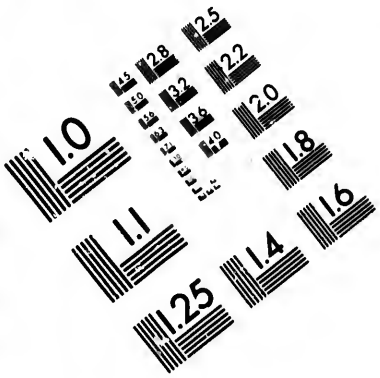

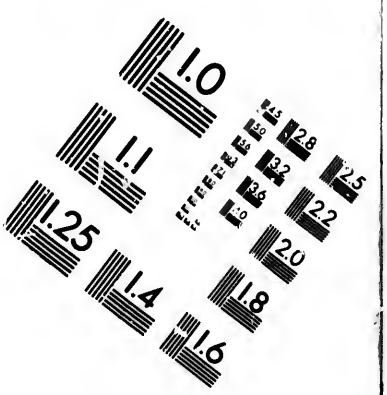

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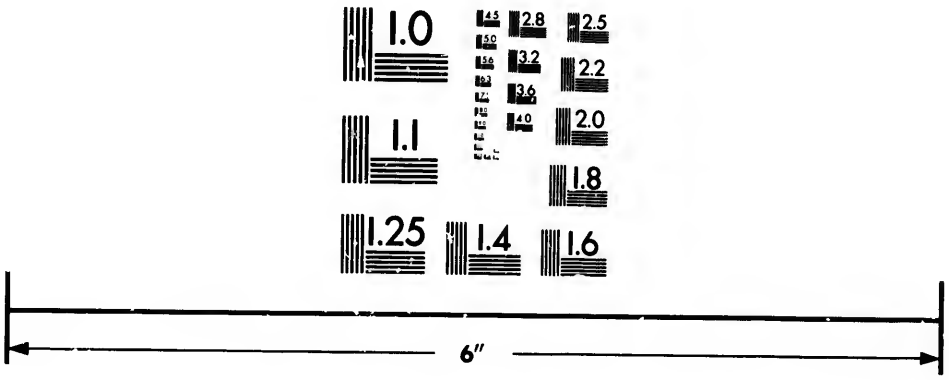

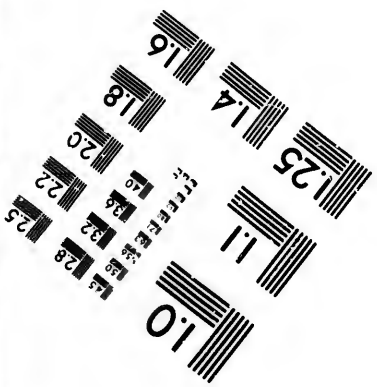

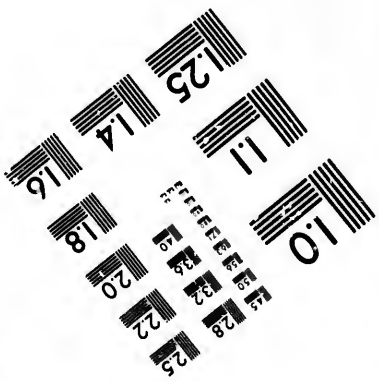

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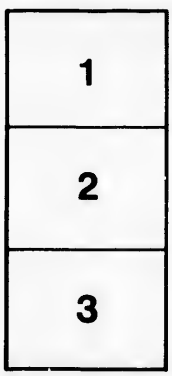

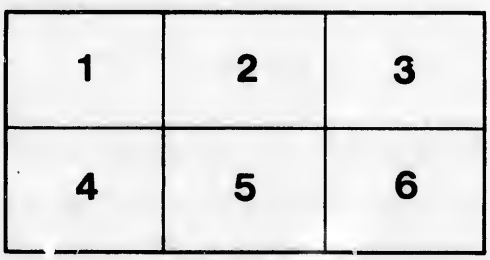

EXERCISES IN ARITHMETIC

FOR USE IN THE

JUNIOR CLASSES OF PUBLIC SCHOOLS

PART I.

A COLLECTION OF PROBLEMS

SUITABLE FOR

FIRST, SECOND AND THIRD BOOK CLASSES

INVOLVING THE

SIMPLE AND COMPOUND RULES, EASY FRACTIONS, Etc.,

WITH ANSWERS.

SECOND EDITION.

BY

W. N. CUTHBERT,

Toronto.

TORONTO:

THE COPP, CLARK COMPANY, LIMITED.

1896.

PREFACE TO FIRST EDITION.

THIS little book (Exercises in Arithmetic, Part I.), as far as it concerns the First and Second Classes, is intended to furnish examples in the use of the *four signs used* in the Simple Rules *to indicate* the operations performed with numbers. A lack of problems, involving the use of the *four signs* mentioned, induced me to furnish a number of such problems to supply the want.

To these have been added a number of exercises in the Simple and Compound Rules, together with a number of exercises in H. C. F. and L. C. M.: Easy Fractions, Bills and Accounts, etc., suitable for pupils in the Third Class.

W. NELSON CUTHBERT.

VERSCHOYLE, *May 1st, 1894.*

PREFACE TO SECOND EDITION.

THE author is grateful to those teachers who have called his attention to errors which had crept into the *First Edition*, and he has pleasure in announcing that these have been corrected; and as the book has been enlarged (in connection with "Exercise Book No. 1") by 74 Exercises, making in all an addition to it of 542 Problems, he trusts that this Second Edition will meet with the same favor as did the First.

At the suggestion of many Inspectors and Teachers, the Answers have been incorporated in the book.

W. NELSON CUTHBERT.

TORONTO, *May 1st, 1896.*

EXERCISES IN ARITHMETIC.

PART I.

FIRST CLASS.

Exercise I.

Find the result of—

1. 2461 + 3876 - 1004 + 2168 - 3747.
2. 14712 - 2169 - 3867 + 4771 - 216 + 874.
3. 9474 - 2198 + 7271 + 1764 - 324.
4. 31 + 48 - 36 - 2 + 417 - 214 + 681 - 3.
5. 7134 - 2186 + 764 - 2186 + 394.
6. 8213 + 4768 - 3214 + 1486 + 3691.
7. 2413 - 9874 - 216 + 73943 - 21947.
8. 28647 - 38624 + 71684 + 332 - 567.
9. 32 - 417 + 8639 - 21416 + 86473.
10. 984716 - 216872 + 34216 - 5001.
11. 8326 - 2194 - 3864 + 7128 - 4006.
12. 1852 - 382 + 716 + 496 - 3821.
13. 417 - 986 + 421 - 387 + 999 + 214 - 682 + 789.

Exercise II.

1. Find the result of 9471 - 2186 + 3774 - 2986 - 7179.

2. Find the result of 47286 - 214 + 8064 - 2104 - 386 - 217 - 394 + 7174.

3. Find the sum of 479, 21, 807, 4006 and 9.

4. From the sum of 8624, 2109 and 404, take the difference between 8749 and 3876.

5. To the difference between 8007 and 7993, add the sum of 81, 405, 507 and 808.

6. How much is 9764 – 2163 greater than 1001?

7. How much must I take from 7218 to leave 6009?

8. Add the sum of 6005 and 5006 to their difference.

9. By how much does 28 + 36 – 4 – 8 + 291 exceed 3947 – 3894?

10. Find the value of 36 – 21 + 9604 + 39 – 58 – 21 + 604 + 723 – 13.

11. From the sum of 1989 and 9891, take the difference between them.

12. What is 16947 + 2198 – 38476 + 16 – 45 + 77881 + 4689 + 3943 + 286 – 1728 – 5981 – 2864 + 7286?

13. What is the sum of 709; five hundred and 37; one hundred and seventy-three; 410; and eighty?

Exercise III.

Add the numbers in each of the following questions, vertically and horizontically, and prove the correctness of the work by adding the results :—

1.

9+8+7+6+ 4 =	
3+8+4+9+10 =	
15+4+9+8+11 =	
+ + + + =	

2.

19+14+16+ 7	
3+ 9+11+ 4	
15+21+36+49	

3.

71+83+64+72	
2+91+36+84	
5+ 6+19+84	

4.

5+ 9+14+61 3+18+41+23 16+21+36+42	

5.

23+39+21+ 9 7+44+23+ 8 6+14+28+36	

6.

9+2+8+7+6+11 5+9+4+3+2+ 5 4+3+6+9+8+ 1	

7.

3+9+7+6+4+7 2+8+9+6+7+8 4+6+8+7+2+5	

8.

3+9+7+8+6+1 2+8+9+5+1+0 3+6+0+4+3+1	

9.

21+ 63+94+100 461+382+41+ 36 29+ 36+43+ 82	

10.

94+36+71+28 36+21+64+72 36+82+91+34	

11.

81+72+36+94 83+61+72+85 39+62+84+91	

12.

38+76+21+94 8+ 6+ 9+ 7 17+21+36+44	

13.

338+416+721 324+210+943 76+ 28+ 9	

Exercise IV.

1. John has 3 dozen apples, and James has 4 dozen. How many apples have they both?

2. A boy has two darts; he shoots one north 105 yards, and the other south 115 yards; what is the *least* distance he must go to get both darts? If he go the wrong way, how many yards farther will he require to walk?

3. Add 789, 397 and 57; and take away 876 from the sum.

4. I owed a man $4.09, and gave him a five dollar bill; what change should I get back?

5. What is 14−10+60−4−3+702 1+4?

6. Find the sum of 1008, 864, 291, 1086, 14, 319, 90004; and subtract it from 870912.

7. How many times can the sum of 64, 201, and 83 be taken from 2436?

8. John has 10 cents in one pocket, 25 cents in another pocket, and 80 cents in a third pocket. How much money has he more than Sam who has 75 cents?

9. Tom walks 5 miles south, then he turns round and walks 8 miles north; how far is he from where he started?

10. Add all the numbers ending in 5 between 1 and 50.

11. A man earns 80 cents on Monday, and twice as much each of the other days of the week on which he can work, what does he earn that week?

12. A dog caught as many rats on Wednesday as it has feet, eyes and ears; and 3 times as many on Thursday. On Friday it caught 7, and on Saturday 11; how many did it catch during the four days?

13. Each of 7 boys has 20 cents; they, together, give 99 cents to the poor. How much money have they all left?

Exercise V.

1. One hundred and twenty-nine is taken as an addend 4 times, and 921 is taken as an addend 3 times. What is the sum of both?

2. Write in figures:—Five hundred and seven; two thousand and one; 8 hundred and 89; and subtract LXIV from their sum?

3. What is 640729 – 386002?

4. Subtract 5980 from 11 thousand and 11.

5. Bought a hat for $2, a coat for $15, a tie for 20 cents and a handkerchief for 15 cents. Paid down $10.60. How much do I still owe?

6. John had 5 half-dollar pieces in his purse. He bought a knife for 25 cents, a book for 30 cents and two slates at 10 cents a piece. How much money had he left after paying his bill?

7. Mary received a box of 9 dozen marbles; she gave her two brothers each 20 marbles, and her sister a dozen more than she gave to both her brothers. How many had she then left for herself?

8. Will had a dozen bunches of fire-crackers of 100 each. He gave away half of them, and fired off half of what remained. How many did he give away and fire off all put together?

9. There are 60 pupils in a school; one-third of them being girls, how many boys are there more than girls in the school?

10. In a box there are 144 sticks of chalk; 36 of them are broken. How many are whole?

11. Find the sum of all the numbers from89 to 98 counting these two numbers as addends.

12. What is $32+86-4-27+62-3+89-2-4$?

13. The difference between the price of two lots is $264.63, and the price of one lot is $38 .0; what is the price of the other lot?

Exercise VI.

1. How many pigeons, worth 20 cents each, can I get with 180 cents?

2. A man gave $95 for three cows. For two of them he gave $63; what did the other cow cost him?

3. From the sum of 9006 and 1990, take their difference.

4. There are six addends; the first three are 205 each; the next two are 502 each, and their sum is 2618; find the sixth addend.

5. A fat ox weighs 1859 lbs.; what is the weight of 7 such oxen?

6. A man owes 187 cents. He has a dollar bill, 7 ten-cent pieces, 4 five-cent pieces and four one-cent pieces in his purse. Which pieces, along with the dollar bill, will he take out of his purse to pay his debt?

Tom picked the full of a ten-quart pail of berries on Monday; the half-full of a sixteen-quart pail on Tuesday, and on Wednesday half as many as he picked on Monday and Tuesday. How many quarts did he pick during the three days?

8. Tim has $5; he gives 75 cents to each of his three brothers, and a dollar to his aunt Sarah. How much money has he left?

9. If Jane had 70 cents more money, she would have 520 cents. How much would she have, if she were to lose 50 cents?

10. Take 817; add 415 to it; take away 715; add 904; take away 977. How much is left? Write it down in words.

11. What number added to the difference of 3000 and 1729 will give the sum of 40366, 2709 and 30916?

12. Bob caught 5 dozen fish, and let 4 of them go back into the water again. How many had he left?

13. Find the sum of 60 cents; $2; 8 ten-cent pieces; 145 cents; and 9 five-cent pieces.

Exercise VII.

1. There are 14 pupils in the first class, 10 in the second, 11 in the third, 15 in the fourth, and 65 pupils in the whole school; how many are there in the fifth class?

2. There were 215 crows in a tree-top; 3 dozen and 3 crows flew away, and a man going past the tree frightened away 11 more. How many crows must then go back, that the number in the tree-top may be 175?

3. Walter Smith paid as much for his farm as he did for his stock and implements together. His stock cost $2500, and his implements $1400; what is he worth, if he has $800 in the bank?

4. How many gallons added to a cask, containing 38 gallons, will make 72 gallons?

5. In ten years John will be 45 years old; how old was he 13 years ago?

6. A grocer's shop is worth $3000, and his goods $7000 more than his shop; what is the value of both?

7. Add the following both ways; then add up the answers so as to prove your work:—

4+ 3+ 9+10=	
8+16+ 5+ 7=	
20+ 8+ 9+ 3=	
4+15+18+20=	
+ + + =	

8. James offers John a knife worth 40 cents and a top worth 15 cents for 3 pencils worth 5 cents each and a slate worth 20 cents. How much money ought John to give James to make the exchange a fair one?

9. A person divided a basket of pears among 11 boys. The first 4 got 9 pears each; the second 4 got a dozen each; and the others 13 each. How many pears were in the basket?

10. A man bought a horse for $70, and paid $25 for his keep. He hired the horse out enough times to receive $50, and then sold him for $80. How much did he gain?

11. What is $20 – 45 cents + 5 cents?

12. What is 740 – 1690 + 43969 – 1 + 8264?

13. From the sum of 3545, 33264, 1155 and 185376 take the difference between 6"9349 and 416009.

Exercise VIII.

1. John has 5 pens of chickens. In the first there are 11 ; in the second 12 ; in the third 21 ; in the fourth half as many as there are in the first, second and third together : and in the fifth half as many as in all the others put together. How many chickens has John ?

2. I lost $20.15 by selling a cow for $13.85. What was the real value of the cow ?

3. A boy has 5 pair of pigeons ; each hen hatches 6 pigeons during the summer, and then 4 fly away. How many dozen pigeons has the boy left ?

4. A farmer had 250 sheep ; he sold 49 of them ; the dogs killed 11, and 10 died. He then bought half as many more as he had left after the 10 died. How many sheep had he after that ?

5. A room is 40 feet wide and half as long again as it is wide. How much string will go round the room, on the inside, close to the walls ?

6. In a garden a gardener grows 14 bushels of currants, 13 bushels of raspberries, 12 bushels of peaches, 40 bushels of pears, 140 bushels of strawberries, and 75 bushels of apples. How much fruit has he ?

7. A man's salary is $1400 a year. He spends $500 in books, $150 in clothes and $130 in board. If he saves $600 a year, what must have been his other expenses ?

8. At billiards Tim made 600 points, and Sam made 471 points. Which won, and by how many points ?

9. A train has 13 cars loaded with hogs ; in the first 4 cars there are 600 hogs ; in each of the next 5 cars there are 90 hogs and 100 in each of the remaining cars. How many hogs are there on the train ?

10. Alfred has 17 cents, Peter 18 cents more than Alfred, and Joseph as many as both the other boys. How many cents have Alfred and Joseph more than Peter ?

11. Jane's quilt has 144 patches in it. Her mother made and sewed in 45 of the patches, and Jane did the rest of it herself. How many patches did Jane do alone ?

12. Jack had 15 candy-sticks in a box : his father put in a quarter of a dozen more, and Jack ate the half of all he had then in the box. How many had he left ?

13. Minnie's garden has 6 rose-bushes in it. On each bush there are 42 roses. How many roses are there in her garden ?

Exercise IX.

1. In a bag there are 41 white candies and 30 red ones. Fred puts in three-quarters of a dozen more red candies, and then takes out 3 white ones. How many more red candies than white ones are there left in the bag?

2. A merchant sold 15 dollars' worth of tea to one man; 16 dollars' worth to another, and 20 cents' worth to a third man. How much did he get for tea altogether?

3. A tradesman earned $16 one week and spent $4.20 of it; the next week he earned $41.80 and spent $16. He then bought a suit of clothes with the rest of the money, paying $7.60 more for the suit than it was worth. What was the suit worth?

4. Four boys own a boat worth $25. John's share in it is $5. Tom's $7.50. Will's $3. What is Harry's share in it?

5. On one side of a house there are 4 windows with 4 panes of glass in each. On the opposite side there are 5 windows with 4 panes in each. On the other two sides there are 7 windows with 4 panes in each, and the doors have 144 colored panes in them. How many more colored panes than clear ones are there in the house?

6. A boy had 14 rabbits in a box. He sold 5 of them at 20 cents each; 3 at 25 cents each; and the rest at 30 cents each. How much money did he get for his rabbits?

7. A man paid $5 for one dog and twice as much for another; they together killed 4 sheep for the man, each worth $6, and he then killed both dogs. How much did he lose altogether by buying the dogs?

8. Find the sum of (*a*) 6, 15, 400; (*b*) 4, 00, 16 and 11; (*c*) six, nine, nought, fifty, one hundred and eight; (*d*) 7, four, 6 hundred and 17; and 59. Add together all your answers.

9. James bought 6 oranges and Harvey bought 24 more than James. How many dozen have they both?

10. A boy having a basket of apples gave Mary 6, Bella 10, Jane half a dozen all but 2, Kate 4, and had one dozen left in the basket. How many were there in the basket at first?

11. Find the sum of all the numbers from 1 to 35 inclusive, and add your sum together 11 times

12. Eight years ago Charles was 15 years old. How old will he be in 15 years more?

13. Susan is 12 years old and Bob is 2 years old. How much older will Susan be than Bob in 20 years' time?

Exercise X.

1. Mr. Sims and Mr. Baggs had each the same amount of money in his pocket when starting for town ; Mr. Sims spent $4.28, and Mr. Baggs won $3 on a wager. When they came home Mr. Baggs had $14. How much had Mr. Sims?

2. A farmer had 14 cows and 13 calves. He lost 2 cows and 4 calves, and then bought 11 cows and 9 calves. How many of each has he now? How many altogether?

3. A man being asked how many goats he had, replied : "If you will give me 4 more goats and I buy 11, then I can give you 8 and have 20 left." How many had he?

4. A speculator gained $6,700 in nine months; he then lost $1,400 a month for the rest of the year. How much did he gain that year. ?

5. How much greater is the sum of 6890 and 4977 than the difference between 6947 and 4109 increased by 9016?

6. A grain dealer has 1700 bushels of barley in one bin and 1413 bushels in another bin. How much more must he buy so that he can sell 3000 bushels and have 1300 bushels left in each bin?

7. Tom had $11 ; he lost 40 cents, and gave away $2, after which he had only $1.60, having spent the balance. How much did he spend?

8. Bought a pig for $6, a cow for $26.40, and 4 oxen at $41 a head. I then had $1 left in my purse. How many cents had I at first?

9. Ned received $4698-2194+368$ marbles on Monday ; $6492-1388+146$ on Tuesday ; $59+13+2869-141+9687$ on Wednesday; and 4000 on Thursday. How many did he receive altogether?

10. From the sum of 6498 and 4492 take twice the difference between them.

11. A pole is nine yards long, and 6 pieces, each four inches long, are cut off it. How long is the pole then?

12. Tom and Sam play at marbles. Tom has 38 at first and Sam has 56. Each boy "puts up" 4 marbles every game played. Tom wins 6 games and Sam 3 games. How many marbles has each then?

13. A boy had a frog, which, when he let it down, took nine jumps each 10 feet long, and then stopped. How many jumps must the boy now take, each 5 feet long, to get the frog?

SECOND CLASS.

Exercise I.

Multiply each of the following numbers by 2, 3 and 4 respectively:

1. 6472. 2. 1687. 3. 9864.

Multiply each of the following numbers by 4 and 5 respectively:

4. 6041.
5. 2016.
6. 8747.
7. 7698.
8. 8647.
9. 2161.
10. 7164.
11. 4139.
12. 6471.
13. 4628.

Exercise II.

Multiply each of the following numbers by 5:

1. 29604.
2. 12706.
3. 27590.
4. 64784.
5. 32197.
6. 62586.
7. 28647.
8. 12168.
9. 47139.
10. 84769.
11. 21396.
12. 29217.
13. 8070.

Exercise III.

Multiply each of the following numbers by 6:

1. 98764.
2. 21607.
3. 78479.
4. 39867.
5. 74079.
6. 86729.
7. 12164.
8. 41837.
9. 70908.
10. 29671.
11. 12864.
12. 71686.
13. 30406.

Exercise IV.

Multiply each of the following numbers by 7:

1. 30406.
2. 71686.
3. 12864.
4. 29671.
5. 70908.
6. 41837.
7. 12164.
8. 86729.
9. 74079.
10. 39867.
11. 78479.
12. 21604.
13. 98764.

Exercise V.

Multiply each of the following numbers by 8 :

1. 438671.
2. 216987.
3. 316784.
4. 201068.
5. 416987.
6. 71698.
7. 84769.
8. 49621.
9. 12967.
10. 76987.
11. 86471.
12. 30608.
13. 21987.

Exercise VI.

Multiply each of the following numbers by 9 :

1. 246918.
2. 239068.
3. 473214.
4. 712864.
5. 236471.
6. 385069.
7. 985476.
8. 216984.
9. 720609.
10. 59060.
11. 81969.
12. 98716.
13. 41321.

Exercise VII.

Multiply each of the following numbers by 9 :

1. 368213.
2. 716982.
3. 984716.
4. 210903.
5. 809064.
6. 400080.
7. 860947.
8. 789698.
9. 487169.
10. 298960.
11. 908716.
12. 280964.
13. 717986.

Exercise VIII.

Multiply each of the following numbers by 11 :

1. 896847.
2. 121968.
3. 764312.
4. 216984.
5. 131698.
6. 386984.
7. 121698.
8. 473864.
9. 219687.
10. 328769.
11. 594687.
12. 216984.
13. 716095.

Exercise IX.

Multiply each of the following numbers by 12 :

1. 846781.
2. 213874.
3. 594856.
4. 286384.
5. 120096.
6. 4960871.
7. 2160984.
8. 5768294.
9. 1576983.
10. 2865945.
11. 8647169.
12. 449876981
13. 96384190.

Exercise X.

Find the result of each of the following :

1. 2864×32.
2. 147×736.
3. 2804×4082.
4. 9007×7009.
5. 4728×2973.
6. 3904×3045.
7. 4906×6904.
8. $8762 \times (2)^7$.
9. 6487×2104.
10. 9210×2109.
11. 41390×67.
12. $6729 \times 5 \times 5 \times 5 \times 5$.
13. 808×808.

Exercise XI.

1. $3698 \times (7)^3$.
2. 1469×876.
3. 5968×2705.
4. $6407 \times (9)^3$.
5. 8760×8006.
6. 69004×876.
7. 6472×1683.
8. 4506×6009.
9. 2860×6007.
10. 4776×7213.
11. 4209×9024.
12. 46656×6417.
13. 6098×8096.

Exercise XII.

Find the result of each of the following, using two factors :

1. $59063059 \div 6$.
2. $2169874 \div 4$.
3. $3862147 \div 12$.
4. $432146 \div 9$.
5. $289064 \div 108$.
6. $589637 \div 16$.
7. $6987 \times 609 \div 21$.
8. $286408 \div 64$.
9. $456890 \div 45$.
10. $216987 \div 28$.
11. $369 \times 475 \div 45$.
12. $289641 \div 21$.
13. $5608321 \div 72$.

Exercise XIII.

Find the result of each of the following, using two factors :

1. $4968721 \div 108$
2. $27005126 \div 48$
3. $23001281 \div 72$
4. $33721245 \div 99$
5. $3790521 \div 12$
6. $7583261 \div 28$
7. $648712 \div 45$
8. $(46325 + 53627) \div 49$
9. $896871 \div 63$, by 24, by 42 respectively.
10. $9876421 \div 108$, 96, by 24 "
11. $96872141 \div 48$, by 96, by 27 "
12. $(6904718 - 5496874) \div 45$, by 63, by 21, by 144 respectively.
13. $(68 \times 904) \div 8$, by 42, by 63, by 108 respectively.

Exercise XIV.

Find the result of each of the following, using two factors:

1. $68 \times 72 \times 100 \div 88$, ÷ by 99, ÷ by 100 respectively.
2. $88 \times 107 \times 640 \div 24$, ÷ by 36, ÷ by 81 respectively.
3. $20563124 \div 63$.
4. $9287562 \div 90$.
5. $375930 \div 45$.
6. $42864711 \div 81$.
7. $29876804 \div 96$.
8. $39845607 \div 108$.
9. $80 \times 90 \times 60 \div 72$.
10. $694 \times 847 \div 144$.
11. $92876413 \div 28$.
12. $21687438 \div 44$.
13. $34768914 \div 63$.

Exercise XV.

Find the result of each of the following, using two factors:

1. $570021 \div 77$.
2. $482359 \div 66$.
3. $3627915 \div 140$.
4. $35971423 \div 120$.
5. $51293746 \div 110$.
6. $37912851 \div 50$.
7. $71068081 \div 99$.
8. $38698743 \div 96$.
9. $4896732 \div 18$.
10. $8706431 \div 100$.
11. $3896424 \div 27$.
12. $7698431 \div 88$.
13. $5906070 \div 132$.

Exercise XVI.

Find the result of each of the following, using two factors:

1. $8296871 \div 144$.
2. $8621345 \div 132$.
3. $3264307 \div 84$.
4. $8294065 \div 77$.
5. $2134570 \div 81$.
6. $2147068 \div 28$.
7. $69428641 \div 108$.
8. $49657284 \div 14$.
9. $2000641 \div 120$.
10. $1243698 \div 132$.
11. $76964598 \div 144$.
12. $7628104 \div 36$.
13. $8321040 \div 110$.

Exercise XVII.

Find the result of each of the following, using two factors:

1. $4721084 \div 121$.
2. $2846934 \div 24$.
3. $2168738 \div 40$.
4. $5933905674 \div 9$.
5. $28964321 \div 35$.
6. $4001612 \div 80$.
7. $9206431 \div 56$.
8. $6284016 \div 121$.
9. $7028971 \div 132$.
10. $6098721 \div 30$.
11. $290864 \div 21$.
12. $54210681 \div 22$.
13. $3862145 \div 54$.

Exercise XVIII.

Find the result of each of the following, using two factors:

1. 498283632÷77.
2. 2106438÷28.
3. 49682141÷21.
4. 4281064÷81.
5. 28641711÷20.
6. 72864103÷42.
7. 86721460÷72.
8. 53928146÷18.
9. 41064385÷35.
10. 90647186÷12.
11. 84006401÷96.
12. 21047321÷40.
13. 24078641÷64.

Exercise XIX.

Find the result of each of the following, using two factors:

1. 81316125÷99.
2. 9477180÷45.
3. 242690112÷63.
4. 3342276÷36.
5. 29776980÷60.
6. 45403092÷63.
7. 1294640÷20.
8. 2922930÷45.
9. 5243292÷81.
10. 4049409÷49.
11. 7874272÷32.
12. 13639104÷144.
13. 6601320÷66.

Exercise XX.

Find the result of each of the following, using two factors:

1. 8764210÷21.
2. 64010640÷36.
3. 59647101÷42.
4. 84106471÷132.
5. 987641÷40.
6. 410643896÷16.
7. 916048763÷28.
8. 643216891÷35.
9. 99896478÷63.
10. 41286401÷15.
11. 2641321÷56.
12. 84739604÷33.
13. 90071643÷99.

Exercise XXI.

Find the result of each of the following, using three or more factors:

1. 8640071÷60.
2. 12004064÷30.
3. 84006412÷66.
4. 586421047÷90.
5. 14000704÷385.
6. 28471064÷216.
7. 28716041÷540.
8. 21964710÷160.
9. 132416987÷144.
10. 20400040÷396.
11. 42088641÷300.
12. 39876401÷330.
13. 92800061÷495.

Exercise XXII.

Work the following, taking the *signs* as they occur:

1. Square 107009.
2. Divide 19094867, 3058867, and 252567, respectively by 4009.
3. Multiply 1863 by 365, and divide the product by 24, using factors.
4. Multiply 18603 by 365; and 1863 by 3650. Add the results.
5. What is $20-15\times5-25\times630\times70$?
6. " $762\times8-96\times6000$?
7. " $298\times406-120000-987$?
8. " 72168×60.07?
9. " $632-147\times714$?
10. " $72168-61314\times10854$?
11. " 7928×9657?
12. " $29+36-28-1+64-24-36+72\times112$?
13. " 6871×7816?

Exercise XXIII.

Find the result of each of the following, taking the *signs* as they occur:

1. $864\times976+3526$.
2. $728+463+981+472\times9$.
3. $308\times807\div231$.
4. $384\times971\div327$.
5. $896\times987\div141$.
6. $864\times247\div494$.
7. $2864+7931+2859+6048\times48$.
8. $6871+2984+6485+2198\times9$.
9. $2984+6947+2198+7836+119790\div7$.
10. $110396\div286$.
11. $63-28+49-60+71-32+48-2\times603$.
12. $36\times28\div63\times144+696\div3$.
13. $(6084).^2$

Exercise XXIV.

Find the result of each of the following taking the signs as they occur

1. $29+38\times64$.
2. $280+420-310\times77$.
3. $64+38-21\times9\div3$.
4. $64721860-12169847\div12$.
5. 698×698.
6. $41\times86-2981\div3$.
7. $762\times9\div4$.
8. $76\times38\div2\times1444$.
9. 7698×2103.
10. $48\times36\times9\div12$.
11. $879\times798\div6$.
12. 98711×28604.
13. $3968204-1210482\div11$.

Exercise XXV.

Find the result of each of the following, taking the signs as they occur:

1. $39 \times 46 \times 3 \div 9 \times 895$.
2. $42 \times 3 \div 6 \times 21 \times 441$.
3. $72 \times 86 \times 3 - 2864 \times 9$.
4. 8604×7013.
5. $1276 \times 8009 - 10189597$.
6. $506 \times 609 - 308154$.
7. 7216×4798.
8. $3968 - 1987 + 47198 \div 3$.
9. $6426 + 8695 + 2609 + 738 + 96 \times 1097$.
10. $286 + 471 + 985 + 713 + 2 + 18 \times 5742$.
11. $298 + 716 + 874 + 316 \times 2098$.
12. $298 \times 713 \div 2 \times 6031$.
13. $298764 - 186786 \times 9080$.

Exercise XXVI.

Find the result of each of the following, taking the signs as they occur:

1. $320 \times 4 + 319 \div 3 \times 533$.
2. $267625 + 160575 + 214100 + 321150 - 963000 \times 504$.
3. $709 \times 216 \times 4415 \times 9$.
4. $76482 \div 7 \times 10926$.
5. $88096811 \div 11 \times 8095$.
6. $286 + 179 + 483 \times 9$.
7. $294 + 713 + 826 \times 1833 \times 611$.
8. $59686 \div 11 \times 5426$.
9. $271 \times 172 \div 4 - 11000 \times 653$.
10. $7628 \times 1764 \div 2 \times 504$.
11. $329 \times 924 \times 303996$.
12. $924 \times 775 \div 25$, using factors.
13. $225 \times 89 \div 5 \times 5004$.

Exercise XXVII.

Find the result of each of the following, taking the signs as they occur:

1. $87641 - 29870 \div 3 \times 987$.
2. 1864×2793.
3. $624 + 461 + 392 + 287 \times 1764$.
4. $396 + 284 + 713 \times 3931$.
5. $476 + 284 + 790 + 380 + 7 \times 5 \times 9685$.
6. $398 + 764 + 218 + 64 + 700 \times 4412$.
7. $2144 \times 8 \div 2$.
8. $2144 \times 4412 - 9359969$.
9. $5940 \div 5 \times 1188$.
10. $909 \times 909 - 101010$.
11. 4760×8074.
12. $4298 \times 3964 \div 4 \times 3$.
13. $762839595 \div 7 \times 89$.

Exercise XXVIII.

Find the result of each of the following, taking the signs as they occur, unless otherwise indicated by brackets :

1. $88-64-21\times5\times15\times225$.
2. $6287-1990\times7924\div4$.
3. $796-184\times908$.
4. $8769\times9876-86601947$.
5. $612421\times7-3861284$.
6. $9604-2108\div4\times5$.
7. 9106×6009.
8. $(296\div4)\times(357\div7)$.
9. $612421\times7-4285902$.
10. $4235849\times2-8471590\times801$.
11. $81\times36\div9+676\times2-1851$.
12. $723-140\times583$.
13. $64-28+36+10-4\times78$.

Exercise XXIX.

Find the result of each of the following, taking the signs as they occur :

1. $5968-2160\times402$.
2. $2226\times6222-13840173$.
3. $47698728\div11$.
4. $96\times89\div8\times8601$.
5. $42\times86\div3\times4021$.
6. $764\times862-657000\times9$.
7. $50823+30463\times640$.
8. $8762838\div7\times1251834$.
9. $2968+4716+9871-16087\times2$.
10. 7104×4017.
11. $684769-472871\times9$.
12. $33\times64-1450+632\times7$.
13. 5566×9988.

Exercise XXX.

Find the result of each of the following, taking the signs as they occur :

1. $706\times607-10\div12$.
2. $698+217+769+843+296+475+283+647\times8224$.
3. $155470\div70$, using factors.
4. $63+49-12\times100-1$.
5. $6487-1206\times5281$.
6. $86291347-12830609\times9$.
7. $2869047\div9\times7$.
8. $5968-2169\times3241$.
9. 9876×4121.
10. $7682+1496+3685-11386$.
11. $421064\times2\div8$.
12. $63\times75+625\div5$.
13. 7609×8090.

Exercise XXXI.

Find the result of each of the following, taking the signs as they occur.

1. $3968748 \times 7 \div 6$.
2. $287690 \div 5 \times 204$.
3. 20306×60302.
4. $147062 - 96872 \div 5 \times 10038$.
5. 377111×111773.
6. $596081 - 123456 \times 40706$.
7. $72 - 2 \times 70 + 49 - 6 + 328 - 215 \times 9$.
8. $2987 + 3983 + 2169 + 8763 + 2415 \times 20317$.
9. $4241 \times 7 - 29686$.
10. $19686 - 13264 \times 6422$.
11. $14296 - 7128 \times 7168$.
12. $296 + 384 - 176 \times 762$.
13. $729 \times 867 \div 9$.

Exercise XXXII.

Find the result of each of the following, by multiplying vertically and horizontally :

1.

$6 \times 4 \times 3 =$	
$2 \times 5 \times 7 =$	
$8 \times 6 \times 3 =$	
$\times \quad \times \quad =$	

2.

$6 \times 9 \times 4 \times 5$	
$2 \times 3 \times 4 \times 7$	
$8 \times 2 \times 5 \times 3$	
$\times \quad \times \quad \times$	

3.

$3 \times 4 \times 7 \times 2 \times 1$	
$1 \times 4 \times 3 \times 6 \times 7$	
$7 \times 4 \times 8 \times 3 \times 6$	
$\times \quad \times \quad \times \quad \times$	

4.

$2\times8\times9\times7\times3$ $3\times4\times5\times6\times2$ $1\times3\times4\times5\times6$	
$\times\ \times\ \times\ \times$	

5.

$5\times2\times7\times1\times5$ $6\times2\times3\times5\times9$ $8\times7\times1\times2\times6$	
$\times\ \times\ \times\ \times$	

6.

$7\times3\times8\times9\times6$ $6\times7\times0\times4\times7$ $8\times3\times2\times4\times6$	
$\times\ \times\ \times\ \times$	

7.

$9\times3\times7\times\ 4\times\ 8$ $6\times3\times2\times\ 1\times\ 9$ $4\times5\times3\times10\times11$	
$\times\ \times\ \times\ \ \times$	

8.

$19\times14\times\ 3\times\ 8$ $1\times\ 2\times11\times12$ $4\times\ 6\times\ 9\times11$	
$\times\ \ \times\ \ \times$	

9.

$4\times7\times9\times6\times\ 8$ $3\times4\times7\times9\times11$	
$\times\ \times\ \times\ \times$	

10.

$586 \times 216 \times 104$ $321 \times 210 \times 102$	
$\times \quad \times$	

11.

$694 \times 704 \times 102$ $204 \times 921 \times 707$	
$\times \quad \times$	

12.

$68 \times 42 \times 96$ $28 \times 82 \times 10$ $13 \times 13 \times 13$	
$\times \quad \times$	

13.

$13 \times 13 \times 13 \times 13$ $13 \times 13 \times 13 \times 13$ $13 \times 13 \times 13 \times 13$	
$\times \quad \times \quad \times$	

Exercise XXXIII.

Find the result of each of the following by short division, using *all* the factors of each divisor, and prove the correctness of your work by long division :

1. $3480641 \div 480$.
2. $(698 \times 743) \div (48 \times 36)$.
3. $96087415 \div 840$.
4. $(947 \times 386) \div (2 \times 2 \times 3 \times 3 \times 3 \times 5)$.
5. $(983 \times 409) \div (63 \times 48)$.
6. $(24001086 \times 1825) \div (6 \times 25)$.
7. $(6920 \times 783) \div (81 \times 24)$.
8. $(808 \times 907) \div (75 \times 21)$.
9. $41296 \div 1512$.
10. $(960001 - 473869) \div (42 \times 24)$.
11. $\{(90 \times 90) + (46 \times 20)\} \div (63 \times 49)$.
12. $(96 \times 108 \times 190) \div (81 \times 72)$.
13. $333396 \div (3 \times 9 \times 7 \times 4)$.

Exercise XXXIV.

Find the result of each of the following, taking the signs as indicated by the brackets:

1. $(28563614040 \div 70008) - \{(364+226) \times (364-226)\} \times 5$.
2. $\{(68 \times 72) + (68+72) - (68-72+68)\} \times 900$.
3. $(9+11) \times (11-9) \times (11 \times 9) \times (11 \times 9 - 11 + 9)$.
4. $(89374 + 499 + 8454 - 9879 - 948)$.[2]
5. $6008 \times (69 - 96 + 41 - 32 + 108)$.
6. $(60 \times 80 \times 98) \div (30 \times 44)$.
7. $(94 \times 72 + 46 - 72 + 106) \times 8486$.
8. $\{(64 \times 49) - (82 \times 10) + 6470\} \div 49$.
9. $\{(61 \times 24) + (42 \times 89) - (75 \times 57) + 8\} \div 85$.
10. $\{(250+173) \times (250-173)\} \div 33$.
11. $(96+7) \times (43 \times 4) \div (2 \times 2) + 71 - 500$. Write your answer in words.
12. $(984 - 1068 + 49 - 12 + 687) \times 640$.
13. $[(7 \times \{707+497\}) \times \{7 \times (707-497)\}] \div 7$.

Exercise XXXV.

Find the result of each of the following, taking the signs as indicated by the brackets:

1. $\{(50 \times 50 \times 50) - (23 \times 23 \times 23)\} \div (50-23)$.
2. $(50 \times 50) + (50 \times 23) + (23 \times 23)$.
3. $\{(98 \times 20) + (56 \times 24)\} \div 91$.
4. $\{(88 \times 64) + (29 \times 41)\} \div 68$.
5. $\{(88 \times 34) + (62 \times 17)\} \div (3 \times 2 \times 7)$, by factors.
6. $\{(84 \times 64) + (28 \times 80)\} \div 9$.
7. $\{(40 \times 40 \times 40) - (30 \times 30 \times 30)\} \div 5$.
8. $\{(40 \times 40) + (40 \times 30) + (30 \times 30)\} \times 2$.
9. $\{(80 \times 80 \times 80) - (60 \times 60 \times 60)\} \div 64$.
10. $[\{(80 \times 80) + (60 \times 80) + (60 \times 60)\} - 925] \div 3$.
11. $(7250 \div 125) \times 11$.
12. $7250 \div (125 \times 11)$.
13. $[\{(99+46-32+71-100+4) \times 72\} - 36] \div 75$.

(1). By short division, using factors; (2) by long division.

Exercise XXXVI.

Divide each of the following, in respective columns, as indicated at heading :

(Have pupils write out, in tabular form, the *first nine* multiples of each of the following divisors, to assist them).

Divide by 13 :	Divide by 23 :	Divide by 26:
1. 24160890.	6. 67214169.	11. 3987645.
2. 64718960.	7. 36900040.	12. 7432152.
3. 5267005.	8. 21674328.	13. 6471862.
4. 68471065.	9. 69471386.	
5. 8264719.	10. 24369841.	

Exercise XXXVII.

Divide each of the following, in respective columns, as indicated at heading :

(Have pupils write out, in tabular form, the *first nine* multiples of each of the following divisors to assist them.)

Divide by 59 :	Divide by 93 :	Divide by 99 :
1. 2864713.	5. 2846172.	9. 6471214.
2. 10969484.	6. 5684731.	10. 10647321.
3. 647218.	7. 48000719.	11. 4216091.
4. 7216910.	8. 5960572.	12. 9468727.
		13. 100040600.

Exercise XXXVIII.

Divide each of the following, in respective columns, as indicated at heading :

(Have pupils write out the *first nine* multiples of each of the following divisors, to assist them).

Divide by 117 :	Divide by 19 :	Divide by 67 :
1. 647186436.	6. 6471869.	10. 4908641.
2. 2064007.	7. 12596839.	11. 1000461.
3. 18632981.	8. 24716834.	12. 98742016.
4. 4716832.	9. 5764030.	13. 2896477.
5. 59864713.		

Exercise XXXIX.

Multiply :

1. 57009 by 50790.
2. 720467 by 600400.
3. 8964713 by 5438698.
4. 680047 by 300209.
5. 69846 by 98374.
6. 698004 by 8697.
7. 98046 by 70906.
8. 6908742 by 90870.
9. 73986254 by 30276098.
10. 698457 by 587630.
11. 2164 by 63028.
12. 60472861 by 709684.
13. 4570301 by 40067.

Exercise XL.

Find the product of :

1. 2864713 and 2060703.
2. 87462 and 4056.
3. 92876 and 4016.
4. 59730215 and 7016.
5. 71523097 and 402607.
6. 467259873 and 397506.
7. 64132708 and 516.
8. 58972 and 50070.
9. 98500 and 9070.
10. 876047 and 21864.
11. 17942 and 5079.
12. 688 and 506909.
13. 640289 and 70406.

Exercise XLI.

Find the result of each of the following :

1. 328741×82107.
2. 740162×305607.
3. 746832×407090.
4. $2513112824757 \times 36336$.
5. 4065502×49580.
6. 2190046×4590064.
7. 248944×1221270.
8. 4831×9760.
9. 698574×4850090.
10. 960096×690069.
11. 986947×507908.
12. 698768×9876.
13. 520080×5004.

Exercise XLII.

Divide :

1. 4682135 by 1946.
2. 16122344 by 536.
3. 732540408423 by 273.
4. 973021546019 by 397.
5. 15046099180 by 25060.
6. 8150566412 by 87694.
7. 8679678000 by 987.
8. $(12361 \times 9 \times 7)$ by 789.
9. 75759616 by 8704.
10. 69004191 by 6908.
11. 7172184024 by 79896.
12. 10052451302944 by 9084.
13. 69027966 by 8967.

Exercise XLIII.

Find the result of each of the following :

1. $8769471398 \div 97043$.
2. $69872146 \div 98$.
3. $47196007 \div 8967$.
4. $69027732 \div 144108$.
5. $98740000604006 \div 101$.
6. $69874600081 \div 597$.
7. $10052451302944 \div 2190046$.
8. $(9847 \times 4789) \div 9760$.
9. $6904183 \div 528$.
10. $201567607604 \div 49580$.
11. $(68379 \times 29478) \div 987$.
12. $(8967 \times 7698) \div 479$.
13. $8487930000 \div 289$.

Exercise XLIV.

Find the result of each of the following :

1. $853184262330 \div 986574$.
2. $47150560 \div 4831$.
3. $795495 \div 293$.
4. $491339 \div 827$.
5. $2867912889 \div 47930$.
6. $103351501 \div 2895$.
7. $36827146 \div 109$.
8. $864509601 \div 508$.
9. $21476098 \div 379$.
10. $51488703 \div 567$.
11. $237237000 \div 3003$.
12. $268761483 \div 639$.
13. $69061859 \div 1858$.

Exercise XLV.

Find the result of each of the following :

1. $63824714 \div 17$.
2. $39876580 \div 83$.
3. $39064071 \div 97$.
4. $21698432 \div 59$.
5. $4682891 \div 39$.
6. $90640005 \div 85$.
7. $90471623 \div 82$.
8. $(608872 \times 69) \div 92$.
9. $59860471 \div 98$.
10. $9872145 \div 47$.
11. $1006474 \div 29$.
12. $1645908 \div 73$.
13. $(2000 \times 1440 \times 88) \div 37$.

Exercise XLVI.

1. Multiply the sum of 928374650 and 928311860 by their difference.

2. Divide 1708058237484 by 374000052.

3. Multiply seven million nine thousand and seven by three million fifty thousand seven hundred ; and divide the product by six hundred and ten thousand one hundred and forty.

4. Divide twenty-seven hundred million seven thousand two hundred by forty hundred and ninety hundred and ninety-two.

5. Divide the continued product of 13200, 640 and 30 by seven hundred and twenty, using all the factors of the divisor.

6. The dividend is 21810149152, and the quotient is 39314; what is the divisor?

7. Divide 298764 by 361 and 6890064 by 9871, and subtract the remainders.

8. What number added to 34552671 will make it divisible by 1965?

9. Multiply 2035674 by 396 and divide the product by 198.

10. What is the square of $(1079+228+66+2559)$?

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

12. The divisor is the same as the quotient and their sum is 12180; what is the dividend?

13. What numbers divided by 496 will give 49 for quotient and 207 for remainder?

Exercise XLVII.

1. Divide the product of 691 and 907 by 45 times 32.

2. Find the sum of 809 times 14 and 5919122 divided by 43; subtract 31920 from the sum, and divide the difference by 30, using factors.

3. The product of *three* numbers is five hundred and thirty-five thousand five hundred; one of the numbers is 75; another is 68; find the third number.

4. Multiply 8694 by 3, 60, 900 and 4000 separately and add the results together; then multiply 8694 by 4963 and compare your two answers. Why do they agree?

5. Take 11 from a million, and divide the remainder by 15×28 using short division by factors.

6. If the divisor, dividend and quotient be 216, 435780 and 2017 respectively, what is the remainder?

7. There are two numbers whose difference is 99, and whose sum exceeds 300 by 119; find their product.

8. Divide 698×896 by 960 (*a*) using three factors, (*b*) using all the factors you can find for the divisor.

9. What is the difference between $\{ 9198 \div (41 - 32) \times 1022 \}$ and 909×706 ?

10. Divide the product of 98764 and 98764 by 46789.

11. Divide the product of 6984 and 3860 by the difference between ten thousand, and three hundred and 61.

12. The dividend 6077974, the divisor is 7403, and the quotient 821 ; what is the remainder?

13. Multiply 37004 by 8607 and divide the product by the difference between 6×7 and $6 + 7$.

Exercise XLVIII.

1. From the quotient of 9748147941 by 987 take twice the difference between 7846985 and 3985769.

2. From the product of 9405075 and 3040509, take four thousand five hundred and nine billion, three hundred and ten million, four hundred and seventy-two thousand, two hundred and seventy-seven.

3. Subtract 9807060540321 from 64114324713000.

4. Ben had 57643954 marbles and lost 954289 ; how many had he left?

5. Subtract $8376 + 9437$ from 5869×8.

6. Subtract 67 hundred million 4 hundred and seventy-one from 9841309896.

7. Subtract one hundred and seven thousand and ten from twenty million ten thousand one hundred and one ; add nine to the difference and divide the sum by 25.

8. Multiply the difference between 34876 and 72093 by 9.

9. Subtract 1038 from the product of 63 and 21.

10. From 90 thousand thousand take the product of eighty-six hundred and seventy-one, and twenty-one hundred and thirty-nine.

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

12. From 17 million and 17 take eighty thousand and eight, and square it.

13. From the product of 264094 and 83720 take the difference between 20539025994 and the product of the two numbers of which *twice their sum* is 25280 and *half their difference* 804.

Exercise XLIX.

1. If 91 bushels of wheat cost $79.17, what is that a bushel?

2. Subtract 7836289 from 8765427 and divide the difference by 4.

3. Find the product of 6947 and 2985.

4. Jack has 49 marbles, Jim 24 more than 7 times as many, and Tom one-fourth as many as both Jack and Jim. How many has Tom?

5. A mile is 5280 feet, and a boy steps two feet each step; how many steps will he take in going five miles?

6. If a bushel of hemp seed is 44 pounds, how many bushels are there in a bin weighing 8844 pounds? What is it worth at $1.40 a bushel?

7. Find the cost of 4 lbs. butter at 13 cents, 18 lbs. cheese at 12 cents, 19 lbs. biscuit at 9 cents, 41 lbs. soda at 10 cents, 36 lbs. tea at 87 cents, and 45 lbs nuts at 25 cents.

8. Divide 3480641 by 16×30, using the factors 2, 8, 5 and 6.

9. Find the cost of 17 yards of cloth at $1.55 a yard.

10. How many more bottles of wine are there in a case containing 17 dozen and 7 bottles, than in one containing 7 dozen and 17 bottles?

11. What number subtracted 88 times from eighty thousand and five will leave 13 as remainder.

12. Divide 9874000604 by 985.

13. How many times can you subtract 101 from a million, and what will remain?

Exercise L.

1. How many sheep, worth $9 each, can a man buy with $18468?

2. A farmer paid $70.35 for oats at 35 cents a bushel. The oats weighed 6834 lbs.; what did a bushel weigh?

3. How many sheep, at 3 for $13, can a man get for $234?

4. In a field there are 12 rows of potatoes with 169 hills in a row and 48 potatoes in a hill. How many dozen potatoes are there in the 12 rows?

5. What is the value of 202 pair of gloves at $1.26 for 4 gloves?

6. Multiply 69874 by 47896 and divide the product by 98764.

7. Find the total cost of:

16 lbs. sugar at 8 cents a lb.
41 lbs. rice at 25 cents a lb.
72 lbs. raisins at 13 cents a lb.
72 dozen cans salmon at 20 cents a can.

8. How many hogs, at 7 for $48, can I buy with $700, and have $28 left?

9. What other number besides 601 will divide sixty-three thousand seven hundred and six without leaving a remainder?

10. Out of a bag of nuts, containing 225, John took 7 handfuls, and there were still left 134 nuts. How many did he take out each time on an average?

11. A man bought a horse for $97, and another for $85. They cost him for feed, while he owned them, $8. He sold the two together for $200; what did he gain?

12. If the sum of 250 and 173 be multiplied by their difference, and the product be divided by 33, what is the quotient?

13. How much more will remain, if I subtract 17 from the sum of 53 and 27, than if I subtract 17 from their difference?

Exercise LI.

1. What is the product of 504 and 405? How much must be added to the product to get the product of 754 and 309? How much must be taken from the product to get the product of 321 and 123?

2. What is $(979 \times 867) \div (24 \times 45)$? Work by short division, using factors; and also by long division.

3. What will 5 barrels of eggs, each containing 2412 eggs, cost at 15 cents a dozen?

4. A man paid $3.60 a ream for 72 reams of paper, and $6.60 a ream for 48 reams of a better quality. How much did he pay for it all? What did it all cost him a quire if a ream is 20 quires?

5. If 409621 is the dividend, 21 the remainder and 320 the quotent, find the divisor.

6. Divide $\{(9602)^2-(4216)^2\}$ by 67214.

7. If 69 sheep cost $483, what will 33 sheep cost?

8. From half a million take 49901; divide the difference by 9, and then square it.

9. What is $(64\times81\div72)^2-5084\times100+1011\div11$?

10. Bob has 11 marbles more than Sam. They each "put up" 2 marbles every game played, and Sam wins 13 *straight* games from Bob. How many marbles has Sam more than Bob then?

11. How many cows at $29 each can a man buy with the money he receives for 12 horses at $87 each?

12. Find the cost of 4356 pens at 10 cents a dozen and 740 pencils at 8 cents a score.

13. A man clears 5 cents on every book he prints; how much money will he make on the sale of half a million books?

Exercise LII.

1. Find the cost of 2 loads of cheese of 40 boxes each, if a cheese weighs 70 lbs. and is worth 12 cents a lb.

2. If a bushel of oats weighs 34 pounds, find the value of 21828 lbs. of oats at 52 cents a bushel.

3. Jones bought 2 dozen rolls of wire of 900 yards each; find what it cost him at 5 cents for every 18 feet, given that a yard is 3 feet?

4. Divide 26521425316 by 162854.

5. A pound is 16 ounces; find the cost of 67200 ounces of beef at 5 cents a lb.

6. Multiply the quotient of 18141480 and 2070 by 4678.

7. A man sold chickens, that cost him 35 cents each, for 76 cents a pair, and gained $2.70 on all he sold. How many pair did he sell?

8. Bought 76 dozen pears at 2 for 5 cents, and sold them out again at 40 cents a dozen. Find my gain.

9. If you had 352 yards of tape, and you sold 60 feet of it. How many yards would you have left?

10. How many dozen apples, at 2 for a cent, can I get with $42.42?

11. Divide $640.20 equally among 5 boys.

12. What is 75 times 630 times one-third of twelve thousand?

13. John walked 214 miles, James 4 times as far all but 24 miles, and Andrew half as far again as John and James together. How far did they all walk?

Exercise LIII.

1. What is $63\times48\div6\times10\div5+36-100+45-101$?

2. Express MMDCCXCIX in figures, and square it.

3. One loaf of bread is worth 14 cents; how much are 14 dozen and 4 such loaves worth?

4. A boy had 120 marbles and gave away 2 out of every dozen. How many had he left?

5. If 7 dozen eggs cost 168 cents, what is that for 5 eggs?

6. Divide 9876947130016 by 456.

7. Find the sum of 602×509, 462×321, 265×607, 832×987 and 2272×206.

8. What is the *sum* of the product, quotient, difference and sum of 9811890 and 954?

9. How many dozen peaches can I get for 388 cents, at 16 cents a dozen?

10. The sum of 4 numbers is 20000; three of the numbers are 697, 4090 and 8976 respectively; find the fourth number.

11. For a flock of 21 sheep and 42 lambs a farmer received $401. For the lambs he got $2 each. What was the price of a sheep?

12. At 20 cents a lb., how much butter can I buy with 3640 cents?

13. What number multiplied by 9 will give 7236×5?

Exercise LIV.

1. Divide 68712161 by 7000, (*a*) using 4 factors, (*b*) using *all* the factors, (*c*) by striking off the ciphers and dividing by 7.

2. Form the *square* of each of the following :

41, 28, 72, 603, 95,101, 325, and add the results together

3. How many times is 7×28 contained in $\{(38 \times 45) - 610 + 11\} \times 1111 - 109$?

4. Find the amount of the following bill :

42 yards tweed at \$1.75 a yard.
13 yards gingham at 20 cents a yard.
42 lbs. butter at \$1 for 6 lbs.
36 lbs. sugar at 12 lbs. for \$1.
15 doz. eggs at 3 for 5 cents.

5. Find the sum of all the *odd* numbers between 406 and 436.

6. Divide 307 times 704 by $33 \times 5 - 5$, by long division, and by short division by factors, using all the factors you can find for the divisor.

7. How many bricks will 8 teams draw, if a wagon-load is 4×575 bricks ?

8. Write, in words, the difference between one million, and one hundred and one thousand and one.

9. Find the sum of :

$9 \times 6 \times 8 \times 4 =$
$5 \times 60 \times 9 =$
$9 \times 12 \times 11 \times 10 =$
$706 \times 304 =$

Sum.

10. Multiply 6804 by 9087 and divide the product by 20412.

11. A merchant buys 600 yards of cloth at 250 cents a yard, and sells one-third of it at \$3 a yard and the remainder at \$2.40 a yard. What does he gain on the whole lot ?

12. A hare takes 60 jumps, each 7 yards long, in a minute. How many yards will it have gone in 30 minutes ?

13. Divisor is 56 ; Quotient is 317 ; Remainder 28 ; find the Dividend.

Exercise LV.

1. Divide the sum of 63, 208, 7146, 283, 5 and 91382 by 3.

2. Find the sum, difference, product and quotient of 4893 and 29, and write the name after each answer you get.

3. A man bought 320 barrels of apples at 90 cents a barrel, and sold them at $1.88 a barrel. What did he gain after paying 20 cents a piece for the barrels?

4. Divide the product of 640 and 460 by their difference, using all the factors of the divisor.

5. Find the total cost of 32 dozen pears at 2 cents each, 95 yds. tape at 4 cents a yard, 520 eggs at 18 cents a dozen.

6. Multiply 70608 by 42070; and divide 22109949680 by 264094.

7. Find the *product* of the sum, difference and quotient of 128 and 32.

8. The sum of two numbers is 8470 and their difference is 2430. What are the numbers?

9. From the square of 230 take $\{(36\div9)\times40-63\}\times80$.

10. Divide 704×960 by $40-32\times8$.

11. From the sum of all the *odd* numbers between 77 and 141, including these numbers, take the sum of all the *even* numbers.

12. Bought 20 pigs at $3.75 each; spent $12 in feeding them, and sold the whole lot at $5.30 each. What did I gain?

13. (*a*) What will 430 citrons cost at 5 for 54 cents? (*b*) Find the sum of one thousand and eight, thousand; sixty-four hundred thousand two hundred and forty-one; thirteen millions four hundred and sixty-two thousand, one hundred and thirty-one; three thousand two hundred and eighty, hundred; and thirty hundred and thirty-three, hundred, and forty-eight. Divide the sum by fifty hundred, hundred, and forty.

Exercise LVI.

1. Simplify each of the following:

(*a*) $8787546-986497\div7$.

(*b*) $64329\div48$ factored.

(*c*) $7489\times8007\div3$.

2. A boy has 60 yards of string on his kite. If he break off 30 feet, and then tie on 50 yards of new string, how far will his kite be from him when all the string is out?

3. What is the whole cost of 80 sheep at $8.80 a head, and 45 pigs at $3 a head?

4. Nine men, each earn $1.25 a day and spend 50 cents a day. What will they all save out of 5 weeks' wages?

5. By using factors, work the following:

(*a*) 6370071 ÷ 132.
(*b*) 6590579 × 64.
(*c*) 3104058 ÷ 320.

6. If 54 horses cost $4.860, (*a*) what is the value of a horse? (*b*) of 171 horses?

7. By how much is the sum of 29, 86, 109, 375, 486, 21, 98, 47, 1001, 6897, 4832, 594, 263, 987 and 4968, *greater* than the product of the first two numbers? By how much is the sum *less* than the product of the last two?

8. Express in figures (*a*) seventy thousand six hundred and four, and (*b*) five thousand and five; and find their product.

9. Bought 125 pigs at $3.25, and 32 sheep at $10. How much more did I pay for the pigs than for the sheep?

10. Find the sum of all the even numbers between 206 and 308 inclusive, and multiply it by 1049.

11. What will eleven yoke of oxen cost at $70 a head?

12. Ten women do a piece of work in 10 days, and 12 boys do it in 15 days. How much longer will it take a boy than a woman, when working alone, to do it?

13. Find the cost of:

17 lbs. tobacco at 75 cents a lb.
38 lbs. tea at 63 cents a lb.
41 lbs. rice at 25 cents a lb.
180 eggs at 15 cents a dozen.
16 water-melons at 4 for 75 cents.
75 oranges at 32 cents a dozen.

Exercise LVII.

1. A farmer gave 85 bushels of wheat, worth $1.18 a bushel, for 10 sheep. How much per head did the sheep cost him?

2. Divide 304027838880 by 746832.

3. Multiply 876493 by 498673, and divide the product by 71239.

4. How many ties will be required for 20 miles of railway, if a mile is 1760 yards, and the ties are a yard apart?

5. Find the total cost of:

15 lbs. coffee at 32 cents.
16 lbs. lard at 15 cents.
25 lbs. honey at 13 cents.
16 lbs. pork at 16 cents.

6. Multiply (*a*) 7098 by 257; (*b*) 25607 by 3094; (*c*) five hundred and forty thousand six hundred and nine by seventeen hundred and fifty. Find the sum of the results.

7. If 17 men can build a house in 98 days, how long ought it to take one man to build it?

8. How many lemons worth 24 cents a dozen can be got for $9.60?

9. A boy gave 110 dozen eggs for a suit of clothes worth $15 and a cap worth $5.90. What were eggs a dozen?

10. Find the sum of 809×14 and $5919122 \div 43$. Subtract 31920 from the sum, and divide the remainder by 30, using the factors 2, 3 and 5.

11. A number increased by 13 times itself amounts to twenty millions and thirty six. Find the number.

12. A drover has $866 to invest in pigs at the rate of 10 for $34. How many can he buy and still have $16 left in his pocket?

13. Find the cost of 8964 cans of green corn at 90 cents a dozen cans.

Exercise LVIII.

1. If 20 men work 14 days at a job, and each man gets $1·25 a day, how much will they all have at the end of that time?

2. There were 40 rows of potatoes in a certain field with nine potatoes on an average, to the hill, and it took 970 potatoes to average a bushel. If there were 36 bushels in the field, how many hills were there in a row?

3. From the sum of 648 and 724, subtract their difference, and divide the result by 16.

4. What is 7 times the difference of 68412 and 60871 ?

5. By how much does 13 times the difference between 3987 and 268 exceed eleven times their sum ?

6. Find the product of the sum and difference of 9684 and 9516.

7. Annie has 90 cents, Fanny has four times as much and Mary one-fifth as much as both Annie and Fanny and ten cents more. How much money has Mary ?

8. If 16 pennies placed on top of each other just stand 2 inches high, how many pennies, so placed, will make a column 6 feet in height ?

9. The product of two numbers is 1270374 and the half of one of them is 3129 ; what is the other number ?

10. Subtract one from a million and divide the difference by 90909.

11. A man gets $1.87 for each full day's work of ten hours, and 45 cents an hour for overtime. What does he earn in 29 full days, and 38 hours overtime ?

12. There are 56 oranges in a peck, and oranges are worth 24 cents a dozen. Find the cost of 86 pecks of oranges at this rate ?

13. How many yards of print at 15 cents a yard can be got for the price of 90 bushels of oats at 30 cents a bushel ?

Exercise LIX.

1. A man steps 3 feet and a boy who goes with him steps 2 feet each step. If the man takes 1240 steps in going a certain distance, how many steps does the boy take ?

2. Tom has 55 cents, Will has 9 times as much money all but 5 cents, and Bob has 7 times as much as Will. How much money has Bob ?

3. What will 75 bushels of turnips cost at 18 cents a bushel ?

4. Divide 2015676075 by 4935.

5. Find the total cost of :

40 bushels of cherries at $3 a bushel.

10 bushels of pears at $4 a bushel.

7 quarts of berries at 8 cents a quart.

9 barrels of apples of 3 bushels each at 90 cents a bushel.

6. A bushel of barley weighs 48 lbs. Find the cost of 4656 lbs. of barley at 59 cents a bushel.

7. Find the value of $\{(60+48)\times(8+3)\times(10\times4)\times40¢\}\div7$.

8. A man bought horses at $137 a head and sold them at $176 a head, gaining $1053. How many did he buy?

9. What number subtracted 97 times from two hundred thousand will leave 83 as remainder?

10. Of 12 heads of wheat, 4 had 36 grains each, 6 had 65 grains each, and the rest 100 grains each. How many grains were there in all?

11. A man receives a salary of $1,200 a year. Out of this he lays up $212 a year. How much does he spend per week during the year?

11. Divide, using factors:

(*a*) 987641 by 14×15.

(*b*) 698745 by 27×24.

13. How long would it take sound to travel 18112 feet, going at the rate of 1132 feet in a second?

Exercise IX.

1. Multiply the sum of 687 and 94806 by their difference, and divide the product by their quotient.

2. A man having a debt of $448.35 paid $21.35 on it. How many times has he yet to pay that sum to cancel the debt?

3. How many pair of boots, worth $3.60 a pair, can I buy with $147.60?

4. If 4 yoke of oxen weighed 12376 lbs., what was the average weight of an ox? What are the oxen worth at 4 cents a lb.?

5. Find the price of 25 cords of wood at $3.80 a cord.

6. Divide $98\times89\times765\times35$ by 4361.

7. A ham of pork is worth $1.75, and a lb. of coffee 25 cents. How many lbs. of coffee can be got for 73 hams?

8. A man bought 25 animals at $18 a head; but 4 of them died. At what price must he sell the remainder, per head, so as to lose only $30?

9. Divide, using factors, 864713 by $(2\times7\times9\times11)$. Work also by long division.

10. What will 5 dozen cans of tomatoes cost at 11 cents a can?

11. What number multiplied by 265 will give 1490097385 for the product?

12. What is the sum of 216 apples, 212 marbles and 46 pears?

13. If fish on an average weigh 4 lbs. each and are worth 11 cents a lb., how many of such fish can a dealer buy with $43.56?

Exercise LXI.

1. Find the product of the sum and difference of 707 and 497 and divide it by 7.

2. What is the value of 672 geese at $1.50 a pair?

3. What will 87 crates, containing 105 dozen oranges each, cost at 3 cents each?

4. Multiply 2759621 by 35766.

5. The divisor is 21, and the quotient is 5 times the divisor; also the remainder is one-seventh of the quotient. Find the dividend.

6. Divide 98700604716 by 5961.

7. How many lambs at 5 for $35 can I buy with $350?

8. What is the difference between $\{(608+442)\times(608-442)\}$ and $\{(608\times608)-(442\times442)\}$?

9. Simplify $(694-21+406-49+702-1000)\times9070$.

10. If 692 be the divisor and 407 the quotient, what is the dividend?

11. How many dresses, each requiring 18 yards of trimming, can be trimmed with 37 pieces of braid, each measuring 17 yards? How much more would trim another dress?

12. A man bought 24 cattle at $24 a head, 15 at $30 a head, and 11 at $28 a head. For how much a head must he sell them to gain $166 on the whole lot?

13. A man paid $2400 cash for some land, and gave $525 in produce besides. If there were 45 acres, what did the land cost him per acre?

Exercise LXII.

1. A potato field has 78 rows in it, and each row has 96 hills, with two dozen potatoes in a hill. If 13 dozen potatoes make a peck, what is the field worth at 25 cents a peck?

2. (*a*) Write down all the prime numbers less than 40 and find their sum. (*b*) Multiply 46789 by 108 by long multiplication, by *factors*, and by *parts*.

3. James paid 18 cents for a slate, 14 cents for a book, 22 cents for a knife, $1.25 for a hat, and 46 cents for a purse. How much change should he get back out of a five-dollar bill?

4. Find the result of $(398265 - 319871) \div (2063 \times 2)$.

5. I bought 3 horses for $697. For the first I paid $137; for the second $29 more than for the first. Find the cost of the third horse.

6. Express in words 20020020, and in figures seventy-seven thousand and seven.

7. What is the value of $947 + 863 - 279 + 4876 - 270 + 6890 + 16 + 32$?

8. Multiply 520080 by 5004.

9. If a man buys 80 cows at $30 each and sells them again at $42 each, how much does he gain?

10. What number divided by 87 will give the same quotient as 3926745 divided by 783?

11. If a man earns 45 cents an hour, and works 9 hours a day, how long will he be in earning $400.95?

12. If out of a salary of $1300 a year a man pays $180 for board, $197 for clothing, $167 for books and $238 for expenses, how much can he save in 7 years?

13. A man bought a span of horses for $275. He hired them out at $12 a week, but paid $5 a week for their keep. At the end of 7 weeks he sold them for $250. How much did he gain or lose on them?

THIRD CLASS.

Exercise I.

1. Reduce 47 acres, 130 square rods, 29 square yards, to feet.

2. In 6 miles, 217 rods, 4 yards, 2 feet, how many inches are there?

3. In 68742 square feet, how many acres, square rods and square yards are there?

4. In 5 miles, 269 rods, 15 feet, how many inches?

5. In 108 acres, 2 roods, 11 square rods, 8 square yards, 7 square feet, 36 square inches, how many square feet are there?

6. Reduce 41441 acres, 25 sq. yds. to square feet.

7. In 6874 square feet, how many sq. rods, sq. yards, sq. feet and sq. inches are there?

8. Reduce 870460 square feet to acres etc.

9. Reduce 44010504 square inches to acres, square rods, etc.

10. In 41080 inches, how many miles, rods, etc.?

11. Reduce 2 miles, 80 rods, 4 yards, to inches.

12. Find the cost of a tract of land 75 chains long and 15 chains wide at $60 an acre.

13. A man walked 6 miles on Monday; 18270 yards on Tuesday; 650 rods on Wednesday; 26400 feet on Thursday; 800 chains on Friday. How many miles and yards did he walk during the 5 days?

Exercise II.

1. Reduce 41911 feet to miles, etc.

2. Reduce 13114 yards to miles, rods and yards.

3. Reduce 5913 yards to miles, etc.

4. Reduce 9871 square yards to acres, square rods, etc.

5. Reduce 42 lbs. Avoir. to lbs. ozs., etc., Troy.

6. In 6981 lbs. of cheese, how many tons, cwts., etc. ?

7. In 721689 inches, how many miles, rods, etc. ?

8. In 20 tons, 12 cwt., 3 qrs., 21 lbs., how many lbs. are there ?

9. Reduce 987641 inches to miles, etc.

10. Reduce 69141 feet to miles, etc.

11. Reduce 6726 yards to miles, etc.

12. Reduce 272583 inches to miles, rods, etc.

13. In 87691 feet, how many miles, rods, yds. and feet are there ?

Exercise III.

1. Reduce 1107 yards, to rods, yds., feet, and inches.

2. Reduce 472816 square inches to acres, etc.

3. Reduce 89088336 square inches to acres, etc.

4. In 28141 square feet, how many acres, etc. ?

5. Reduce 98721 square feet to acres, square rods, etc.

6. Reduce 68932468 square inches to acres, etc.

7. Reduce 742181 square inches to acres, etc.

8. Reduce 2114132 square inches to acres, etc.

9. Reduce 2864 yards to miles, etc.

10. Reduce 417 yards to miles, furlongs, perches, yds, ft., inches.

11. Reduce 64721 yards to miles, etc.

12. Reduce 1 mile, 207 rods, 2 yds., 1 ft., 6 in., to feet.

13. Reduce 11261070 square feet to acres, etc.

Exercise IV.

1. Reduce 519200 ozs. to tons, and lbs.

2. Reduce 258611$\frac{1}{5}$ grains Troy to lbs., ozs., etc.

3. Reduce 98211731 sq. in. to acres, etc.

4. Reduce 472161 ft. to miles, etc.

5. Reduce 998921$\frac{1}{4}$ sq. ft. to acres and rods.

6. A bought 17 tons, 1999 lbs., 15 ozs., bran, on Monday ; 213 tons, 685 lbs., 10 ozs., bran, on Tuesday ; 71 tons, 641 lbs., 8 ozs., bran, on Wednesday. On Saturday, he sold 241 tons, 1741 lbs., 9 ozs., bran. How much had he left?

7. Subtract 35 tons, 1789 lbs., 12 ozs., from 63 tons, 1128 lbs., 8 ozs.

8. Add 88 cubic yds., 9 cubic ft., 1000 cubic in.; 98 cubic yds. 20 cubic ft., 970 cubic in.; 45 cubic yds., 26 cubic ft., 1700 cubic in.

9. A man sells a horse for $146, how many £ Sterling does he receive for him?

10. From 20 acres, 120 sq. rods, 30 sq. yds., 1 sq. ft., 9 sq. in., take 19 acres, 80 sq. rods, 27 sq. yds., 5 sq. ft., 108 sq. inches.

11. Find the cost of 420 rods of wire at 2 cents a foot.

12. Find the cost of 200 bushels, 3 pks. of berries at 3 cents a pint.

13. Reduce 370242 inches to miles, etc.

Exercise V.

1. Find the sum of all the numbers between 875 and 910 inclusive, and square it.

2. Multiply the difference between 402 and 63 by one-fifth of their sum.

3. Multiply 867 by 907, and divide the product by 289.

4. Find the product of $(6-8+14)$, $(8+17-11)$, $(7\times8\times3\div4)$ and 806.

5. Find the difference between the product of 683 and 403, and 670 times their sum.

6. A boy sold 7 dozen pigeons at 10 cents a piece. How many apples at the rate of 36 cents a dozen can he buy with the money?

7. Find the difference between four hundred and 7 times 8 thousand and 40, and $3582267648\div48$.

8. Square 4079.

9. Forty-two sheep, 13 cows and 20 hogs, together, cost $895.50. The cows cost $21.50 a head ; the sheep $8 a head ; what did the hogs cost a head?

10. Take the product of 97 and 806 from the quotient of 90986595 and 987, and write your result in words.

11. What number must be taken 708 times from 688953 to leave 69 for remainder?

12. Bought 460 bags bran of 70 lbs. each at 20 cents a bushel, and sold out again at 80 cents a cwt., what did I lose by the transaction?

13. In 642×865 ounces, how many tons, lbs. and ozs.?

Exercise VI.

1. What is the product of the sum and difference of 2964 and 2705?

2. In 72 rods, 1680 inches, how many feet are there?

3. When 24 lbs. of pork cost \$3.60, what ought I to pay for 80×2 lbs.?

4. Find the value of 72 geese at \$1.50 a pair.

5. Find the value of 60 barrels of sugar of 170 lbs. each, at $9\frac{1}{2}$ cents a pound.

6. Find the cost of 88 lbs., 12 ozs. butter at 16 cents a lb.

7. Find the value of 66 bushels of potatoes at 20 cents a peck, and 70 pecks of apples at $1\frac{1}{6}$ cents a lb.

8. Find the cost of:

70 cords of wood at \$3.75 a cord.
17 bushels, 20 lbs. of bran at $1\frac{1}{2}$ cents a lb.
1008 lbs. of apples at 90 cents a bushel.

9. Find the cost of 11 bushels pears at 10 cents a quart, and 12 baskets of grapes, containing 40 lbs. each, at 3 lbs. for a quarter of a dollar.

10. What is 3×5000 lbs., in tons and lbs.?

11. Find the cost of 16450 lbs. of wool at \$38 a cwt.

12. How many lbs. of beef can I get for \$342, at \$5 a cwt.?

13. Find the cost of 776 bushels pears at 98 cents a peck, and 7280 lbs. hay at 6 cents for 80 ounces.

Exercise VII.

1. Find the cost of 63×720 ounces of hay at $16 a ton.

2. How many tons and lbs. in 6×6880 ounces?

3. A man sold 11 tons, 1500 lbs. flax at $18 a ton, and bought wire, for fencing, at 36 cents a rod. How many rods of wire did he get?

4. Find the cost of 11 cwt. of hay at $14 a ton.

5. Find the cost of 980 lbs wool at $11 a ton.

6. Find the cost of 18 cwt. bran at $24 a ton, and 16 tons, 1350 lbs. of middlings at $12 a ton.

7. Find the cost of 8 tons, 1175 lbs. coal at $16 a ton.

8. Find the cost of 720 lbs. jute at $12.50 a ton.

9. A man paid $50 for coal at 10 cents a bushel, how many tons did he buy?

10. Find the cost of 850 lbs. straw at $4 a ton.

11. What is the cost of 2 tons, 540 lbs. of rye straw at $15 a ton?

12. What will 4116 lbs. of flour cost at $3.75 a barrel?

13. Find the total cost of:

3500 feet of lumber at $24 a thousand feet.
10 hogs, each weighing 240 lbs., at $6 a cwt.
3 tons, 125 lbs., hay at $8 a ton.
18 turkeys at the rate of $3.80 for 3 turkeys.

Exercise VIII.

1. Find the cost of 1640 lbs. hay at $12 a ton, and 650 lbs. of hay at $9 a ton.

2. What is the value of 1950 lbs. of oats at $15 a ton?

3. Find the cost of a ton, 17 cwt., and 50 lbs. of millet at $20 a ton.

4. Find the cost of:

4050 feet of lumber at $18 a thousand.
650 lbs. hay at $12 a ton.
990 lbs. potatoes at $1.20 a bag.

5. Find the value of 9200 lbs. cheese at $12.20 a ton.

6. It took 106 tons, 1750 lbs. of beef to feed an army of men for 2 months of 30 days each, giving each man 15 ozs. of beef per day, how many men were there in the army?

7. If $62.40 cents buy 24 pecks, 3 quarts of raspberries at 12 cents a lb., how many pints of berries make 4 lbs.?

8. How much hay, at $12 a ton, will 2160 lbs. pork, at $8 a cwt., buy?

9. Find the cost of:

380 lbs. of pork at $4 a cwt.
8760 lbs. of wheat at 75 cents a bushel.
900 lbs. of dried apples at $2.75 a bushel.
40 bags of potatoes at 80 cents a bushel.

10. What is hay per lb., when 3 tons, 720 lbs., cost $537.60?

11. Find the cost of 7 tons of tobacco at half a cent per ounce.

12. A man buys as many lbs. of hay as there are units between 891 and 9000 inclusive; what is it worth at $18 a ton?

13. Find the cost of 60 tons of chop at 75 cents a cwt.

Exercise IX.

1. Find the cost of 8730 lbs. carrots at 35 cents a bag.

2. Find the cost of 860 boards of 16 ft. each at $12 a thousand.

3. Find the cost of 810 lbs. of apples (undried) at 70 cents a bag.

4. Find the cost of 8604 lbs. cheese at $8.25 a cwt.

5. Find total cost of:

9030 ft. of lumber at $20.45 a thousand.
240 lbs. beef at $6 a cwt.
2 ounces nails at $5\frac{1}{5}$ cents a lb.

6. Find the value of 16 loads cheese, each having 38 boxes, weighing 40 lbs. to the box, at $12.40 a cwt.

7. A grocer mixed 8 lbs. tea at 59 cents, 15 lbs. at 58 cents and 28 lbs. at 65 cents; what was a lb. of the mixture worth?

8. A man paid $4.93 for turnips at 17 cents a bushel, how many cwt. and lbs. did he get?

9. A bought 28 boxes of cheese for $215.60 at $11 a cwt. How many lbs. did each box hold?

10. A man has 25 score of sheep which shear 8 lbs. of wool each on an average; what is the clip worth at 18 cents a lb.?

11. A man has 47 barrels of eggs with 114 score in each barrel; he sells the whole lot, getting 15 cents a dozen for the eggs and 38 cents a piece for the barrels, how much money does he receive?

12. I exchange 200 bushels of wheat at $1.20 a bushel and 300 bushels of oats at 40 cents a bushel, for cloth at 90 cents a yard; how many yards should I get?

13. I buy 25 tons of coal at $8 a ton and 70 cords of wood at $3 a cord, and pay 50 cents a cord for splitting and piling the wood and 20 cents a ton for delivering the coal. What does my year's fuel cost me?

Exercise X.

1. What is the value of 5340 lbs. of wheat at 89 cents a bushel?

2. What is the value of 38 bushels and 38 lbs. of rye, at 67 cents a bushel?

3. What is the value of 4968 lbs. of barley at 75 cents a bushel?

4. How many bushels of hemp seed will weigh as much as 198 bushels of pease?

5. Find the cost of 9600 lbs. of pease at 85 cents a bushel.

6. If 5 bushels of oats are worth 3 bushels of wheat, how many lbs. of wheat are equal to 1870 lbs. of oats?

7. Find the cost of 1620 lbs. of pease at 77 cents a bushel.

8. If 7 bushels of pease are equal to 9 bushels of oats, how many lbs. of oats are equal 5040 lbs of pease?

9. A man paid 98.33\frac{1}{12}$ for wheat at 85 cents a bushel, how many lbs. of wheat did he get?

10. A man paid $108.81 for oats at 39 cents a bushel; how many lbs. less than half a dozen tons did he get for that money?

11. A man receives $134.76 for 192 bushels, 25 lbs., of barley; how much does he lack of being fully paid, barley being worth 70 cents a bushel?

12. Find the cost of 6314 lbs. of buckwheat at 72 cents a bushel.

13. Find the value of 1512 lbs. of sweet potatoes at 68 cents a bushel.

Exercise XI.

1. If 38 bushels and 12 lbs. of wheat cost $32.47, what is the value of a bushel?

2. When 4 gallons of rye are worth 49 cents, what is the value of 1216 lbs. of rye?

3. Find the cost of 27 cwt., 44 lbs. of fine salt at 19 cents a bushel?

4. What is the value of a quarter of a ton of castor beans at 40 cents a peck?

5. What is the cost of 41 hundred and 44 lbs. of Indian corn at $5 for 256 quarts?

6. Find the value of 8126 lbs. of cheese at $12 a cwt.

7. What will 364 million eggs cost at $1.25 for every 130 eggs?

8. Find the cost of 75 tons of hay (*a*) at 3 cents for 10 lbs. (*b*) at 45 cents a cwt.

9. Find the value of 200 ounces of potatoes, when $115.20 buys 480 bushels.

10. Find the cost of 3468 lbs. of oats at 27 cents a bushel.

11. Find the value of 2640 lbs. of pease at $1.07 a bushel.

12. Find the cost of 101 bushels, 10 lbs. of wheat at 90 cents a bushel.

13. What will 1 peck, 3 lbs., 2 ozs. of rape seed cost at $2.40 a bushel?

Exercise XII.

1. What will 40 ounces of canary seed cost at 75 cents a peck?

2. Sold 2220 lbs. of wheat at 98 cents a bushel, and 2686 lbs. of oats at 57 cents a bushel; bought 49 yds. carpeting at $1.15 cents per yd. and 24 rolls of wall paper at 37 cents a roll. How much had I left out of my sales?

3. Thirty bushels of wheat at 90 cents a bushel will buy how many yards of cloth at $1.35 a yard?

4. Find the cost of 2861 lbs. rye at 75 cents a bushel.

5. What is the value of 8075 lbs. of barley at 96 cents a bushel?

6. Find the value of 8126 lbs. of alsike clover-seed at $7.20 a bushel.

7. What will 37 bushels 24 lbs. of buckwheat cost at 60 cents a bushel?

8. What is the cost of 6128 lbs. millet seed at $1.50 a bushel?

9. Find the cost of 75 bushels 10 lbs. of pease at 90 cents a bushel.

10. Find the cost of 51 bushels 40 lbs. corn at 90 cents a bushel.

11. Find the cost of 51464 lbs. of rye at 49 cents a bushel.

12. What will 20 car-loads of lumber, containing each 9 thousand and 30 feet, cost at $20.45 a thousand feet?

13. Find amount of the following:

40680 lbs. pease at 57 cents a bushel.
6840 lbs. wheat at 70 cents a bushel.
6480 lbs. apples at 80 cents a bag.
64 bushels, 14 lbs., corn at 72 cents a bushel.
56 bushels, 12 lbs., beans at $1.20 cents a bushel.
15 bushels, 15 lbs., clover seed at $6.40 a bushel.
(286 × 790) ounces of hay at $16 a ton.

Exercise XIII.

Find the total amount of each of the following bills:

1. 63 yds. muslin at 18 cents a yard.
45 yds. linen at 28 cents a yard.
63 lbs. butter at 23 cents a lb.
47 lbs. rice at 25 cents a lb.
24 lemons at 8 for 31 cents.
90 cans salmon at $1.80 a dozen.

2. 180 cans plums at $3 a dozen.
66 water-melons at 96 cents a dozen.

3. 23 lbs. yarn at 38 cents a lb.
45 lbs. prunes at 15 cents a lb.
32 spools at 8 for 50 cents.
39 bananas at 56 cents a dozen.

4. 63 yds. ribbon at 13 cents a yard.
   24 yds. print at 17 cents a yard.
   78 dozen eggs at 12 cents a dozen.
   12 oranges at 4 cents each.
   81 lemons at 38 cents for 9.

5. 63 yds. cheese-cloth at 3 cents a yard.
   45 yds. lace at 45 cents a yard.
   18 yds. braid at 10 cents a dozen yards.

6. 20 lb. rice at 9 cents a lb.
   13 lbs. tobacco at 65 cents lb.
   42 lbs. tea at 65 cents a lb.
   11 lbs. pepper at 12 cents a lb.

7. 13 ounces mace at $1.92 a lb.
   14 lbs. sugar at 8 cents a lb.
   19 lbs. tea at 70 cents a lb.
   50 lbs. beef at $13.00 a cwt.

8. 24 lbs. butter at 18 cents a lb.
   13 lbs. rice at 25 cents a lb.
   15 lbs. tea at 70 cents a lb.
   45 lbs. bacon at 13 cents a lb.
   28 lbs. coffee at 22 cents a lb.

9. 12 chickens at 35 cents a pair.
   42 lbs. tea at 75 cents a lb.
   39 lbs. mace at 20 cents a lb.
   400 lbs. sugar at 20 lbs. for a dollar.
   36 cans lobsters at $1.20 a dozen.

10. 28 lbs. mustard at 12 cents a lb.
    45 dozen lemons at 3 cents each.
    96 eggs at 20 cents a dozen.
    28 bunches grapes at 7 for 30 cents.
    19 lbs. candy at 15 cents a lb.

11. 45 dozen eggs at 3 for 5 cents.
    28 lbs. mutton at 11 cents a lb.
    41 cans sardines at 20 cents a can.
    32 spools at 2 for 8 cents.
    91 yds. trimming at 40 cents a yard.
    52 yds. dress goods at 18 cents a yard.

12. 13 bushels, 1 peck, grass seed at $6 a bushel.
20 lbs., 15 ozs. cheese at $16 a cwt.

13. 500 lbs. hay at $18 a ton.
39 ounces of gold dust at $200 a lb.

Exercise XIV.

1. Find the total cost of :

16 lbs., 8 ozs. bread at 8 cents a lb.
42 lbs. tea at 3 cents an oz.
496 ozs. coffee at 35 cents a lb.
68 lbs. tobacco at $87\frac{1}{2}$ cents a lb.

2. Sold 72 bushels, 28 lbs., corn at 90 cents a bushel, and bought chickens at 45 cents a pair. How many pairs did I get?

3. What is the value of 972 bushels hemp seed at 14 cents a peck?

4. Find the total cost of :

27 bushels, 16 lbs., barley at 45 cents a bushel.
88 bushels, 45 lbs., of wheat at 96 cents a bushel.
75 bushels, 20 lbs., clover seed at $5.10 a bushel.

5. Find the total cost of :

16 yds. cotton at $12\frac{1}{2}$ cents a yard.
42 yds. print at 16 cents a yard.
144 boxes pins at 75 cents a dozen boxes.
9 pairs of gloves at 60 cents a pair.
14 boxes collars, of 10 each, at 20 cents a piece.

6. A man bought 864 rods of wire at 3 cents for every 8 feet. He then sold it at 10 cents a rod ; what did he gain?

7. Find the amount of :

64 pecks of potatoes at 27 cents a bushel.
3128 lbs. of oats at 28 cents a bushel.
1710 lbs. wheat at 88 cents a bushel.

8. If 22 ounces bread feed 2 soldiers for a day, how many tons, and lbs. of bread will feed 28000 soldiers for 4 weeks?

9. If 24 men can do a work in 12 days, and each man gets $1.30 a day, what does the work cost?

10. How much money should a person get for 87 dozen eggs at 15 cents, 49 lbs. butter at 22 cents, and 178 lbs. wool at $45 a cwt. ?

11. Find the value of 4 bushels, 10 gallons pease at 15 cents a peck.

12. How many apples, at the rate of 3 for 5 cents, can be got with $61.45 ?

13. What will 111360 ounces of wheat cost at 95 cents a bushel ?

Exercise XV.

1. Find the cost of :

64 oranges at 30 cents for 8.
27 lemons at 52 cents a dozen.
Half a pound of figs at 28 cents a pound.
86 bananas at the rate of 2 for 5 cents.

2. How many paper bags, each holding 15 lbs. of flour, can be filled from the contents of 30 barrels ?

3. Find the bill of the following :

81 yds. silk at $1.20.
15 yds. print at 17 cents.
45 yds. ticking at 38 cents.
108 papers of pins at 6 for 5 cents.

4. What is the value of a load of wheat, consisting of 38 bags, 130 lbs. in each, when wheat is worth 90 cents a bushel ?

5. Find the cost of :

72 oranges at 38 cents a dozen.
29 pencils at 5 cents each.
42 books at 80 cents a dozen.
21 bottles of ink at 7 for 30 cents.
81 yds. of muslin at 35 cents a yard.

6. Find the total cost of :

50 melons at $1.44 a dozen.
33 eggs at 20 cents a dozen.

7. Find the amount of the following bill :

63 lbs. sugar at 8 cents a lb.
45 lbs. coffee at 25 cents a lb.
32 lbs. rice at 18 cents a lb.
92 lbs. tea at 45 cents a lb.
44 boxes of dates at 11 for $2.50.

8. Find the amount of the following bill of goods :

45 lbs. sash cord at 50 cents a lb.
28 lbs. nails at 4 cents a lb.
35 lbs. iron at 5 cents a lb.
36 bolts at 12 cents a dozen.
30 hinges at 36 cents a dozen.

9. Find the value of :

75 cocoanuts at $1.44 a dozen.
30 walnuts at 6 for 5 cents.

10. Find the bill of the following :

26 lbs. soda at 8 cents a lb.
13 lbs. bacon at 15 cents a lb.
40 lbs. mace at 20 cents a lb.
36 clothes-pins at 15 cents a dozen.
374 lbs. sugar at 11 lbs. for a dollar.

11. Sold 42 sheep at $6 a head. Bought 20 yds. cotton at 10 cents ; 13 yds. print at 14 cents ; 140 yds. carpet at $1.25. How much money have I left after paying my bill ?

12. Find the total amount of :

13 lbs. cinnamon at 10 cents a lb.
45 lbs. ginger at 20 cents a lb.
36 dozen eggs at 3 for 5 cents.
14 lbs. cheese at 12 cents a lb.
32 cocoanuts at 50 cents for every 4.
2 lbs. tea at 75 cents a lb.

13. Find total cost of :

600 lbs. honey at $33 a cwt.
195 lbs. sugar at 15 lbs. for a dollar.
37 lbs. oatmeal at 5 cents a lb.
42 lbs. tea at 75 cents a lb.
80 lbs. biscuit at 13 cents a lb.

Exercise XVI.

1. Find bill of :

9 lbs. nails at 3 cents a lb.
21 boxes tacks at 3 boxes for 20 cents.
15 dozen hinges at 12 cents each.
38 lbs. putty at 13 cents a lb.
150 lbs. cord at half-a-cent a lb.

2. Find the the total cost of :

32 lbs. butter at 23 cents a lb.
44 lbs. bacon at 73 cents for 4 lbs.
28 lbs. mutton at 15 cents for 2 lbs.
66 lbs. sugar at 11 lbs. for a dollar.

3. Make out the following bill :

24 boxes eggs of 950 each, at 18 cents a dozen.
41 lbs. sugar at 8 cents a lb.
720 lbs. whiting at $\frac{1}{2}$ a cent per lb.
340 dozen lemons at 3 for 12 cents.
750 cans fruit at $3 a dozen.
92 lbs. tobacco at 75 cents a lb.

4. Find cost of :

22 lbs. sugar at 11 lbs. for $1.
2 dozen and 6 spools at 5 cents each.
27 yds. cotton at 16 cents a yard.
320 clothes-pins at 8 for 3 cents.
29 lbs. rice at 25 cents a lb.

What change, out of 4 five-dollar bills should a person get who purchased the foregoing bill of goods ?

5. A boy bought 32 dozen lemons at 2 for 5 cents. He then sold the whole lot at 50 cents a dozen ; what did he gain ?

6. How many sheep at the rate of 3 for $21 can I get with $763 ?

7. Find the bill of :

280 yds. cotton at 10 cents a yard.
560 yds. print at 13 cents a yard.
960 yds. braid at 35 cents a dozen.
40 dozen skeins silk at 3 for 40 cents.
432 pins at $1.25 a gross.

8. Find bill of :

7 lbs. tea at 65 cents a lb.
4 lbs. coffee at 35 cents a lb.
7 lbs. sugar at 12 cents a lb.
8 lbs. raisins at 9 cents a lb.
8 lbs. cheese at 14 cents a lb.
13 lbs. rice at 9 cents a lb.

9. Find bill of :

20 lbs. tea at 65 cents a lb.
41 lbs. pork at 15 cents a lb.
$\frac{1}{2}$ lb. pepper at 20 cents a lb.
$3\frac{1}{2}$ lbs. soda at 12 cents a lb.

10. Find bill of :

32 yds. tape at 12 cents for 8 yds.
32 dozen eggs at 2 cents each.
45 lb. butter at 2 cents an ounce.
1680 ounces tea at 45 cents a lb.

11. Find bill of :

36 yds. braid at 14 cents a dozen yds.
48 dozen eggs at 12 cents a dozen.
56 cans salmon at 7 for a dollar.
300 lbs. sugar at 15 lbs. for a dollar.
60 dozen lemons at 3 for 8 cents.
15 score clothes-pins at 5 cents a dozen.
38 gross pencils at 6 cents a dozen.
$\frac{1}{2}$ a gross pens at 10 cents a dozen.
2 doz. oranges at 3 cents each.
45 score paper fasteners at 2 for a cent.
116 sheets paper at 2 for 5 cents.
12 dozen lead pencils at 4 cents each.
24 slates at $1 a doz.

12. Find the cost of 15 bushels apples at $\frac{1}{2}$ a cent a pint.

13. Find the cost of 7 bushels pears at 3 cents a lb.

Exercise XVII.

1. Find the total amount of:

28 gross pencils at 2 for a cent.
Half a quire paper at 3 cents a sheet.
20 score lead pencils at 4 for 15 cents.
9 dozen sponges at 30 cents each.
42 elastic bands at 60 cents a dozen.

2. How many dozen apples at the rate of 2 apples for a cent, can I get with the money received for 36 bags of potatoes at 36 cents a bushel?

3. Find the total amount of:

28 lbs. tobacco at 75 cents a lb.
42 lbs. cinnamon at 2 cents an ounce.
36 lbs. rice at 25 cents a lb.
24 lbs. ginger at 3 cents an oz.
45 lbs. pepper at 30 cents a lb.
40 lbs. nutmegs at 5 cents an oz.

4. Find bill of:

42 gallons coal oil at 10 cents a quart.
36 bags apples at 25 cents a bushel.
32 ounces almonds at 20 cents a lb.
45 lbs. cinnamon at 3 cents an oz.
20 dozen eggs at 3 for 2 cents.
19 lbs. biscuits at 13 cents a lb.

5. Make out the following bill:

38 lbs. pork at 15 cents a lb.
19 lbs. butter at 22 cents a lb.
37 lbs. honey at 3 cents an oz.
42 lbs. pepper at $\frac{1}{2}$ a cent an oz.
18 lbs. tea at 87 cents a lb.
51 cocoanuts at the rate of 3 for 55 cents.

6. Find the cost of 28 baskets peaches, of 48 dozen each, at 6 for 10 cents, the baskets being worth 15 cents each.

7. Find the cost of:

16 lbs. ginger at 5 cents an oz.
18 lbs. coffee at 32 cents a lb.
54 lbs. cream of tartar at 2 cents an oz.
46 dozen yeast cakes at 12 cents a dozen

8. Find the cost of :

20 bushels potatoes at 20 cents a peck.

13 lbs. pork at 2 cents an oz.

10 lbs. tea at 65 cents a lb.

30 ounces walnuts at 16 cents a lb.

9. Find bill of :

320 lbs. coffee at 20 cents a lb.

75 lbs. rice at 3 lbs. for a dollar.

210 packages soda, 7 for a dollar.

45 boxes mace, 5 for $3.

640 dozen eggs at 6 cents a dozen.

720 cakes soap at 40 cents a dozen.

10. What is the value of 40 bags of potatoes at 50 cents a bushel ?

11. What will 7290 lbs. apples cost at 40 cents a bag ?

12. Find the cost of 72 bags of beets at 90 cents a bushel.

13. A woman sold a grocer 7 pairs of chickens at 56 cents a pair, 5 pairs ducks at 73 cents a pair, 4 geese at 93 cents each, 3 turkeys at $1.15 each ; and then she bought from the grocer, 13 yds. cotton at 15 cents a yd., 19 yds. print at 17 cents a yd., 17 yds. flannel at 45 cents a yd., 29 yds. chintz at 26 cents a yd. How much money is due the merchant on the transaction ?

Exercise XVIII.

1. Find the total cost of :

19 yds. cotton at 17 cents a yd.

17 yds. linen at 47 cents a yd.

16 yds. lining at 9 cents a yd.

8 yds. flannel at 48 cents a yd.

23 yds. braid at 3 cents a yd.

7 pairs of mitts at 25 cents a pair.

3 pairs of gloves at 65 cents a pair.

2. Find the bill of:

14 yds. tape at 13 cents a yd.
11 yds. frilling at 15 cents a yd.
45 yds. ticking at 18 cents a yd.
32 yds. muslin at 28 cents a yd.
41 spools at 5 cents each.
16 pairs of gloves at 75 cents a pair.
32 yds. braid at 4 cents a yd.

3. Sold a grocer 15 dozen eggs at 18 cents a dozen, and 35 lbs. of butter at 23 cents a lb.; bought from him 9 lbs. tea at 55 cents a lb., 15 lbs. sugar at 7 cents a lb., 5 bars soap at 25 cents a bar, 1 gal. vinegar at 16 cents a quart, 4 lbs. raisins at 12 cents a lb., 4 lbs. currants at 7 cents a lb., 2 ounces cinnamon at 48 cents a lb., $10\frac{2}{3}$ ozs. spice at $0.36 a lb. How many 5-cent pieces will balance accounts?

4. A man sells 14 bushels onions at $3.25 a bushel, 78 lbs. cheese at 12 cents a lb., 16 lbs. butter at 24 cents a lb.; he then buys 17 yds. cloth at 95 cents a yd., 680 lbs. oatmeal at 5 cents a lb., 72 bbls. of apples, of 2 bushels each, at 25 cents a bushel; how much money with the produce will pay the store bill?

5. If a sheep shear 7 lbs. of wool on an average each year, what will 5 years' wool be worth, at $25 a cwt., from a flock of 300 sheep?

6. At $4 a yd. the value of 26 pieces of cloth is $5512; find the length of each piece in yards.

7. A man bought 7 webs of cotton, of 42 yds. each, at 9 cents a yd. He sold 5 webs at 10 cents a yd. and the rest at 13 cents a yd. What would he gain on the sale of 100 such webs at the same rate?

8. Find bill of:

28 lbs. rice at 9 cents a lb.
6 lbs. maple sugar at 22 cents a lb.
4 lbs. tea at 75 cents a lb.
$\frac{1}{2}$ a dozen lemons at 2 for 3 cents.
307 cents' worth of beef.

9. How many lbs. and ozs. of butter, worth 16 cents a lb., can I get with $33.36?

10. Find the value of 11 bushels 24 quarts of pease at 15 cents a peck, and 6420 eggs at 15 cents a dozen.

11. At one cent for 3 pints, what will 21 bushels of plums cost?

12. Make out the following bill:

28 lbs. oatmeal at 70 cents a stone.
42 eggs at 18 cents a dozen.
35 lbs. coffee at 40 cents a lb.
23 yds. print at 16 cents a yd.
35 spools at 7 for 30 cents.
45 dozen bunches braid at 3 cents a bunch.
4 lbs. biscuits at 8 cents a lb.
5 lbs. tea at 48 cents a lb.
One dollar's worth of sugar.
½ a bushel of apples at 15 cents a peck.
15 brooms at $3 a dozen.
25 lbs. of flour at $3 a cwt.
8 lbs. of coffee at 45 cents a lb.

13. What will it cost to feed 13 horses for 40 weeks when hay is $10 a ton and oats 40 cents a bushel, and a horse eats 5 lbs. of hay and 12 quarts of oats a day?

Exercise XIX.

1. What is the value of:

64 yds. cloth at $2.75 a yard.
42 yds. cotton at 11 cents a yard.
98 yds. flannel at 45 cents a yd.
16 dozen buttons at 12 cents a dozen.
40 collars at $1.44 a dozen?

2. Find amount of the following bill: Guelph, Oct. 13, 1885, Robert Thomson bought of W. K. Brown and Son:—

12 lbs. butter at 13 cents a lb.
15 lbs. sugar at 9 cents a lb.
5 lbs. tea at 55 cents a lb.
3 lbs. coffee at 35 cents a lb.
A fish for 35 cents.
A box of biscuits 94 cents.

3. Find the amount of the following bill:

26 yds. silk at $1.45 a yd.
4 yds. lining at 15 cents a yd.
$2\frac{1}{2}$ yds. satin at 20 cents a yd.
4 yds. muslin at 11 cents a yd.
2 dozen buttons at 25 cents a dozen.
12 yds. flannel at 38 cents a yd.
5 yds. cotton at 14 cents a yd.
2 pairs kid gloves at $1.25 a pair.
$3\frac{1}{2}$ yds. ribbon at 42 cents a yd.

4. Find the bill of:

8 lbs. prunes at 13 cents a lb.
9 dozen oranges at 3 for 10 cents.
32 ozs. rice at 20 cents a lb.
75 lbs. tea at 4 cts. an oz.

5. Find the total cost of:

20 score pencils at 5 cents each.
240 score pens at 10 cents a doz.

6. Find bill of:

49 dozen packages matches at 2 cents each.
34 boxes pens, of 1 gross each, at 2 pens for a cent.
19 lbs. tobacco at 38 cents a lb.
45 bottles ink at 5 for 20 cents.
72 ounces liquorice at 76 cents a lb.
10 lbs. opium at 20 cents an oz.

7. Find bill of:

18 doz. towels at 20 cents each.
45 yds. lace at 38 cents a yd.
28 yds. print at 17 cents a yd.
45 yds. linen at 28 cents a yd.
97 yds. cotton at 10 cents a yd.
64 yds. braid at 24 cents a dozen yds.

8. Bought 80 bags of apples at 60 cents a bag, and sold them immediately at 45 cents a bushel; what did I gain?

9. Find bill of following :

24 handkerchiefs at $1.80 a doz.
13 lbs. cotton yarn at 18 cents a lb.
25 yds. 9 in. ticking at 40 cents a yd.
72 yds. lace at 50 cents a doz.
12 pairs shoes at $2.75 a pair.

10. Find total amount of :

80 bags apples at 40 cents a bushel.
20 bags of potatoes at 90 cents a bag.
41 bushels pease at 93 cents a bushel.
21 bushels, 6 lbs. wheat at $1.30 a bushel.
14 melons at 7 for 75 cents.

11. Find bill of :

28 bags apples at 72 cents a bushel.
15 lbs. dried apples at $3.96 a bushel.
14 lbs. sugar at 7 cents a lb.
96 eggs at 15 cents a dozen.
145 bananas at 5 for 8 cents.

12. Find bill of :

23 yds. cotton at 13 cents a yd.
14 yds. muslin at 40 cents a yd.
39 lbs. sugar at 13 lbs. for a dollar.
45 lbs. tea at 75 cents a lb.
3 pairs of boots at $3.75 a pair.
14 pairs gloves at 75 cents a pair.
72 cocoanuts at 2 for 25 cents.

13. A man gets 81 reams of paper for $777.60 ; what does he pay a quire for it?

Exercise XX.

1. Find the total amount of :

75 yds. muslin at 24 cents a yard.
29 yds. tape at 2 cents a yd.
45 papers pins at 52 cents a dozen papers.

35 yds. cotton at 8 cents a yard.
90 lbs. yarn at 9 lbs for a dollar.
48 yds. ticking at 35 cents a yd.
49 yds. lining at 32 cents a yd.
40 yds. tape at 24 cents a doz.
82 yds. lace at 11 cents a yd.
92 yds. flannel at 50 cents a yd.
288 yds. braid at 8 cents a doz.

2. Find bill of :

240 dozen oranges at $1.24 a score.
28 boxes dates at 13 cents a box.
45 boxes figs at 35 cents a box.
90 lbs. grapes at 5 cents a lb.
70 lbs. white sugar at 14 lbs. for a dollar.

3. Find bill of :

20 lbs. beef at 3 cents a lb.
14 lbs. pork at 15 cents.
4 cwt. sugar at 20 lbs. for a dollar.
360 herrings at 45 cents a dozen.
630 cans salmon at 35 cents for 3.
19 doz. eggs at 2 for 3 cents.

4. Find the total cost of :

28 lbs. yarn at 38 cents a lb.
41 lbs. wool at 2 cents an oz.
22 lbs. sugar at 11 cents a lb.
21 lbs. soap at $\frac{1}{2}$ a cent an oz.
14 lbs. ginger at 3 cents an oz.
10 lbs. rice at 25 cents a lb.
36 yds. braid at 10 cents a dozen.

5. Find bill of :

27 doz. pencils at 5 cents each.
45 books at 3 for 50 cents.
18 slates at 24 cents each.
20 quires paper at 15 cents a quire.
62 sheets music paper at 2 for 5 cents.
40 doz. pens at 5 for 3 cents.

6. Find bill of:

2 suits clothes at $12.50 each.
4 pairs socks at 25 cents a pair.
$\frac{1}{4}$ of a dozen handkerchiefs at 20 cents each.
2 hats at $3.75 each.
40 yds. shirting at 16 cents a yd.
2 pairs drawers at 90 cents a pair.
2 neck-ties at 35 cents each.
1 overcoat $17.
1 pair gloves at 75 cents.
2 knitted shirts at $1.75 each.

7. Find bill of:

32 bales paper at 5 cents a sheet.
45 doz. envelopes at 20 cents a doz.
36 pens at 13 cents a doz.
448 score pencils at 4 for 10 cents.
19 boxes chalk at 20 cents a box.
45 doz. slates at 2 for 25 cents.
96 packages of seals at 50 cents a doz.

8. When 9 lbs. of tea are taken in exchange for 45 lbs. cheese at 11 cents a lb., what is tea worth a lb.?

9. Find the total value of:

8 lbs. beef at $\frac{3}{4}$ of a cent an ounce.
17 yds. cotton at 13 cents a yd.
6 pairs of chickens at 65 cents a pair.

10. Find the price of 3 bundles of socks of a dozen pairs each at 45 cents a pair.

11. Find the bill of:

768 lbs. cheese at 7 cents a lb.
287 lbs. butter at 19 cents a lb.
178 doz. eggs at 13 cents a doz.
2 kegs of lard, of 32 lbs. each, at $12\frac{1}{2}$ cents a lb.

12. Find the value of 12 pecks, 3 qts., raspberries at 10 cents a lb., assuming 3 quarts to be equal to 4 lbs.

13. Bought a certain number of bushels pears at 3 cents a lb., for $92.16; sold 2 pecks, 1 gallon, what fractional part of the quantity bought was the quantity sold?

Exercise XXI.

1. Find the total cost of :

32 yds. braid at 18 cents a dozen.
45 yds. print at 14 cents a yd.
29 yds. muslin at 15 cents a yd.
450 dozen buttons at 8 for 2 cents.
55 spools thread at 11 for 50 cents.
72 pair braces at $3 a dozen pairs.
95 yds. carpeting at $1.25 a yd.

2. Find amount of the following :

475 lbs. cheese at $12 a cwt.
93 lbs. ham at $15 a cwt.
20 lbs. sugar at 10 lbs for $1.
36 lbs. rice at 22 cents a lb.
70 lbs. tea at 70 cents a lb.
3 boxes figs of 2 lbs. each, at 2 cents an ounce.
128 ounces raisins at 20 cents a lb.
56 lbs. coffee at 40 cents a lb.

3. Find bill of :

49 yds. lace at 28 cents a yd.
63 yds. muslin at 14 cents a yd.
117 yds. braid at 3 yds. for 10 cents.
57 yds shirting at 18 cents a yd.
63 yds. cotton at 11 cents a yd.
12 dozen and 3 brooms at 25 cents each.
2 shawls at $5.24 each.
99 yds. linen at 45 cents a yd.
4 dozen and 4 spools at 5 cents each.
31 dozen tape at 9 cents a dozen.
20 gross pins at 8 cents a dozen.

4. Find bill of :

320 lbs. grapes at 4 lbs. for 15 cents.
63 boxes of figs at 3 boxes for 60 cents.
120 oranges at 55 cents a dozen.
34 dozen cans fruit at 2 for 25 cents.
54 lbs. sugar at 18 lbs. for a dollar.
16 lbs. dates at $1\frac{1}{2}$ cents an ounce.
36 lbs. biscuits at 15 cents a lb.
80 ounces candy at 25 cents a lb.

5. Find total amount of :

75 tons of hay at 45 cents a cwt.
20 lbs. pork at $8 a cwt.
17 lbs. beef at 15 cents a lb.
38 lbs. mutton at 4 cents an ounce.
96 barrels herring at $60 a dozen barrels.
54 bags potatoes at 80 cents a bag.

6. Find bill of :

60 yds. cotton at 12½ cents a yd.
32 yds. dress goods at 38 cents a yd.
16 yds. tweed at 80 cents a yd.
45 dozen pans at 14 cents each.
72 plates at $3 a dozen.
150 dozen cans lobsters at 4 for a dollar.
16 pairs mitts at $6 a dozen pairs.

7. How many hats at 9 for $27 can I get with $81 ?

8. A merchant sold : 13 yds. calico at 12 cents a yd., 19 yds. muslin at 23 cents a yd., 17 yds. flannel at 48 cents a yd. He took in part payment thereof 38 bushels of potatoes at 37 cents a bushel and the balance was left on credit. How much money will begin the new account ?

9. Sold on the market 23 lbs. butter at 27 cents a lb. I then bought 13 lbs. sugar at 7 cents a lb. and 4 lbs. coffee at 35 cents a lb. How many lbs. of currants, at 6 cents a lb., can I get with the balance of my butter money ?

10. If 42 reams of music paper cost $604.80, what is that a quire?

11. At 24 cents a score, a merchant paid $84.24 for 9 barrels of eggs. How many dozen of eggs were there in each barrel ?

12. Make out the following bill :

5 dozen hat-hooks at 40 cents a dozen.
3 door knobs at 15 cents each.
3 rack pulleys at 20 cents each.
25 lbs. nails at 4 cents a lb.
3 pairs hinges at 23 cents a pair.
2 door locks at 30 cents each.
7 lbs. cut nails at 8 cents a lb.
9 dozen screws at 6 cents a dozen.
3 padlocks at 25 cents each.
3 hasps and staples at 15 cents each set.
2 doz. bolts at 20 cents a dozen.
5 lbs. sash-cord at 90 cents a lb.
5 yds. screening at 33 cents a yd.

13. Find cost of:

420 oranges at 90 cents a score.
132 boxes figs at $1.80 a dozen boxes.
7 dozen and 9 peaches at 3 for 2 cents.

Exercise XXII.

1. Bought 72 horses at $90 each ; 2 of them died. At what price each must I then sell the remainder of my horses to gain $1920 on the whole lot?

2. Find the value of 96 cwt. and 48 lbs. of timothy seed at $1.25 a peck.

3. A railway company paid $39600 for wire at 3 cents a foot ; how many miles of wire did the company purchase?

4. Find the cost of 48 cwt. and 1 bushel of pease at 72 cents a bushel.

5. Bought 75 cows for $38.25 a head ; fed them 9 tons of hay at $16 25 a ton, and then sold them at $60.20 a head ; find my gain per head.

6. If three coffee-trees produce 8 lbs. of coffee a year, on an average, for 4 years, what is the value of the coffee, grown on 144 coffee-trees, at 38 cents a lb. ?

7. If the sum of two numbers is 3785, and the greater number is 249 more than the smaller, what is the product of the two numbers?

8. Bought 59 horses at $65 each ; 9 of them died, and I sold the remainder so as to gain $265 on the lot ; what did I get for each horse sold ?

9. A farmer traded 570 lbs. of old iron, worth 5 cents a lb., with a stove-dealer for a new stove worth $32.40, and paid the balance due in cash. How much cash changed hands ?

10. A horse dealer goes to Europe with $25,600 cash to buy stock ; he buys 59 cows at $40 a head, and 59 horses at $130 a head ; how many ponies can he get with the balance of his money, if a pony costs $\frac{3}{4}$ as much as a cow ?

11. A man bought cordwood for $140, and found that by selling it again at $5.70 a cord he gained $59.50 on all he sold. How many cords did he sell ?

12. Sold 59780 lbs. flour at $8.87½ a barrel ; find my receipts for flour.

13. If 6 men mow 12 acres in 10 hours, in what time will 72 men mow 48 acres ?

Exercise XXIII.

1. If 24 men do a work in 10 days, and 40 boys do it in 8 days, which will be the cheaper,—to get boys to do it at 40 cents each per day, or men at 75 cents each per day?

2. Find the product of two hundred and four thousand and seventy, and six thousand seven hundred and thirty-eight.

3. Find the sum, difference, product and quotient of 9318375 and 825; then, add the results.

4. Square 6382, and divide the product by 3191.

5. Find the value of 77 baskets of peaches, of 9 doz. each, at 3 for 2 cents.

6. If 32 ounces of bread feed a man for a day, how many tons will feed 2400 men for a week?

7. What will 3660 lbs. of potatoes cost (*a*) at 20 cents a bushel? (*b*) at 7 cents a peck? (*c*) at 3 cents a quart?

8. What will 32 tons of hay cost at one cent for every 64 ounces?

9. By factors find the result of each of the following:

(*a*) $8762135 \div 105$.

(*b*) $824 \times 21 \div 84$.

(*c*) $360 \times 625 \div 1000$.

10. Multiply 44092 by 704, and subtract 31040767 from the product.

11. Find the cost of 688 lbs. butter at 2 cents an ounce.

12. What will 96 bushels of potatoes cost at a third of a cent for 10 ounces?

13. Square 16920009, and subtract one hundred thousand billions from the product; then divide the difference by 132, using 3 factors.

Exercise XXIV.

1. Three flocks of chickens are worth $15.80 at 20 cents all round. One flock contains 37 chickens; how many are there in each of the other flocks, if there are 12 in one for 2 in the other?

2. What is the difference, in cost, between 6238 eggs at 15 cents a dozen, and 11 bushels of pears at $\frac{1}{2}$ a cent an ounce?

3. A man gets 648 reams of paper for $777.60; how much does he pay per quire?

4. How many tons of beef will feed 60,000 men for 6 months of 30 days each, giving each man 10 ounces of beef per day?

5. Multiply 698421 by 100209.

6. Divide 42150827803 by 377111.

7. If 2 boys earn as much as a man and it takes a man 20 days to do a work for which he gets $30, how much should a boy get for a day's work?

8. Find the value of $\{(216)^2 - (145)^2\} - \{(216+145)\times(216-145)\}$.

9. A man has 13 bags of money. In each of 4 of them he has 400 five-cent pieces; in each of 3 of them he has 270 ten-cent pieces; and in each of the rest 140 twenty-five cent pieces. How much money has he?

10. Write definitions for the following: quotient, factors of a number, composite number, product, multiplicand.

11. How many cows at $45 each should be given for 840 sheep at $18 each?

12. A farmer sold 45 bushels of wheat at 90 cents a bushel and 60 bushels of oats at 42 cents a bushel; with the money received he bought cloth at 73 cents a yard. How many yards did he buy?

13 The product of two numbers is twenty-one thousand three hundred and three; one of them is 27; find the other.

Exercise XXV.

1. A news-boy bought 72 papers a day for 7 weeks at 30 cents a dozen; he sold them at 4 cents each, and at the end of each week he had a dozen old papers on hand. How much money did he make during the seven weeks?

2. If 4 pigs cost $36 and 7 pigs cost as much as 9 sheep, how much more will 20 pigs cost than 20 sheep?

3. Find the cost of 63 lbs. 10 ozs. of butter at 24 cents a lb.

4. What are 20 cows worth at $540 for 15?

5. A man sold 3 pigs for $49. For the first he got $15 less than for the second, but $8 more than for the third. What did he get for each?

6. Find the L.C.M. of 60, 85, 95 and 1005.

7. Sold 72 chains of wire at 5 cents a foot; find the selling price.

8. Mr. Jones sold 112 bushels 40 lbs. wheat at 96 cents a bushel and bought cotton with the money, at 8 cents a yd. How many yds. did he get?

9. What is the cost of 96048 lbs. Hungarian seed at $4 a bushel?

10. If 48 acres of land cost $1200, what is the cost of 1000 acres?

11. If a quarter of beef sell for $9.40, what is the value of $\frac{3}{4}$ of it?

12. A merchant bought 8 pieces of cloth, all of the same length, at $5.20 a yard. He gained $108 on his outlay by selling 5 of the pieces for $1980. How many yds. did he buy?

13. The cost price of an article is $\frac{7}{8}$ of the selling price, and the gain, at which it was sold, is $20. Find the cost price.

Exercise XXVI.

1. A speculator sold a horse for a certain price, gaining thereby $\frac{1}{9}$ of his selling price. Had he received $100 less than he did for the horse, he would have lost $\frac{5}{36}$ of his real selling price. Find the cost price which was $\frac{8}{9}$ of the real selling price of the horse.

2. Twenty men can do a piece of work in 36 days. They work together at it for 6 days, after which one man finishes it alone. How many days does it take him?

3. Find the value of 8 times (8 tons, 6 cwt., 25 lbs.) of bran at $10.50 a ton.

4. A man can dig 60 post-holes in $2\frac{1}{2}$ days, or he can cut 5 cords of wood in 3 days. (*a*) Which is the more profitable employment, digging post-holes at 6 cents each, or cutting wood at 50 cents a cord? (*b*) What difference in money would accepting the more profitable employment make to the man in 2 months of 24 days each?

5. Bought 25 fur overcoats at $36 each. Gave away 3 of them to friends, and sold the balance of them at $45.50 each. Find my profit on the lot.

6. What is the value of 72×4750 steel pens at $1.37 a gross?

7. The perimeter of a field, 6 times as long as it is wide, is 462 rods. Find the cost of fencing one end of the field with a hedge fence, at $2 a rod.

8. A farmer exchanges hay, worth $12 a ton, with a miller for flour, worth $6 a barrel; if the miller charges $7.50 a barrel for his flour, what should the farmer charge per ton for his hay?

9. The selling price of an article is $1.80, and 3 times the selling price is equal to four times the cost price; find the gain at which it was sold.

10. A bought apples at 4 for 5 cents, and B bought oranges at 6 for 20 cents. How many apples should A give B for 47 dozen and 6 oranges?

11. A and B agreed to do a piece of work for $177. A worked 7 days of 5 hours each, and B worked 3 days of 8 hours each; what should each one receive?

12. Three men were to share $5 among them. The first was to get 20 cents more than the second, and the second was to get 15 cents more than the third. How much did each get for his share?

13. Five square miles of land are equally divided among 48 settlers; find the value of any 4 of their farms at $45 an acre.

Exercise XXVII.

1. The gain on selling a piano is $90, which is $\frac{1}{5}$ of the selling price. Find the cost price of the piano.

2. Find the total cost of:

8 cwt., 37 lbs., 8 ozs. of beef at $6.48 a cwt.
8462 lbs. of hay at $22.50 a ton.
6225 bricks at $8.25 a thousand.
936 feet of lumber at 2.37\frac{1}{2}$ a hundred feet.
4 lbs., $\frac{7}{8}$ of an oz. butter at 48 cents a lb.

3. Bought a horse for $80; sold him again for $110; then rueing my sale, I bought him back for $120. What would I lose by 10 such transactions?

4. A plot of ground is 2 chains long by 5 rods wide, and it is planted with strawberries. What is the value of the crop, assuming that 4 quarts grow on every square yard of the plot, and that berries are worth $2.80 a bushel?

5. A farmer, who owns a farm of 100 acres, 40 square rods, sells off a plot 3 chains, 75 links long, by 3 chains wide, for a school-site. How many acres and square rods has he left?

6. The sum of two numbers is 909; the greater number is 504; the product of the two numbers decreased by the product of the digits in their difference, and the result, then, divided by the difference between the numbers gives what final result?

7. A sack of pease weighs 2 cwt., 55 lbs., 8 ozs., and a farmer's wagon is loaded with 25 such sacks. (*a*) What is his load of pease worth at 72 cents a bushel? (*b*) How much less than 3 tons, 4 cwt., has he on his wagon?

8. A pile of 4-ft. wood is 90 ft. long and 6 ft. high. What is it worth at $\$4.18\frac{2}{3}$ a cord?

9. A's capital is $\frac{7}{15}$ of \$45000, which is $3\frac{1}{2}$ times as much as B's. How much money has B less than A?

10. Change $\frac{9}{11}$ to an equivalent vulgar fraction, the difference between whose terms is 13.

11. What is the total cost of:

15 tons bran at 60 cents a cwt.
7 tons, 400 lbs. middlings at 75 cents a cwt.
40 bushels, 15 lbs. barley at 80 cents a bushel.
14 bushels, 14 lbs. rye at 92 cents a bushel?

12. If $\frac{4}{5}$ of a ton of coal cost \$9, what is the value of 5 tons at the same rate?

13. (*a*) What is the value of 56000 ounces of tea, put up in 5-lb. caddies, and sold at the rate of \$36 per dozen caddies? (*b*) Add $£\frac{4}{7}$, $\frac{5}{8}$ shillings, $\frac{5}{14}$d.

Exercise XXVIII.

1. Find the value of 15 tons, 150 lbs. of coal at \$8.40 a ton.

2. A man walking the distance of 18 miles, finds, at the end of 2 hours, 40 minutes, that the distance he has got to go is $1\frac{1}{4}$ times the distance he has gone. Find his rate of travelling, in miles, per hour.

3. A man spends \$80 in buying eggs at 16 cents per dozen, and sells them at the rate of 8 for 20 cents. what is his gain?

4. Sold a horse for \$153 and thereby lost $\frac{3}{20}$ of what he cost me; at what price would I have gained $\frac{1}{4}$ of what he cost me?

5. Paid \$3621.35 for wire at \$46 a mile. How many miles and rods did I get?

6. Bought 45 turkeys at 90 cents each, and $\frac{3}{5}$ as many at \$1 each; sold the whole lot at \$1.40 each; find my gain.

7. A man has 4 fields of sheep; in the first he has 150 sheep; in the second $1\frac{1}{3}$ times as many as in the first; in the third $\frac{5}{7}$ as many as in the first and second together; and in the fourth 25 less than half as many as in all the other fields. What is the value of his entire flock at \$6.20 a head?

8. What will 7 loads of wheat, each containing 57 bushels, 57 lbs. cost at $2 a cental?

9. Subtract $14\frac{5}{6}$ from one hundred and ninety ninths; then subtract $\frac{5}{18}$ from the result.

10. Resolve each of the following into its prime factors:
2520, 30030, 1296 and 5544.

11. How many gallons and quarts must be taken from a tank, 7 feet long, 3 feet wide, and 5 feet deep, filled with water, in order that there may be the greatest possible number of even barrels, of $31\frac{1}{2}$ gallons each, left in it? How many barrels will remain in the tank?

12. Bought 580 lbs. maple sugar at $15 a cwt.; kept 1856 ounces for my own use. At what price per lb. must I sell the remainder of it, in order that I may gain $\frac{1}{3}$ of my outlay?

13. A's money is $\frac{6}{10}$ of B's, but if A gives his money to B, B will then have as much money as C. How much money has each, given that they, together, have $25?

Exercise XXIX.

Find the L.C.M. of each of the following:

1. 2, 4, 6, 19, 38, 54 and 76.
2. 3, 7, 9, 15, 18, 36, 42 and 63.
3. 7, 11, 42, 90, 154 and 630.
4. 24, 108, 180, 84, 96, 12, and 48.

Find the G.C.M. of each of the following:

5. 1160 and 1827.
6. 6550 and 7991.
7. 32967 and 50061.
8. 13620, 14074 and 27694

Reduce each of the following fractions to an equivalent fraction in its lowest terms:

9. $\frac{377}{406}$ and $\frac{123.}{205.}$

10. $\frac{2828}{6363}$ and $\frac{5403.}{12607.}$

11. $\frac{1128}{1269}$ and $\frac{17043.}{18525.}$

12. $\frac{3018}{8551}$ and $\frac{323.}{7619.}$

13. $\frac{777}{814}$ and $\frac{715.}{741.}$

Exercise XXX.

Simplify :

1. $20\frac{1}{8} - 2\frac{1}{4} + \frac{1}{8}$.
2. $2\frac{3}{4} \times 1\frac{1}{10} \times 17 \times \frac{1}{2\,8\,9}$.
3. $\frac{4}{4} + \frac{5}{6} + \frac{7}{8} + \frac{9}{10} + 1\frac{1}{15}$.
4. $\dfrac{2\frac{3}{4}}{14} + 15\frac{5}{7} + 6\frac{1}{4} - \frac{9}{6\,6}$.
5. (*a*) $(\frac{6}{7} - \frac{2}{3}) \div (\frac{3}{4} + \frac{2}{3})$; (*b*) $\frac{6}{7} - \frac{2}{3} \div \frac{3}{4} + \frac{2}{3}$.
6. (*a*) $1\frac{7}{8} \times 1\frac{1}{3} \times 2$; (*b*) $\frac{1\,9}{2\,2\,2\,3}$; (*c*) $\dfrac{3\frac{1}{4} - 2\frac{1}{3}}{3\frac{1}{6} + 1\frac{1}{2}} \div 1\frac{4}{7} + \frac{7}{8}$.
7. $5\frac{3}{4} \div 15\frac{1}{3} \times 8$.
8. $4\frac{2}{5} \times 6\frac{3}{7} \div \dfrac{2\frac{1}{2}}{7} \times 76$.
9. $\frac{7}{8} \times 5\frac{1}{5} \times 1\frac{7}{2\,3} \times \frac{2\,4}{4\,9} \times 7$.
10. $6\frac{1}{2}\ (4\frac{2}{3} - 1\frac{7}{8} - \frac{1\,9}{2\,4})$.
11. $\dfrac{\frac{1}{1\,3} + \frac{1}{2\,6} + \frac{1}{3\,9}}{\frac{2}{7} \times \frac{3}{5} \times \frac{4}{9} \times 2\frac{5}{8}} + \frac{1}{6}$.

12. Find the L.C.M. of 1836, 1482 and 1938, and add $\frac{1}{1\,8\,3\,6}$, $\frac{5}{1\,4\,8\,2}$ and $\frac{7}{1\,9\,3\,8}$.

13. Simplify :

(*a*) $\dfrac{2}{1 + \dfrac{3}{3 + 1\frac{1}{2}}}$; (*b*) $\dfrac{4\frac{2}{3} \text{ of } \frac{3}{1\,7}}{2\frac{7}{9} + 5\frac{3}{3}}$.

Exercise XXXI.

1. How many ounces of hay are there in a load containing 2 tons, 3 cwt., 18 lbs.?

2. How many miles, rods, etc., are there in 82080 inches?

3. Find the value of 19 gals., 3 qts., 1 pint of coal oil at 3 cents a pint.

4. A farmer's crop consists of 16 acres 120 sq. rods, of oats; 19 acres 106 sq. rods of wheat; and 10 acres 76 sq. rods of barley. How much land has he under crop?

5. A man travels 9 miles, 216 rods, by railway and 17600 yards by steamboat. Which way does he travel the farther and how much?

6. A merchant bought 38 gals., 3 qts., 1 pt., of vinegar. He then sold 13 gals., 1 qt., to one man, and 14 gals., 1 pt., to another. How much had he left?

7. A farmer reaped 8 acres, 120 sq. rods, of land each day for 7 days. How much did he reap during the 7 days?

8. Out of a cistern containing 57 gallons of water, 14 pailfuls were taken. If the pail held 2 gals., 3 qts., how much water still remained in the cistern?

9. A boy walks 2 miles, 220 rods, 4 yds., an hour, for 8 hours; how far does he travel during that time?

10. If 9 acres of land produce 213 bushels, 1 gallon, 2 qts., of grain, how much does an acre produce?

11. How many parcels, each containing 1 lb., 4 ozs., can be made from 1 ton, 35 lbs., of tea?

12. How long will it take a man who cuts 3 cords, 60 cubic feet per day, to cut 41 cords, 80 cubic feet of wood?

13. How many posts, each 7 feet long, placed 8 feet apart from centre to centre and 3 feet in the ground, will be required for a fence 322 yds., 2 ft. long?

Exercise XXXII.

1. What is $(72\times48\times96\times108)\div8\times12\times48\times36$ (*a*) by short division by factors? (*b*) by long division? and (*c*) by cancellation?

2. Find all the *prime* factors of each of the following:
128, 324, 252, 860, 1089 and 1260

3. A's load is 74 bushels, 18 lbs. of potatoes, and B's load is 80 bushels, 20 lbs. of corn. How many ounces does one load weigh more than the other?

4. From 6 miles, 240 rods, take 5 miles, 160 rods, 5 yards, and reduce the difference to inches.

5. Find the value of a pile of twenty-two inch wood $\frac{1}{8}$ of a mile long, 8 ft. high, at $2 a cord.

6. Find the cost of a train-load of 20 cars of pork, each car containing 75 hogs, each of which averages 220 lbs., when pork is worth $7.50 a cwt.

7. A shoe-dealer buys shoes at $22.50 a case of 1 dozen each. At what price per pair must he sell them to gain $4.50 a case?

8. Gentlemen's neck-ties are bought at $3.50 a dozen, and sold at 35 cents each. What is gained on 300 ties sold?

9. Shirts cost $24 a dozen; what is the retail selling price of a shirt to gain $16 on every 100 shirts sold?

10. Find the product of the sum and difference of 1500 and 15.

11. Boots are bought at $48 a dozen pairs and retailed at a third of the marked price for $2.50 a pair. How much would have been gained on 200 pairs, sold at the marked price?

12. Find the cost of 26 tons, 3 cwt., of bran at $12 a ton, and 7 tons, 325 lbs. of hay at $8 a ton.

13. If 5 tons, 8 cwt., of ham at $9 a ton, and 4 tons, 1200 lbs. hay, together, cost $117.60, find the cost of hay per ton.

Exercise XXXIII.

1. Divide 1319 acres, 13 sq. yds., 4 sq. feet, 48 sq. inches by 64, using factors.

2. Find the value of $\frac{51}{320}$ of a ton in lbs. and ounces.

3. Bought a cow for $38, and sold her for $42. At this rate, what would I gain on the sale of 100 cows?

4. How many bushels of wheat at $2\frac{1}{4}$ cents a lb. can I get for 5 ozs., 10 dwts., 20 grs. of gold dust at $15 an ounce?

5. If $13.50 buys $\frac{3}{8}$ of a ton, what part of a ton will $30 buy?

6. Find the L.C.M. of 6, 12, 20, 24, 54, 81, 63 and 14.

7. Find the G.C.M. of 5291, 5499 and 7020.

8. What will 24 bushels, 27 lbs., wheat cost at 1.60 a bushel?

9. If 12 cwt., 40 lbs. of sugar cost $148.80, how many barrels, each containing 322 lbs., 8 ozs., could be bought for $774?

10. What is the value of a tract of land 25 chains long and 20 chains, 40 links wide, at $80 an acre?

11. George gave away \$12.60, and had $\frac{3}{7}$ of his money left; how many pairs of ducks could he have bought with his money at 34 cents a pair?

12. Divide \$31 between A and B, so that as often as A gets $\frac{4}{5}$ of a dollar B gets 75 cents.

13. How many tons of hay at 60 cents a cwt. should be given for 240 cords 4 cord feet 12 cubic feet of wood at \$1.60 a cord, and 54 bushels, 20 lbs., wheat at \$1.20 a bushel?

Exercise XXXIV.

1. Simplify:

$$\left\{ \frac{3\frac{1}{4}}{9\frac{3}{4}} + \frac{14}{13\frac{1}{3}} - \frac{4}{5} \div 1\frac{1}{5} \text{ of } \frac{5}{8} \right\} \times 5\frac{5}{11}.$$

2. A man bought a certain number of horses for \$29400; he then sold $\frac{1}{4}$ of the lot for \$8400 at \$80 a head. What did the entire lot cost him per head?

3. A tract of ground, 50 rods long, and $\frac{1}{8}$ of a mile wide, is divided into 160 lots of the same size. What fractional part of an acre does each lot contain?

4. A grocer sold 3 ounces of tea for 15 cents. How much cheaper is that than \$1 a lb. for tea?

5. If 40 men can mow a field of 19 acres in 17 days of 5 hours each, how many acres can 17 men mow in 40 days of 10 hours each?

6. How many $2\frac{1}{2}$ inch cubes may be cut out of a block of stone 5 feet long, 3 feet $1\frac{1}{2}$ inches wide, and 10 inches deep?

7. What is the value of:

$$\frac{\frac{1}{2} \text{ of } \frac{2}{3} \div \frac{3}{4} \text{ of } \frac{4}{5}}{\frac{1}{2} \div \frac{2}{3} \text{ of } \frac{3}{4} \div \frac{5}{6}} \text{ of an acre at } 5\tfrac{2}{5} \text{ cents a sq. yard?}$$

8. Find the value, in dollars and cents, of 15 bushels of barley at $1\frac{1}{2}$ pence (Stg.) a pint.

9. A and B together take 50 hours to do a certain piece of work; but with C's help they could have done it in $18\frac{3}{4}$ hours. In what time could C alone have done it?

10. If 126 sheep are bought for \$1,638, and sold for \$1,953, what is the profit on each sheep?

11. The difference between $\frac{1}{6}$ of a number and the half of it is 14; find the number.

12. Find the value of $1+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\frac{1}{25}+\frac{1}{36}$ and $\frac{3}{13}-\frac{1}{7}+\frac{8}{59}$; multiply the results together and reduce the product to its lowest terms.

13. A, B and C have together \$1,330. For every \$5 that A has, B has \$6, and C \$8. How many dollars has each?

Tables (Miscellaneous).

MONEY.

£1 Sterling = \$4.86⅔, or
£15 Sterling = \$73.00
100 cents = \$1.00.
(100 cent pieces weigh 1 lb. Avoirdupois).

ON LONG MEASURE.

5280 feet = 1 mile.
1760 yards = 1 mile.
320 rods = 1 mile.
80 chains = 1 mile.
6 feet = 1 fathom.

ON SQUARE MEASURE.

160 square rods = 1 acre.
4840 square yards = 1 acre.
100000 square links = 1 acre.
10 square chains = 1 acre.
10 chains square = 10 acres.

A SURVEYOR'S CHAIN.

66 feet long.
22 yards "
4 rods "
100 links "

ON MEASURE OF CAPACITY.

A gallon of water weighs 10 pounds.
A cubic foot of water weighs 1000 ozs., or $62\frac{1}{2}$ lbs.
A cubic foot of water is 25 quarts, or $6\frac{1}{4}$ gallons.
A ton of shipping is 40 cubic feet. (As for example: A ship of 600 tons = 600×40 cub. ft., *space* in hold for shipping).

VARIOUS WEIGHTS AND MEASURES ESTABLISHED BY CUSTOM.

Plastering hair, 8 lbs. to the bushel.
Orchard grass seed, 14 lbs. to the bushel.
Red Top, 14 lbs. to the bushel.
Blue (Kentucky), 14 lbs. to the bushel.
Blue (English), 24 lbs. to the bushel.
Dried apples, 22 lbs. to the bushel.
Charcoal, 22 lbs. to the bushel.
Bran, 20 lbs. to the bushel.
Dried peaches, 28 lbs. to the bushel.
Oats, 34 lbs. to the bushel.
Malt, 36 lbs. to the bushel.
Cranberries, 40 lbs. to the bushel.
Castor beans, 40 lbs. to the bushel.
Hemp seed, 44 lbs. to the bushel.
Timothy seed, 48 lbs. to the bushel.
Hungarian grass seed, 48 lbs. to the bushel.
Millet seed, 48 lbs. to the bushel.
Barley, 48 lbs. to the bushel.
Buckwheat 48 lbs. to the bushel.
Apples (undried), 48 lbs. to the bushel.
Canary seed, 50 lbs. to the bushel.
Corn meal, 50 lbs. to the bushel.
Rape seed, 50 lbs. to the bushel.
Coarse salt, 50 lbs. to the bushel.
Flax-seed, 50 lbs. to the bushel.
Indian corn (shelled), 56 lbs. to the bushel.
Rye, 56 lbs. to the bushel.
Fine salt, 56 lbs. to the bushel.
Sweet potatoes, 56 lbs. to the bushel.
Wheat, 60 lbs. to the bushel.

Pease, 60 lbs. to the bushel.
Red and alsike clover seed, 60 lbs. to the bushel.
Beans, 60 lbs. to the bushel.
Onions, 60 lbs. to the bushel.
Potatoes (heaping measure), 60 lbs. to the bushel.
Turnips (heaping measure), 60 lbs. to the bushel.
Beets (heaping measure), 60 lbs. to the bushel.
Carrots (heaping measure), 60 lbs. to the bushel.
Parsnips (heaping measure), 60 lbs. to the bushel.
Corn (on cob), 72 lbs. to the bushel.
Coal (bituminous), 70 lbs. to the bushel.
Coal (anthracite), 80 lbs. to the bushel.

Miscellaneous.

PAPER.

24 sheets of paper = 1 quire.
20 quires = 1 ream.
2 reams = 1 bundle.
5 bundles (10 reams) = 1 bale.

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14 lbs. = 1 stone.

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1 lb. = 16 ozs. (Avoir.) = 7000 grains (Troy).
1 oz. (Avoir.) = $437\frac{1}{2}$ grains (Troy).

Exercise XXXV.

1. Make out the following bill:

10 bales paper at 3 cents for 5 sheets.
20 gross pencils at 5 cents each.
240 dozen pens at $1 a gross.
120 score slates at $1.50 a dozen.

2. From 29 acres, 159 sq. rods, 30 sq. yds., take 10 acres, 158 sq. rods, $30\frac{5}{8}$ sq. yds.

3. A merchant bought 72 quarter-barrels of beer at $1.50 each and sold it out at 3 cents a pint. Find his gain.

4. Sold a piece of land 40 chains long by 18 chains wide at $80 an acre. Find selling price.

5. If 60 sheep cost $630, what would 14 sheep cost?

6. A fruit-dealer bought 5 barrels of apples at $2.75 a barrel. The barrels contained in all 4956 apples which he sold at the rate of 7 for 5 cents ; find his gain.

7. Find the cost of 940 lbs. of hay at $9 a ton.

8. A farmer bought a yoke of oxen and paid $75 down, which was $\frac{5}{9}$ of the price of the oxen ; how many cords of wood, at $3 a cord, will pay the balance due ?

9. How often does the square of 896040 contain $(873 \times 441 \div 63)$?

10. A boy carries 300 bricks in an hour from one kiln to another ; how many tons of brick can he move in 40 days of eight hours each, if each brick weighs 12 ounces ?

11. A man burned 5 cords of wood every four weeks ; at this rate what would it cost him for fuel for a year, when wood is worth $1.80 a cord ?

12. Sold an iron box, weighing 340 lbs., filled with barley weighing 33840 lbs., getting for the iron 5 cents a lb., and for the barley 75 cents a bushel ; what did I get for the whole ?

13. A bin holds 30240 lbs. of wheat, or it holds one-third more lbs. of oats ; how many bushels of oats does it hold ?

Exercise XXXVI.

1. Find the total cost of :

25 lbs. flour at $4 a cwt.
50 lbs. oatmeal at 3 cents a lb.
16 lbs., 8 ozs. butter at 32 cents a lb.
A peck of apples at 60 cents a bushel.

2. One man has 25 thousand cents, and another man has the proceeds of 3456 lbs. of barley at 60 cents a bushel. How many lbs. sugar at 8 cents a lb. can they both, together, buy ?

3. If 621 calves, worth $5 a head, are given for 1035 pigs, what are pigs worth per head ?

4. Find the total cost of :

32 lbs. tea at 5 cents an ounce.
24 lbs. coffee at $37\frac{1}{2}$ cents a lb.
14 lbs. pepper at $\frac{1}{2}$ a cent an ounce.
36 ozs. soda at 16 cents a lb.
117 bars soap at $1 for 9 bars.
1404 eggs at 23 cents a dozen.
2 dozen lemons at 5 cents for 2.
16 lbs. tobacco at $87\frac{1}{2}$ cents a lb.
35 lbs. sugar at $1 for 14 lbs.
12 lbs. raisins at 4 ozs. for 3 cents.

5. Divide 2864712300000908958 by 9081.

6. A man bought 70 rods of rope at 2 cents for 5 feet, and sold it at 8 cents a rod; what did he gain?

7. A farmer sold 5460 lbs. pease at 67 cents a bushel and bought cotton with the money at 7 cents a yard; how many yards did he get?

8. In a mow there are 69840 lbs. of hay; what is it worth at (*a*) $2.70 a cwt? (*b*) $16 a ton?

9. A man gave $180 for a horse and $\frac{5}{36}$ as much for a saddle; what did they both cost?

10. If 5 tons of coal are equal to 9 cords of wood, and a family burns 54 cords of wood in a year, which is the cheaper to burn wood or coal when wood is $4.25 a cord and coal $7 a ton?

11. Ten boys walk 2360 rods each in 2 hours; how many miles is that altogether?

12. Find the value of 72800 pickets at $24 a thousand.

13. A drain, 70 rods long, cost $10.50 to dig it; what is that for 22 yards?

Exercise XXXVII.

1. If 7 horses cost $1260, what is the value of a car-load of 12 horses?

2. Find the cost of 7000 lbs. bran at $.15 a bushel.

3. If 4 bushels of oats are worth $1.16, what is the value of 578 lbs.?

4. Find the amount of the following bill:

99 lbs. sugar at 11 lbs. for a dollar.
29 lbs. soda at 15 cents a lb.
8 ducks at 75 cents a pair.
46 lbs. butter at 23 cents a lb.
17 gals. vinegar at 10 cents a quart.
33 gals. syrup at 80 cents a gallon.

5. From the sum of 17 tons, 1999 lbs., 15 ozs.; 213 tons, 685 lbs., 10 ozs.; and 71 tons, 641 lbs., 8 ozs., subtract 241 tons, 1741 lbs. 9 ozs.

6. Multiply the sum of 63 and 47 by their difference.

7. How many bags of rice of 25 lbs. each can be made from 3 bags of 625 each?

8. James has 20 half-dollar pieces, 15 quarter-dollar pieces, 75 five-cent pieces and 1000 coppers. How much money has he?

9. Twenty oxen at $30 each and 45 sheep cost, together, $825. Find the value of a sheep.

10. Find the cost of 63 cocoanuts at $1.60 a dozen.

11. To how many persons can I give 25 cents, having in my pockets $37.50?

12. If 5 pigeons or 30 sparrows eat 1 quart of grain in a day, how many bushels of grain will feed 60 pigeons and 210 sparrows a week?

13. If 14 lbs. of tea cost $7.84, what will $\frac{1}{3}$ of a caddie of 21 lbs., 12 ozs., cost?

Exercise XXXVIII.

1. If 12 cords of wood equal $3\frac{1}{4}$ tons of coal, how many cords of wood would last a family that burns 26 tons of coal in a year?

2. A "skip" of bees makes 60 lbs. of honey in a season; how much money, at this rate, would 6 dozen such "skips" bring in, in a season, when honey is worth 20 cents a lb.?

3. If the cost of fencing be 10 cents a yard, what would be the cost of fencing a field, the four sides of which measure 820 rods?

4. A florin is $18\frac{1}{3}$ cents, and a man has 630 florins, with which he buys dates at 3 cents an ounce; how many pounds and ounces does he get?

5. Multiply the sum of all the numbers from 88 to 100 inclusive by 1222.

6. If 12 apples cost 9 cents, what will a bbl. of 520 dozen cost?

7. If 4 bushels of turnips feed a cow for a week, what will it cost to feed 42 cows for 4 months of 4 weeks each, when turnips are $\frac{1}{4}$ of a cent a lb.?

8. Find the cost of 30 crates of eggs of 48 dozen each at 36 cents a score.

9. Find the cost of 560 lbs. of oatmeal at 50 cents a stone.

10. Multiply 2 acres, 163 rods, $16\frac{3}{8}$ yards by 48, and divide the product by 6.

11. Divide 8697 bushels, 2 pecks, by 15 bushels, 1 peck, 2 quarts.

12. A fisherman buys 8420 lbs. of white-fish at 12 cents a lb. He buys barrels at 25 cents each, barrels up his fish, and then sells them at $42 a barrel. Find his gain.

13. Find the amount of the following bill of goods:

42 yds. tape at 2 cents a yd.
45 yds. cotton at 8 cents a yd.
36 yds. braid at 20 cents a dozen.
96 yds. cloth at 60 cents a yd.
40 pairs mitts at $3 a dozen pairs.
29 yds. tweed at 70 cents a yd.
53 yds. cotton at 9 cents a yd.
72 yds. lace at 40 cents a yd.
64 yds. flannel at 55 cents a yd.
96 spools at 52 cents a dozen.
19 lbs. cotton yarn at 9 lbs. 8 ozs. for a dollar.

Exercise XXXIX.

1. Find the cost of 100 dozen baskets of grapes, of 35 lbs. each, at $6.75 a bushel of 48 lbs.

2. If 12 bushels of oats or 4 bushels of wheat cost $3.84, what will 48 bushels oats and 16 bushels of wheat cost?

3. If 25 men do a piece of work in 24 days, working 8 hours a day, in how many days would 30 men do the same piece of work, working 10 hours a day?

4. A drover bought 120 pigs at $7.30 a head; he kept them 2 weeks at a cost of 37 cents a head, per week, and then sold them at $8.25 a head; find his gain or loss.

5. How many oranges at 60 cents a dozen can be bought with the price of 16 crocks of butter, of 24 lbs. each, at $37\frac{1}{2}$ cents a lb.?

6. Find the value of 48 hogs, of 450 lbs. each, at $7 a cwt.

7. What number is it from which the square of 90 being subtracted leaves 8 times 220?

8. How many lbs., and ozs. of coffee, at 2 cents an oz., should be taken in exchange for 4752 yds. of wire at 3 cents for 8 feet; 912 apples at 30 cents a dozen; 3420 lbs. of wheat at 88 cents a bushel; and 16 bushels of potatoes at 13 cents a peck?

9. Find the total cost of 13 doz., 10 score and 12 gross of pencils at 2 for 5 cents.

10. Find the difference between $\frac{3}{7}$ of 84 doz. eggs, and $\frac{1}{2}$ of $\frac{4}{5}$ of 3000 eggs.

11. If peaches sell at 15 cents a quart, what is that a bushel?

12. A farmer sold 700 bushels of wheat, on a speculation, at $1.35 a bushel. What did he gain, if the wheat cost him $\frac{4}{5}$ of $\frac{5}{6}$ of the selling price per bushel.

13. Make out the following bill:

16 lbs. butter at 2 cents an oz.

45 bushels of potatoes at 13 cents a peck.

160 ounces of tea at 45 cents a lb.

17 lbs. of coffee at $\frac{1}{2}$ a cent an oz.

141 boxes biscuits at 3 boxes for 25 cents.

Exercise XL.

1. What is the value of 196 bags of bran, of 30 lbs. each, at $12 a ton?

2. Find the cost of feeding 90 cows for 15 weeks, giving each cow 15 lbs. of hay per day, when hay is $8 a ton?

3. If 2 men or 3 women earn $1.50 a day, how much should 20 men and 20 women earn in 20 days?

4. A dog runs 210 rods in a minute; how long will he be in running 540 miles at the same rate?

5. Find the cost, in Canadian currency, of 360 lambs, sold at 15 shillings Sterling, per head.

6. Find the total cost of:

3360 lbs. hay at $18 a ton.

3550 lbs. pork at $8 a cwt.

600 dozen eggs at 3 for 5 cents.

7. Multiply 13 acres, 97½ rods, by 213.

8. How much, per square foot, is $2.79 a square yard?

9. How much, per dozen, is 87½ cents a pair?

10. A man walked 2 miles, 2635 feet, 80 rods, in 6 days; how many yards, feet, and inches, is that in a day?

11. Reduce to inches, 2 acres, 45 rods, 10 yds.

12. If 61840 inches of a ship's sounding-line are in the water, how many fathoms deep is it?

13. (*a*) Paid $109800 for a tract of land at $45 an acre. It was 1220 chains long; how many rods wide was it? (*b*) The sum of two numbers is 1069; their difference is 659; find the *product* of the two numbers.

Exercise XLI.

1. A man gained $66 by buying wire at 5 cents for 20 feet and selling it at half a cent a foot. How many rods did he buy?

2. A drover sold 70 sheep at $7.50 a head. He lost $25 of the money received for them and then bought turkeys at $1.25 each with the balance of his money. How many turkeys did he get?

3. Find the bill of the following:

18 bushels, 24 lbs. barley at 70 cents a bushel.
56 bushels, 20 lbs. wheat at 87 cents a bushel.
45 bushels, 17 lbs. oats at 50 cents a bushel.
1625 lbs. flour at $4.60 a cwt.

4. In a field a drover had 60 cows and half as many sheep. He sold 5 sheep and 11 cows for $355. He then sold the rest of the cows at $37 a head and the sheep at $6 a head. If they all cost him $1800, what did he gain on the entire lot?

5. Find the cost of 11 bags of apples each containing 72 lbs., at 50 cents a bushel.

6. A merchant had 1654 lbs. tea; he sold 60 lbs. one day, 308 lbs. the next, and 407 lbs. the third day. What is the balance of tea on hand worth at 87 cents a lb.?

7. Half the sum of two numbers is 4331, and half their difference is 3353. Find the two numbers.

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

9. A brewer sells a quarter of a ton of malt; how many bushels does he sell?

10. A, B and C have each a tract of land. A has 16,000,000 square links, B has 3 times as much, and C has 240 acres. What is the whole of their land worth at $50 an acre?

11. The hold of a barge, of 600 tons burden, is filled with potatoes; find the value of the cargo at 72 cents a bushel.

12. Find the value of 99 lbs. dried apples at $4.40 a bushel, and 792 lbs. green (undried) apples at 90 cents a bag.

13. Find the value of:

1600 lbs. castor beans at $3.20 a bushel.

280 lbs. orchard grass-seed at $3.80 a bushel.

Half a bushel of canary seed at 20 cents a lb.

2 bushels of sweet potatoes at $1\frac{1}{2}$ cents a lb.

Exercise XLII.

1. A feed merchant sold 575 lbs. corn meal at $1.80 a bushel, 850 lbs. rape seed at $2.70 a bushel, and 30 lbs. flax seed at $1.50 a bushel; how much did he receive for the whole?

2. Find the cost of 205260 lbs. of green (undried) apples at 60 cents a bag, allowing that a bag holds $1\frac{1}{2}$ bushels.

3. In 2 miles, 80 rods, 4 yards, how many inches are there?

4. (*a*) How many cent pieces would weigh as much as 24 bushels, 10 lbs. of barley? (*b*) If laid in a straight row touching each other how far would they reach?

5. Off "The Banks of Newfoundland," the ocean is 9000 feet deep; how many fathoms of sounding-line will measure its depth?

6. A man walked 120 miles, 80 rods, 34 ft., 6 inches in 9 days; how far did he travel each day?

7. How long will it take a train, running 20 miles an hour, to go from Winnipeg to Calgary and back, the distance between the two places being 955 miles, no time being lost in turning?

8. How many boards each 11 ft. long, laid in a straight line with their ends touching each other, would reach a mile?

9. A farmer sells 7 loads of barley, each containing 3024 lbs. *net*, at 59 cents a bushel. How much money does he receive?

10. Divide the product 8064 and 1512 by 3024.

11. If 12 lbs. of tea cost 636 cents, what will 50 lbs. cost?

12. How many days would it take a man to travel 312 miles at the rate of 3 miles an hour for 8 hours a day?

13. (*a*) Divide 2864713 by 120, using all the factors of the divisor, and find the correct remainder. (*b*) Divide it also by 120 by long division.

Exercise XLIII.

1. Reduce 2 acres, 45 rods, 10 yds., 2 feet, to inches.

2. From the sum of 66 acres, 116 rods, and 20 acres, 3800 yds., take 75 acres, 118 rods, 8 feet.

3. A merchant bought a car-load of potatoes at 80 cents a bag; the car contained 36000 lbs., and he sold them out at 15 cents a peck. Find his gain.

4. Find the gain on 12 barrels of cider of $31\frac{1}{2}$ gallons each, bought at $6 a barrel and sold at 3 cents a pint.

5. Find the value of 2×1630 lbs. of hay at $9 a ton.

6. How much will 16 hogsheads of beer weigh more than 15 hogsheads of water, if beer is $1\frac{1}{10}$ times as heavy as water?

7. Divide 36 bushels, 2 pecks, 1 quart, by 1 gallon, 1 pint.

8. In 66024 seconds, how many hours, minutes and seconds are there?

9. A tract of land is 1220 chains long and 80 rods wide; what is it worth at $45 an acre?

10. A piece of fencing cost $64 at 40 cents a rod. How many chains long was it?

11. A whale weighed 40 tons, and the whale-bone in his jaws $\frac{1}{8}$ as much; find the value of the whale-bone at $5\frac{1}{2}$ cents a lb.

12. A received $310 for a house which was $18 more than it cost him. How many £ Sterling did it cost?

13. Bought 8040 lbs. of Hungarian seed at $2.70 a bushel, and 660 lbs. buckwheat at 60 cents a bushel. How many bushels of potatoes at 50 cents a bushel will pay the bill?

Exercise XLIV.

1. Divide 4 years, 2 months, 10 days, by 1 week, 12 hours.

2. What is the difference, in weight, between 32 barrels of water and 44 barrels of trout?

3. A man went to town with 12 doz. eggs; he sold half of them at the rate of 3 for a cent, and the other half at the rate of 9 for 5 cents. Next day he went in with the same number of eggs, which he sold at 12 for 6 cents. Which day did he get the more money, and how much more?

4. A grocer bought $31\frac{1}{2}$ gallons of syrup for $7.50; he then sold out the half of it at 18 cents a quart, and the other half at 22 cents a quart. How much did he gain?

5. Find the cost of 63 barrels of pork at 12 cents a lb.

6. If 9 reams of paper cost $216, what is that a sheet? a quire?

7. What is the amount of the following bill:

16 gross crayons at 2 doz. for 3 cents.
150 lbs. lead at 10 cents a lb.
Half a gross of pens at 6 for 5 cents.
10 dozen penholders at 25 cents a score.

8. Find the cost of 6 tons, 800 lbs. hay at $12 a ton.

9. In a field there are 60 rows of carrots and each row contains 2500 carrots; if 75 carrots fill a bag, how much is the field worth at 15 cents a bushel?

10. If 15 lbs. clover-seed sow an acre, how many bushels will sow 50 acres?

11. A sack of potatoes weighs 178 lbs; if six such sacks cost $26.70, what is the price of potatoes per bushel?

12. A soldier took 28160 steps, each 3 feet long; how far did he walk?

13. A man paid $72.80 for wheat at $37\frac{1}{2}$ cents for 20 lbs. How many bushels did he get?

Exercise XLV.

1. Divide the product of $45 \times$ (20 acres, 85 rods, 19 yards), by 15.

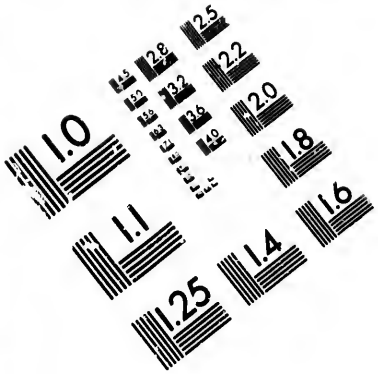
2. How many boards, each 8 inches wide, will build a tight board fence 60 rods long?

3. A farmer exchanges 16 sheep for 2 loads of hay at $8 a load, and 56 turkeys at $2 each. What were sheep per head?

4. Bought 75 lambs at $2.50 a head; one fifth of them died; for how much must I sell the remainder to gain $112.50 on the entire lot?

5. How many barrels are there in a tank which holds 640 $\frac{2}{25}$ cubic ft. of water?

6. How often will a wheel 5 ft. 6 in. in circumference turn in going 11 miles?



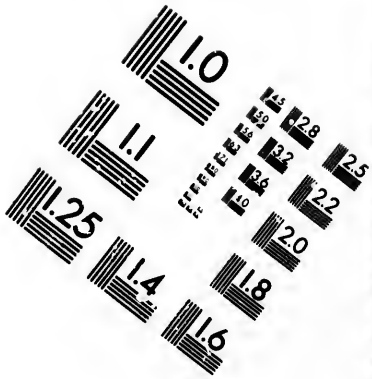
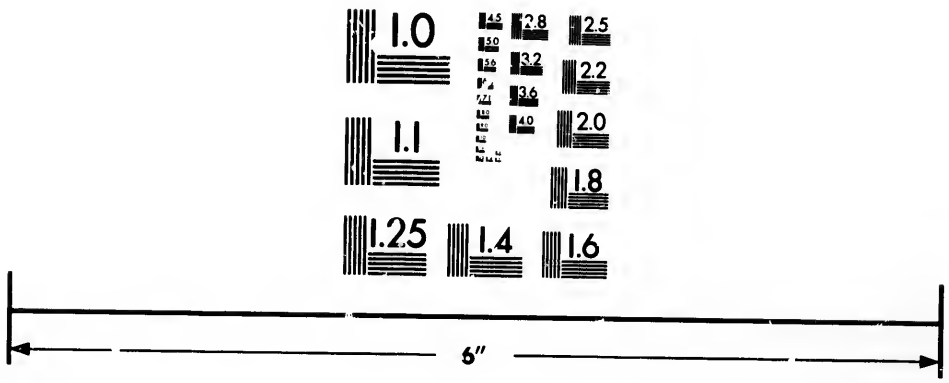
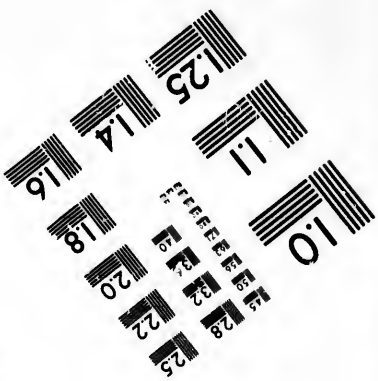


IMAGE EVALUATION
TEST TARGET (MT-3)





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7. A, B and C paid $25.20 for a supper. A invited 9, B 7, and C 17 guests, and each man was as a guest himself. How much of the cost of the supper should each man pay?

8. From 2 tons, 1640 lbs., 3 ozs. resin take 1 ton, 1900 lbs., 12 ozs., and find the cost of the remainder at $\frac{1}{2}$ cent for 4 ounces.

9. If 6 lbs. of flour make 24 loaves of bread, how many loaves will a barrel of flour make?

10. A drover bought 88 pigs for $440. He then sold 40 of them at $5.40 a head. At what price per head must he sell the rest to gain $160 on the whole drove?

11. If 1670 lbs. of hay at $18 a ton, and 6720 lbs. of apples (undried) cost $283.83, what is a bushel of apples worth?

12. How many bales of cloth, containing 40 pieces of 36 yards each, worth $.30 a yard must be given in exchange for 3240 lbs. of clover seed at $4 a bushel?

13. Find the total cost of.

2880 lbs. wheat at $87\frac{1}{2}$ cents a bushel.
7240 lbs. hay at $\frac{1}{2}$ a cent for 10 ounces.
2 cwt. of lard at 6 cents a lb.

Exercise XLVI.

1. Bought 84 dozen eggs, and lost $\frac{1}{7}$ of them; sold the remainder at 50 cents a dozen, and gained thereby $16.68; find the cost per dozen.

2. If 8 cents is the price of $\frac{2}{3}$ of a herring, what is the price of a barrel of 180 dozen?

3. Find the cost of feeding 42 cows for 20 days, giving each cow 20 lbs of hay and 15 lbs. of bran per day, when hay is $30 and bran $12 a ton.

4. If 41 pigs cost $205, what would a drove of 630 pigs be worth at the same rate?

5. Divide $650 between 2 boys, giving one 12 times as much as the other, and find the share of each.

6. If you can buy 680 acres of land for $30600, how many acres can you buy for $7425?

7. In 5462764 sq. feet, how many acres, rods, etc?

8. What will be the expense of making a railway, 146 miles long, at $15.33 a yard?

9. What is the cost of paving a floor whose length is 33 feet 2 inches, and breadth 18 feet, at 6 shillings (Stg.) per square yard? (Answer in dollars and cents).

10. Reduce 4533206 inches to miles, rods, etc.

11. A sack of potatoes weighs 178 lbs. If 6 such sacks cost £2, 4s., 6d., what will 44 lbs. of potatoes cost?

12. One hundred and fifty men had a piece of work to complete in 65 days; 20 of the men falling ill, how much longer was the work under contract?

13. If 6 horses require 45 bushels of oats to feed them for 3 weeks, how many bushels will feed 42 horses for 6 weeks?

Exercise XLVII.

1. Bought 500 doz. oranges at 3 cents each; lost $\frac{1}{10}$ of them by decay, and sold the rest at 6 for 25 cents; what did I gain?

2. Reduce 18 acres, 130 rods, 22 yds., 3 feet, 72 inches, to sq. feet.

3. Find the sum of the nine numbers that follow the number,—ninety thousand eight hundred and seventy-eight.

4. The product of 704 and 819 is how many times 91?

5. A man having bought a drove of cattle for $18130, sold 84 of them to a butcher at $51 each; the rest then stood him $43 each. How many did he buy?

6. What is the value of 96 bushels, 28 lbs. of rye at 96 cents a bushel?

7. How many cords of wood worth $3.25 a cord can be bought with the price of 75 lambs at $10 a head? What will be left in cash?

8. Find the total cost of:

31 reams of paper at 20 cents a quire.

45 doz. pencils at 19 cents a score.

A gross of pens at 3 for 5 cents.

9. John Shaw, of Mooreville, sold James Moore on May 1st, 1887:—3 lbs. coffee at 33 cents, 12 lbs. sugar at 11 cents, 4 gallons

molasses at 88 cents, 7 lbs. tea at 65 cents, 9 lbs. butter at 16 cents, 3 doz. nutmegs at 8 cents, 15 lbs. rice at 9 cents. He received in part payment 42 bushels apples at 45 cents a bag, and 2 chickens at 40 cents each, and the remainder in cash. How much cash did the merchant receive?

10. Find the value of $(68379 \times 29478) \div 987$.

11. A woman has 7 gallons of honey to put into jars, and finds that each jar will hold 1 pint 3 gills. How many jars will she require?

12. What will 1380 lbs. of wheat cost at 87 cents a bushel.

13. By selling a farm for \$3990, I lost as much as I would have gained, had I received \$5130 for it. How much did the farm cost me?

Exercise XLVIII.

1. Find the *prime* factors of: (*a*) 240; (*b*) 450; (*c*) 14700.

2. Of what number is each of the following the *prime* factors: (*a*) 2^4, 3^2, 13^2? (*b*) 2, 3^2, 11^2, 17^3?

3. Write out all the *odd* numbers between 2 and 46.

4. Write out all the *even* numbers between 7 and 81.

5. Arrange the following into groups of *composites* and *primes* respectively: 7, 21, 39, 40, 63, 79, 81, 84, 19, 13, 53, 99, 29, 41.

6. Write all the *pairs of factors* for: (*a*) 24. (*b*) 27. (*c*) 54.

7. Find the L.C.M. of 3, 20, 35, 45, 50, 63, and 70.

8. Find the L.C.M. of 7, 9, 11, 13, 15, and 21; divide the L.C.M. by each of the given numbers; and find the sum of the several quotients.

9. Find the number of bushels and gallons of strawberries which a gardener has, given that he can put the whole lot up into an *exact* number of 1-quart, 2-quart, 3-quart, 4-quart, 5-quart, or 7-quart baskets.

10. Find the H.C.F. of 6916, 7448, 9660.

11. Reduce (*a*) $\frac{364}{420}$; (*b*) $\frac{684}{855}$; and (*c*) $\frac{1573}{1694}$ to fractions in their *lowest terms*.

12. A boy has three boxes of 125, 135, and 145 marbles, respectively, which he wishes to put into an exact number of the *largest-sized* bags. How many bags will he require, and how many marbles will each bag contain?

13. What is the *least* number which will contain both 8 and 9 as factors? Write the *first 9 multiples* of that number?

Exercise XLIX.

1. Find the L.C.M. of 3, 9, 12, 15, 18, 21, 24 and 27.

2. Find the L.C.M. of 8, 16, 20, 21, 63, 90 and 105.

3. Find the L.C.M. of 7, 21, 42, 63, 84, 154, 161

4. Find the H.C.F. of 1836, 1482, and 1938.

5. Find the H.C.F. of 1702, 8214 and 8362.

6. Find the H.C.F. of 9153, 9234, and 9315.

7. Divide the L.C.M. of 1287 and 1386 by their G.C.M.

8. Add $\frac{2}{3}$, $\frac{14}{15}$, $\frac{17}{20}$ and $\frac{53}{60}$.

9. Subtract $\frac{13\frac{4}{7}}{1\frac{37}{42}}$ from $12\frac{17}{79}$.

10. Multiply together $8\frac{8}{17}$, $8\frac{11}{56}$, $\frac{35}{54}$ and 45.

11. Divide $13\frac{2}{7}$ by $2\frac{3}{14}$.

12. Find the value, in Canadian currency, of £1095, 864 shillings, 720 pence Sterling. (Note—£15 = \$73; 1s. = $24\frac{1}{3}$ cents; and 1d. = $2\frac{1}{30}$ cents).

13. Find the value of:

(*a*) $\frac{\frac{1}{8}+\frac{3}{5}+\frac{7}{12}}{3\frac{1}{4}\cdot 4\frac{1}{5}-2\frac{13}{60}}$; (*b*) $[\{(\frac{3}{4}+\frac{1}{5})-\frac{1}{20}\}\times\frac{4}{5}]\div 1\frac{1}{5}$; (*c*) Find the *intermediate* number between $\frac{4}{5}$ and $\frac{7}{12}$, having for its denominator 120.

Exercise L.

1. Add $\frac{2}{3}$, $\frac{4}{5}$, $\frac{5}{6}$, $\frac{8}{9}$, and $\frac{1}{90}$.

2. Add $1\frac{7}{10}$, $3\frac{7}{20}$, $2\frac{1}{25}$, and $\frac{1}{100}$.

3. Add $2\frac{3}{16}$, $\frac{5}{9}$, $1\frac{7}{12}$, $\frac{11}{72}$, and $\frac{1}{48}$.

4. Add $\frac{4}{7}$, $1\frac{5}{18}$, $3\frac{9}{14}$, $\frac{23}{84}$, and $1\frac{59}{252}$.

5. Add $1\frac{4}{5}$, $2\frac{5}{6}$, $3\frac{44}{45}$, and $\frac{7}{18}$.

6. Simplify: $1\frac{4}{15}+1\frac{4}{25}+5\frac{3}{20}+5\frac{27}{300}$.
7. Simplify: $4\frac{5}{18}+3\frac{6}{7}+1\frac{5}{36}+\frac{2}{21}$.
8. Simplify: $\frac{1}{4}+\frac{1}{3}+\frac{1}{5}+\frac{7}{24}$.
9. Simplify: $2\frac{3}{9}+\frac{8}{11}+5\frac{1}{3}+2\frac{7}{2}+\frac{68}{198}$.
10. Simplify: $1\frac{1}{2}+\frac{2}{3}+\frac{5}{6}+2\frac{4}{11}$.
11. Find the sum of $2\frac{5}{8}$, $1\frac{3}{11}$, $5\frac{1}{24}$, $\frac{7}{18}$.
12. What is $3\frac{5}{13}+2\frac{1}{7}+1\frac{6}{11}+\frac{1}{21}$?
13. Simplify: $\frac{1}{9}+\frac{1}{15}+\frac{1}{18}+4\frac{1}{6}$.

Exercise LI.

1. Subtract $6\frac{5}{21}$ from $\frac{66}{7}$.
2. Subtract $6\frac{4}{9}$ from $8\frac{3}{7}$.
3. Subtract $13\frac{7}{12}$ from $20\frac{11}{30}$.
4. Subtract $22\frac{5}{13}$ from $30\frac{7}{30}$.
5. Simplify: $45\frac{1}{60}-19\frac{2}{39}$.
6. Simplify: $4\frac{1}{21}-3\frac{9}{14}$.
7. Simplify: $5\frac{3}{16}-2\frac{7}{12}$.
8. Simplify: $14\frac{2}{9}-9\frac{5}{8}$.
9. Find the difference between $10\frac{1}{8}$ and $5\frac{3}{16}$.
10. What is $20\frac{1}{13}-13\frac{13}{20}$?
11. Find the difference between $30\frac{5}{16}$ and $9\frac{16}{45}$.
12. Simplify: $20\frac{6}{25}-14\frac{15}{22}$.
13. Subtract $10\frac{4}{9}$ from $13\frac{8}{21}$.

Exercise LII.

1. Multiply together $10\frac{1}{2}$, $\frac{8}{17}$, $2\frac{11}{20}$, and $2\frac{6}{7}$.
2. Multiply together $13\frac{4}{5}$, $\frac{17}{24}$, $2\frac{9}{23}$, and $\frac{4}{17}$.
3. Multiply together $\frac{13}{14}$, $\frac{17}{35}$, $\frac{17}{78}$, and $3\frac{3}{34}$.
4. Multiply together $\frac{14}{15}$, $\frac{23}{25}$, $\frac{45}{46}$, $\frac{19}{28}$, and $1\frac{1}{19}$.

5. Find the product of $9\frac{8}{17}$ and $2\frac{11}{54}$.
6. Find the product of $3\frac{16}{19}$ and $\frac{399}{84}$.
7. Find the product of $3\frac{9}{10}$ and $5\frac{3}{13}$.
8. Find the product of $5\frac{8}{11}$ and $4\frac{8}{9}$.
9. What is $10\frac{3}{16} \times 23\frac{1}{3} \times 1\frac{3}{5} \times \frac{4}{11}$?
10. Simplify: $1\frac{2}{9} \times \frac{5}{12} \times 8\frac{1}{10} \times 2\frac{1}{22}$.
11. Simplify: $14\frac{4}{15} \times 2\frac{8}{21} \times 7\frac{9}{13} \times 22\frac{3}{4}$.
12. Find the value of $7\frac{5}{6}$ times $7\frac{1}{5}$.
13. Find the product of $6\frac{1}{3}$, $\frac{5}{42}$, $\frac{9}{38}$ and $1\frac{2}{5}$.

Exercise LIII.

1. Divide $5\frac{1}{4}$ by $19\frac{3}{8}$.
2. Divide $1\frac{7}{8}$ by $3\frac{5}{12}$.
3. Divide $4\frac{9}{10}$ by $12\frac{5}{6}$.
4. Divide $8\frac{1}{8}$ by $\frac{5}{16}$.
5. Find the quotient of 9 divided by $6\frac{3}{13}$.
6. Find the quotient of $7\frac{3}{10}$ divided by $1\frac{4}{5}$.
7. Find the quotient of $702\frac{3}{4}$ divided by 6.
8. Find the quotient of 728 divided by $3\frac{1}{5}$.
9. What is the value of $2\frac{4}{4} \div 1\frac{1}{16}$?
10. Simplify: $\dfrac{5\frac{3}{16}}{29}$.
11. Simplify: $12\frac{3}{8} \div 3\frac{5}{24}$.
12. Simplify: $2\frac{4}{87} \div 1\frac{6}{29}$.
13. Simplify: $867\frac{1}{3} \div 9$.

ANSWERS.

PART I.

FIRST SECOND AND THIRD CLASSES.

ANSWERS.

FIRST CLASS.

Exercise I.

1. 3754.
2. 14105.
3. 15987.
4. 922.
5. 3920.
6. 14944.
7. 44319.
8. 61525.
9. 73311.
10. 797059.
11. 5390.
12. −1139.
13. 785.

Exercise II.

1. 894.
2. 59209.
3. 5322.
4. 6264.
5. 1815.
6. 6600.
7. 1209.
8. 12010.
9. 290.
10. 10893.
11. 3978.
12. 64152.
13. 1909.

Exercise III.

1. 115.
2. 204.
3. 617.
4. 289.
5. 258.
6. 102.
7. 108.
8. 76.
9. 1388.
10. 665.
11. 860.
12. 377.
13. 3065.

Exercise IV.

1. 84 apples.
2. 325 yards; 10 yards farther.
3. 367.
4. 91 cents.
5. 762.
6. Sum = 93586. Diff. = 777326.
7. 7 times.
8. 40 cents.
9. 3 miles.
10. 125.
11. $8.80.
12. 50 rats.
13. 41 cents.

Exercise V.

1. 3279.
2. 3333.
3. 254727.
4. 5031.
5. $6.75.
6. $1.75.
7. 16 marbles.
8. 900.
9. 20 more.
10. 108.
11. 935.
12. 229.
13. $124.97.

Exercise VI.

1. 9.
2. $32.
3. 3980.
4. 999.
5. 12950 pounds.

6. The seven ten-cent pieces. Three of the five-cent pieces. Two of the one-cent pieces.

7. 27 quarts.
8. $1.75.
9. $4.00.
10. 444: four hundred and forty-four.
11. 72720.
12. 56.
13. 530 cents.

Exercise VII.

1. 15.
2. 10 crows.
3. $8600.
4. 34 gallons.
5. 22 years old.
6. $13000.
7. 159.
8. 20 cents.
9. 123 pears.
10. $35 gain.
11. $19.60.
12. 51282.
13. 0.

Exercise VIII.

1. 99.
2. $34.
3. 3 dozen.
4. 270 sheep.
5. 200 feet.
6. 294 bushels.
7. $20.
8. Tim, by 129 points.
9. 1450 hogs.
10. 34 cents.
11. 99 patches.
12. 9.
13. 252.

Exercise IX.

1. 7.
2. $31.20.
3. $30.00.
4. $9.50.
5. 80.
6. $3.55.
7. $39.
8. (*a*) 421, (*b*) 31, (*c*) 173, (*d*) 687 = 1312 total.
9. 3 dozen.
10. 36 apples.
11. Sum = 630; and 630 taken 11 times = 6930.
12. 38 years old.
13. 10 years.

Exercise X.

1. $6.72.
2. 23 cows and 18 calves, or 41 in all.
3. 13 goats.
4. $2,500.
5. 13.
6. 2487 bushels.
7. $7.
8. 19740 cents.
9. 24609.
10. 6978.
11. 25 feet long.
12. Tom, 50, Sam, 44.
13. 18.

SECOND CLASS.

Exercise I.

1. 12944 ; 19416 ; 25888.
2. 3374 ; 5061 ; 6748.
3. 19608 ; 29412 ; 39216.
4. 24164 ; 30205.
5. 8064 ; 10080.
6. 34938 ; 43735.
7. 30792 ; 38490.
8. 34588 ; 43235.
9. 8644 ; 10805.
10. 28656 ; 35820.
11. 16556 ; 20695.
12. 25884 ; 32355.
13. 18512 ; 23140.

Exercise II.

1. 148020.
2. 63530.
3. 137950.
4. 323920.
5. 160985.
6. 312930
7. 143235.
8. 60840.
9. 235695.
10. 423845.
11. 106980.
12. 146085.
13. 40350.

Exercise III.

1. 592584.
2. 129642.
3. 470874.
4. 239202.
5. 444474.
6. 520374.
7. 72984.
8. 251022.
9. 425448.
10. 178026.
11. 77184.
12. 430116.
13. 182436.

Exercise IV.

1. 212842.
2. 501802.
3. 90048.
4. 207697.
5. 496356.
6. 292859.
7. 85148.
8. 607103.
9. 518553.
10. 279069.
11. 549353.
12. 151228.
13. 691348.

Exercise V.

1. 3509368.
2. 1735896.
3. 2534272.
4. 1608544.
5. 3335896.
6. 573584.
7. 678152.
8. 396968.
9. 103736.
10. 615896.
11. 691768.
12. 244864.
13. 175896.

Exercise VI.

1. 2222262.
2. 2151612.
3. 4258926.
4. 6415776
5. 2128239.
6. 3465621.
7. 8869284.
8. 1952856.
9. 6485481.
10. 531540
11. 737721.
12. 888444.
13. 371889.

Exercise VII.

1. 3313917.
2. 6452838.
3. 8862444.
4. 1898172.
5. 7281576.
6. 3600720.
7. 7743523.
8. 7107282.
9. 4384521.
10. 2690640
11. 8178444.
12. 2528676.
13. 6461874.

Exercise VIII.

1. 9865317.
2. 1341648.
3. 8407432.
4. 2386824.
5. 1448678.
6. 4256824.
7. 1338678.
8. 5212504.
9. 2416557.
10. 3616459.
11. 6541557.
12. 2386824.
13. 7877045.

Exercise IX.

1. 10161372.
2. 2566488.
3. 7138272.
4. 3436608.
5. 1441152.
6. 59530452.
7. 25931808.
8. 69219528.
9. 18923796.
10. 34391340.
11. 103766028.
12. 5398523772.
13. 1156610280.

Exercise X.

1. 91648.
2. 108192.
3. 11445928.
4. 63130063.
5. 14056344.
6. 11887680.
7. 33871024.
8. 1121536.
9. 13648648.
10. 19423890.
11. 2773130.
12. 4205625.
13. 652864.

Exercise XI.

1. 1268414.
2. 1286844.
3. 16143440.
4. 4670703.
5. 70132560.
6. 60447504.
7. 10892376.
8. 27076554.
9. 17180020.
10. 34449288.
11. 37982016.
12. 299391552.
13. 49369403.

Exercise XII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 9843843,	1.	8. 4475,	8.
2. 542468,	2.	9. 10153,	5.
3. 321845,	7.	10 7749,	15.
4. 48016,	2.	11. 3895,	0.
5. 2676,	56.	12. 13792,	9.
6. 36852,	5.	13. 77893,	25.
7. 202623,	0.		

Exercise XIII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 46006,	73.	11. 2018169,	29.
2. 562606,	38.	1009084,	77.
3. 319462,	17.	3587857,	2.
4. 340618,	63.	12. 31285,	19.
5. 315876,	9.	22346,	46.
6. 270830,	21.	67040,	4.
7. 14415,	37.	9776,	100.
8. 2039,	41.	13. 7684,	0.
9. 14236,	3.	1463,	26.
32031,	3.	975,	47.
21354,	3.	569,	20.
10. 91448,	37.		
102879,	37.		
411517,	13.		

Exercise XIV.

Quotient.	Remainder.	Quotient.	Remainder.
1. 5563,	56.	6. 529193,	78.
4945,	45.	7. 311216,	68.
4896,	0.	8. 368940,	87.
2. 251093,	8.	9. 6000,	0.
167395,	20.	10. 4082,	10.
74[illegible]	2.	11. 3317014,	21.
3. 326[illegible],	50.	12. 492896,	14.
4. 103195,	12.	13. 551887,	33
5. 8354,	0.		

Exercise XV.

Quotient.	Remainder.	Quotient.	Remainder.
1. 7402,	67.	8. 403111,	87.
2. 7308,	31.	9. 272040,	12.
3. 25913,	95.	10. 87064,	31.
4. 299761,	103.	11. 144312,	0.
5. 466306,	86.	12. 87482,	15.
6. 758257,	1.	13. 44742,	126.
7. 717859,	40.		

Exercise XVI.

Quotient.	Remainder.	Quotient.	Remainder.
1. 57617,	23.	8. 3545520,	4.
2. 65313,	29.	9. 16672,	1.
3. 38860,	67.	10. 9421,	126.
4. 107715,	10.	11. 534476,	54.
5. 26352,	58.	12. 211891,	28.
6. 76681,	0.	13. 75645,	90.
7. 642857,	85.		

Exercise XVII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 39017,	27.	8. 51934,	2.
2. 118622,	6.	9. 53249,	103.
3. 54218,	18.	10. 203290,	21.
4. 659322852,	6.	11. 13850,	14.
5. 827552,	1.	12. 2464121,	19.
6. 50020,	12.	13. 71521,	11.
7. 164400,	31.		

Exercise XVIII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 6471216,	0.	8. 2996008,	2.
2. 75229,	26.	9. 1173268,	5.
3. 2365816,	5.	10. 7553932,	2.
4. 52852,	52.	11. 875066,	65.
5. 1432085,	11.	12. 526183,	1.
6. 1734859,	25.	13. 376228,	49.
7. 1204464,	52.		

Exercise XIX.

Quotient.	Remainder.	Quotient.	Remainder.
1. 821375,	0.	8. 64954,	0.
2. 210604,	0.	9. 64732,	0.
3. 3852224,	0.	10. 82641,	0.
4. 92841,	0.	11. 246071,	0.
5. 496283,	0.	12. 94716,	0.
6. 720684,	0.	13. 100020,	0.
7. 64732,	0.		

Exercise XX.

Quotient.	Remainder.	Quotient.	Remainder.
1. 417343,	7.	8. 18377625,	16.
2. 1778073,	12.	9. 1585658,	24.
3. 1420169,	3.	10. 2752426,	11.
4. 637170,	31.	11. 47166,	25.
5. 24691,	1.	12. 2567866,	26.
6. 25665243,	8.	13. 909814,	57.
7. 32716027,	7.		

Exercise XXI.

Quotient.	Remainder.	Quotient.	Remainder.
1. 144001,	11.	8. 137279,	70.
2. 400135,	14.	9. 919562,	59.
3. 1272824,	28.	10. 51515,	100.
4. 6515789,	37.	11. 140295,	141.
5. 36365,	179.	12. 120837,	191.
6. 131810,	104.	13. 187474,	431.
7. 53177,	461.		

Exercise XXII.

1. 11450926081.
2. 4763, 763, and 63.
3. Prod. 679995, Quot. 28333, Rem. 3.
4. (6790095 + 6799950) = 13590045.

5. 0.	8. 4337801976.	11. 76560696.
6. 36000000.	9. 346290.	12. 12544.
7. 1.	10. 117809316.	13. 53703736.

Exercise XXIII.

1. 846790.
2. 23796.
3. 1076.
4. Quot. 1140, and Rem. 84.
5. 6272.
6. 432.
7. 137616.
8. 166842.
9. 19965.
10. 386.
11. 65727.
12. 1000.
13. 37015056.

Exercise XXIV.

1. 4288.
2. 30030.
3. 243.
4. Q. 4379334, Rem. 5.
5. 487204.
6. Q. 181, Rem. 2.
7. Q. 1714, Rem. 2.
8. 2085136.
9. 16188894.
10. 1296.
11. 116907.
12. 2823529444.
13. 250702.

Exercise XXV.

1. 535210.
2. 194481.
3. 141408.
4. 60339852.
5. 29887.
6. 0.
7. 34622368.
8. 16393.
9. 20364708.
10. 14211450.
11. 4623992.
12. 640715347.
13. 1016760240.

Exercise XXVI.

1. 284089.
2. 226800.
3. 6085176840.
4. 119377476.
5. 64831244095.
6. 8532.
7. 2052892179.
8. 29441476.
9. 426409.
10. 3390859584.
11. 92413568016.
12. 28644.
13. 20041020.

Exercise XXVII.

1. 19006659.
2. 5206152.
3. 3111696.
4. 5475883.
5. 93799225.
6. 9459328.
7. 8576.
8. 99359.
9. 1411344.
10. 725271.
11. 38432240.
12. 12777954.
13. 9683960565.

Exercise XXVIII.

1. 50625.
2. 8512357.
3. 555696.
4. 697.
5. 425663.
6. 9370.
7. 54717954.
8. 3774.
9. 1045.
10. 86503.
11. 149.
12. 339889.
13. 6084.

Exercise XXIX.

1. 1530816.
2. 9999.
3. 4336248.
4. 9185868.
5. 4841284.
6. 14112.
7. 52023040.
8. 1567088363556.
9. 2936.
10. 28536768.
11. 1907082.
12. 9058.
13. 55593208.

Exercise XXX.

1. 35711.
2. 34771072.
3. 2221.
4. 9999.
5. 27888961.
6. 661146642.
7. 2231481.
8. 12312559.
9. 40698996.
10. 1477.
11. 105266.
12. 1070.
13. 61556810.

Exercise XXXI.

1. 4630206.
2. 11737752.
3. 1224492412.
4. 100761444.
5. 42150827803.
6. 19238673250.
7. 45504.
8. 412780489.
9. 1.
10. 41242084.
11. 51380224.
12. 384048.
13. 70227.

Exercise XXXII.

1. 725760.
2. 43545600.
3. 341397504.
4. 783820800.
5. 381024000.
6. 0.
7. 12933043200.
8. 4004453376.
9. 100590336.
10. 90512634401280.
11. 661974884915097 6.
12. 13830292869120.
13. 23298085122481.

Exercise XXXIII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 7251,	161.	8. 465,	481.
2. 300,	214.	9. 27,	472.
3. 114389,	655.	10. 482,	276.
4. 676,	502.	11. 2,	2846.
5. 132,	2879.	12. 337,	4536.
6. 292013213,	0.	13. 441,	0.
7. 2787,	432.		

Exercise XXXIV.

1. 905.		8. Q. 179,	Rem. 15.
2. 4474800.		9. Q. 11,	Rem. 0
3. 384120.		10. Q. 987,	Rem. 0.
4. 7656250000.		11. 4000. Four thousand.	
5. 540720.		12. 409600.	
6. Q. 356,	Rem. 480.	13. 1769880.	
7. 58112128.			

Exercise XXXV.

1. 4179.		8. Q. 7400,	Rem. 0.
2. 4179.		9. Q. 4625,	Rem. 0.
3. Q. 36,	Rem. 28.	10. Q. 4625,	Rem. 0.
4. Q. 100,	Rem. 21.	11. 638.	
5. Q. 96,	Rem. 14.	12. Q. 5,	Rem. 375.
6. Q. 846,	Rem. 2.	13. Q. 84,	Rem. 0.
7. Q. 7400,	Rem. 0.		

Exercise XXXVI.

Quotient.	Remainder.	Quotient.	Remainder.
1. 1858530,	0.	8. 942362,	2.
2. 4978381,	7.	9. 3020495,	1.
3. 405154,	3.	10. 1059558,	7.
4. 5267005,	0.	11. 153370,	25.
5. 635747,	8.	12. 285852,	0.
6. 2922355,	4.	13. 248917,	20.
7. 16043480,	0.		

Exercise XXXVII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 48554,	27.	8. 64092,	16.
2. 185923,	26.	9. 65365,	79.
3. 10969,	47.	10. 107548,	69.
4. 122320,	30.	11. 42586,	77.
5. 30604,	0.	12. 95643,	70.
6. 61126,	13.	13. 1010511,	11.
7. 516136,	71.		

Exercise XXXVIII.

Quotient.	Remainder.	Quotient.	Remainder
1. 5531508,	0.	8. 1300886,	0.
2. 17641,	10.	9. 303370,	0.
3. 159256,	29.	10. 73263,	20.
4. 40314,	94.	11. 14932,	17.
5. 511664,	25.	12. 1473761,	29.
6. 340624,	13.	13. 43231,	0.
7. 662991,	10.		

Exercise XXXIX.

1. 2895487110.
2. 432568386800.
3. 48756366663674.
4. 204156229823.
5. 68710[illegible]0404.
6. 6070540788.
7. 6952049676.
8. 627797385540.
9. 2240015076756892.
10. 410434286910.
11. 136392592.
12. 42916621885924.
13. 183478853167.

Exercise XL.

1. 5903322673239.
2. 354745872.
3. 372990016.
4. 419067188440.
5. 28795699513879.
6. 185738603076738.
7. 33092477328.
9. 2952728040.
8. 893395000.
10. 19153891608.
11. 91127418.
12. 348753392.
13. 45080187334.

Exercise XLI.

1. 26991937287.
2. 226198688334.
3. 304027838880.
4. 91316467600370352.
5. 201567589160.
6. 10052451302944.
7. 304027838880.
8. 47150560.
9. 3388146771660.
10. 662532486624.
11. 501278276876.
12. 6901032768.
13. 2602480320.

Exercise XLII.

Quotient.	Remainder.	Quotient.	Remainder.
1. 2406,	59.	8. 987,	0.
2. 30079,	0.	9. 8704,	0.
3. 2683298199,	96.	10. 9989,	179.
4. 2450935884,	71.	11. 89769,	0.
5. 600403,	0.	12. 1106610667,	3916.
6. 92943,	22970.	13. 7698,	0.
7. 8794000,	0.		

Exercise XLIII.

Quotient.	Remainder.	Quotient	Remainder.
1. 90366,	83660.	8. 4831,	6723.
2. 712981,	8.	9. 13076,	55.
3. 5263,	2686.	10. 4065502,	18444.
4. 479,	0.	11. 2042225,	87.
5. 977623768356,	50.	12. 144108,	234.
6. 117042881,	124.	13. 29370000,	0.
7. 4590064,	0.		

Exercise XLIV.

Quotient.	Remainder.	Quotient.	Remainder.
1. 864795,	0.	8. 1701790,	281.
2. 9760,	0.	9. 56665,	63.
3. 2715,	0.	10. 90809,	0.
4. 594,	101.	11. 79000,	0.
5. 59835,	21339.	12. 420597,	0.
6. 35700,	1.	13. 37169,	1857.
7. 337863,	79.		

Exercise XLV.

Quotient.	Remainder.	Quotient.	Remainder.
1. 3754394,	16.	8. 456654,	0.
2. 480440,	60.	9. 610821,	13.
3. 402722,	37.	10. 210045,	30.
4. 367770,	2.	11. 34706,	0.
5. 120074,	5.	12. 22546,	50.
6. 1066353,	0.	13. 6849729,	27.
7. 1103312,	39.		

Exercise XLVI.

1. 116581345962900.
2. Q. 4567, Rem. 0.
3. Q. 35045035, Rem. 0.
4. Q. 6600, Rem. 0.
5. Q. 352000, Rem. 0.
6. 554768.
7. 111.
8. 1854.
9. Q. 4071348, Rem. 0.
10. 15460624.
11. 119369.
12. 37088100.
13. 24511.

Exercise XLVII.

1. Q. 435, Rem. 337.
2. 3902.
3. 105.
4. 43148322=product.
5. Q. 2380, Rem. 389.
6. 108.
7. 41440.
8. Q. 651, Rem. 448.
9. 402730.
10. Q. 208474, Rem. 37710.
11. Q. 2796, Rem. 7596.
12. 111.
13. Q. 10982532, Rem. 0.

Exercise XLVIII.

1. 2154111.
2. 240869047108 98.
3. 543072641726 79.
4. 56689665.
5. 29139.
6. 3141309425.
7. Q. 796124, Rem. 0.
8. 334953.
9. 285.
10. 71452731.
11. 62736602436.
12. 286236704560081.
13. 1610219670.

Exercise XLIX.

1. 87 cents.
2. Q. 232284, Rem. 2.
3. 20736795.
4. 104.
5. 13200 steps.
6. 201 bushels ; $281.40
7. $51.06.
8. Q. 7251, Rem. 161.
9. $26.35.
10. 110 bottles.
11. 909.
12. Q. 10024366, Rem. 94.
13. 9900 times, and 100 remains.

Exercise L.

1. 2052 sheep.
2. 34 lbs.
3. 54 sheep.
4. 8112 dozen.
5. $127.26.
6. Product 3346685104 ; Quot. 33885 and 66964 over.
7. $193.69.
8. 98 hogs.
9. 106.
10. 13 nuts.
11. $10.
12. 987.
13. 54.

Exercise LI.

1. 204120 ; 28866 ; 164637.
2. Q. 785, Rem. 993.
3. $150.75.
4. $576 ; 24 cents a quire.
5. 1280.
6. Q. 1107, Rem. 17850.
7. $231.
8. 2501100121.
9. 1001.
10. 41.
11. 36.
12. $39.26.
13. $25,000.

Exercise LII.

1. $672.
2. $333.84.
3. $180.
4. 162854.
5. $210.
6. 40997992.
7. 45 pair.
8. $7.60.
9. 332 yards.
10. 707 dozen.
11. $128.04.
12. 189000000.
13. 2615 miles.

Exercise LIII.

1. 888.
2. $(2799)^2 = 7834401$.
3. \$24.08.
4. 100.
5. 10 cents.
6. Q. 21659971776, and 160 over.
7. Sum 1904791.
8. Sum 9380177125.
9. 24 dozen and 3 peaches.
10. 6237.
11. \$15.
12. 182 lbs.
13. 4020.

Exercise LIV.

1. Q. 9816, Rem. 161.
2. Sum of squares = 496109.
3. 6297 times.
4. \$89.10.
5. 6315.
6. Q. 1350, Rem. 128.
7. 18400.
8. Eight hundred and ninety-eight thousand, nine hundred and ninety-nine.
9. 230932 sum.
10. Q. 3029, Rem. 0.
11. \$60.
12. 12600 yards.
13. 17780.

Exercise LV.

1. 33029.
2. 4922 sum; 4864 difference; 141897 product; 168 quotient, and 21 remainder.
3. \$249.60.
4. Q. 1635, Rem. 100.
5. \$19.28.
6. 2970478560, Product; Q. 83720; Rem. 0.
7. 61440.
8. 5450 and 3020.
9. 45140.
10. 10560.
11. $(3597 - 3488) = 109$.
12. \$19.
13. (*a*) \$46.44; (*b*) Q. 43.

Exercise LVI.

1. (*a*) Q. 1114435, Rem. 4.
   (*b*) Q. 1340, Rem. 9.
   (*c*) Q. 19988141, Rem. 0.
2. 300 feet, or 100 yards.
3. \$839.00.
4. \$202.50.
5. (*a*) Q. 48258, Rem. 15.
   (*b*) P. 421797056.
   (*c*) Q. 9700, Rem. 58.
6. \$90; \$15,390.
7. 18309; 4882613.
8. $70604 \times 5005 = 353373020$.
9. \$86.25.
10. $(13364 \times 1049) = 14018836$.
11. \$1540.
12. 80 days.
13. \$54.19.

Exercise LVII.

1. $10.03.
2. Q. 407090, Rem. 0.
3. Q. 6135451, Rem. 0.
4. 35201.
5. $13.01.
6. (*a*) 1824186, (*b*) 79228058, (*c*) 946065750 = 1027117994, sum.
7. 1666 days.
8. 40 dozen.
9. 19 cents.
10. Q. 3902.
11. 1428574.
12. 250 pigs.
13. 672.30.

Exercise LVIII.

1. $3.50.
2. 97 hills.
3. 81.
4. 52787.
5. 1542.
6. 3225600.
7. $1.00.
8. 576 pennies.
9. 203.
10. 11 times.
11. $71.33.
12. $96.32.
13. 180 yards.

Exercise LIX.

1. 1860.
2. $34.30.
3. $13.50.
4. Q. 408445, Rem. 0.
5. $184.86.
6. $57.23.
7. Q. 2776525, Rem. 5.
8. 27.
9. 2061.
10. 734.
11. $19.
12. (*a*) Q. 4703, Rem. 11.
    (*b*) Q. 1078, Rem. 201.
13. 16 seconds.

Exercise LX.

1. (95493 × 94119)=8987705667; and 8987705667 ÷ 138=Quotient 65128301, Remainder 129.
2. 20 times.
3. 41 pair.
4. 1547 lbs.; and $495.04.
5. $95.
6. Q. 53550, Rem. 0.
7. 511.
8. $20 a head.
9. Q. 623, Rem. 1235.
10. $6.60.
11. 5623009.
12. Cannot add these. Why?
13. 99 fish.

Exercise LXI.

1. 36120.
2. $504.
3. $3288.60.
4. 98700604686.
5. 2220.
6. 16557726 and 30 over.
7. 50 lambs.
8. No difference. (Identities ; each 174300).
9. 6639240.
10. 281644.
11. 34 dresses ; 1 yard more.
12. $30 a head.
13. $65.

Exercise LXII.

1. $288.
2. (*a*) 198 ; (*b*) 5053212.
3. $2.75.
4. 19.
5. $394.
6. Twenty millions twenty thousand and twenty ; and 7707.
7. 13075.
8. 2602480320.
9. $960.
10. 436305.
11. 99 days.
12. $3626.
13. $24 gain.

THIRD CLASS.

Exercise I.

1. 2082973½ feet.
2. 423294 inches.
3. 1 acre, 92 sq. rods, 15 sq. yards.
4. 370242 inches.
5. 4729334 sq. feet.
6. 1805170185 sq. feet.
7. 25 sq. rods, 7 sq. yds., 4 sq. ft., 108 sq. inches.
8. 19 acres, 157 sq. rods, 8 sq. yds., 4 sq. ft., 108 sq. inches.
9. 7 ac. 2 sq. rods, 18 sq. yds., 2 sq. feet.
10. 207 rods, 2 yds., 1 ft., 10 inches.
11. 142704 inches.
12. $6750.
13. 33 miles, 725 yards.

Exercise II.

1. 7 miles 300 rods, 1 foot.
2. 7 miles, 144 rods, 2 yards.
3. 3 miles, 115 rods, 1 foot, 6 inches.
4. 2 acres, 6 sq. rods, 9 sq. yds., 4 sq. ft., 72 sq. inches.
5. 51 lbs.. 10 dwts.
6. 3 tons, 9 cwt., 3 qrs., 6 lbs., or 3 tons 981 lbs.
7. 11 miles, 124 rods, 4 yds., 2 ft., 9 inches.
8. 41296.
9. 15 miles, 188 rods, 1 ft., 5 inches.
10. 13 miles, 30 rods, 2 yds.
11. 3 miles, 262 rods, 5 yds.
12. 4. miles, 96 rods, 3 yds, 2 ft., 3 inches.
13. 16 miles, 194 rods, 3 yds, 1 foot.

Exercise III.

1. 201 rods, 1 yd., 1 ft., 6 inches.
2. 12 sq. rods, 1 sq. yard, 7 sq. ft., 64 sq. inches.
3. 14 acres, 32 sq. rods, 13 sq. yds.
4. 103 sq. rods, 11 sq. yds., 36 sq. inches.

5. 2 acres, 42 sq. rods, 18 sq. yds., 4 sq. ft., 72 sq. inches.
6. 10 acres. 158 sq. rods, 9 sq. yds., 1 sq. ft., 28 sq. inches.
7. 18 sq. rods, 28 sq. yds., 1 sq. ft., 77 sq. inches.
8. 53 sq. rods, 28 sq. yds., 32 sq. inches.
9. 1 mile, 5 fur., 4 yds.
10. 1 fur,. 35 per., 4 yds., 1 ft. 6 inches.
11. 36 miles, 247 rods, 2 yds., 1 ft., 6 inches.
12. 8703 feet.
13. 258 acres, 82 sq. per., 29 sq. yds., 4 sq. ft., 72 sq. inches.

Exercise IV.

1. 16 tons, 450 lbs.
2. 44 lbs., 10 ozs., 15 dwts., $11\frac{1}{2}$ grs.
3. 15 acres, 105 sq. rods, 4 sq. yds., 3 sq. ft., 95 in.
4. 89 miles, 135 rods, 4 yds , 1 ft., 6 in.
5. 22 acres, 149 sq. rods, 4 sq. yards.
6. 60 tons, 1585 lbs., 8 ozs.
7. 27 tons, 1338 lbs., 12 ozs.
8. 253 cubic yds., 3 cubic ft., 214 cubic in.
9. £30.
10. 1 acre, 40 sq. rods, 2 sq. yds., 4 sq. ft., 45 sq. inches.
11. $138.60.
12. $385.44.
13. 5 miles, 269 rods, 15 feet.

Exercise V.

1. $(32130)^2 = 1032336900$.
2. 31527.
3. Q. 2721, Rem. 0.
4. 5687136.
5. 452371.
6. 280 apples.
7. 71358296.
8. 16638241.
9. $14.00.
10. Fourteen thousand and three.
11. 973.
12. $64.40.
13. 17 tons, 708 lbs., 2 ounces.

Exercise VI.

1. 1468271.
2. 1328 feet.
3. $24.
4. $54.00.
5. $969
6. $14.20.
7. $62.60.
8. $286.80.
9. 75.20.
10. 7 tons, 1000 lbs.
11. $6251.
12. 6840 lbs.
13. $3129.28.

Exercise VII.

1. $22.68.
2. 1 ton, 580 lbs.
3. 587 rods, 8 ft., 3 inches.
4. $7.70.
5. $5.39.
6. $221.70.
7. $137.40.
8. $4.50.
9. 17 tons, 1000 lbs.
10. $1.70.
11. $34.05.
12. $78.75.
13. $275.30.

Exercise VIII.

1. $12.76½.
2. $14.62½.
3. $37.50.
4. $90.00
5. $56.12.
6. 3800 men.
7. 3 pints.
8. 14 tons, 800 lbs.
9. $285.20.
10. 8 cents.
11. $1120.
12. $72.99.
13. $900.00.

Exercise IX.

1. $33.95.
2. $165.12.
3. $7.87½.
4. $709.83.
5. $199.07.
6. $3015.68.
7. 62 cents.
8. 17 cwt., 40 lbs.
9. 70 lbs.
10. $720.00.
11. $1357.36.
12. 400 yds.
13. $450.

Exercise X.

1. $79.21.
2. 25.91\frac{13}{16}$.
3. $77.625.
4. 270 bush., hemp seed.
5. $136.00.
6. 1980 lbs.
7. $20.79.
8. 3672.
9. 6941 lbs.
10. 2514 lbs.
11. $\frac{11}{24}$ of a cent.
12. $94.71.
13. $18.36.

Exercise XI.

1. 85 cents.
2. $21.28.
3. $9.31.
4. $20.00.
5. $46.25.
6. $975.12.
7. $3,500,000.00.
8. (*a*) $450; (*b*) $675.
9. 5 cents.
10. $27.54.
11. $47.08.
12. $91.05.
13. 75 cents.

Exercise XII.

1. 15 cents.
2. $16.06.
3. 20 yards.
4. 38.31\frac{19}{58}$.
5. $161.50.
6. $975.12.
7. $22.50.
8. $191.50.
9. $67.65.
10. 46.54\frac{1}{2}$.
11. $450.31.
12. $3693.27.
13. $862.53.

Exercise XIII.

1. $64.61.
2. $50.28.
3. $18.51.
4. $25.53.
5. $22.29.
6. $38.87.
7. $22.48.
8. $30.08.
9. $65.00.
10. $25.21.
11. $67.32.
12. $82.85.
13. $654.50.

Exercise XIV.

1. $91.83.
2. 145 pairs.
3. $544.32.
4. $481.70.
5. $51.12.
6. $32.94.
7. $55.16.
8. 269 tons, 1000 lbs.
9. $374.40.
10. $103.93.
11. $3.15.
12. 3687 apples.
13. $110.20.

Exercise XV.

1. $5.86.
2. 392.
3. $117.75.
4. $74.10.
5. $35.78.
6. $6.55.
7. $73.45.
8. $26.63.
9. $9.25.
10. $46.48.
11. $73.18.
12. $24.68.
13. $254.75.

Exercise XVI.

1. $28.96.
2. $23.49.
3. $768.58.
4. $3.73.
5. $6.40.
6. 109 sheep.
7. $196.55.
8. $9.80.
9. $19.67.
10. $69.81.
11. $98.47.
12. $4.80.
13. $10.08.

Exercise XVII.

1. $70.02.
2. 324 dozen.
3. $100.46.
4. $56.37.
5. $56.01.
6. $273.
7. $41.36.
8. $26.96.
9. $208.40.
10. $30.00.
11. $40.50.
12. $97.20.
13. $5.63.

Exercise XVIII.

1. $20.89.
2. $35.86.
3. 36 5-cent pieces.
4. $27.45.
5. $2625.
6. 53 yds.
7. $78.00.
8. $10.00.
9. 208 lbs., 8 ozs.
10. $87.30.
11. $4.48.
12. $49.53.
13. $637.

Exercise XIX.

1. $231.44.
2. $8.00.
3. $48.97.
4. $53.04.
5. $60.00.
6. $80.68.
7. $88.64.
8. $6.00.
9. $52.04.
10. $133.06.
11. $37.44.
12. $76.09.
13. 48 cents.

Exercise XX.

1. $123.55.
2. $207.45.
3. $113.12.
4. $37.38.
5. $35.45.
6. $64.25.
7. $7988.69.
8. 55 cents a lb.
9. $7.07.
10. $16.20.
11. $139.43.
12. $13.20.
13. $\frac{5}{512}$.

Exercise XXI.

1. $163.88.
2. $155.79.
3. $160.00.
4. $94.59.
5. $1226.67.
6. $584.06.
7. 27 hats.
8. 3 cents.
9. 65 lbs.
10. 72 cents.
11. 65 dozen.
12. $14.19.
13. $39.32.

Exercise XXII.

1. $120.
2. $1005.
3. 250 miles.
4. $58.32.
5. $20.
6. $583.68.
7. 3566056.
8. $82.
9. $3.90.
10. 519 ponies.
11. 35 cords.
12. 2706.87\frac{1}{2}$.
13. 3 hrs., 20 minutes.

Exercise XXIII.

1. The boys by $52.
2. 1375023660.
3. 7706307420.
4. 12764.
5. $55.44.
6. 16 tons, 1600 lbs.
7. (*a*) $12.20 ; (*b*) $17.08 ; (*c*) $58.56.
8. $160.
9. (*a*) Q. 83448, Rem. 95.
   (*b*) Q. 206, Rem. 0.
   (*c*) Q. 225, Rem. 0.
10. 1.
11. $220.16.
12. $30.72.
13. Q. 1411262913333, Rem. 125.

Exercise XXIV.

1. 36 and 6.
2. $36.36.
3. 6 cents.
4. 3375 tons.
5. 69988069989.
6. 111773.
7. 75 cents.
8. 0.
9. $371.
10. Theory.
11. 336.
12. 90 yards.
13. 789.

Exercise XXV.

1. $42.
2. $40.
3. $15.27.
4. $720.
5. $14, first.
   $29, second.
   $6, third.
6. 1298460 L.C.M.
7. $237.60.
8. 1352 yards.
9. $8004.00.
10. $25000.00.
11. $28.20.
12. 576 yards.
13. $140.

Exercise XXVI.

$640.
2. 600 days.
3. $698.25.
4. (*a*) Digging post-holes ;
   (*b*) $29.12.
5. $101.00.
6. $3253.75
7. $66.00.
8. $15.00.
9. $.45 gain.
10. 126 doz. and 8 apples.
11. A $105 ; B $72.
12. First $1.85 ; second $1.65 , third $1.50.
13. $12000.00.

Exercise XXVII.

1. $360.
2. $225.00.
3. $100.
4. $423.50.
5. 99 acres, 20 sq. rods.
6. 2061.
7. (*a*) $76.65 ; (*b*) 12 lbs., 8 ozs.
8. $70.65.
9. $15000.00.
10. $58\frac{1}{2}$.
    $71\frac{1}{2}$.
11. $333.36.
12. $56.25.
13. (*a*) 2100.00 ; (*b*) 12 sh., 1d.

Exercise XXVIII.

1. $126.63.
2. 3 miles per hour.
3. $70 gain.
4. $225.
5. 78 miles, 232 rods.
6. $33.30.
7. $5425.
8. $486.78.
9. 6.
10. $2^3 \times 3^2 \times 5 \times 7$; $2 \times 3 \times 5 \times 7 \times 11 \times 13$; $2^4 \times 3^4$; $2^3 \times 3^2 \times 7 \times 11$.
11. 26 gallons, 1 quart ; 20 barrels.
12. 25 cents per lb.
13. A $3.00 ; B $9.50 ; C $12.50.

Exercise XXIX.

1. 2052.
2. 1260.
3. 6930.
4. 30240.
5. 29.
6. 131.
7. 1221.
8. 454.
9. $\frac{13}{14}$; $\frac{8}{9}$.
10. $\frac{4}{5}$; $\frac{3}{7}$.
11. $\frac{8}{9}$; $\frac{23}{25}$.
12. $\frac{6}{17}$; $\frac{17}{401}$.
13. $\frac{21}{22}$; $\frac{55}{67}$.

Exercise XXX.

1. 18.
2. $\frac{11}{64}$.
3. $4\frac{11}{120}$.
4. 22.
5. (*a*) $\frac{16}{119}$; (*b*) $\frac{40}{63}$.
6. (*a*) 5 ; (*b*) $\frac{101}{117}$; (*c*) 1.
7. 3.
8. 5776.
9. 20.
10. 13.
11. $\frac{24}{25}$.
12. 453492 ; $\frac{3415}{4534927}$.
13. $1\frac{1}{5}$; $\frac{3}{64}$.

Exercise XXXI.

1. 69088 ounces.
2. 1 mile, 94 rods, 3 yds.
3. $4.77.
4. 46 acres, 142 sq. rods.
5. By steamboat, by 104 rods.
6. 11 gallons, 2 quarts.
7. 61 acres, 40 sq. rods.
8. 18 gallons, 2 quarts.
9. 21 miles, 165 rods, 4 yards, 1 foot, 6 inches.
10. 23 bush., 2 pks., 1 gal., 2 qts.
11. 1628 parcels.
12. 12 days.
13. 122 posts $=(121+1)$.

Exercise XXXII.

1. Q. 216, Rem. 0.
2. 2^7 ; $2^2\times3^4$; $2^2\times3^2\times7$; $2^2\times5\times43$; $3^2\times11^2$; $2^2\times3^2\times5\times7$.
3. 672 ounces.
4. 79020 inches.
5. $330.00.
6. $24,750.
7. $2.25.
8. $17.50.
9. $2.16.
10. 2249775.
11. $700 gain.
12. $371.10.
13. $15.00 a ton.

Exercise XXXIII.

1. 20 acres, 97 sq. rods, 15 sq. yards, 3 sq. feet, 3 sq. inches.
2. 2193 lbs., 12 ozs.
3. $400.00.
4. 61 bushels, $34\frac{4}{5}$ lbs.
5. $\frac{5}{8}$ of a ton, or $1666\frac{2}{3}$ lbs.
6. 22680.
7. 13.
8. $39.12.
9. 20 barrels.
10. $4080.00.
11. 45 pairs.
12. A $16 ; B $15.
13. 37 tons, 1025 lbs.

Exercise XXXIV.

1. 1.
2. $70.
3. $\frac{5}{64}$.
4. $.20.
5. 38 acres.
6. 1440.
7. $121.
8. $29.20.
9. 30 hours.
10. $2.50.
11. 36.
12. $\frac{1}{3}$.
13. A $350 ; B $420 ; C $560.

Exercise XXXV.

1. $752.
2. 19 acres, 29 sq. yards, 5 sq. feet, 90 sq. inches.
3. $47.52 gain.
4. $5760.
5. $147.
6. $21.65.
7. $4.23.
8. 20 cords
9. $1313840009\frac{601}{6111}$ times.
10. 36 tons.
11. $117.
12. $545.75.
13. 1185 bushels, 30 lbs.

Exercise XXXVI.

1. $7.93.
2. 3665 lbs.
3. $3.
4. $94.53.
5. 315,462,206,805,518.
6. $.98.
7. 871.
8. (*a*) $1885.68; (*b*) $558.72.
9. $205.
10. Wood, $229.50 / Coal, $210.00 } Coal by $19.50.
11. 73 miles, 240 rods.
12. $1747.20.
13. 60 cents.

Exercise XXXVII.

1. $2160.
2. $52.50.
3. $4.93.
4. $60.13.
5. 60 tons, 1585 lbs., 8 ozs.
6. 1760.
7. 9375 bags.
8. $27.50.
9. $5.00.
10. $8.40.
11. 150.
12. 4 bushels, 5 qts.
13. $4.06.

Exercise XXXVIII.

1. 96 cords.
2. $864.
3. $451.
4. 240 lbs., 10 ozs.
5. 1,493,284.
6. $46.80.
7. $403.20.
8. $311.04.
9. $20.
10. 24 acres, 28 rods, 10 yds.
11. 568 times.
12. $747.05.
13. $167.87.

Exercise XXXIX.

1. $5906.25.
2. $30.72.
3. 16 days.
4. $25.20 gain.
5. 240 dozen.
6. $1512.
7. 9860.
8. 421 lbs., 1 ounce.
9. $52.10.
10. 28 dozen.
11. $4.80.
12. $315.
13. $46.13.

Exercise XL.

1. $35.28.
2. $567.00.
3. $500.00.
4. 13 hrs., 42$\frac{6}{7}$ minutes.
5. $1314.
6. $434.24.
7. 2898 acres, 127 rods, 15 yds., 1 foot, 18 inches.
8. 31 cents.
9. $5.25.
10. 806 yds., 1 foot, 2 inches.
11. 14322420 inches.
12. 720 fathoms.
13. (*a*) 80 rods ; (*b*) 177120.

Exercise XLI.

1. 1600 rods.
2. 400 turkeys.
3. $159.46.
4. $518 gain.
5. $8.25.
6. $764.73.
7. 7684 and 978.
8. 24511.
9. 13 bushels, 32 lbs.
10. $44,000.00.
11. $11,088.00.
12. $29.70.
13. $210.68.

Exercise XLII.

1. $67.50.
2. $1710.50.
3. 142704 inches.
4. (*a*) 116200 ; (*b*) 1 mile, 266 rods, 4 yds., 2 ft., 4 inches.
5. 1500 fathoms.
6. 13 miles, 115 rods, 4 yds., 1 ft.
7. 3 days, 23 hours, 30 minutes.
8. 480.
9. $260.19.
10. Q. 4032.
11. $26.50.
12. 13 days.
13. Q. 23872, Rem. 73.

Exercise XLIII.

1. 14,322,708 sq. inches.
2. 11 acres, 123 rods, 17 yds., 7 feet, 108 inches.
3. $40.00 gain.
4. $18.72.
5. $14.67.
6. 54 lbs.
7. 259$\frac{7}{9}$ times.
8. 18 hrs, 20 minutes, 24 sec.
9. $109,800.00.
10. 40 chains.
11. $550.00.
12. £60 (Stg.)
13. 921 bushels.

Exercise XLIV.

1. 188 times.
2. 1280 lbs.
3. 2nd day ; 8 cents more.
4. $17.70.
5. $1512.00.
6. 5 cents ; $1.20.
7. $19.98.
8. $76.80.
9. $450.00.
10. 12 bushels, 30 lbs.
11. $1.50.
12. 16 miles.
13. 65 bushels.

Exercise XLV.

1. 61 acres, 96 rods, 26 yds., 6 feet, 108 inches.
2. 1485.
3. $8 a head.
4. $5 a head.
5. 127 barrels.
6. 10,560 times.
7. A, $7.00 ; B, $5.60 ; C, $12.60.
8. $34.79½.
9. 784 loaves.
10. $8.00.
11. $1.92.
12. ½ a bale (20 pieces).
13. $111.92.

Exercise XLVI.

1. 23 cents.
2. $259.20.
3. $327.60.
4. $3150.00.
5. $600 ; $50.
6. 165 acres.
7. 125 acres, 65 sq. rods, 7 yds., 4 feet, 108 inches.
8. $3,939,196.80.
9. $96.84⅔.
10. 71 miles, 174 rods, 5 yds., 1 foot, 2 inches.
11. 1 shilling, 10d.
12. 10 days longer.
13. 630.

Exercise XLVII.

1. $45.00 gain.
2. 819674 sq. feet.
3. 817,947.
4. 6336 times.
5. 406 head.
6. $92.64.
7. 230 cords ; $2.50 left.
8. $131.53.
9. 1 cent.
10. Q. 2,042,225, Rem. 87.
11. 32.
12. 20.01.
13. $1560.00.

Exercise XLVIII.

1. (*a*) $2^4, 3, 5$; (*b*) $2, 3^2, 5^2$; (*c*) $2^2, 3, 5^2, 7^2$.

2. (*a*) 24336; (*b*) 10700514.

3. 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45.

4. 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80.

5. Composites 21, 39, 40, 63, 81, 84, 99: Primes 7, 13, 19, 29, 41, 53, 79.

6. (*a*) $\left\{\begin{matrix}1\times24\\2\times12\\3\times8\\4\times6\end{matrix}\right\}$; (*b*) $\left\{\begin{matrix}1\times27\\3\times9\end{matrix}\right\}$; (*c*) $\left\{\begin{matrix}1\times54\\2\times27\\3\times18\\6\times9\end{matrix}\right\}$.

7. 6300 L.C.M.

8. L.C.M. 45045 : Quotients $\left\{\begin{matrix}6435\\5005\\4095\\3465\\3003\\2145\end{matrix}\right\}$: Sum 24148.

9. 13 bushels, 1 gallon.

10. 28, H.C.F.

11. (*a*) $\frac{13}{15}$; (*b*) $\frac{4}{5}$; (*c*) $\frac{13}{14}$.

12. 81 bags ; 5 marbles.

13. 72 ; $\left\{\begin{matrix}72 & 432\\144 & 504\\216 & 576\\288 & 648\\360\end{matrix}\right\}$.

Exercise XLIX.

1. 7560 L.C.M.
2. 5040 L.C.M.
3. 63756 L.C.M.
4. 6 H.C.F.
5. 74 H.C.F.
6. 81 H.C.F.
7. (L.C.M.) 18018 ÷ (G.C.M.) 99 = 182 times.
8. $3\frac{1}{3}$.
9. 5.
10. 2025.
11. 6.
12. $5553.84.
13. (*a*) $\frac{1}{4}$; (*b*) $\frac{3}{5}$; (*c*) $\frac{88}{120}$.

Exercise L.

1. $3\frac{1}{5}$.
2. $7\frac{1}{10}$.
3. $4\frac{1}{2}$.
4. 7.
5. 9.
6. 13.
7. $9\frac{31}{84}$.
8. $1\frac{3}{40}$.
9. $8\frac{17}{18}$.
10. $5\frac{4}{11}$.
11. $9\frac{65}{108}$.
12. $7\frac{2650}{3003}$.
13. $4\frac{2}{5}$.

Exercise LI.

1. $2\frac{1}{3}$.
2. $1\frac{32}{35}$.
3. $6\frac{17}{60}$.
4. $7\frac{431}{300}$.
5. $25\frac{251}{260}$.
6. $\frac{17}{42}$.
7. $2\frac{29}{45}$.
8. $4\frac{43}{72}$.
9. $4\frac{15}{16}$.
10. $6\frac{111}{200}$.
11. $20\frac{989}{720}$.
12. $5\frac{307}{550}$.
13. $2\frac{59}{63}$.

Exercise LII.

1. 36.
2. $5\frac{1}{2}$.
3. $\frac{17}{56}$.
4. $\frac{3}{8}$.
5. 21.
6. $2\frac{5}{8}$.
7. $20\frac{2}{5}$.
8. 28.
9. $138\frac{10}{33}$.
10. $8\frac{7}{10}$.
11. $388\frac{8}{9}$.
12. $56\frac{2}{5}$.
13. $\frac{1}{4}$.

Exercise LIII.

1. $\frac{442}{155}$.
2. $\frac{45}{82}$.
3. $\frac{21}{55}$.
4. 26.
5. $1\frac{4}{5}$.
6. $4\frac{1}{18}$.
7. $117\frac{1}{3}$.
8. $227\frac{1}{2}$.
9. $2\frac{10}{17}$.
10. $\frac{83}{464}$.
11. $3\frac{6}{7}$.
12. $1\frac{73}{105}$.
13. $96\frac{19}{27}$.

ANSWERS TO INTRODUCTORY EXERCISES IN ADDITION AND SUBTRACTION.

ARITHMETIC EXERCISE BOOK No. 1.

"DESK-WORK."

ADDITION.

Exercises I to X.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
56	63	51	60	61	52	57	55	62	49
77	84	72	81	82	73	78	76	83	70
98	105	93	102	103	94	99	97	104	91
91	98	86	95	96	87	92	90	97	84
63	70	58	67	68	59	64	62	69	56
84	91	79	88	89	80	85	83	90	77
49	56	44	53	54	45	50	48	55	42

Exercises XI to XX.

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
308	527	441	629	696	798	1148	418	413	1238
322	541	455	643	710	812	1162	432	427	1252
336	555	469	657	724	826	1176	446	441	1266
287	506	420	608	675	777	1127	397	392	1217
301	520	434	622	689	791	1141	411	406	1231
315	534	448	636	703	805	1155	425	420	1245
329	548	462	650	717	819	1169	439	434	1259

Exercises XXI to XXX.

21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
726	734	584	442	482	420	419	358	537	456
677	685	535	393	433	371	370	309	488	407
691	699	549	407	447	385	384	323	502	421
705	713	563	421	461	399	398	337	516	435
719	727	577	435	475	413	412	351	530	449
670	678	523	386	426	364	363	302	481	400
684	692	542	400	440	378	377	316	495	414

Exercises XXXI to XL.

31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
224	231	238	245	252	259	266	273	280	418
238	245	252	259	266	273	280	287	294	432
252	259	266	273	280	287	294	301	308	466
266	273	280	287	294	301	308	315	322	460
280	287	294	301	308	315	322	329	336	474
231	238	245	252	259	266	273	280	287	424
245	252	259	266	273	280	287	294	301	439

Exercises XLI to L.

41.	42.	43.	44.	45.	46.	47.	48.	49.	50.
1334	1914	2464	3014	3554	4094	4634	5194	5734	6274
1348	1928	2478	3028	3568	4108	4648	5208	5748	6288
1362	1942	2492	3042	3582	4122	4662	5222	5762	6302
1376	1956	2506	3056	3596	4136	4676	5236	5776	6316
1327	1907	2457	3007	3547	4087	4627	5187	5727	6267
1341	1921	2471	3021	3561	4101	4641	5201	5741	6281
1355	1935	2485	3035	3575	4115	4655	5215	5755	6295

SUBTRACTION.

Exercises I to X.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
80	88	78	86	85	84	83	82	90	76
66	74	64	72	71	70	69	68	76	62
52	60	50	58	57	56	55	54	62	48
38	46	36	44	43	42	41	40	48	34
87	95	85	93	92	91	90	89	97	83
73	81	71	79	78	77	76	75	83	69
59	67	57	65	64	63	62	61	69	55

Exercises XI to XX.

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
17942	21245	26638	8737	19830	20592	9960	14397	15518	31122
38291	41594	46987	29086	40179	40941	30309	31746	35867	51471
25579	28882	34275	16374	27467	28229	17597	22034	23155	38759
29877	33180	38573	20672	31765	32527	21895	26332	27453	43057
22961	26264	31657	13756	24849	25611	14979	19416	20537	36141
24872	28175	33568	15667	26760	27522	16890	21327	22448	38052
39726	43029	48422	30521	41614	42376	31744	36181	37302	52906

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