gets $\frac{5}{8}$ of a sum of money, B $\frac{5}{8}$ of the remainder, C the remainder; if A gets \$750 more than B, find the share of each.

6. A can do a work in 3 days, B twice as much in 8 days, C five times as much in 12 days; in what time could they all do three times as much?

7. Simplify $\dfrac{8\frac{1}{2}\times 2\frac{2}{3}}{8\frac{1}{2}+2\frac{2}{3}} \div \dfrac{8\frac{1}{2}-2\frac{2}{3}}{8\frac{1}{2}\div 2\frac{2}{3}}$.

8. A man buys 20,000 bus. of wheat at \$1.05 a bus.; he keeps it 7 mos., during which it shrinks $1\frac{1}{2}$ per cent.; if money be worth 7 per cent., and his expenses are \$500; find his gain or loss by selling at \$1.95.

9. Define interest, simple and compound.

Miscellaneous—Continued.

EXERCISE LXXXVIII.

1. By selling tea at 60c. I gain $\frac{1}{11}$ of the cost.; if I raise the price to 70c., find my gain per cent.

2. A man sells 2 horses for $130 each; on one he loses 25 per cent., and on the other he gains 25 per cent.; did he gain or lose, and how much?

3. A merchant marks his goods so that after deducting 10 per cent. to grangers, he still makes 25 per cent.; find the marked price of a hat which cost $2.35.

4. What sum of money lent for 4 years at 8 per cent., simple interest, will amount to $7920?

5. By selling an article for $2.76 I lost 8 per cent.; for how much should I have sold it to gain $7\frac{1}{2}$ per cent.?

6. Divide $76 between A and B, in the proportion of $\cdot 3$ and $\cdot \dot{3}$.

7. A can do a work in $2\frac{2}{3}$ days, and B in $3\frac{3}{4}$ days; how long will it take both to finish it after B has worked $1\frac{1}{2}$ days?

8. If $\frac{3}{5}$ of a mine be worth $64,000, find the value of $\cdot \dot{6}$ of $\frac{2}{3}$ of $\cdot 8\dot{9}$ of the remainder of it.

9. In how many years will $725.25 double itself at $6\frac{2}{3}$ per cent., simple interest?

10. A rectangular field of 8 acres is twice as long as broad; find its dimensions.

Miscellaneous—Continued

EXERCISE LXXXIX.

1. Four horses are worth as much as 9 cows, 4 cows as much as 28 sheep, 19 sheep cost \$114; find the value of a horse.

2. Divide \$550 among A, B and C, so that $3\frac{1}{2}$ times A's will be equal to twice B.'s and 4 times C's share.

3. How many bricks, 9 in. long, 4 in. wide and 2 in. thick, are required to build a wall 60 yds. long, 13 ft. high, 1 ft. 9 in. thick, if the mortar supply $\frac{1}{8}$ of it?

4. A grocer gives only $15\frac{7}{8}$ ounces to the lb.; how much does he cheat a customer who buys \$4.80 worth?

5. A man buys stock, paying 5 per cent. so as to realize 6 per cent on his money; find the price of the stock.

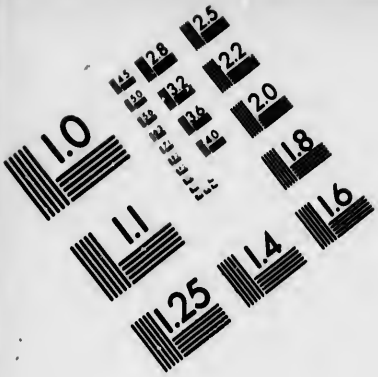
6. How long will it take to walk round a square field of 16 ac., 41 rods, at the rate of $3\frac{1}{2}$ miles per hour?

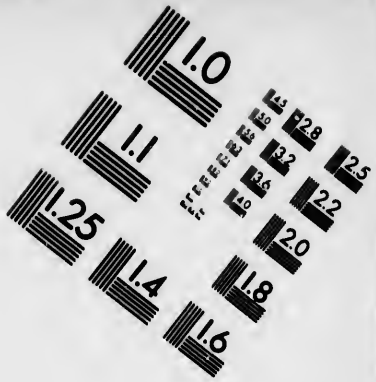
7. If 70 lbs. of tea at 50c., and coffee at 30c. a lb., cost \$30; find the number of lbs. of each.

8. The interest on \$3500, at a certain rate, and the interest on \$3600, at 1 per cent. more, is \$463; find the rates.

9. By selling a house for \$1290 I lose 14 per cent.; find the cost.

10. A dealer buys oranges at 3 for 10c., and sells them at 4c. each; find the gain per cent.





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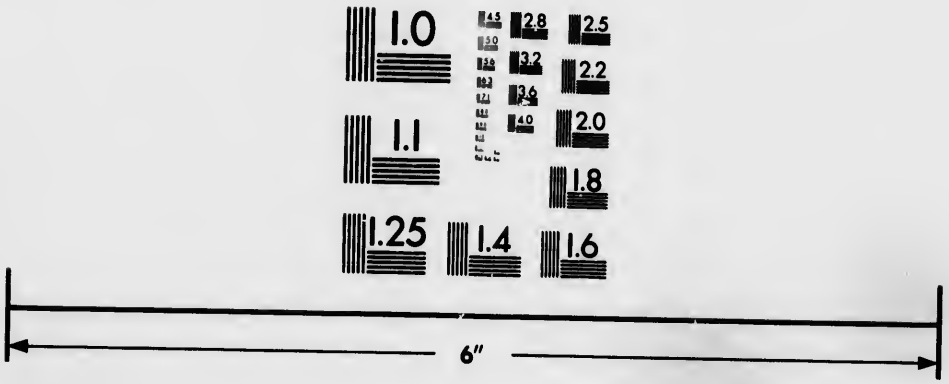

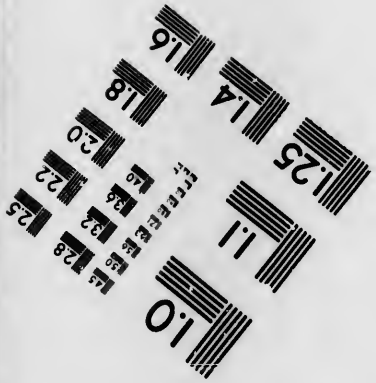

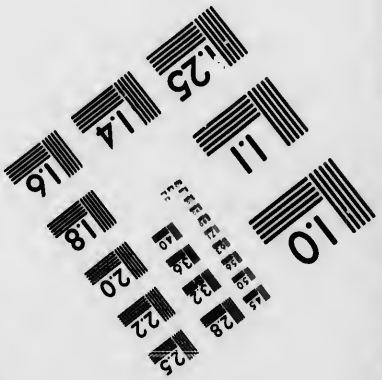

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Miscellaneous.—Continued.

EXERCISE XC.

1. What is the value of a pile of wood 34 feet long, 3 feet wide and $5\frac{1}{3}$ feet high, at \$7.88 a cord?

2. Twice the sum of two numbers is 25280 and half their difference is 804; find the numbers.

3. If 1 lb. of tea is worth 50 oranges, and 70 oranges are worth 84 lemons, what is the value of 50 lbs. of tea when a lemon is worth a penny? Ans. in £ s. d.

4. A pond whose area is $\frac{3}{4}$ of an acre is covered with ice 9 in. thick; what is the weight of the ice on the pond, if a cubic foot of ice weigh 900 ozs.?

5. Find the difference between the true and bank discount on \$425 for 1 year at $6\frac{1}{4}$ per cent.

6. A man is offered \$7000 cash, or \$8000, payble after three years, for his farm; which is the better offer, and by how much—money being worth 4 per cent., compound interest?

7. A merchant gives 6 mos. credit, but deducts 5 per cent for cash; find the cash price of an article marked \$3.75.

8. Sold a house for \$6381, gaining $\frac{1}{8}$ of the cost; find the cost.

9. Sold two lots for \$240 each; on one I gained 15 per cent., and on the other lost 15 per cent.; what per cent. did I gain or lose on the whole?

ANSWERS.

Ex. VIII. (2.) 19140 yds. (8.) 10080 rails. (9) 343 yds. (10). 109 rails.

Ex. IX. (10.) $123.48. (17.) $6.48. (18.) 495 pks.

Ex. X. (3.) 36,792,000 times. (8.) 54072 grs. (14) 61632 c. in.

Ex. XI. (4) 6 lbs. 3 ozs. 10 dwt. 16 grs. (5) 33 mls. 3 rods 1 yd. 1 ft. 6 in.

Ex. XIV. (3) 11842 bus. 1 gal. (5) 670 ac. 5 rods. (6) 1399 lbs. 5 oz. 8 drs. (8) 45 mls. 7 fur. 32 rods 3 yds. 1 ft. 6 in. (9) 163 lbs. 18 dwt. (10) 1765 c. yds. 11 c. ft. 1152 c. in. (14) £628 3d. (18) 346 ac. 1 ro. 28 rods. (19) 3335 hrs. 32 min. 12 sec.

Ex. XV. (4) 12 rods 4 yds. 2 ft. 10 in. (5) 5 wks. 6 dys. 18 hrs. 14 min. (6) 86 lbs. 7 ozs. 16 dwt. 11 grs. (7) 300 ac. 3 ro. 32 per. (8) 12 rods 4 yds. 2 ft. 10 in.

Ex. XVI. (4) 3 tons 2 cwt. 3 qrs. 6 lbs. 4 ozs. (5) 201 tons 3 cwt. (7) 1 qr. 20 lbs. $4\frac{5}{12}$ ozs. (8) 1025 parcels. (9) 17 times, 584 ozs.

Ex. XVII. (5) 6729366. (8) 42134 far. (11) $642.01.

Ex. XVIII. (3) 1081512. (4) 487½ ac. (10) $65.52.

Ex. XIX. (2.) $2.97½. (8) B 81 ac. 14 rods. (9) 5040.

Ex. XX. (1) $1085.28. (3) 4,400,676. (9) 85c. (10) $461.75.

Ex. XXI. (2) $4.94. (4) 4,370,520 sq. yds. (11) 224 doz.

Ex. XXII. (5) $4.40, 1120 lbs. (7) 146 hrs. 40 min. (10) 1980 times.

Ex. XXIII. (1) $19.50. (2) $1984.95. (3) $425.56. (7) $112.

Ex. XXIV. (1) 1839882$\frac{1}{3}$. (3) Horses $18481.25. (7) $1513.25. (10)2317.

Ex. XXV. (2) $2344. (7) $210.08. (10) 9566 times 82 far.

Ex. XXVI. (8) $16.80. (9) $20. (10)$2.61.

Ex. XXVII. (1) 97$\frac{3}{8}\frac{1}{2}$ cords. (2) 5$\frac{8}{10}\frac{0}{8}\frac{5}{0}$ ac. (5) 5$\frac{1}{3}$ ft: (8) 1920 times.

Ex. XXVIII. (2) £184203 2s. 2d. (5.) £475.

Ex. XXIX. (1) 157 ac. 1 ro. 32 per. 20 yds. 8 ft. 81 in. (6) 70070 times.

Ex. XXXIII. (1) 49276 grs., (3) 45472. (4.) £ 8. 8 s. 2$\frac{1}{4}$ d. (10) $151.50.

Ex. XXXV. (3) 7684 and 978. (10) $105.02. (11) 526,024,538 sq. in.

Ex. XXXVI. (8) 3$\frac{5}{6}$. (9). 2$\frac{1}{1}\frac{1}{2}$. (10) 4$\frac{3}{2}\frac{3}{0}\frac{3}{0}$.

Ex. XXXVII. (11) 73$\frac{1}{7}$. (2) 9$\frac{1}{1}\frac{1}{8}\frac{7}{2}$. (3) 6$\frac{4}{2}\frac{3}{5}\frac{1}{3}\frac{1}{0}$. (4) 19.87\frac{7}{8}$.

Ex. XXXVIII. (6) 4$\frac{1}{6}\frac{3}{0}$. (10) 5$\frac{1}{2}\frac{1}{4}$.

Ex. XXXIX. (4) $\frac{5}{1}\frac{1}{6}\frac{1}{0}$. (7) 3.84\frac{7}{8}$. (12) 2$\frac{3}{3}\frac{8}{0}$.

Ex. XLII. (6) 4525$\frac{4}{7}$ times. (9) $7.14.

Ex. XLIII. (1) 26 bbls. (4) 139 ft. (6) 9 hrs. 36 min.

Ex. XLIV. (3) 665 coins. (5) 18$\frac{5}{8}$. (7) 204 bus. 2 qts. (10) 37\frac{4}{7}\frac{4}{4}$.

Ex. XLV. (1) $4.77. (5) 6026 rods. (7) 16$\frac{1}{2}\frac{1}{2}$. (10) $57.48.

Ex. XLVI. (4) 57096 times. (5) $74.86. (7) 2062$\frac{1}{2}$. (8) 20+buckets.

Ex. XLVII. (1) \$2.71½. (3) \$6.38¼. (5) \$3.02½. (7) \$1.75. (8) \$3.70.

Ex. XLVIII. (1) 30¼ bus. (3) \$360.40. (4) 16$\frac{47}{63}$ cords. (7) \$15187.50.

Ex. XLIX. (4) 12 times, (5) 44⅓ gal. (8) 1⅛. (10) 7.12 p m.

Ex. L. (7) \$342.50. (9) \$256. (10) \$346.50. (11) \$47.91$\frac{9}{176}$.

Ex. LI. (1) \$3388.75. (4) 31½$\frac{37}{48}$ cords. (6) \$59.25.

Ex. LVIII. (1) 5$\frac{7}{36}$. (2)2$\frac{23}{50}$. (3) a 2$\frac{1}{60}$, b $\frac{14}{27}$, c 43¾, (4) 1$\frac{53}{75}$. (5) a $\frac{867}{1728}$, b $\frac{225}{3024}$. (6) 6$\frac{99}{1728}$. (7) $\frac{2}{5}$. (8) 1 bus. 2 pk 1 qt. (9) 3 yds. 2 ft. 8⅓ in.

Ex. LIX. (2) $\frac{28}{99}$. (8) £1 1s. 8d.

Ex. LXII. (5) 640$\frac{10}{11}$ lbs. (8) $\frac{7}{12}$ bag. (11) \$6.69.

Ex. LXIII. (1) 4$\frac{14}{15}$ days. (3) 13$\frac{31}{57}$c. (4) 48$\frac{36}{53}$ days. (5) 120 days. (7) 26$\frac{263}{360}$ lbs.

Ex. LXIII. (1) 4$\frac{14}{15}$ days. (4) 48$\frac{36}{53}$ days. (7) 26$\frac{263}{360}$.

Ex. LXXII. (2) 69⅓ lbs. (7) \$50.27$\frac{11}{32}$. (9) 862½ lbs.

Ex. LXXVIII. (3) \$5.48. (6) \$1437.68.

Ex. LXXIX. (7) Horse, \$117.72. (8) 5$\frac{5}{16}$ per cent. (9) \$19.12½.

Ex. LXXXI. (2) 22$\frac{1}{42}$ per cent. (3) 33⅓ per cent. (6) 69$\frac{3}{275}$c.

Ex. LXXXII. (1) \$61.11⅑. (3) $\frac{5}{24}$. (12) \$105.91.

Ex. LXXXIV. (1) \$44.90. (2) \$49.09$\frac{18}{20}$. (7) 6415⅓.

Ex. LXXXV. (1) $19_{\frac{1}{3}\frac{6}{1}\frac{6}{4}\frac{9}{9}}$ yrs. (2) 1 fur., 5 rods, 2 yds., $2\frac{8}{9}\frac{7}{8}\frac{9}{4}$ ft. 11 $52.62\frac{3}{5}$.

Ex. LXXXVI. (2) $2\frac{4}{7}\frac{3}{9}\frac{3}{4}\frac{3}{0}$ mls. (6) $133\frac{1}{3}$ qts. (9) 60 per cent.

Ex. LXXXVII. (2) $\$115\frac{3}{4}\frac{8}{7}\frac{5}{7}$. (4) ·0584. 7 $1\frac{2}{1}\frac{6}{7}\frac{6}{6}\frac{9}{9}$.

Ex. XC. (4) 1,378,265$\frac{5}{8}$ lbs. (6) Latter $111.08.

London, 1st. Jan., 1883.

Messrs. J. J. Anderson & Co:

GENTLEMEN,—I have known Mr. R. K. Row as a successful teacher of Arithmetic for several years. In his regular class work he exhibited admirable skill in presenting a problem from many different points of view. Mr. Row possesses special fitness to compile a book of arithmetical questions, and consequently I would expect an excellent series of Graded Exercises in Arithmetic from his hand. The examination, which I have had the privilege to make, of the accompanying proof-sheets fulfils my expectations. The problems are well varied, eminently practical, and carefully graded. I venture to predict that for the Third and Fourth Classes of the Public Schools Mr. Row's "Graded Exercises" will be welcomed by the teachers as a most valuable aid to their work.

Yours, etc.,

J. DEARNESS,

Public School Inspector.

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