# How
## to **Calculate**
## Quickly | Full Course in
Speed Arithmetic

Henry **Sticker**

# HOW TO
# CALCULATE
# QUICKLY

(the art of calculation)

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# PREFACE

Arithmetic is a science, but calculation is an art. Science is knowledge—art is skill. You have all the knowledge you could possibly need to determine that 57 times 25 equals 1425, but if you are asked to multiply 57 by 25 and cannot do this mentally in just about one second, you are not adept at the art of calculation.

Genuine skill in the calculating art can be acquired by any person of ordinary intelligence, no matter what his schooling may have been. To develop such skill is the purpose of this book. Special forms of short, graded exercises, performed for the most part mentally, lead the student by easy steps to a point where he will possess really exceptional calculating ability.

For instance, if you will look at Exercise No. 371 on page 191, you will find that you are expected to perform mentally such multiplications as 696 times 858, 858 times 878, etc. These are not "trick" examples—the student who systematically performs the practice examples presented in this book will be able to do many kinds of examples of this degree of difficulty by his sheer ability to hold and manipulate figures *in his head*.

*How* is this skill developed? Essentially by developing *number sense*. Number sense consists in the ability to recognize the relations that exist between numbers considered as whole quantities, and to work with the thought of their broad relations always uppermost. Number sense is possessed by many people in all walks of life—particularly by accountants, bookkeepers, estimators, cashiers, storekeepers and the like. On the other hand, it is absent in many who have an excellent understanding of advanced mathe-

matics. The engineering professions are full of those who require slide rules to perform calculations which the average billing clerk would do mentally.

To give an example of what is meant by number sense, suppose you were asked to multiply mentally 11625 by 12. If you felt at all competent to try to do so, you would probably (unless you are the exceptional case) proceed like this: 12 times 5 is 60, remember 0 and carry 6; 12 times 2 is 24, put 0 before the other 0 and carry 3, etc. In this way you would eventually arrive at the correct answer—if you did not get all mixed up in the meantime; but at best you would take a long time, because number sense would have played no part whatever in your awkward method of approaching this very simple little problem.

Suppose now that we introduce a little of this number sense—suppose that instead of dealing with plain figures, you were told to imagine that you had sold twelve machines on each of which you made a commission of $11.62½. As soon as money enters into the matter you immediately see the whole picture in a different light. If you were asked *approximately* how much your commissions amounted to, you would figure quick as a flash that 11 times 12 is 132, and you would probably answer instantly that you had made something over $132. If you were then asked *how much* over $132, you would either figure that 62½¢ are ⅝ of one dollar, or else that this amount is equal to half a dollar plus ⅛ of a dollar. You would not take long in determining that the excess over $132 comes to $7½, and that therefore the

total amount received would be $139½ or $139.50.

Why not apply to numbers "in the raw" the same methods that you use when dealing with small amounts of dollars and cents? It is no more difficult to multiply 11⅝ thousands by 12 than 11⅝ dollars. If 11⅝ dollars times 12 is 139½ dollars, then 11⅝ thousands times 12 is 139½ thousands, or 139,500.

From this illustration you may correctly infer that the person with number sense works very largely *from left to right* instead of from right to left. Left-to-right calculation is of the essence of number sense. Countless practical people know this, yet the art of left-to-right calculation is never taught in the schools, and is, in fact, rarely mentioned in books of any kind.

Step-by-step instruction and practice in this neglected art of left-to-right calculation constitutes the greater part of the substance of this book. Methods of this kind are applied not only to multiplication but to all the fundamental operations. By means of such methods, for instance, you learn to add two columns of figures at a time, and you even get a little practice in three-column addition. You are also taught comparable methods of subtraction and division.

In addition to the exercises having to do with left-to-right calculation, there are many that are based on an *extension of the multiplication table*. You are taught by easy stages to use all the numbers up to 25 as direct multipliers—that is to say, you acquire a *complete* knowledge of the multiplication table up to 25 times 25.

The subject of fractions is treated with special reference to the addition and subtraction of the

fractions that are most commonly met with in everyday work. The object here is to enable the student to memorize the answers to the kinds of problems that are ordinarily figured out over and over again.

The exercises dealing with decimals are designed to give the student a large workable fund of knowledge of the decimal equivalents of fractions. Memory work includes twelfths and sixteenths, and there is practice in the rapid calculation of thirty-seconds and twenty-fourths.

The final broad subject developed in this book is "short cuts." These are of the highest value in developing a general understanding of numbers.

The subject matter of this book is limited to the four fundamental operations, with the inclusion of fractions and decimals. No attempt is made to consider the various fields of arithmetical application. Skill in calculation pure and simple is the only goal.

The exercises, nearly four hundred in number, are for the most part very short. Few should take more than ten minutes to do, and many will take less. As progress is by graded steps, the instruction is in small "doses." The book, accordingly, can be used with profit whenever you happen to have a few free minutes. Its pocket size, moreover, makes it all the more suitable for odd-moment study.

Taken as a whole, this book will prove valuable to anybody engaged in work or study that requires any considerable amount of arithmetical calculation. It is especially recommended to heads of departments in industrial and commercial organizations, for general distribution to the members of their staffs.

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# THE PLAN OF THIS BOOK

The subject matter here presented might have been divided into sections on addition, subtraction, multiplication, etc., in the manner usual to text-books on arithmetic. Because, however, of the special purpose of this book, no such division is made. The general plan is to have several branches proceed simultaneously. Progress is not from subject to subject but from less to more difficult calculation.

For each of the fundamental divisions of arithmetic there is a general introduction—for instance, *Addition in General* on page 3 . In these introductions the special objects sought are described, as well as the methods by which these objects are attained. The student, therefore, always has a clear view of the ultimate aims of his studies and knows how the work immediately in hand fits into the general plan.

Wherever anything new is introduced, it is clearly explained and illustrated. Usually the exercises that go with each explanation are spread through many succeeding pages. In a large number of cases the exercise calls for work with the numbers in a certain list or table (for instance, Table I on page 7 ). The same lists of numbers are used for various kinds of calculation. This method of presentation makes possible the remarkably great number (about 15,000) of practice examples that are included.

Two main objects are sought. The first is to add by single columns, grouping three successive numbers at a time; the second is to add two columns at a time:

Take the following sum:

$$26$$
$$43$$
$$84$$
$$72$$
$$96$$
$$27$$
$$42$$
$$35$$
$$68$$
$$64$$
$$37$$
$$\underline{97}$$

By the first method, starting at the top of the units' column, we would add these numbers thus: (sum of the first three figures) 13 (+ sum of the next three figures, 15) 28 (+ 15) 43 (+ 18) 61; write 1 and carry 6; (6 + 14) 20 (+ 18) 38 (+ 13) 51 (+ 18) 69; total, 691.

By the second method, starting at the top, we would add both columns simultaneously thus: (26 + 43) 69 (+ 84) 153 (+ 72) 225 (+ 96) 321 (+ 27) 348 (+ 42) 390 (+ 35) 425 (+ 68) 493 (+ 64) 557 (+ 37) 594 (+ 97) 691.

In actual practice, very rapid addition is possible by either method, and you will be left free

to choose whichever you prefer. You should, however, learn both.

How do you proceed to learn these methods? You were taught—or should have been taught—at school that speed in addition is acquired by combining pairs of successive numbers that add up to 10. It is at this point that we start, because this is the simplest way in which grouped numbers can be added to a preceding sum. You are given short columns of numbers to be added by incidentally selecting such pairs of successive figures as make 10. In succeeding exercises the columns are lengthened, and you are also asked to group any pairs that add up to less than 10.

In the meantime, you will have been doing exercises in mentally adding all the numbers from 11 to 18 to all the numbers from 1 to 99. Since no pair of figures in a column can add to more than 18, this amount of practice will enable you to add *any* pair of successive figures in a column to a previous sum, and hence to add the entire column by taking two figures at a time.

You are similarly taught to add trios of numbers that make 10 or less than 10, and to add any number from 19 to 27 to any number from 1 to 99. With this practice you will be able to add *any* column by taking three figures at a time.

If you can quickly add any number from 1 to 27 to another number, you will not find it difficult to add numbers greater than 27 in the same manner. You are accordingly ready now to add two columns at a time. Exercises in this method are introduced, and these are gradually increased in difficulty.

Toward the end of the book there are some exercises in three-column addition—just enough to demonstrate that it will be possible for *you* to add this way if you wish to use this method.

There are examples in addition of still another kind. These are not included for practice in addition as such but have a special bearing on the art of multiplying mentally. We need not consider sums of this kind at this point.

You will note that in the exercises in one-column addition you are alternately instructed *to add from the top down* and *to add from the bottom up*. In practical work it is of course immaterial in which direction addition is performed. You should, however, be able to add with equal facility in either direction, and by alternating as suggested you will get the necessary practice.

## Exercise No. 1

### Pairs Adding to 10

Add the following columns by grouping pairs of numbers that make 10. *Add from the top down.*

Thus you would add the first column by saying to yourself: 7, 17, 22, 32.

Do not consciously repeat in your mind anything but the successive totals. That is to say, do *not* add this column thus: 7 + 10, 17, +5, 22, +10, 32.

For another illustration of the correct method, take the second example. This is added thus: 8, 18, 20, 30.

Write your answers in succession on a piece of paper and compare them with the correct answers on page 154. (A good plan is to place the edge of your paper immediately under the examples, write the answers along this edge, and fold it under as it becomes used up.)

| 1. 7 | 2. 8 | 3. 4 | 4. 5 | 5. 6 | 6. 5 |
|---|---|---|---|---|---|
| 6 | 9 | 5 | 2 | 4 | 5 |
| 4 | 1 | 5 | 8 | 6 | 3 |
| 5 | 2 | 5 | 4 | 3 | 6 |
| 1 | 3 | 4 | 1 | 2 | 4 |
| 9 | 7 | 6 | 9 | 8 | 8 |

| 7. 5 | 8. 3 | 9. 8 | 10. 6 | 11. 5 | 12. 9 |
|---|---|---|---|---|---|
| 4 | 2 | 2 | 9 | 5 | 6 |
| 6 | 7 | 9 | 1 | 3 | 4 |
| 6 | 3 | 8 | 5 | 2 | 8 |
| 3 | 1 | 1 | 4 | 4 | 1 |
| 7 | 2 | 9 | 6 | 6 | 7 |

| 13. 3 | 14. 1 | 15. 6 | 16. 6 | 17. 1 | 18. 7 |
|---|---|---|---|---|---|
| 7 | 9 | 4 | 3 | 3 | 6 |
| 6 | 9 | 4 | 7 | 7 | 2 |
| 2 | 1 | 5 | 2 | 9 | 8 |
| 8 | 5 | 4 | 2 | 3 | 5 |
| 8 | 4 | 3 | 5 | 7 | 5 |

| 19. 1 | 20. 1 | 21. 6 | 22. 3 | 23. 7 | 24. 4 |
|---|---|---|---|---|---|
| 9 | 5 | 4 | 4 | 5 | 9 |
| 4 | 5 | 7 | 6 | 5 | 1 |
| 3 | 9 | 6 | 4 | 3 | 3 |
| 9 | 4 | 3 | 6 | 6 | 2 |
| 1 | 6 | 7 | 3 | 2 | 8 |

## Table I
### Numbers from 1 to 99

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 8 | 15 | 22 | 29 | 36 | 43 | 50 |
| 57 | 64 | 71 | 78 | 85 | 92 | 99 | 6 |
| 13 | 20 | 27 | 34 | 41 | 48 | 55 | 62 |
| 69 | 76 | 83 | 90 | 97 | 4 | 11 | 18 |
| 25 | 32 | 39 | 46 | 53 | 60 | 67 | 74 |
| 81 | 88 | 95 | 2 | 9 | 16 | 23 | 30 |
| 37 | 44 | 51 | 58 | 65 | 72 | 79 | 86 |
| 93 | 7 | 14 | 21 | 28 | 35 | 42 | 49 |
| 56 | 63 | 70 | 77 | 84 | 91 | 98 | 5 |
| 12 | 19 | 26 | 33 | 40 | 47 | 54 | 61 |
| 68 | 75 | 82 | 89 | 96 | 3 | 10 | 17 |
| 24 | 31 | 38 | 45 | 52 | 59 | 66 | 73 |
| 80 | 87 | 94 | | | | | |

## Exercise No. 2
### Mental Addition

Add 11 to each of the numbers in Table I above.

Use *left-to-right* addition, which is performed by first adding the tens of one number to the whole of another. In other words, starting with the number in the table you first add 10 and then 1. A few illustrations will be in order:

15 + 11: say 15, 25, 26;

22 + 11: say 22, 32, 33;

29 + 11: say 29, 39, 40;

99 + 11: say 99, 109, 110.

Work down the columns—not across the page. Write down your answers and compare them with those on page 154.

### Exercise No. 3
### Pairs Adding to 10

Group all pairs of successive numbers that make 10.
*Add from the bottom up.*

| 1. 7 | 2. 6 | 3. 5 | 4. 9 | 5. 6 | 6. 3 |
|------|------|------|------|------|------|
| 8 | 4 | 2 | 7 | 7 | 1 |
| 4 | 5 | 5 | 6 | 9 | 6 |
| 6 | 2 | 4 | 4 | 1 | 4 |
| 5 | 4 | 6 | 8 | 3 | 4 |
| 3 | 5 | 6 | 8 | 4 | 1 |
| 5 | 4 | 7 | 9 | 6 | 8 |
| 5 | 1 | 3 | 1 | 3 | 2 |
| 1 | 2 | 4 | 1 | 8 | 9 |
| 8 | 8 | 8 | 7 | 5 | 6 |
| 2 | 7 | 2 | 5 | 2 | 4 |
| 5 | 3 | 4 | 5 | 8 | 7 |

| 7. 4 | 8. 8 | 9. 4 | 10. 6 | 11. 9 | 12. 3 |
|------|------|------|-------|-------|-------|
| 7 | 2 | 4 | 5 | 8 | 7 |
| 3 | 9 | 3 | 7 | 8 | 6 |
| 8 | 1 | 2 | 3 | 2 | 6 |
| 3 | 5 | 4 | 4 | 7 | 1 |
| 2 | 3 | 6 | 2 | 1 | 2 |
| 2 | 8 | 1 | 8 | 9 | 7 |
| 8 | 5 | 6 | 9 | 6 | 6 |
| 1 | 5 | 4 | 1 | 5 | 4 |
| 9 | 2 | 9 | 3 | 5 | 5 |
| 1 | 6 | 3 | 2 | 5 | 5 |
| 9 | 5 | 7 | 1 | 4 | 6 |

| 13. 7 | 14. 3 | 15. 9 | 16. 1 | 17. 3 | 18. 6 |
|---|---|---|---|---|---|
| 4 | 7 | 1 | 8 | 6 | 9 |
| 6 | 8 | 6 | 7 | 4 | 1 |
| 3 | 2 | 3 | 5 | 2 | 7 |
| 2 | 8 | 7 | 5 | 8 | 7 |
| 6 | 5 | 5 | 6 | 5 | 3 |
| 4 | 5 | 4 | 7 | 1 | 2 |
| 1 | 8 | 6 | 3 | 4 | 1 |
| 8 | 2 | 4 | 5 | 1 | 5 |
| 3 | 7 | 3 | 4 | 9 | 2 |
| 7 | 1 | 2 | 4 | 8 | 9 |
| 9 | 9 | 9 | 6 | 7 | 1 |

### Exercise No. 4
#### Mental Addition

Add 12 to the numbers in Table I on page 7.

To illustrate:

15 + 12: say 15, 25, 27;

22 + 12: say 22, 32, 34;

29 + 12: say 29, 39, 41;

99 + 12: say 99, 109, 111.

### Exercise No. 5
#### Mental Addition

Add 13 to the numbers in Table I on page 7.

### Exercise No. 6
#### Mental Addition

Add 14 to the numbers in Table I on page 7.

## Exercise No. 7
### Mental Addition
Add 15 to the numbers in Table I on page 7.

## Exercise No. 8
### Pairs Adding to 10 or Less

The grouping of pairs of successive numbers is now to be extended to include any that add to less than 10 as well as any that add to 10. That is to say, as you add each column watch to see whether any two successive numbers add to either 10 or less than 10, and if they do, make one addition of them to the preceding sum.

For this exercise use the columns of numbers in Exercise No. 1 and compare your answers with those for Exercise No. 1. *Add from the top down.*

To illustrate, the first column is added: 7, 17, 23, 32; the second: 8, 18, 23, 30; the third: 9, 19, 29.

## Exercise No. 9
### Mental Addition
Add 16 to each of the numbers in Table I on page 7.

## Exercise No. 10
### Mental Addition
Add 17 to each of the numbers in Table I on page 7.

### Exercise No. 11

### Pairs Adding to 10 or Less

Add the columns in Exercise No. 3 by grouping all pairs of successive numbers that add to 10 or less than 10. *Add from the bottom up.*

### Exercise No. 12

### Mental Addition

Add 18 to each of the numbers in Table I on page 7.

### Exercise No. 13

### Adding Single Columns by Pairs

Add the following by single columns, taking pairs of successive numbers at a time. *Add from the top down.* The first example would be added: 5, 14, 25, write 5 and carry 2; 2, 12, 27, 36; answer 365.

| 1. 43 | 2. 29 | 3. 58 | 4. 87 | 5. 16 |
|---|---|---|---|---|
| 62 | 75 | 33 | 62 | 91 |
| 78 | 36 | 65 | 94 | 33 |
| 81 | 69 | 98 | 27 | 56 |
| 14 | 43 | 72 | 89 | 29 |
| 87 | 16 | 45 | 74 | 32 |

| 6. 19 | 7. 48 | 8. 77 | 9. 36 | 10. 63 |
|---|---|---|---|---|
| 99 | 21 | 29 | 49 | 78 |
| 36 | 68 | 49 | 94 | 96 |
| 71 | 29 | 11 | 59 | 44 |
| 61 | 18 | 51 | 22 | 41 |
| <u>41</u> | <u>25</u> | <u>53</u> | <u>27</u> | <u>88</u> |

| 11. 33 | 12. 21 | 13. 34 | 14. 24 | 15. 16 |
|---|---|---|---|---|
| 39 | 79 | 43 | 14 | 44 |
| 43 | 74 | 27 | 11 | 49 |
| 51 | 85 | 53 | 15 | 54 |
| 55 | 63 | 17 | 75 | 49 |
| <u>36</u> | <u>82</u> | <u>57</u> | <u>78</u> | <u>99</u> |

| 16. 31 | 17. 28 | 18. 63 | 19. 32 | 20. 63 |
|---|---|---|---|---|
| 35 | 63 | 35 | 65 | 28 |
| 67 | 21 | 12 | 16 | 76 |
| 44 | 34 | 31 | 67 | 45 |
| 84 | 52 | 81 | 73 | 69 |
| <u>42</u> | <u>56</u> | <u>15</u> | <u>55</u> | <u>62</u> |

| 21. 85 | 22. 54 | 23. 14 | 24. 68 | 25. 69 |
|---|---|---|---|---|
| 56 | 42 | 27 | 42 | 28 |
| 75 | 68 | 54 | 28 | 45 |
| 37 | 13 | 85 | 34 | 37 |
| 73 | 99 | 59 | 83 | 71 |
| <u>24</u> | <u>84</u> | <u>69</u> | <u>16</u> | <u>91</u> |

## Exercise No. 14
### Mental Addition
Add 19 to each of the numbers in Table I on page 7 .

## Exercise No. 15
### Adding Single Columns by Pairs

Add the following by single columns, taking pairs of successive numbers at a time. *Add from the bottom up.* The first example would be added: 11, 15, 27, 42, 49, 60, write 0 and carry 6; 6, 17, 24, 37, 43, 54, 62; answer, 620.

| 1. 27 | 2. 81 | 3. 92 | 4. 16 | 5. 29 |
|---|---|---|---|---|
| 64 | 28 | 92 | 14 | 27 |
| 32 | 75 | 29 | 14 | 25 |
| 85 | 43 | 86 | 31 | 25 |
| 46 | 96 | 54 | 97 | 32 |
| 29 | 57 | 18 | 65 | 19 |
| 78 | 51 | 68 | 29 | 76 |
| 64 | 89 | 62 | 79 | 51 |
| 31 | 75 | 11 | 73 | 12 |
| 43 | 42 | 86 | 22 | 84 |
| 75 | 54 | 53 | 58 | 33 |
| 46 | 86 | 65 | 64 | 19 |

| 6. 43 | 7. 58 | 8. 74 | 9. 91 | 10. 99 |
|---|---|---|---|---|
| 51 | 54 | 69 | 85 | 13 |
| 38 | 62 | 65 | 91 | 96 |
| 36 | 49 | 74 | 76 | 13 |
| 37 | 47 | 71 | 85 | 87 |
| 33 | 36 | 58 | 82 | 96 |
| 41 | 34 | 47 | 69 | 93 |
| 87 | 52 | 35 | 58 | 87 |
| 62 | 98 | 63 | 37 | 69 |
| 23 | 73 | 31 | 74 | 47 |
| 95 | 34 | 84 | 42 | 75 |
| 44 | 27 | 45 | 95 | 53 |

| 11. 19 | 12. 39 | 13. 51 | 14. 63 | 15. 84 |
|---|---|---|---|---|
| 12 | 41 | 55 | 62 | 99 |
| 26 | 23 | 52 | 62 | 75 |
| 18 | 37 | 34 | 63 | 73 |
| 24 | 29 | 48 | 45 | 74 |
| 24 | 35 | 56 | 59 | 56 |
| 18 | 98 | 46 | 67 | 82 |
| 15 | 29 | 31 | 57 | 78 |
| 98 | 26 | 53 | 42 | 68 |
| 36 | 91 | 37 | 64 | 53 |
| 85 | 48 | 13 | 48 | 59 |
| 49 | 96 | 59 | 24 | 57 |

## Exercise No. 16
### Mental Addition
Add 20 to each of the numbers in Table I on page 7.

## Exercise No. 17
### Adding Single Columns by Pairs
Add the following by single columns, taking pairs of successive numbers at a time. *Add from the top down.*

| 1. 51 | 2. 42 | 3. 41 | 4. 34 | 5. 33 |
|---|---|---|---|---|
| 30 | 53 | 73 | 36 | 81 |
| 96 | 90 | 32 | 97 | 28 |
| 24 | 79 | 12 | 19 | 39 |
| 25 | 87 | 62 | 69 | 43 |
| 75 | 76 | 11 | 94 | 10 |
| 48 | 92 | 44 | 83 | 85 |
| 49 | 52 | 84 | 37 | 47 |
| 93 | 45 | 70 | 38 | 29 |
| 80 | 72 | 40 | 46 | 14 |
| 13 | 18 | 61 | 17 | 95 |
| 58 | 63 | 67 | 23 | 10 |
| 88 | 22 | 56 | 66 | 82 |
| 86 | 21 | 16 | 64 | 31 |
| 20 | 59 | 98 | 89 | 77 |
| 99 | 91 | 55 | 68 | 74 |
| 59 | 15 | 27 | 60 | 35 |
| 65 | 78 | 54 | 23 | 84 |

| 6. | 61 | 7. | 34 | 8. | 39 | 9. | 36 | 10. | 17 |
|---|---|---|---|---|---|---|---|---|---|
| | 81 | | 90 | | 32 | | 25 | | 66 |
| | 82 | | 86 | | 21 | | 97 | | 28 |
| | 24 | | 85 | | 49 | | 96 | | 74 |
| | 59 | | 16 | | 87 | | 52 | | 84 |
| | 95 | | 58 | | 33 | | 30 | | 15 |
| | 53 | | 64 | | 48 | | 63 | | 67 |
| | 37 | | 47 | | 11 | | 94 | | 93 |
| | 27 | | 23 | | 60 | | 35 | | 73 |
| | 31 | | 45 | | 20 | | 62 | | 69 |
| | 92 | | 44 | | 70 | | 51 | | 10 |
| | 83 | | 65 | | 26 | | 91 | | 29 |
| | 80 | | 72 | | 55 | | 88 | | 79 |
| | 38 | | 68 | | 57 | | 43 | | 78 |
| | 54 | | 42 | | 12 | | 19 | | 22 |
| | 98 | | 40 | | 46 | | 14 | | 13 |
| | 41 | | 89 | | 75 | | 56 | | 76 |
| | 77 | | 99 | | 18 | | 42 | | 39 |

### Exercise No. 18

### Mental Addition

Add 21 to each of the numbers in Table I on page 7.

# SUBTRACTION IN GENERAL

In keeping with the general object of this book, the succeeding exercises in subtraction are performed by left-to-right methods.

When subtraction is performed on paper there is no special advantage in working from left to right instead of from right to left. Paper practice in the former method, however, fits in with the broad purpose of developing number sense.

When it comes to doing subtraction mentally, the left-to-right method is natural and logical. Thus, if you had started the day with $17.43 in your pocket, and if you wanted to figure without paper and pencil how much you had left after spending $5.89, you would not be likely to start by subtracting 9 from 13. You would probably calculate that if you had spent the full $6, you would have $11.43 left, but that having spent 11¢ less than $6, the remainder comes to 11¢ more than $11.43, or $11.54.

In considering the specific aims of these exercises in subtraction, look first at the written examples. If you will glance at the first exercise that follows, and which is included merely to familiarize you with the idea of working from left to right, you will see that in every case the figures in the subtrahend (lower number) are smaller than those in the minuend. The examples are all of the type of

$$54$$
$$-23$$

and you can determine the answers faster than you can write them down. If, however, you take the example

$$685 \\ -356$$

and try to write the answer in the same way, you will run into trouble when you reach the final figures at the right because 6 is greater than 5. What to do about cases of this kind is the subject of the instruction. The exercises take into account the possible variations that may occur in numbers of two and three places.

The examples in mental subtraction are performed by methods altogether different from those that apply to written work. There are two such methods, of which one has already been illustrated. We subtracted $5.89 from $17.43 by taking $6 from $17.43 and then adding to $11.43 the difference between $6 and $5.89, obtaining as our answer $11.43 + $.11, or $11.54. To do the same example mentally by the other method, we calculate that if you had started with $17 even, you would have $11.11 left; but you had $.43 more than $17 at the start, and therefore the actual remainder is $11.11 + $.43, or $11.54. One method is as good as the other. Examples are given that carry the practice in both methods as far as numbers involving hundreds of dollars and odd cents.

Incidentally, you should know that ordinary written subtraction is commonly performed by two entirely different methods—the *borrow*

method and the *carry* method. The borrow method is taught almost exclusively in this country today, but in times past the carry method had similar acceptance.

Take the example

$$
\begin{array}{r}
856 \\
-569 \\
\hline
287
\end{array}
$$

To do this by the borrow method you reason: 9 from 16 leaves 7, 6 from 14 leaves 8, 5 from 7 leaves 2; answer, 287. To do the same example by the carry method you would say: 9 from 16 leaves 7, 7 from 15 leaves 8, 6 from 8 leaves 2; answer, 287.

You should understand both these methods (neither of which has any clear advantage over the other), though you continue to use regularly whichever one comes most naturally to you. In the illustrations given in this book the borrow method is followed because it is the more familiar to the majority of people.

### Exercise No. 19
#### Left-to-Right Subtraction

Perform the following subtractions by directly writing your answers from left to right.

| 1. 67 | 2. 48 | 3. 41 | 4. 78 | 5. 64 |
|-------|-------|-------|-------|-------|
| 55 | 14 | 20 | 22 | 31 |

| 6. 98 | 7. 53 | 8. 65 | 9. 28 | 10. 66 |
|-------|-------|-------|-------|--------|
| 20 | 41 | 52 | 16 | 45 |

| 11. 99 | 12. 69 | 13. 83 | 14. 32 | 15. 93 |
|--------|--------|--------|--------|--------|
| 92     | 35     | 31     | 21     | 41     |

## Exercise No. 20

### Left-to-Right Subtraction

Directly write your answers from left to right.

To take the first example, you simply note that 6 is greater than 4, and therefore the 5 in the minuend becomes a 4: 2 from 4 leaves 2 (writing 2), 6 from 14 leaves 8 (writing 8); answer 28.

| 1. 54 | 2. 47 | 3. 51 | 4. 46 | 5. 52 |
|-------|-------|-------|-------|-------|
| 26    | 19    | 39    | 27    | 37    |

| 6. 84 | 7. 37 | 8. 35 | 9. 72 | 10. 50 |
|-------|-------|-------|-------|--------|
| 58    | 18    | 17    | 24    | 29     |

| 11. 83 | 12. 56 | 13. 71 | 14. 96 | 15. 77 |
|--------|--------|--------|--------|--------|
| 44     | 39     | 45     | 38     | 49     |

| 16. 94 | 17. 45 | 18. 48 | 19. 68 | 20. 71 |
|--------|--------|--------|--------|--------|
| 76     | 16     | 29     | 39     | 52     |

## Exercise No. 21

### Mental Addition

Add 22 to each of the numbers in Table I on page 7.

## Exercise No. 22

### Trios that Add to 10 or Less

This exercise introduces the idea of taking in three suc-

cessive numbers at a glance. Every column contains four groups of three numbers each; each of these groups adds to 10 or less. Add by combining these groups. *Add from the top down.*

| 1. 27 | 2. 14 | 3. 64 | 4. 57 | 5. 34 |
|-------|-------|-------|-------|-------|
| 21 | 11 | 21 | 31 | 31 |
| 11 | 12 | 13 | 12 | 11 |
| 45 | 33 | 44 | 56 | 54 |
| 41 | 21 | 42 - | 21 | 42 |
| 13 | 13 | 22 | 23 | 13 |
| 65 | 25 | 43 | 56 | 52 |
| 12 | 21 | 32 | 12 | 31 |
| 12 | 24 | 33 | 12 | 22 |
| 25 | 35 | 78 | 45 | 44 |
| 11 | 12 | 11 | 21 | 31 |
| <u>11</u> | <u>13</u> | <u>11</u> | <u>12</u> | <u>14</u> |

| 6. 41 | 7. 62 | 8. 43 | 9. 21 | 10. 33 |
|-------|-------|-------|-------|--------|
| 21 | 32 | 33 | 11 | 12 |
| 26 | 12 | 24 | 15 | 15 |
| 31 | 61 | 21 | 12 | 63 |
| 31 | 21 | 11 | 11 | 11 |
| 22 | 23 | 27 | 14 | 24 |
| 81 | 52 | 43 | 33 | 42 |
| 11 | 21 | 11 | 11 | 22 |
| 11 | 16 | 45 | 23 | 44 |
| 72 | 44 | 62 | 24 | 43 |
| 21 | 12 | 12 | 21 | 32 |
| <u>13</u> | <u>14</u> | <u>15</u> | <u>25</u> | <u>33</u> |

## Exercise No. 23
### Left-to-Right Subtraction

Sight practice with pairs of three-place numbers. No borrowings are involved. Work from left to right.

| 1. 754 | 2. 827 | 3. 468 | 4. 659 | 5. 746 |
|--------|--------|--------|--------|--------|
| 233    | 614    | 235    | 338    | 415    |

| 6. 928 | 7. 675 | 8. 558 | 9. 649 | 10. 458 |
|--------|--------|--------|--------|---------|
| 615    | 423    | 146    | 437    | 328     |

| 11. 727 | 12. 898 | 13. 753 | 14. 462 | 15. 941 |
|---------|---------|---------|---------|---------|
| 605     | 457     | 321     | 111     | 720     |

## Exercise No. 24
### Mental Addition

Add 23 to each of the numbers in Table I on page 7.

## Exercise No. 25
### Mental Addition

Add 24 to each of the numbers in Table I on page 7.

## Exercise No. 26
### Adding Single Columns by Pairs
Take successive pairs at a time. *Add from the top down.*

| 1. $40.72 | 2. $35.51 | 3. $27.13 | 4. $47.15 |
|---|---|---|---|
| 33.32 | 56.28 | 96.92 | 10.20 |
| 98.21 | 43.90 | 22.07 | 36.09 |
| 29.05 | 49.44 | 38.71 | 59.73 |
| 53.69 | 84.57 | 58.94 | 55.70 |
| 79.66 | 99.61 | 34.88 | 85.54 |
| 83.97 | 24.25 | 60.26 | 31.78 |
| 45.77 | 16.23 | 65.14 | 11.12 |
| 42.63 | 80.17 | 18.19 | 52.48 |
| 46.68 | 82.67 | 89.30 | 87.81 |
| 64.39 | 86.93 | 41.75 | 74.01 |
| 37.62 | 91.76 | 50.95 | 25.60 |

| 5. $79.45 | 6. $77.52 | 7. $48.68 | 8. $88.09 |
|---|---|---|---|
| 85.30 | 54.05 | 49.99 | 44.80 |
| 70.46 | 61.65 | 14.78 | 75.03 |
| 83.73 | 76.29 | 11.12 | 36.53 |
| 69.97 | 74.43 | 90.55 | 95.96 |
| 34.21 | 38.10 | 17.18 | 62.39 |
| 64.81 | 87.37 | 15.50 | 82.01 |
| 20.72 | 63.25 | 56.47 | 26.13 |
| 60.26 | 32.93 | 67.06 | 33.28 |
| 31.57 | 22.98 | 19.16 | 42.71 |
| 59.86 | 89.84 | 41.40 | 94.66 |
| 58.35 | 91.23 | 56.15 | 10.34 |

## Exercise No. 27

### Left-to-Right Subtraction

In these examples, in the vertical pairs of figures at the extreme right the subtrahend is greater than the minuend, reducing by 1 the tens' figure of the minuend.

Taking the first example, we note that the tens' figure of the minuend will become a 4 instead of a 5; 5 from 7 leaves 2, 3 from 4 leaves 1, 9 from 14 leaves 5; answer 215.

| 1. 754 | 2. 863 | 3. 528 | 4. 642 | 5. 995 |
|---|---|---|---|---|
| 539 | 448 | 319 | 313 | 217 |

| 6. 422 | 7. 323 | 8. 676 | 9. 266 | 10. 583 |
|---|---|---|---|---|
| 313 | 109 | 428 | 138 | 346 |

| 11. 912 | 12. 365 | 13. 744 | 14. 390 | 15. 555 |
|---|---|---|---|---|
| 509 | 259 | 619 | 265 | 419 |

| 16. 983 | 17. 696 | 18. 472 | 19. 713 | 20. 626 |
|---|---|---|---|---|
| 779 | 587 | 329 | 606 | 318 |

| 21. 718 | 22. 683 | 23. 951 | 24. 648 | 25. 873 |
|---|---|---|---|---|
| 409 | 246 | 229 | 539 | 358 |

| 26. 715 | 27. 582 | 28. 246 | 29. 997 | 30. 737 |
|---|---|---|---|---|
| 506 | 246 | 139 | 129 | 318 |

## Exercise No. 28

### Mental Addition

Add 25 to each of the numbers in Table I on page 7.

### Exercise No. 29
### Mental Addition

Add 26 to each of the numbers in Table I on page  7.

### Exercise No. 30
### Mental Addition

Add 27 to each of the numbers in Table I on page  7.

### Exercise No. 31
### Trios that Add to 20 or Less

In the separate columns of the following examples the successive groups of three figures add to some number between 11 and 20.  Add by combining these groups of three. *Add from the top down.*

The first example would be added:  16, 30, 41, 61, write 1 and carry 6; 6, 18, 30 , 46, 62; answer 621.

| 1. 23 | 2. 31 | 3. 12 | 4. 24 | 5. 24 |
|-------|-------|-------|-------|-------|
| 46    | 46    | 84    | 64    | 74    |
| 67    | 46    | 89    | 74    | 78    |
| 21    | 12    | 33    | 35    | 35    |
| 55    | 24    | 43    | 45    | 55    |
| 58    | 97    | 78    | 95    | 78    |
| 22    | 13    | 13    | 14    | 14    |
| 54    | 73    | 37    | 45    | 44    |
| 95    | 86    | 99    | 75    | 99    |
| 12    | 23    | 13    | 25    | 25    |
| 69    | 57    | 88    | 65    | 35    |
| 99    | 77    | 98    | 86    | 69    |

| 6. 33 | 7. 32 | 8. 24 | 9. 34 | 10. 24 |
|---|---|---|---|---|
| 36 | 44 | 67 | 54 | 75 |
| 98 | 58 | 69 | 56 | 85 |
| 11 | 13 | 36 | 25 | 35 |
| 25 | 33 | 47 | 25 | 56 |
| 89 | 77 | 87 | 89 | 86 |
| 13 | 23 | 13 | 24 | 14 |
| 77 | 57 | 48 | 64 | 55 |
| 75 | 88 | 69 | 97 | 56 |
| 23 | 31 | 14 | 35 | 25 |
| 56 | 46 | 99 | 55 | 36 |
| 69 | 68 | 98 | 67 | 77 |

### Exercise No. 32
#### Left-to-Right Subtraction

In the type of example given here we see by inspection that the subtrahend has a larger figure than the minuend in the tens' place, reducing by 1 the hundreds' figure of the minuend. To take the first example: 5 from 6 leaves 1, 9 from 15 leaves 6, 3 from 4 leaves 1; answer 161.

Subtract from left to right.

| 1. 754 | 2. 648 | 3. 262 | 4. 548 | 5. 629 |
|---|---|---|---|---|
| 593 | 356 | 191 | 357 | 458 |

| 6. 856 | 7. 435 | 8. 468 | 9. 914 | 10. 765 |
|---|---|---|---|---|
| 792 | 183 | 271 | 291 | 481 |

| 11. 787 | 12. 547 | 13. 341 | 14. 112 | 15. 783 |
|---|---|---|---|---|
| 693 | 160 | 171 | 51 | 190 |

| 16. 486 | 17. 888 | 18. 489 | 19. 944 | 20. 842 |
|---|---|---|---|---|
| 291 | 494 | 194 | 452 | 161 |

### Exercise No. 33

#### Left-to-Right Subtraction

In these examples the tens and the units are larger in the subtrahend than in the minuend, thus reducing by 1 both the hundreds and the tens of the minuend. Taking the first example: 2 from 6 leaves 4, 8 from 14 leaves 6, 9 from 14 leaves 5; answer, 465.

| 1. 754 | 2. 773 | 3. 413 | 4. 484 | 5. 342 |
|---|---|---|---|---|
| 289 | 194 | 249 | 298 | 189 |

| 6. 626 | 7. 787 | 8. 383 | 9. 867 | 10. 672 |
|---|---|---|---|---|
| 578 | 298 | 197 | 379 | 295 |

| 11. 918 | 12. 666 | 13. 586 | 14. 232 | 15. 515 |
|---|---|---|---|---|
| 589 | 197 | 298 | 176 | 299 |

| 16. 353 | 17. 428 | 18. 856 | 19. 481 | 20. 318 |
|---|---|---|---|---|
| 169 | 179 | 779 | 192 | 149 |

## Exercise No. 34
### Adding Single Columns by Pairs

Add the following by single columns, taking pairs of successive numbers at a time. *Add from the bottom up.*

| 1. $14.44 | 2. $80.54 | 3. $74.43 | 4. $43.93 |
|---|---|---|---|
| 38.42 | 33.20 | 67.27 | 32.06 |
| 72.09 | 13.40 | 18.02 | 94.34 |
| 61.90 | 55.95 | 21.60 | 97.86 |
| 63.26 | 10.17 | 25.98 | 30.29 |
| 56.78 | 75.79 | 96.45 | 36.47 |
| 73.76 | 77.52 | 89.84 | 70.66 |
| 62.58 | 39.51 | 11.12 | 35.07 |
| 91.28 | 83.85 | 64.48 | 81.68 |
| 31.41 | 87.19 | 19.92 | 49.37 |
| 71.15 | 59.57 | 22.53 | 69.16 |
| 50.82 | 24.23 | 65.99 | 57.84 |
| 22.78 | 94.70 | 66.75 | 53.69 |
| 33.34 | 61.90 | 11.54 | 96.17 |
| 25.12 | 50.05 | 74.45 | 36.03 |
| 92.49 | 82.98 | 55.62 | 30.35 |
| 58.43 | 93.63 | 95.37 | 39.51 |
| 75.64 | 20.67 | 72.71 | 48.15 |

| 5. $22.78 | 6. $94.70 | 7. $66.75 | 8. $79.53 |
|-----------|-----------|-----------|-----------|
| 69.33 | 34.61 | 90.72 | 71.09 |
| 48.14 | 27.10 | 80.11 | 54.96 |
| 17.81 | 68.47 | 73.29 | 59.15 |
| 44.88 | 76.13 | 56.25 | 50.91 |
| 40.18 | 31.05 | 74.45 | 57.42 |
| 19.02 | 26.30 | 35.58 | 43.93 |
| 63.95 | 37.86 | 24.38 | 32.23 |
| 89.16 | 46.65 | 39.51 | 85.64 |
| 99.08 | 20.67 | 84.36 | 28.41 |
| 87.83 | 92.49 | 82.98 | 55.01 |
| 77.52 | 21.60 | 92.13 | 16.46 |
| 22.78 | 56.25 | 49.12 | 50.91 |
| 40.18 | 31.82 | 94.70 | 98.55 |
| 66.75 | 62.77 | 52.05 | 74.79 |
| 53.45 | 69.33 | 34.57 | 21.65 |
| 60.39 | 51.85 | 64.61 | 90.72 |
| 71.09 | 48.15 | 27.10 | 80.06 |

## Exercise No. 35
### Left-to-Right Subtraction

This exercise illustrates a principle: if a figure in the subtrahend is the same as the one above it in the minuend, the effect on the minuend will depend on whether or not a borrowing has been necessary with the next figure to the right.

In the first example we see that because 9 is greater than 4, the 5 in the minuend becomes a 4, and since 5 is greater than this the 7 in the minuend becomes a 6. We perform the subtraction thus: 3 from 6 leaves 3, 5 from 14 leaves 9, 9 from 14 leaves 5; answer, 395.

| 1. 754 | 2. 655 | 3. 251 | 4. 546 | 5. 592 |
|--------|--------|--------|--------|--------|
| 359 | 358 | 159 | 247 | 294 |

| 6. 862 | 7. 444 | 8. 968 | 9. 773 | 10. 763 |
|---|---|---|---|---|
| 667 | 146 | 569 | 279 | 266 |

| 11. 832 | 12. 233 | 13. 983 | 14. 572 | 15. 656 |
|---|---|---|---|---|
| 536 | 139 | 488 | 278 | 357 |

| 16. 395 | 17. 856 | 18. 645 | 19. 721 | 20. 941 |
|---|---|---|---|---|
| 197 | 659 | 248 | 428 | 249 |

| 21. 527 | 22. 863 | 23. 985 | 24. 267 | 25. 843 |
|---|---|---|---|---|
| 329 | 569 | 389 | 168 | 448 |

## Exercise No. 36
### Trios that Add to 27 or Less

The groups of three here add to numbers between 21 and 27. Add by combining these groups. *Add from the top down.*

| 1. 36 | 2. 63 | 3. 47 | 4. 65 | 5. 47 |
|---|---|---|---|---|
| 98 | 79 | 87 | 78 | 97 |
| 99 | 89 | 98 | 98 | 99 |
| 69 | 86 | 74 | 87 | 75 |
| 99 | 89 | 78 | 87 | 78 |
| 99 | 89 | 79 | 99 | 89 |
| 56 | 33 | 67 | 54 | 49 |
| 89 | 99 | 77 | 89 | 89 |
| 89 | 99 | 97 | 99 | 99 |
| 73 | 67 | 84 | 77 | 75 |
| 79 | 97 | 88 | 87 | 78 |
| 99 | 97 | 99 | 88 | 78 |

| **6.** 55 | **7.** 68 | **8.** 56 | **9.** 68 | **10.** 56 |
|---|---|---|---|---|
| 88 | 88 | 87 | 88 | 98 |
| 89 | 88 | 99 | 99 | 98 |
| 77 | 85 | 78 | 96 | 78 |
| 78 | 99 | 88 | 98 | 89 |
| 98 | 99 | 89 | 98 | 99 |
| 65 | 57 | 96 | 68 | 66 |
| 89 | 98 | 97 | 89 | 78 |
| 89 | 99 | 98 | 99 | 89 |
| 87 | 76 | 78 | 96 | 84 |
| 98 | 87 | 78 | 97 | 88 |
| 98 | 98 | 88 | 99 | 89 |

### Exercise No. 37

### Left-to-Right Subtraction

In these examples another consideration arises: the tens' figure in the minuend is 0; when 1 is borrowed to make possible the subtraction of the units, the tens in the minuend become 9 and the hundreds are also reduced by 1.

To illustrate with the first example: 3 from 6 leaves 3, 5 from 9 leaves 4, 7 from 14 leaves 7; answer, 347.

Subtract from left to right.

| **1.** 704 | **2.** 307 | **3.** 806 | **4.** 204 | **5.** 404 |
|---|---|---|---|---|
| 357 | 118 | 457 | 126 | 297 |

| **6.** 808 | **7.** 706 | **8.** 308 | **9.** 302 | **10.** 203 |
|---|---|---|---|---|
| 549 | 517 | 189 | 236 | 115 |

| **11.** 800 | **12.** 501 | **13.** 300 | **14.** 805 | **15.** 601 |
|---|---|---|---|---|
| 585 | 323 | 122 | 796 | 374 |

| **16.** 902 | **17.** 500 | **18.** 408 | **19.** 700 | **20.** 207 |
|---|---|---|---|---|
| 793 | 386 | 159 | 466 | 178 |

| **21.** 807 | **22.** 603 | **23.** 200 | **24.** 600 | **25.** 300 |
|---|---|---|---|---|
| 509 | 319 | 162 | 224 | 171 |

### Exercise No. 38
### Adding Single Columns by Pairs

Take pairs of successive numbers at a time. *Add from the bottom up.*

| **1.** $5759.37 | **2.** $7856.21 | **3.** $6525.49 |
|---|---|---|
| 2186.62 | 2477.50 | 5214.44 |
| 4491.67 | 5843.84 | 8788.76 |
| 3848.60 | 3993.36 | 1115.81 |
| 6874.79 | 4751.85 | 2740.32 |
| 1831.04 | 9213.53 | 4569.82 |
| 1080.33 | 3363.26 | 9528.30 |
| 6461.73 | 9994.90 | 7271.70 |
| 9823.34 | 9617.89 | 8983.55 |

| **4.** $4142.97 | **5.** $6675.01 | **6.** $1916.46 |
|---|---|---|
| 4629.22 | 3508.07 | 2009.03 |
| 2089.83 | 5624.21 | 6538.82 |
| 9766.48 | 6039.10 | 8788.80 |
| 3367.72 | 7677.25 | 7531.01 |
| 9849.04 | 6393.03 | 8635.19 |
| 1623.26 | 6257.59 | 5096.58 |
| 4308.52 | 3646.51 | 1185.13 |
| 5354.34 | 9678.28 | 1714.55 |
| 4244.07 | 7170.27 | 4015.81 |
| 6874.79 | 3229.30 | 6422.37 |
| 6118.91 | 4569.73 | 9947.94 |

## Exercise No. 39

### Mental Subtraction

Use the method of making the subtrahend a round number. Subtract $1 from the minuend and add to this the difference between $1 and the given subtrahend.

Taking the first example: $1 from $5.18 leaves $4.18; $.83 from $1 leaves $.17; $4.18 + $.17 = $4.35.

| | |
|---|---|
| 1. $5.18 − $.83 | 11. $3.22 − $.93 |
| 2. $6.42 − $.83 | 12. $7.37 − $.61 |
| 3. $1.89 − $.95 | 13. $4.56 − $.97 |
| 4. $2.47 − $.99 | 14. $6.87 − $.91 |
| 5. $7.48 − $.56 | 15. $2.21 − $.65 |
| 6. $8.29 − $.66 | 16. $4.86 − $.97 |
| 7. $3.18 − $.87 | 17. $3.32 − $.64 |
| 8. $7.27 − $.43 | 18. $7.75 − $.83 |
| 9. $4.19 − $.49 | 19. $4.12 − $.63 |
| 10. $3.53 − $.77 | 20. $6.23 − $.26 |

## Exercise No. 40

### Adding Single Columns by Trios

Do the addition examples in Exercise No. 13 on page 11 by grouping three numbers at a time.

Taking the first example there presented, the following illustrates the method of adding: 13 (+12) 25, write 5 and carry 2; 2 (+17) 19, (+17) 36; answer, 365. Do not consciously repeat to yourself the individual amounts that you are adding, but only the successive total. *Add from the top down.*

## Exercise No. 41

### Adding Single Columns by Pairs

| 1. $7489.99 | 2. $8356.24 | 3. $2165.38 |
|---|---|---|
| 2897.66 | 4860.39 | 1034.96 |
| 7828.17 | 8084.05 | 8788.86 |
| 3519.16 | 2303.32 | 2922.64. |
| 2237.61 | 1891.45 | 4142.44 |
| 7170.27 | 4015.94 | 9062.57 |
| 5950.95 | 5843.08 | 9849.04 |
| 1209.63 | 9326.73 | 4768.79 |
| 8152.92 | 3646.51 | 1185.13 |
| 5354.14 | 5520.33 | 6772.76 |
| 7725.75 | 3104.60 | 1348.37 |
| 6101.98 | 4953.91 | 6039.62 |
| 5429.30 | 6772.76 | 1780.84 |
| 4414.57 | 5910.18 | 9134.96 |
| 7812.07 | 7170.06 | 8788.86 |
| 5056.24 | 9564.22 | 7755.63 |
| 2593.26 | 2075.27 | 4033.03 |
| 4569.35 | 9236.74 | 8932.58 |

| 4. $8799.55 | 5. $1319.16 | 6. $8348.84 |
|---|---|---|
| 4437.14 | 5781.63 | 2538.82 |
| 9793.08 | 5266.88 | 2861.41 |
| 4223.59 | 3926.73 | 9809.50 |
| 3218.94 | 9156.24 | 5834.43 |
| 9564.65 | 2227.49 | 5340.33 |
| 6296.78 | 1207.54 | 5446.31 |
| 4569.35 | 7729.30 | 5115.71 |
| 7006.68 | 6772.11 | 8521.65 |
| 7976.92 | 9036.17 | 8074.89 |
| 3612.97 | 8909.50 | 2124.56 |
| 8765.77 | 2930.51 | 1507.23 |
| 5960.54 | 9964.75 | 2279.76 |
| 5546.31 | 7188.86 | 2858.34 |
| 4347.04 | 4147.61 | 8085.37 |
| 9570.06 | 1457.10 | 4884.44 |
| 6935.05 | 3218.94 | 8168.39 |
| 6774.27 | 4913.26 | 7273.93 |

## Exercise No. 42
### Mental Subtraction

Perform the subtractions in Exercise No. 39 by using the method of making a round number of the minuend. That is, reduce the minuend to the next lower number of even dollars. Subtract the subtrahend from this and then add the excess of cents in the minuend.

Taking the first example ($5.18 − $.83): $.83 from $5 leaves $4.17; $4.17 + 18 = $4.35.

## Exercise No. 43

### Mental Subtraction

Perform the following subtractions mentally. Raise the subtrahend to the next larger number of even dollars.

| | | | |
|---|---|---|---|
| 1. $2.79 − $1.86 | | 11. $5.53 − $3.64 |
| 2. $3.17 − $1.97 | | 12. $2.62 − $1.89 |
| 3. $9.50 − $6.69 | | 13. $3.05 − $1.82 |
| 4. $2.56 − $1.91 | | 14. $8.28 − $6.65 |
| 5. $4.77 − $2.81 | | 15. $8.10 − $6.39 |
| 6. $9.78 − $3.94 | | 16. $5.15 − $2.67 |
| 7. $7.44 − $4.49 | | 17. $4.47 − $2.61 |
| 8. $4.37 − $2.72 | | 18. $7.93 − $5.99 |
| 9. $5.22 − $2.98 | | 19. $5.40 − $2.95 |
| 10. $6.04 − $5.33 | | 20. $3.23 − $1.60 |

## Exercise No. 44

### Mental Subtraction

Do the examples in Exercise No. 43 by lowering the minuend to the next smaller number of even dollars.

## MULTIPLICATION IN GENERAL

Multiplication is the heart's core of the art of calculation. In itself it constitutes an art about which a large volume might be written.

The multiplication exercises in this book have three main objects in view—first, to enable the student to use all numbers up to 25 as direct multipliers in written work; second, to teach him to multiply mentally any number up to 1000 by any other number up to 1000; third, to drill him in various short-cut methods that apply to particular cases.

The use of numbers up to 25 as direct multipliers may be illustrated by this example:

| A | B |
|---|---|
| 7648 | 7648 |
| 1923 | 1923 |
| 22944 | 175904 |
| 15296 | 145312 |
| 68832 | 14707104 |
| 7648 | |
| 14707104 | |

In Method A, which is here shown for comparison, the usual procedure is followed. In Method B the calculation is performed thus: $8 \times 23 = 184$, write 4 and carry 18; $4 \times 23 = 92$, $92 + 18 = 110$, write 0 and carry 11; $6 \times 23 = 138$, $138 + 11 = 149$, write 9 and carry 14; $7 \times 23 = 161$, $161 + 14 = 175$. Multiplication by 19 is done in the same way, and the partial products added.

To multiply in the manner described it is of course necessary to acquire a knowledge of the multiplication table up to 25 × 25. Instruction in this direction is given by very easy steps. There are several types of exercises leading to the same end.

Exercises in mental multiplication are similarly graded. You start by multiplying two figures by one, then two by two, then three by one, three by two, and finally three by three.

The subject of short cuts is highly specialized and need not detain us for the present.

### Exercise No. 45

#### Mental Multiplication

Multiply by 2 the numbers in Table I on page 7. Proceed from left to right. A few examples of the method calculating will suffice.

32 × 2: 30 × 2 = 60, 2 × 2 = 4, 60 + 4 = 64
45 × 2: 40 × 2 = 80, 5 × 2 = 10, 80 + 10 = 90
49 × 2: 40 × 2 = 80, 9 × 2 = 18, 80 + 18 = 98
99 × 2: 90 × 2 = 180, 9 × 2 = 18, 180 + 18 = 198

### Exercise No. 46

#### Mental Multiplication

Multiply mentally by 3 the numbers in Table I on page 7.

### Exercise No. 47

#### Mental Multiplication

Multiply mentally by 4 the numbers in Table I on page 7.

## Exercise No. 48

### Adding Single Columns by Pairs

Take pairs of successive numbers at a time. *Add from the bottom up.*

| 1. $227976.55 | 2. $364631.71 |
|---|---|
| 491368.39 | 291241.97 |
| 476170.02 | 620314.57 |
| 804501.33 | 378990.83 |
| 920950.63 | 267278.30 |
| 512573.15 | 586721.69 |

| 3. $693505.74 | 4. $430413.93 |
|---|---|
| 822427.23 | 525632.59 |
| 186620.98 | 198886.28 |
| 871060.54 | 651653.40 |
| 118577.94 | 964295.81 |
| 996475.17 | 480444.80 |

| 5. $605465.38 | 6. $694235.68 |
|---|---|
| 599320.95 | 483929.91 |
| 810064.74 | 841653.40 |
| 112279.76 | 344518.66 |
| 431275.17 | 624133.37 |
| 890890.55 | 364698.97 |

## Exercise No. 49

### Mental Subtraction

Raise the subtrahend to the next larger number of even dollars.

| | | | |
|---|---|---|---|
| 1. | $19.03 — $.50 | 9. | $61.70 — $.94 |
| 2. | $26.52 — $.86 | 10. | $72.04 — $.85 |
| 3. | $24.27 — $.32 | 11. | $67.30 — $.73 |
| 4. | $15.58 — $.80 | 12. | $60.54 — $.69 |
| 5. | $42.35 — $.59 | 13. | $94.20 — $.48 |
| 6. | $39.29 — $.91 | 14. | $81.64 — $.74 |
| 7. | $16.53 — $.79 | 15. | $76.34 — $.66 |
| 8. | $43.12 — $.17 | 16. | $62.41 — $.89 |

## Exercise No. 50

### Mental Multiplication

Multiply mentally by 5 the numbers in Table I on page 7.

## Exercise No. 51

### Mental Subtraction

Do the examples in Exercise No. 49 by reducing the minuend to the next smaller number of even dollars.

## Exercise No. 52

### Mental Multiplication

Multiply mentally by 6 the numbers in Table I on page 7.

## Exercise No. 53

### Mental Multiplication

Multiply mentally by 7 the numbers in Table I on page 7.

## Exercise No. 54
### Adding Single Columns by Pairs

Take pairs of successive numbers at a time. *Add from the top down.*

| 1. | $806054.65 | 2. | $386942.35 |
|---|---|---|---|
| | 681097.85 | | 933492.59 |
| | 451866.93 | | 209507.09 |
| | 431248.39 | | 751706.02 |
| | 298291.24 | | 882750.78 |
| | 322157.61 | | 305181.62 |
| | 700177.25 | | 733115.33 |
| | 714913.58 | | 379499.64 |
| | 746789.23 | | 663265.52 |
| | 569055.36 | | 444684.16 |
| | 534011.98 | | 227976.86 |
| | 281472.87 | | 377730.32 |

| 3. | $243130.39 | 4. | $559663.93 |
|---|---|---|---|
| | 158010.21 | | 882067.60 |
| | 519794.95 | | 265254.65 |
| | 893672.07 | | 332750.44 |
| | 870485.02 | | 380353.71 |
| | 834913.40 | | 462925.62 |
| | 287919.76 | | 583492.78 |
| | 697537.73 | | 411711.98 |
| | 225942.35 | | 230882.09 |
| | 435756.84 | | 911270.45 |
| | 996168.05 | | 180190.66 |
| | 164864.14 | | 744732.86 |

### Exercise No. 55
### Mental Subtraction

Raise the subtrahend to the next larger number of even dollars.

| | | | |
|---|---|---|---|
| 1. $24.31 — $4.55 | | 9. $96.15 — $8.88 |
| 2. $26.36 — $7.50 | | 10. $87.04 — $2.53 |
| 3. $49.13 — $4.62 | | 11. $79.19 — $7.58 |
| 4. $34.37 — $7.98 | | 12. $59.42 — $3.82 |
| 5. $43.12 — $1.70 | | 13. $99.05 — $1.90 |
| 6. $14.06 — $7.86 | | 14. $77.24 — $3.55 |
| 7. $15.10 — $2.88 | | 15. $67.60 — $5.97 |
| 8. $26.52 — $6.89 | | 16. $72.07 — $3.87 |

### Exercise No. 56
### Mental Multiplication

Multiply mentally by 8 the numbers in Table I on page 7.

### Exercise No. 57
### Adding Single Columns by Trios

Do the examples in Exercise No. 15 on page 12 by taking three successive numbers at a time. *Add from the top down.*

### Exercise No. 58
### Mental Subtraction

Do the examples in Exercise No. 55 by lowering the minuend to the next smaller number of even dollars.

### Exercise No. 59
### Addition of Partial Products

The type of exercise here presented has a bearing on mental multiplication. Thus the first example represents, in inverted position, the partial products we get when we multiply 15 by 53.

$$
\begin{array}{r}
15 \\
\underline{53} \\
45 \\
\underline{750} \\
795
\end{array}
$$

When partial products of this kind occur in mental multiplication you are of necessity compelled *to retain them in your mind.* Hence to develop your ability to do this kind of memory work, you are asked to read each example once and then write it three times on paper before you perform the mental addition.

Complete the mental addition before writing the answer. Work from left to right. Thus in doing the first example you would say to yourself: 750, 790, 795. In doing the second you would say: 620, 680, 682.

| | | | | |
|---|---|---|---|---|
| 1. 750 | 2. 620 | 3. 470 | 4. 740 | 5. 520 |
| 45 | 62 | 94 | 74 | 78 |
| 6. 880 | 7. 720 | 8. 880 | 9. 960 | 10. 840 |
| 44 | 90 | 66 | 72 | 72 |
| 11. 850 | 12. 540 | 13. 570 | 14. 220 | 15. 910 |
| 51 | 81 | 95 | 88 | 52 |
| 16. 680 | 17. 980 | 18. 280 | 19. 640 | 20. 690 |
| 34 | 28 | 84 | 96 | 92 |
| 21. 760 | 22. 810 | 23. 750 | 24. 910 | 25. 580 |
| 95 | 54 | 15 | 78 | 87 |

### Exercise No. 60
### Mental Multiplication
Multiply mentally by 9 the numbers in Table I on page 7.

## Exercise No. 61

### Mental Multiplication

Multiply mentally by 11 the numbers in Table I.


## Exercise No. 62

### Adding Single Columns by Pairs

*Add from the bottom up.*

| 1. $698504.99 | 2. $457012.91 |
|---|---|
| 845643.09 | 820823.58 |
| 761979.28 | 622529.46 |
| 401349.83 | 715303.47 |
| 740614.80 | 159363.96 |
| 553930.31 | 380272.36 |
| 896554.52 | 268195.94 |
| 975160.67 | 789234.17 |
| 417337.75 | 773286.20 |
| 882110.35 | 425922.98 |
| 116448.16 | 669001.18 |
| 477406.66 | 502733.07 |
| 801415.93 | 906396.55 |
| 340939.01 | 301831.05 |
| 380272.36 | 820889.23 |
| 656958.68 | 548620.61 |
| 882152.17 | 874185.10 |
| 401304.99 | 761944.26 |

| 3. | $662533.75 | 4. | $473105.74 |
|----|-----------|----|-----------|
|    | 380277.80 |    | 141593.51 |
|    | 847236.82 |    | 111290.63 |
|    | 735356.57 |    | 897350.27 |
|    | 236569.58 |    | 379128.68 |
|    | 862061.88 |    | 966221.52 |
|    | 178735.81 |    | 644107.29 |
|    | 464385.34 |    | 104004.99 |
|    | 425919.44 |    | 266722.95 |
|    | 789249.94 |    | 987983.35 |
|    | 395497.48 |    | 183216.70 |
|    | 194426.67 |    | 295788.92 |
|    | 129066.25 |    | 336353.75 |
|    | 464347.56 |    | 578389.73 |
|    | 316085.34 |    | 740638.09 |
|    | 499498.27 |    | 236540.02 |
|    | 776980.14 |    | 159383.58 |
|    | 518437.35 |    | 729128.36 |

### Exercise No. 63

### Mental Subtraction

Raise the subtrahend to the next larger number of even dollars.

1. $83.37 − $35.72
2. $68.20 − $61.99
3. $97.48 − $17.87
4. $64.41 − $29.67

5. $25.33 − $10.65
6. $79.58 − $51.84
7. $48.54 − $20.61
8. $52.17 − $30.32

9. $91.28 − $36.82
10. $76.42 − $62.59
11. $55.30 − $18.81
12. $95.12 − $90.66

13. $65.40 − $14.93
14. $37.35 − $28.82
15. $49.01 − $21.85
16. $81.03 − $41.16

## Exercise No. 64

### Continuous Addition Drill

Count by 3's to 75.
Count by 4's to 100.
Count by 6's to 150.
Count by 7's to 175.
Count by 8's to 200.
Count by 9's to 225.
Count by 11's to 275.
Count by 12's to 300.

Repeat this exercise three times.

## Exercise No. 65

### Mental Subtraction

Do the examples in Exercise No. 63 by lowering the minuend to the next smaller number of even dollars.

## Exercise No. 66
### Mental Addition

Read each of these examples once, write it three times and then add it mentally from left to right.

Be careful to think of the upper number in each case as something in the thousands and not as so many hundreds. Thus in the first example the upper number should be called one thousand seven hundred forty, *not* seventeen hundred forty. It is easier to think of comparatively small numbers as hundreds rather than as thousands plus hundreds, but this method of naming leads to trouble when dealing with larger numbers, and it is best to follow one uniform system.

| 1. 1740 | 2. 1650 | 3. 1080 | 4. 1280 |
|---|---|---|---|
| 87 | 55 | 90 | 96 |

| 5. 2430 | 6. 2560 | 7. 3690 | 8. 1120 |
|---|---|---|---|
| 81 | 64 | 82 | 80 |

| | | | |
|---|---|---|---|
| **9.** 1450 | **10.** 1140 | **11.** 1320 | **12.** 1350 |
| 87 | 95 | 88 | 78 |
| **13.** 1340 | **14.** 1320 | **15.** 1920 | **16.** 2340 |
| 67 | 88 | 96 | 78 |
| **17.** 3680 | **18.** 1080 | **19.** 1950 | **20.** 2520 |
| 92 | 84 | 65 | 72 |

### Exercise No. 67
### Mental Subtraction

Raise the subtrahend to the next larger number of even dollars.

| | |
|---|---|
| **1.** $855.30 − $8.32 | **9.** $426.22 − $7.78 |
| **2.** $844.16 − $7.29 | **10.** $912.25 − $5.33 |
| **3.** $671.46 − $4.47 | **11.** $453.31 − $5.60 |
| **4.** $834.06 − $4.09 | **12.** $594.10 − $7.23 |
| **5.** $642.02 − $7.80 | **13.** $415.37 − $7.91 |
| **6.** $836.11 − $8.68 | **14.** $520.39 − $9.76 |
| **7.** $862.21 − $4.45 | **15.** $542.17 − $8.55 |
| **8.** $532.13 − $4.41 | **16.** $673.29 − $9.44 |

### Exercise No. 68
### Adding Single Columns by Trios

Do the examples in Exercise No. 17 on page 15 by grouping three successive numbers at a time. *Add from the top down.*

### Exercise No. 69
### Mental Subtraction

Do the examples in Exercise No. 67 by reducing the minuend to the next smaller number of even dollars.

## Table II
### Numbers for Multiplication Table Drill

| A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 8 | 9 | 10 | 11 |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 14 | 16 | 18 | 20 |
| 8 | 11 | 14 | 17 | 3 | 3 | 3 | 3 | 20 | 23 | 3 | 3 |
| 10 | 14 | 3 | 3 | 9 | 10 | 11 | 12 | 13 | 3 | 11 | 12 |
| 12 | 3 | 7 | 8 | 15 | 17 | 19 | 21 | 9 | 10 | 19 | 21 |
| 14 | 6 | 11 | 13 | 4 | 4 | 4 | 4 | 15 | 17 | 4 | 4 |
| 3 | 9 | 15 | 4 | 10 | 11 | 12 | 13 | 21 | 4 | 12 | 13 |
| 5 | 12 | 4 | 9 | 16 | 18 | 20 | 5 | 4 | 11 | 20 | 22 |
| 7 | 15 | 8 | 14 | 5 | 5 | 5 | 14 | 10 | 18 | 5 | 5 |
| 9 | 4 | 12 | 5 | 11 | 12 | 13 | 6 | 16 | 5 | 13 | 14 |
| 11 | 7 | 16 | 10 | 17 | 19 | 6 | 15 | 22 | 12 | 21 | 23 |
| 13 | 10 | 5 | 15 | 6 | 6 | 14 | 7 | 5 | 19 | 6 | 6 |
|  | 13 | 9 | 6 | 12 | 13 | 7 | 16 | 11 | 6 | 14 | 15 |
|  |  | 13 | 11 | 18 | 7 | 15 | 8 | 17 | 13 | 22 | 24 |
|  |  |  | 16 | 7 | 14 | 8 | 17 | 6 | 20 | 7 | 7 |
|  |  |  | 13 | 8 | 16 | 9 | 12 | 7 | 15 | 16 |  |
|  |  |  |  | 15 | 9 | 18 | 18 | 14 | 23 | 25 |  |
|  |  |  |  |  | 17 | 10 | 7 | 21 | 8 | 8 |  |
|  |  |  |  |  |  | 19 | 13 | 8 | 16 | 17 |  |
|  |  |  |  |  |  |  | 19 | 15 | 24 | 9 |  |
|  |  |  |  |  |  |  |  | 22 | 9 | 18 |  |
|  |  |  |  |  |  |  |  |  | 17 | 10 |  |
|  |  |  |  |  |  |  |  |  |  | 19 |  |

## Exercise No. 70

### Multiplication Table Drill

Use Table II on this page. Multiply the numbers in Column A successively by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12. Repeat this exercise three times.

## Exercise No. 71

### Mental Subtraction

Raise the subtrahend to the next larger number of even dollars, and raise this amount in turn to an even $100. Thus, taking the first example: $100 from $365.42 leaves $265.42; $265.42 + $11 (difference between $100 and $89) equals $276.42; $276.42 + $.27 = $276.69.

| | | | |
|---|---|---|---|
| 1. $365.42 − $88.73 | | 9. $459.48 − $87.55 |
| 2. $950.49 − $94.98 | | 10. $553.18 − $81.64 |
| 3. $723.67 − $40.77 | | 11. $416.07 − $29.19 |
| 4. $614.15 − $93.79 | | 12. $426.22 − $95.78 |
| 5. $858.51 − $84.72 | | 13. $912.25 − $33.63 |
| 6. $928.36 − $36.82 | | 14. $753.46 − $56.57 |
| 7. $413.54 − $86.61 | | 15. $831.05 − $60.85 |
| 8. $342.21 − $96.62 | | 16. $743.16 − $68.29 |

## Exercise No. 72

### Adding Single Columns by Trios

Do the examples in Exercise No. 22 on page 20 by grouping three successive numbers at a time. *Add from the bottom up.*

## Table III

### Numbers to Be Multiplied

| | | |
|---|---|---|
| 1. 111315 | 6. 171922 | 11. 222572 |
| 2. 111417 | 7. 182123 | 12. 541418 |
| 3. 121416 | 8. 897254 | 13. 192389 |
| 4. 121518 | 9. 248963 | 14. 151924 |
| 5. 541316 | 10. 258163 | 15. 212481 |

## Exercise No. 73

### Written Multiplication

Multiply the numbers in Table III by 6789.

## Exercise No. 74

### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right.

Think of the upper number in each case as being in the thousands and not the hundreds.

The first example would be added: 1280, 1480, 1536. In other words, take the first number as a whole, and then add to it successively the hundreds, tens and units of the second number.

| 1. 1280 | 2. 4410 | 3. 1960 | 4. 1380 |
|---|---|---|---|
| 256 | 196 | 686 | 115 |

| 5. 4620 | 6. 3060 | 7. 6510 | 8. 4150 |
|---|---|---|---|
| 693 | 170 | 837 | 664 |

| 9. 4080 | 10. 1110 | 11. 6480 | 12. 1450 |
|---|---|---|---|
| 204 | 185 | 144 | 174 |

| 13. 1640 | 14. 3350 | 15. 5150 | 16. 3510 |
|---|---|---|---|
| 246 | 268 | 344 | 351 |

| 17. 3040 | 18. 8080 | 19. 1240 | 20. 2250 |
|---|---|---|---|
| 304 | 528 | 372 | 405 |

### Exercise No. 75

### Mental Subtraction

Do the examples in Exercise No. 71 on page 49 by lowering the minuend. Reduce it to the next smaller number of even dollars. Taking the first example: $300 − $88.73 leaves $211.27; $211.27 + $65 = $276.27; $276.27 + $.42 = $276.69.

### Exercise No. 76

### Adding Single Columns by Trios

Do the examples in Exercise No. 26 on page 23 by grouping three successive numbers at a time. *Add from the top down.*

### Exercise No. 77

### Mental Multiplication

Multiply mentally by 12 the numbers in Table I on page 7.

### Exercise No. 78

### Adding Single Columns by Trios

Do the examples in Exercise No. 34 on page 28 by grouping three successive numbers at a time.

### Exercise No. 79

### Mental Subtraction

Raise the subtrahend to the next larger number of even hundreds of dollars.

| | | | |
|---|---|---|---|
| 1. $950.49 − $498.65 | | 5. $769.14 − $580.93 | |
| 2. $646.43 − $456.57 | | 6. $831.05 − $685.34 | |
| 3. $520.39 − $176.42 | | 7. $821.45 − $529.48 | |
| 4. $821.13 − $468.54 | | 8. $862.39 − $197.76 | |

9. $318.32 — $181.64    13. $416.07 — $219.44

10. $636.09 — $549.95    14. $640.02 — $493.79

11. $714.10 — $273.65    15. $746.14 — $159.93

12. $821.45 — $599.97    16. $752.30 — $183.81

## Exercise No. 80

### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right. The first example would be added: 16530, 17030, 17081.

| 1. 16530 | 2. 12930 | 3. 24920 |
|---|---|---|
| 551 | 431 | 623 |

| 4. 22080 | 5. 37150 | 6. 33650 |
|---|---|---|
| 552 | 743 | 673 |

| 7. 51780 | 8. 44460 | 9. 67340 |
|---|---|---|
| 863 | 741 | 962 |

| 10. 61810 | 11. 19360 | 12. 12160 |
|---|---|---|
| 883 | 242 | 152 |

| 13. 76960 | 14. 32670 | 15. 25380 |
|---|---|---|
| 962 | 363 | 282 |

| 16. 12690 | 17. 15320 | 18. 19620 |
|---|---|---|
| 141 | 766 | 654 |

| 19. 21720 | 20. 46650 | 21. 44160 |
|---|---|---|
| 543 | 933 | 736 |

## Exercise No. 81

### Written Multiplication

Multiply by 1112 each of the numbers in Table III on page 49. Wherever there occurs in the multiplicand a pair of figures that may be considered as 11 or 12, make one multiplication of this instead of two, and accordingly write down two figures in the partial product. Taking the first example:

$$
\begin{array}{r}
111315 \\
1112 \\
\hline
1335780 \\
1224465 \\
\hline
123782280
\end{array}
$$

111315 is successively multiplied (from right to left) by 12 and 11 thus: $5 \times 12 = 60$, write 0 and carry 6; $1 \times 12 = 12$, $12 + 6 = 18$, write 8 and carry 1; $3 \times 12 = 36$, $36 + 1 = 37$, write 7 and carry 3; $11 \times 12 = 132$, $132+3 = 135$, write 35 and carry 1; $1 \times 12 = 12$, $12 + 1 = 13$, write 13. Multiplication by 11 is carried out in the same way.

In doing these examples be watchful about placing the second partial product *two* places to the left of the first.

## Exercise No. 82

### Adding Single Columns by Trios

Do the examples in Exercise No. 38 on page 32 by grouping three successive numbers at a time. *Add from the bottom up*.

## Exercise No. 83

### Mental Subtraction

Do the examples in Exercise No. 79 on page 51 by lowering the minuend to the next smaller number of even hundreds of dollars.

## Exercise No. 84

### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right.

Add in turn the thousands, hundreds, tens and units to the upper number. In doing the first example you should say to yourself something like the following: 18360 + 1224, 19360; 19360 + 224, 19560; 19560 + 24, 19584.

| | | |
|---|---|---|
| **1.** 18360<br>  1224 | **2.** 21630<br>  2163 | **3.** 24960<br>  3328 |
| **4.** 18820<br>  5646 | **5.** 16260<br>  1084 | **6.** 19530<br>  1953 |
| **7.** 21360<br>  2848 | **8.** 16420<br>  4926 | **9.** 18640<br>  6524 |
| **10.** 10290<br>  2401 | **11.** 13530<br>  3608 | **12.** 16860<br>  5058 |
| **13.** 29240<br>  1462 | **14.** 33680<br>  2526 | **15.** 28590<br>  4765 |
| **16.** 13230<br>  3969 | **17.** 26520<br>  1326 | **18.** 28840<br>  2163 |
| **19.** 24960<br>  4160 | **20.** 28290<br>  5658 | **21.** 14120<br>  2118 |

## Exercise No. 85

### Continuous Addition Drill

Count by 4's to 100.
Count by 6's to 150.
Count by 7's to 175.
Count by 8's to 200.
Count by 9's to 225.
Count by 11's to 275.
Count by 12's to 300.
Count by 13's to 325.

Repeat this exercise three times.

## Exercise No. 86

### Adding Single Columns by Trios

Do the examples in Exercise No. 41 on page 34 by grouping three successive numbers at a time. *Add from the top down.*

## Exercise No. 87

### Factoring

When numbers are multiplied together, they are considered *factors* of the resulting *product*. Thus 2 and 3 are factors of 6, and 3 and 5 are factors of 15.

*Factoring* a number is the process of resolving the number into the factors that will produce the number when multiplied together. Thus 36 may be factored as $2 \times 18$, or as $3 \times 12$, or as $4 \times 9$, or as $6 \times 6$.*

Any number that can be resolved into factors is called a *composite* number.

A *prime* number is one that has no factors besides itself and 1. Thus, 1, 2, 3, 5, 7, 11, 13, etc. are prime numbers.

---

* If it were required to give the *prime* factors of 36, these would be $2 \times 2 \times 3 \times 3$, but factoring into prime numbers has nothing to do with the purposes of this book.

On the pages starting with 146 will be found a table which analyzes all prime and composite numbers up to 625. You will be taught gradually to familiarize yourself with this entire table. The purpose of this is to help you to recognize quickly the character of these numbers—to enable you to multiply rapidly the factors that produce any of them, or to separate any of them into such factors.

Of special importance in this table are the numbers printed in italic type, since these can be produced by two factors each of which is 25 or less.

It is quite commonly appreciated that very small numbers have a definite individuality which grows out of the many associations built up around them in our minds. The individual character of higher numbers becomes similarly apparent and unforgettable when we single them out for particular attention.

For the first exercise in factoring read the first two columns of the table on page 146, and then write these from memory (or calculation) in the same form.

In studying the table note that each composite number is factored by first taking the smaller factors in the order of their size, and that the combinations are not repeated. Thus the separate ways of factoring 48 are given as $2 \times 24$, $3 \times 16$, $4 \times 12$ and $6 \times 8$. These combinations are not repeated as $8 \times 6$, $12 \times 4$, $16 \times 3$, and $24 \times 2$.

### Exercise No. 88

#### Multiplication Table Drill

Use Table II on page 48.

Multiply the numbers in Column A successively by 3, 4, 6, 7, 8, 9, 11, 12 and 13.

Repeat this exercise three times.

This exercise takes us the first step beyond the custom-

ary limits of the multiplication table, which ordinarily goes no farther than 12 × 12. Succeeding examples will enable you to memorize the products of all pairs of numbers up to 25 × 25.

No multiplication table, as such, is presented in this book, because learning the products of higher factors by sheer power of memory is extremely difficult. On the other hand, when you are put over and over again to the necessity of figuring out these higher combinations for yourself, they soon come to stick firmly in the mind.

## Exercise No. 89

### Mental Addition

Read each of the following examples once, write it three times, and then add it mentally from left to right. The first example would be added: 165300, 170300, 170810.

| | | |
|---|---|---|
| 1. 165300 | 2. 129300 | 3. 249200 |
| 5510 | 4310 | 6230 |
| | | |
| 4. 220800 | 5. 371500 | 6. 336500 |
| 5520 | 7430 | 6730 |
| | | |
| 7. 517800 | 8. 444600 | 9. 673400 |
| 8630 | 7410 | 9620 |
| | | |
| 10. 618100 | 11. 193600 | 12. 121600 |
| 8830 | 2420 | 1520 |
| | | |
| 13. 769600 | 14. 326700 | 15. 253800 |
| 9620 | 3630 | 2820 |

| 16. 126900 | 17. 153200 | 18. 196200 |
| 1410 | 7660 | 6540 |

| 19. 217200 | 20. 456500 | 21. 441600 |
| 5430 | 9330 | 7360 |

### Exercise No. 90
#### Mental Multiplication

Multiply mentally by 13 the numbers in Table I on page 7.

In working with numbers from 80 upward, immediately name 1000 as the first part of the product. Thus $83 \times 13$ is 1040, (+39) 1079; $97 \times 13$ is 1170, 1261.

### Exercise No. 91
#### Adding Single Columns by Trios

Do the examples in Exercise No. 48 on page 39 by grouping three successive numbers at a time. *Add from the bottom up.*

### Exercise No. 92
#### Factoring

Read the table on page 146 from 31 to 72 inclusive, and then write it in the same form.

### Exercise No. 93
#### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right.

Add in turn the tens of thousands, thousands, hundreds and tens to the upper number. The first example would be added: 183600, 193600, 195600, 195840.

| 1. 183600 | 2. 216300 | 3. 249600 |
|---|---|---|
| 12240 | 21630 | 33280 |

| 4. 188200 | 5. 162600 | 6. 195300 |
|---|---|---|
| 56460 | 10840 | 19530 |

| 7. 213600 | 8. 164200 | 9. 186400 |
|---|---|---|
| 28480 | 49260 | 65240 |

| 10. 102900 | 11. 135300 | 12. 168600 |
|---|---|---|
| 24010 | 36080 | 50580 |

| 13. 292400 | 14. 336800 | 15. 285900 |
|---|---|---|
| 14620 | 25260 | 47650 |

| 16. 132300 | 17. 265200 | 18. 288400 |
|---|---|---|
| 39690 | 13260 | 21630 |

| 19. 249600 | 20. 282900 | 21. 141200 |
|---|---|---|
| 41600 | 56580 | 21180 |

### Exercise No. 94

#### Written Multiplication

Multiply by 1213 each of the numbers in Table III on page 49. Wherever there occurs in the multiplicand a pair of figures that may be considered as 11, 12 or 13, make one multiplication of this instead of two, and write two figures in the partial product. Thus, taking the first example, we successively multiply 15, 13 and 11 by 13 and again by 12. The partial products are accordingly written in two lines instead of the customary four.

## Exercise No. 95

### Adding Single Columns by Trios

Do the examples in Exercise No. 54 on page 41 by grouping three successive numbers at a time. *Add from the top down.*

## Exercise No. 96

### Factoring

Factor the numbers from 54 to 92 inclusive in the form shown in the table on page 146.

## Exercise No. 97

### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right.

Add the whole of the second number to the first before considering the third. Repeat to yourself several times the sum of the first and second if you find this necessary.

The third example would be added: 36300, 39300, 39930; (repeat 39930, 39930); 39930, 40030, 40051.

| | | |
|---|---|---|
| **1.** 10100 | **2.** 22200 | **3.** 36300 |
| 1010 | 2220 | 3630 |
| 101 | 222 | 121 |
| | | |
| **4.** 52400 | **5.** 70500 | **6.** 90600 |
| 5240 | 7050 | 1510 |
| 262 | 141 | 302 |
| | | |
| **7.** 19100 | **8.** 20200 | **9.** 33300 |
| 9950 | 1010 | 2220 |
| 382 | 101 | 222 |

| | | |
|---|---|---|
| **10.** 48400 | **11.** 65500 | **12.** 84600 |
| 3630 | 5240 | 7050 |
| 121 | 262 | 141 |

| | | |
|---|---|---|
| **13.** 18100 | **14.** 38200 | **15.** 20200 |
| 7240 | 9050 | 4040 |
| 181 | 905 | 202 |

| | | |
|---|---|---|
| **16.** 42400 | **17.** 66600 | **18.** 40400 |
| 6360 | 8880 | 4040 |
| 424 | 666 | 404 |

| | | |
|---|---|---|
| **19.** 33600 | **20.** 88800 | **21.** 30300 |
| 3360 | 8880 | 9090 |
| 336 | 222 | 303 |

### Exercise No. 98
### Continuous Addition Drill
Count by 6's to 150.
Count by 7's to 175.
Count by 8's to 200.
Count by 9's to 225.
Count by 11's to 275.
Count by 12's to 300.
Count by 13's to 325.
Count by 14's to 350.

Repeat this exercise three times.

### Exercise No. 99

### Adding Single Columns by Trios

Do the examples in Exercise No. 62 on page 44 by grouping three successive numbers at a time. *Add from the bottom up.*

### Exercise No. 100

### Factoring

Factor the numbers from 73 to 111 inclusive in the form shown in the table on page 146.

### Exercise No. 101

### Mental Addition

Read each of the following examples once, write it three times and then add it mentally from left to right.

The first example would be added: 26200, 33200, 34000, 34060; 34060, 36060, 36156.

| 1. 26200 | 2. 48400 | 3. 69900 |
|---|---|---|
| 7860 | 9680 | 9320 |
| 2096 | 1210 | 1398 |

| 4. 12100 | 5. 26400 | 6. 42900 |
|---|---|---|
| 9680 | 9240 | 8580 |
| 1089 | 1056 | 1144 |

| 7. 61600 | 8. 82500 | 9. 88000 |
|---|---|---|
| 9240 | 9900 | 8800 |
| 1078 | 1155 | 1056 |

| 10. 93500 | 11. 98000 | 12. 73200 |
|---|---|---|
| 9350 | 9800 | 9760 |
| 1122 | 1188 | 1098 |

| 13. 93100 | 14. 97600 | 15. 71000 |
|---|---|---|
| 9310 | 9760 | 7100 |
| 1064 | 1220 | 1065 |

| 16. 46600 | 17. 57700 | 18. 68800 |
|---|---|---|
| 9320 | 5770 | 6880 |
| 1398 | 2308 | 2064 |

| 19. 79900 | 20. 24600 | 21. 70200 |
|---:|---:|---:|
| 7990 | 9840 | 9320 |
| 3196 | 1107 | 1170 |

### Exercise No. 102

### Multiplication Table Drill

Use Table II on page 48.

Multiply the numbers in Column A successively by 4, 6, 7, 8, 9, 11, 12, 13 and 14.

Repeat this exercise three times.

### Exercise No. 103

### Two-Column Addition

You are now ready to start adding two columns at a time. Take Exercise No. 13 on page 11. *Add from the top down.*

Two-column addition is simply an application of the left-to-right methods which you have already learned. To illustrate with the first example:

$$
\begin{array}{r}
43 \\
62 \\
78 \\
81 \\
14 \\
\underline{87} \\
\end{array}
$$

This would be added: 43, 103, 105, 175, 183, 263, 264, 274, 278, 358, 365. These are the actual steps, but with practice you will read this as 105, 183, 264, 278, 365.

### Exercise No. 104

### Factoring

Factor the numbers from 93 to 129 inclusive in the form shown in the table on pages 146 and 147.

## Exercise No. 105

## Mental Addition

Read each of the following examples once, write it three times, and then add it mentally from left to right.

| 1. 112700 | 2. 136800 | 3. 162900 |
|---|---|---|
| 3220 | 5130 | 2400 |
| 161 | 342 | 181 |

| 4. 105700 | 5. 128800 | 6. 153900 |
|---|---|---|
| 1510 | 3220 | 5130 |
| 302 | 161 | 342 |

| 7. 151200 | 8. 183400 | 9. 176400 |
|---|---|---|
| 5040 | 7860 | 5040 |
| 756 | 262 | 252 |

| 10. 209600 | 11. 104800 | 12. 103200 |
|---|---|---|
| 7860 | 5240 | 6880 |
| 524 | 524 | 860 |

| 13. 114100 | 14. 112800 | 15. 126000 |
|---|---|---|
| 6520 | 7050 | 7560 |
| 978 | 423 | 756 |

| 16. 111000 | 17. 104400 | 18. 135900 |
|---|---|---|
| 9250 | 8700 | 9060 |
| 740 | 870 | 302 |

| 19. 112800 | 20. 130500 | 21. 136800 |
|---|---|---|
| 9870 | 8700 | 6800 |
| 141 | 435 | 684 |

## Exercise No. 106

### Mental Multiplication

Multiply mentally by 14 the numbers in Table I on page 7.

## Exercise No. 107

### Two-Column Addition

Do the examples in Exercise No. 17 on page 15 by adding two columns at a time. *Add from the bottom up.*

## Exercise No. 108

### Factoring

Factor the numbers from 112 to 145 inclusive in the form shown in the table on pages 146 and 147.

## Exercise No. 109

### Mental Addition

Read each of the following examples once, write it three times, and then add it mentally from left to right.

| 1. 121000 | 2. 217600 | 3. 253800 |
|---|---|---|
| 14520 | 10880 | 14100 |
| 484 | 544 | 846 |

| 4. 116000 | 5. 145200 | 6. 224800 |
|---|---|---|
| 11600 | 14520 | 10880 |
| 464 | 726 | 816 |

| 7. 171500 | 8. 211800 | 9. 344700 |
|---|---|---|
| 24010 | 10590 | 22980 |
| 343 | 706 | 383 |

| 10. 129200 | 11. 166500 | 12. 290400 |
|---|---|---|
| 16150 | 19980 | 14520 |
| 323 | 666 | 363 |

| 13. 335700 | 14. 272400 | 15. 324800 |
|---|---|---|
| 18650 | 18160 | 23200 |
| 746 | 454 | 928 |

| 16. 124200 | 17. 317800 | 18. 371200 |
|---|---|---|
| 20700 | 18160 | 23200 |
| 828 | 454 | 924 |

| 19. 395500 | 20. 210000 | 21. 540800 |
|---|---|---|
| 34200 | 36750 | 33800 |
| 565 | 525 | 676 |

### Exercise No. 110
#### Written Multiplication

Multiply by 1314 the numbers in Table III on page 49.

### Exercise No. 111
#### Two-Column Addition

Do the examples in Exercise No. 26 on page 23 by adding two columns at a time. *Add from the top down.*

### Exercise No. 112
#### Factoring

Factor the numbers from 130 to 162 inclusive in the form shown in the table on page 147.

### Exercise No. 113
#### Mental Addition

Read each of the following examples once, write it three times, and then add it mentally from left to right.

| 1. 123200 | 2. 187800 | 3. 254400 |
|---|---|---|
| 39800 | 37560 | 44520 |
| 1232 | 1878 | 2544 |

| 4. 323000 | 5. 393600 | 6. 466200 |
|---|---|---|
| 51680 | 59040 | 26640 |
| 3230 | 3936 | 4662 |

| 7. 616200 | 8. 121200 | 9. 184800 |
|---|---|---|
| 41160 | 48480 | 55440 |
| 1392 | 2424 | 3080 |

| 10. 250400 | 11. 318000 | 12. 387600 |
|---|---|---|
| 25040 | 31800 | 38760 |
| 3956 | 4452 | 1292 |

| 13. 439200 | 14. 532800 | 15. 608400 |
|---|---|---|
| 43920 | 53280 | 60840 |
| 1312 | 1998 | 2704 |

| 16. 139200 | 17. 143400 | 18. 218700 |
|---|---|---|
| 34800 | 28680 | 36350 |
| 1392 | 1434 | 2187 |

| 19. 294800 | 20. 373500 | 21. 454200 |
|---|---|---|
| 44220 | 52290 | 60560 |
| 2948 | 3735 | 4542 |

## Exercise No. 114

### Continuous Addition Drill

Count by 7's to 175.
Count by 8's to 200.
Count by 9's to 225.
Count by 11's to 275.
Count by 12's to 300.
Count by 13's to 325.

Count by 14's to 350.
Count by 15's to 375.
Repeat this exercise three times.

### Exercise No. 115

#### Two-Column Addition

Do the examples in Exercise No. 34 on page 28 by adding two columns at a time. *Add from the bottom up.*

### Exercise No. 116

#### Multiplication Table Drill

Use Table II on page 48.

Multiply the numbers in Column B successively by 6, 7, 8, 9, 11, 12, 13, 14 and 15.

Repeat this exercise three times.

### Exercise No. 117

#### Factoring

Factor the numbers from 146 to 179 inclusive in the form shown in the table on page 147.

### Exercise No. 118

#### Two-Column Addition

Do the examples in Exercise No. 38 on page 32 by adding two columns at a time. *Add from the top down.*

It slows up addition by two columns to keep repeating the number of hundreds as you go along. A good plan is to keep tally of the number of hundreds with a pencil. In all addition of long columns write numbers to be carried either at the head of the next column or beneath the figures in the total as you set them down. When looking for errors in addition, add in the opposite direction from that in which the addition was originally performed.

## Exercise No. 119

### Mental Multiplication

Multiply mentally by 15 the numbers in Table I on page 7 .

## Exercise No. 120

### Two-Column Addition

Do the examples in Exercise No. 41 on page 34 by adding two columns at a time. *Add from the bottom up.*

## Exercise No. 121

### Factoring

Factor the numbers from 163 to 194 inclusive in the form shown in the table on page 147.

## Exercise No. 122

### Two-Column Addition

Do the examples in Exercise No. 48 on page 39 by adding two columns at a time. *Add from the top down.*

## Exercise No. 123

### Written Multiplication

Multiply by 1415 the numbers in Table III on page 49.

## Exercise No. 124

### Two-Column Addition

Do the examples in Exercise No. 54 on page 41 by adding two columns at a time. *Add from the bottom up.*

## Exercise No. 125
### Factoring

Factor the numbers from 180 to 209 inclusive in the form shown in the table on page 147.

## Exercise No. 126
### Two–Column Addition

Do the examples in Exercise No. 62 on page 44 by adding two columns at a time. *Add from the top down.*

## Exercise No. 127
### Continuous Addition Drill
Count by 8's to 200.
Count by 9's to 225.
Count by 11's to 275.
Count by 12's to 300.
Count by 13's to 325.
Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.

Repeat this exercise three times.

## Exercise No. 128
### Three–Column Addition
With the practice you have had in two–column addition you should now be able to add three columns at a time. Try this with the examples in Exercise No. 38 on page 32. No additional exercises in three–column addition are given, but you can of course practice it on your own account if you so desire.

## Exercise No. 129
### Multiplication Table Drill

Use Table II on page 48.

Multiply the numbers in Column C successively by 7, 8, 9, 11, 12, 13, 14, 15 and 16.

Repeat this exercise three times.


## Exercise No. 130
### Factoring

Factor the numbers from 195 to 224 inclusive in the form shown in the table on pages 147 and 148.


## Exercise No. 131
### Mental Multiplication

Multiply mentally by 16 the numbers in Table I on page 7 .


## Exercise No. 132
### Written Multiplication

Multiply by 1516 the numbers in Table III on page 49.


## Exercise No. 133
### Factoring

Factor the numbers from 210 to 239 inclusive in the form shown in the table on pages 147 and 148.

# DIVISION IN GENERAL

Division is multiplication in reverse. As you improve in multiplication you automatically develop your skill at division. For this reason it has been considered unnecessary to include any exercises in long division.

Exercises, however, are given in mental division, in order to round out your general calculating ability. These exercises are of the following types:

First you use the numbers from 2 to 25 as direct divisors, securing quotients from 1 to 99. Then you divide by the numbers from 2 to 9, finding answers of three places. Again, you divide by three-place numbers to arrive at quotients of one figure plus a remainder; the remainder is included so that the answer cannot be guessed but must be calculated accurately. Finally, you divide by numbers of two places and get results of two places. As division is somewhat more complicated, the exercises in division are not carried so far as those in multiplication.

### Exercise No. 134
#### Mental Division

Divide mentally by 2 the answers to Exercise No. 45 as given on pages 161 and 162. Compare your answers with Table I on page 7.

### Exercise No. 135
#### Continuous Addition Drill
Count by 9's to 225.
Count by 11's to 275.

Count by 12's to 300.
Count by 13's to 325.
Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.

Repeat this exercise three times.

## Exercise No. 136
### Mental Division

Divide mentally by 3 the answers to Exercise No. 46 as given on page 162. Compare your answers with Table I on page 7.

## Exercise No. 137
### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column D by 8, 9, 11, 12, 13, 14, 15, 16 and 17.

Repeat this exercise three times.

## Exercise No. 138
### Factoring

Factor the numbers from 225 to 254 inclusive in the form shown in the table on page 148.

## Exercise No. 139
### Mental Division

Divide mentally by 4 the answers to Exercise No. 47 as given on page 162. Compare your answers with Table I on page 7.

## Exercise No. 140
### Mental Multiplication

Multiply mentally by 17 the numbers in Table I on page 7.

### Exercise No. 141
### Written Multiplication

Multiply by 1617 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 17.

### Exercise No. 142

### Factoring

Factor the numbers from 240 to 269 inclusive in the form shown in the Table on page 148.

### Exercise No. 143

### Mental Division

Divide mentally by 5 the answers to Exercise No. 50 as given on page 163. Compare your answers with Table I on page 7 .

### Exercise No. 144

### Continuous Addition Drill

Count by 11's to 275.
Count by 12's to 300.
Count by 13's to 325.
Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.

Repeat this exercise three times.

### Exercise No. 145
### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column E by 9, 11, 12, 13, 14, 15, 16, 17 and 18.

Repeat this exercise three times.

### Exercise No. 146
### Factoring

Factor the numbers from 255 to 284 inclusive in the form shown in the table on page 148.

### Exercise No. 147

### Mental Division

Divide mentally by 6 the answers to Exercise No. 52 as given on page 163. Compare your answers with Table I on page 7.

### Exercise No. 148

### Mental Multiplication

Multiply mentally by 18 the numbers in Table I on page 7.

### Exercise No. 149

### Written Multiplication

Multiply by 1718 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 18.

### Exercise No. 150

### Factoring

Factor the numbers from 270 to 299 inclusive in the form shown in the table on pages 148.

### Exercise No. 151

### Mental Division

Divide mentally by 7 the answers to Exercise No. 53 as given on pages 163 and 164. Compare your answers with Table I on page 7.

### Exercise No. 152

### Continuous Addition Drill

Count by 12's to 300.
Count by 13's to 325.
Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.

Repeat this exercise three times.

### Exercise No. 153

### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column F by 11, 12, 13, 14, 15, 16, 17, 18 and 19.

Repeat this exercise three times.

### Exercise No. 154

### Factoring

Factor the numbers from 285 to 312 inclusive in the form shown in the table on page 148.

### Exercise No. 155

### Mental Division

Divide mentally by 8 the answers to Exercise No. 56 as given on page 164. Compare your answers with Table I on page 7 .

### Exercise No. 156

### Mental Multiplication

Multiply mentally by 19 the numbers in Table I on page 7 .

## Exercise No. 157

### Factoring

Factor the numbers from 300 to 328 inclusive in the form shown in the table on page 148.

## Exercise No. 158

### Mental Division

Divide mentally by 9 the answers to Exercise No. 60 as given on page 164. Compare your answers with Table I on page 7 .

## Exercise No. 159

### Written Multiplication

Multiply by 1819 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 19.

## Exercise No. 160

### Factoring

Factor the numbers from 313 to 343 inclusive in the form shown in the table on page 149.

## Exercise No. 161

### Mental Division

Divide mentally by 11 the answers to Exercise No. 61 as given on page 165. Compare your answers with Table I on page 7 .

### Exercise No. 162

### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column G by 12, 13, 14, 15, 16, 17, 18, 19 and 20.

### Exercise No. 163

### Factoring

Factor the numbers from 329 to 359 inclusive in the form shown in the table on pages 148 and 149.

### Exercise No. 164

### Mental Division

Divide mentally by 12 the answers to Exercise No. 77 as given on page 166. Compare your answers with Table I on page 7.

### Exercise No. 165

### Mental Multiplication

Multiply mentally by 20 the numbers in Table I on page 7.

### Exercise No. 166

### Written Multiplication

Multiply by 1920 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 20.

### Exercise No. 167

### Factoring

Factor the numbers from 344 to 372 inclusive in the form shown in the table on page 149.

### Exercise No. 168

### Mental Division

Divide mentally by 13 the answers to Exercise No. 90 as given on page 167. Compare your answers with Table I on page 7.

### Exercise No. 169

### Continuous Addition Drill

Count by 13's to 325.
Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.
Count by 21's to 525.

### Exercise No. 170

### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column H by 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21.

### Exercise No. 171

### Factoring

Factor the numbers from 360 to 386 inclusive in the form shown in the table on page 149.

### Exercise No. 172

### Mental Multiplication

Multiply mentally by 21 the numbers in Table I on page 7.

### Exercise No. 173

#### Written Multiplication

Multiply by 2021 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 21.

### Exercise No. 174

#### Factoring

Factor the numbers from 373 to 399 inclusive in the form shown in the table on pages 149 and 150.

### Exercise No. 175

#### Mental Division

Divide mentally by 14 the answers to Exercise No. 106 as given on page 168. Compare your answers with Table I on page 7.

### Exercise No. 176

#### Continuous Addition Drill

Count by 14's to 350.
Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.
Count by 21's to 525.
Count by 22's to 550.

Repeat this exercise three times.

## Exercise No. 177

### Multiplication Table Drill

Use Table II on page 48.
Multiply mentally the numbers in Column J by 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22.

## Exercise No. 178

### Factoring

Factor the numbers from 387 to 413 inclusive in the form shown in the table on pages 149 and 150.

## Exercise No. 179

### Mental Multiplication

Multiply mentally by 22 the numbers in Table I on page 7.

## Exercise No. 180

### Written Multiplication

Multiply by 2122 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 22.

## Exercise No. 181

### Factoring

Factor the numbers from 400 to 427 inclusive in the form shown in the table on page 150.

### Exercise No. 182

### Mental Division

Divide mentally by 15 the answers to Exercise No. 119 as given on page 169. Compare your answers with Table I on page 7.

### Exercise No. 183

### Continuous Addition Drill

Count by 15's to 375.
Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.
Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.

Repeat this exercise three times.

### Exercise No. 184

### Multiplication Table Drill

Use Table II on page 48.
Multiply mentally the numbers in Column K by 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23.

### Exercise No. 185

### Factoring

Factor the numbers from 414 to 440 inclusive in the form shown in the table on page 150.

### Exercise No. 186

### Mental Multiplication

Multiply mentally by 23 the numbers in Table I on page 7.

## Exercise No. 187

### Written Multiplication

Multiply by 2223 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 23.

## Exercise No. 188

### Factoring

Factor the numbers from 428 to 455 inclusive in the form shown in the table on page 150.

## Exercise No. 189

### Mental Division

Divide mentally by 16 the answers to Exercise No. 131 as given on pages 169 and 170. Compare your answers with Table I on page 7 .

## Exercise No. 190

### Continuous Addition Drill

Count by 16's to 400.
Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.
Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.
Count by 24's to 600.

Repeat this exercise three times.

## Exercise No. 191

### Multiplication Table Drill

Use Table II on page 48 .

Multiply mentally the numbers in Column L by 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24.

### Exercise No. 192

#### Factoring

Factor the numbers from 441 to 467 inclusive in the form shown in the table on pages 150 and 151.

### Exercise No. 193

#### Mental Multiplication

Multiply mentally by 24 the numbers in Table I on page 7 .

### Exercise No. 194

#### Written Multiplication

Multiply by 2324 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 24.

### Exercise No. 195

#### Factoring

Factor the numbers from 456 to 479 inclusive in the form shown in the table on pages 150 and 151.

### Exercise No. 196

#### Mental Division

Divide mentally by 17 the answers to Exercise No. 140 as given on page 170.  Compare your answers with Table I on page  7 .

### Exercise No. 197

#### Continuous Addition Drill

Count by 17's to 425.
Count by 18's to 450.
Count by 19's to 475.

Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.
Count by 24's to 600.
Count by 25's to 625.

Repeat this exercise three times.

## Exercise No. 198

### Multiplication Table Drill

Use Table II on page 48.

Multiply mentally the numbers in Column M by 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25.

## Exercise No. 199

### Factoring

Factor the numbers from 468 to 491 inclusive in the form shown in the table on page 151.

## Exercise No. 200

### Mental Multiplication

Multiply mentally by 25 the numbers in Table I on page 7.

## Exercise No. 201

### Written Multiplication

Multiply by 2425 the numbers in Table III on page 49. Make a single multiplication of pairs of figures in the multiplicand up to 25.

## Exercise No. 202

### Factoring

Factor the numbers from 480 to 503 inclusive in the form shown in the table on page 151.

### Exercise No. 203
### Mental Division

Divide mentally by 18 the answers to Exercise No. 148 as given on page 170 and 171. Compare your answers with Table I on page 7.

### Exercise No. 204
### Mental Multiplication

Multiply mentally by 20 the numbers in Table I on page 7.

### Exercise No. 205
### Continuous Addition Drill

Count by 18's to 450.
Count by 19's to 475.
Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.
Count by 24's to 600.
Count by 25's to 625.

Repeat this exercise three times.

### Exercise No. 206
### Factoring

Factor the numbers from 492 to 515 inclusive in the form shown in the table on page 151.

### Exercise No. 207
### Continuous Addition Drill

Count by 19's to 475.
Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.
Count by 24's to 600.
Count by 25's to 625.

Repeat this exercise three times.

## Exercise No. 208
### Mental Multiplication

Multiply mentally by 30 the numbers in Table I on page 7.

## Exercise No. 209
### Factoring

Factor the numbers from 504 to 527 inclusive in the form shown in the table on page 151.

## Exercise No. 210
### Mental Division

Divide mentally by 19 the answers to Exercise No. 149 as given on page 171. Compare your answers with Table I on page 7.

## Exercise No. 211
### Continuous Addition Drill

Count by 21's to 525.
Count by 22's to 550.
Count by 23's to 575.
Count by 24's to 600.
Count by 25's to 625.

Repeat this exercise three times.

## Exercise No. 212
### Mental Multiplication

Multiply mentally by 40 the numbers in Table I on page 7.

## Exercise No. 213
### Factoring

Factor the numbers from 516 to 539 inclusive in the form shown in the table on page 151.

### Exercise No. 214

### Continuous Addition Drill

Count by 22's to 550.

Count by 23's to 575.

Count by 24's to 600.

Count by 25's to 625.

Repeat this exercise three times.

### Exercise No. 215

### Mental Multiplication

Multiply mentally by 50 the numbers in Table I on page 7.

### Exercise No. 216

### Factoring

Factor the numbers from 528 to 551 inclusive in the form shown in the table on pages 151 and 152.

### Exercise No. 217

### Continuous Addition Drill

Count by 23's to 575.

Count by 24's to 600.

Count by 25's to 625.

Repeat this exercise three times.

### Exercise No. 218

### Mental Division

Divide mentally by 20 the answers to Exercise No. 165 as given on page 172. Compare your answers with Table I on page 7.

## Exercise No. 219
### Mental Multiplication

Multiply mentally by 60 the numbers in Table I on page 7.

## Exercise No. 220
### Factoring

Factor the numbers from 540 to 564 inclusive in the form shown in the table on page 152.

## Exercise No. 221
### Continuous Addition Drill

Count by 24's to 600.

Count by 25's to 625.

Repeat this exercise three times.

## Exercise No. 222
### Mental Multiplication

Multiply mentally by 70 the numbers in Table I on page 7.

## Exercise No. 223
### Factoring

Factor the numbers from 552 to 576 inclusive in the form shown in the table on page 152.

## Exercise No. 224
### Mental Division

Divide mentally by 21 the answers to Exercise No. 172 as given on page 172. Compare your answers with Table I on page 7.

### Exercise No. 225

### Continuous Addition Drill

Count by 25's to 625.

Repeat this exercise three times.


### Exercise No. 226

### Mental Multiplication

Multiply mentally by 80 the numbers in Table I on page 7 .


### Exercise No. 227

### Factoring

Factor the numbers from 565 to 592 inclusive in the form shown in the table on page 152.


### Exercise No. 228

### Mental Multiplication

Multiply mentally by 90 the numbers in Table I on page 7 .


### Exercise No. 229

### Multiplying Three Figures by One

We are now ready to start the mental multiplication of numbers of three places by numbers of one place. Work from left to right. Immediately name the first partial product as hundreds or thousands. Thus, taking the fourth example, this would be calculated as 800, 900, 902. The fifth example would be figured as 1000, 1120, 1124.

When dealing with numbers in the thousands be sure to consider the thousands as such and not as so many hundreds. If you wish, however, you may shorten the terminology. You may, for instance, think of one thousand one

hundred twenty-six simply as one, one twenty-six, or as one, one two six.

Perform mentally the following multiplications.

| | | |
|---|---|---|
| 1. $121 \times 2$ | 8. $842 \times 2$ | 15. $663 \times 2$ |
| 2. $232 \times 2$ | 9. $953 \times 2$ | 16. $721 \times 2$ |
| 3. $343 \times 2$ | 10. $161 \times 2$ | 17. $832 \times 2$ |
| 4. $451 \times 2$ | 11. $222 \times 2$ | 18. $943 \times 2$ |
| 5. $562 \times 2$ | 12. $333 \times 2$ | 19. $151 \times 2$ |
| 6. $623 \times 2$ | 13. $441 \times 2$ | 20. $262 \times 2$ |
| 7. $731 \times 2$ | 14. $552 \times 2$ | |

## Exercise No. 230
### Factoring
Factor the numbers from 577 to 605 inclusive in the form shown in the table on page 152.

## Exercise No. 231
### Mental Division
Divide mentally by 22 the answers to Exercise No. 179 as given on page 173. Compare your answers with Table I on page 7.

## Exercise No. 232
### Mental Multiplication
Multiply mentally by 110 the numbers in Table I on page 7.

## Exercise No. 233
### Multiplying Three Figures by One
Perform mentally the following multiplications.

| | | |
|---|---|---|
| 1. $131 \times 3$ | 3. $353 \times 3$ | 5. $571 \times 3$ |
| 2. $242 \times 3$ | 4. $464 \times 3$ | 6. $632 \times 3$ |

7. 743 × 3
8. 854 × 3
9. 961 × 3
10. 172 × 3
11. 233 × 3

12. 344 × 3
13. 451 × 3
14. 562 × 3
15. 673 × 3
16. 734 × 3

17. 841 × 3
18. 952 × 3
19. 163 × 3
20. 274 × 3

## Exercise No. 234
### Factoring
Factor the numbers from 593 to 625 inclusive in the form shown in the table on pages 152 and 153.

## Exercise No. 235
### Mental Division
Divide mentally by 23 the answers to Exercise No. 186 as given on pages 173 and 174. Compare your answers with Table I on page 7.

## Exercise No. 236
### Mental Multiplication
Multiply mentally by 120 the numbers in Table I on page 7.

## Exercise No. 237
### Multiplying Three Figures by One
Perform mentally the following multiplications.

1. 141 × 4
2. 252 × 4
3. 363 × 4
4. 474 × 4
5. 585 × 4
6. 641 × 4
7. 752 × 4

8. 863 × 4
9. 974 × 4
10. 185 × 4
11. 241 × 4
12. 352 × 4
13. 463 × 4
14. 574 × 4

15. 685 × 4
16. 741 × 4
17. 852 × 4
18. 963 × 4
19. 174 × 4
20. 285 × 4

## Exercise No. 238
### Mental Division

Divide mentally by 24 the answers to Exercise No. 193 as given on page 174. Compare your answers with Table I on page 7.

## Exercise No. 239
### Mental Multiplication

Multiply mentally by 130 the numbers in Table I on page 7.

## Exercise No. 240
### Multiplying Three Figures by One

Perform mentally the following multiplications.

| | | |
|---|---|---|
| 1. 151 × 5 | 8. 872 × 5 | 15. 693 × 5 |
| 2. 262 × 5 | 9. 983 × 5 | 16. 754 × 5 |
| 3. 373 × 5 | 10. 194 × 5 | 17. 865 × 5 |
| 4. 484 × 5 | 11. 255 × 5 | 18. 976 × 5 |
| 5. 595 × 5 | 12. 366 × 5 | 19. 181 × 5 |
| 6. 656 × 5 | 13. 471 × 5 | 20. 292 × 5 |
| 7. 761 × 5 | 14. 582 × 5 | |

## Exercise No. 241
### Mental Division

Divide mentally by 25 the answers to Exercise No. 200 as given on pages 174 and 175. Compare your answers with Table I on page 7.

## Exercise No. 242
### Mental Multiplication

Multiply mentally by 140 the numbers in Table I on page 7.

### Exercise No. 243
### Multiplying Three Figures by One
Perform mentally the following multiplications.

| | | |
|---|---|---|
| 1. 141 × 6 | 8. 851 × 6 | 15. 661 × 6 |
| 2. 252 × 6 | 9. 962 × 6 | 16. 772 × 6 |
| 3. 363 × 6 | 10. 173 × 6 | 17. 883 × 6 |
| 4. 474 × 6 | 11. 284 × 6 | 18. 994 × 6 |
| 5. 585 × 6 | 12. 395 × 6 | 19. 145 × 6 |
| 6. 696 × 6 | 13. 446 × 6 | 20. 256 × 6 |
| 7. 747 × 6 | 14. 557 × 6 | |

### Exercise No. 244
### Mental Multiplication
Multiply mentally by 150 the numbers in Table I on page 7.

### Exercise No. 245
### Multiplying Three Figures by One
Perform mentally the following multiplications.

| | | |
|---|---|---|
| 1. 131 × 7 | 8. 838 × 7 | 15. 637 × 7 |
| 2. 242 × 7 | 9. 941 × 7 | 16. 748 × 7 |
| 3. 353 × 7 | 10. 152 × 7 | 17. 851 × 7 |
| 4. 464 × 7 | 11. 263 × 7 | 18. 962 × 7 |
| 5. 575 × 7 | 12. 374 × 7 | 19. 173 × 7 |
| 6. 686 × 7 | 13. 485 × 7 | 20. 284 × 7 |
| 7. 797 × 7 | 14. 596 × 7 | |

### Exercise No. 246
### Mental Multiplication
Multiply mentally by 160 the numbers in Table I on page 7.

## Exercise No. 247
## Multiplying Three Figures by One
Perform mentally the following multiplications.

|   |   |   |
|---|---|---|
| **1.** 141 × 8 | **8.** 858 × 8 | **15.** 666 × 8 |
| **2.** 252 × 8 | **9.** 969 × 8 | **16.** 777 × 8 |
| **3.** 363 × 8 | **10.** 171 × 8 | **17.** 888 × 8 |
| **4.** 474 × 8 | **11.** 282 × 8 | **18.** 999 × 8 |
| **5.** 585 × 8 | **12.** 393 × 8 | **19.** 741 × 8 |
| **6.** 696 × 8 | **13.** 444 × 8 | **20.** 652 × 8 |
| **7.** 747 × 8 | **14.** 555 × 8 |   |

# FRACTIONS IN GENERAL

The multiplication or the division of fractions will present no difficulty to the student of these pages since it is simply a matter of combining operations in which he is well practised.

What needs more particular attention is the addition and subtraction of the kinds of fractions most commonly encountered in practical work in office, shop and home. The average person would immediately reach for a pencil if asked the sum of $\frac{3}{4}$ and $\frac{5}{8}$ or the difference between $1\frac{1}{3}$ and $\frac{3}{8}$. Yet a little practice with calculations of this kind makes it very easy to perform them mentally.

The succeeding examples in addition and subtraction of fractions are based on the possible combinations of two fractions of the orders of halves, quarters, eighths, sixteenths, thirds, sixths, twelfths, fifths and tenths.

These exercises are to stimulate memory and rapid thinking. No instructions are given as to how to perform them because it is assumed that the student is familiar with the reduction of fractions to a common denominator.

### Exercise No. 248
#### Reduction of Fractions

1. Reduce to eighths: $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}$
2. Reduce to sixteenths: $\frac{1}{8}, \frac{1}{2}, \frac{3}{8}, \frac{1}{4}, \frac{5}{8}, \frac{3}{4}, \frac{7}{8}$
3. Reduce to sixths: $\frac{1}{3}, \frac{1}{2}, \frac{2}{3}$
4. Reduce to twelfths: $\frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$
5. Reduce to twenty-fourths: $\frac{1}{12}, \frac{1}{8}, \frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{5}{12}, \frac{1}{2}, \frac{7}{12}, \frac{5}{8}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}, \frac{11}{12}$
6. Reduce to tenths: $\frac{1}{5}, \frac{2}{5}, \frac{1}{2}, \frac{3}{5}, \frac{4}{5}$

**7.** Reduce to twentieths: $\frac{1}{10}$, $\frac{1}{5}$, $\frac{3}{10}$, $\frac{2}{5}$, $\frac{1}{2}$, $\frac{3}{5}$, $\frac{7}{10}$, $\frac{4}{5}$, $\frac{9}{10}$

**8.** Reduce to fortieths: $\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{3}{8}$, $\frac{2}{5}$, $\frac{1}{2}$, $\frac{3}{5}$, $\frac{5}{8}$, $\frac{7}{10}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{7}{8}$, $\frac{9}{10}$

**9.** Reduce to fifteenths: $\frac{1}{5}$, $\frac{1}{3}$, $\frac{2}{5}$, $\frac{3}{5}$, $\frac{2}{3}$, $\frac{4}{5}$

**10.** Reduce to thirtieths: $\frac{1}{10}$, $\frac{1}{6}$, $\frac{1}{5}$, $\frac{3}{10}$, $\frac{1}{3}$, $\frac{2}{5}$, $\frac{1}{2}$, $\frac{3}{5}$, $\frac{2}{3}$, $\frac{7}{10}$, $\frac{4}{5}$, $\frac{5}{6}$, $\frac{9}{10}$

## Exercise No. 249
### Mental Multiplication

Multiply mentally by 170 the numbers in Table I on page **7**.

## Exercise No. 250
### Addition of Fractions

Add the following mentally.

| | | | |
|---|---|---|---|
| **1.** $\frac{1}{2} + \frac{1}{4}$ | **11.** $\frac{3}{4} + \frac{1}{8}$ | **21.** $\frac{1}{2} + \frac{13}{16}$ | **31.** $\frac{3}{4} + \frac{1}{16}$ |
| **2.** $\frac{1}{2} + \frac{3}{4}$ | **12.** $\frac{3}{4} + \frac{3}{8}$ | **22.** $\frac{1}{2} + \frac{15}{16}$ | **32.** $\frac{3}{4} + \frac{3}{16}$ |
| **3.** $\frac{1}{2} + \frac{1}{8}$ | **13.** $\frac{3}{4} + \frac{5}{8}$ | **23.** $\frac{1}{4} + \frac{1}{16}$ | **33.** $\frac{3}{4} + \frac{5}{16}$ |
| **4.** $\frac{1}{2} + \frac{3}{8}$ | **14.** $\frac{3}{4} + \frac{7}{8}$ | **24.** $\frac{1}{4} + \frac{3}{16}$ | **34.** $\frac{3}{4} + \frac{7}{16}$ |
| **5.** $\frac{1}{2} + \frac{5}{8}$ | **15.** $\frac{1}{2} + \frac{1}{16}$ | **25.** $\frac{1}{4} + \frac{5}{16}$ | **35.** $\frac{3}{4} + \frac{9}{16}$ |
| **6.** $\frac{1}{2} + \frac{7}{8}$ | **16.** $\frac{1}{2} + \frac{3}{16}$ | **26.** $\frac{1}{4} + \frac{7}{16}$ | **36.** $\frac{3}{4} + \frac{11}{16}$ |
| **7.** $\frac{1}{4} + \frac{1}{8}$ | **17.** $\frac{1}{2} + \frac{5}{16}$ | **27.** $\frac{1}{4} + \frac{9}{16}$ | **37.** $\frac{3}{4} + \frac{13}{16}$ |
| **8.** $\frac{1}{4} + \frac{3}{8}$ | **18.** $\frac{1}{2} + \frac{7}{16}$ | **28.** $\frac{1}{4} + \frac{11}{16}$ | **38.** $\frac{3}{4} + \frac{15}{16}$ |
| **9.** $\frac{1}{4} + \frac{5}{8}$ | **19.** $\frac{1}{2} + \frac{9}{16}$ | **29.** $\frac{1}{4} + \frac{13}{16}$ | **39.** $\frac{1}{8} + \frac{1}{16}$ |
| **10.** $\frac{1}{4} + \frac{7}{8}$ | **20.** $\frac{1}{2} + \frac{11}{16}$ | **30.** $\frac{1}{4} + \frac{15}{16}$ | **40.** $\frac{1}{8} + \frac{3}{16}$ |

## Exercise No. 251
### Multiplying Three Figures by One

| | | |
|---|---|---|
| **1.** $152 \times 9$ | **8.** $869 \times 9$ | **15.** $679 \times 9$ |
| **2.** $263 \times 9$ | **9.** $973 \times 9$ | **16.** $784 \times 9$ |
| **3.** $374 \times 9$ | **10.** $184 \times 9$ | **17.** $895 \times 9$ |
| **4.** $485 \times 9$ | **11.** $295 \times 9$ | **18.** $946 \times 9$ |
| **5.** $596 \times 9$ | **12.** $346 \times 9$ | **19.** $157 \times 9$ |
| **6.** $647 \times 9$ | **13.** $457 \times 9$ | **20.** $268 \times 9$ |
| **7.** $758 \times 9$ | **14.** $568 \times 9$ | |

### Exercise No. 252
#### Mental Division
Divide mentally by 2 the answers to Exercise No. 229 as given on page 175.

### Exercise No. 253
#### Addition of Fractions
Do the last thirty examples in Exercise No. 250 on the preceding page, and also add the following.

1. $\frac{1}{2} + \frac{5}{16}$    4. $\frac{1}{2} + \frac{11}{16}$    7. $\frac{3}{8} + \frac{1}{16}$    10. $\frac{3}{8} + \frac{7}{16}$
2. $\frac{1}{8} + \frac{7}{16}$    5. $\frac{1}{2} + \frac{13}{16}$    8. $\frac{3}{8} + \frac{3}{16}$
3. $\frac{1}{8} + \frac{9}{16}$    6. $\frac{1}{2} + \frac{15}{16}$    9. $\frac{3}{8} + \frac{5}{16}$

### Exercise No. 254
#### Mental Multiplication
Multiply mentally by 180 the numbers in Table I on page 7.

### Exercise No. 255
#### Mental Division
Divide mentally by 3 the answers to Exercise No. 233 as given on page 175.  Compare your answers with Exercise No. 233.

### Exercise No. 256
#### Addition of Fractions
Review the last twenty examples in Exercise No. 250 on page 97 and those in Exercise No. 253 on page 98.  Also add the following.

1. $\frac{3}{8} + \frac{9}{16}$    4. $\frac{3}{8} + \frac{15}{16}$    7. $\frac{5}{8} + \frac{5}{16}$    10. $\frac{5}{8} + \frac{11}{16}$
2. $\frac{3}{8} + \frac{11}{16}$    5. $\frac{5}{8} + \frac{1}{16}$    8. $\frac{5}{8} + \frac{7}{16}$
3. $\frac{3}{8} + \frac{13}{16}$    6. $\frac{5}{8} + \frac{5}{16}$    9. $\frac{5}{8} + \frac{9}{16}$

## Exercise No. 257
### Mental Multiplication
Multiply mentally by 190 the numbers in Table I on page 7.

## Exercise No. 258
### Mental Division
Divide mentally by 4 the answers to Exercise No. 237 as given on page 175.

## Exercise No. 259
### Addition of Fractions
Review the last ten examples in Exercise No. 250 on page 97, as well as those in Exercise No. 253 on page 98 and Exercise No. 256 on page 98. Also add the following.

1. $\frac{5}{8} + \frac{11}{16}$    4. $\frac{7}{8} + \frac{3}{16}$    7. $\frac{7}{8} + \frac{9}{16}$    10. $\frac{7}{8} + \frac{15}{16}$

2. $\frac{5}{8} + \frac{14}{16}$    5. $\frac{7}{8} + \frac{5}{16}$    8. $\frac{7}{8} + \frac{11}{16}$

3. $\frac{7}{8} + \frac{1}{16}$    6. $\frac{7}{8} + \frac{7}{16}$    9. $\frac{7}{8} + \frac{13}{16}$

## Exercise No. 260
### Mental Multiplication
Multiply mentally by 200 the numbers in Table I on page 7.

## Exercise No. 261
### Addition of Fractions
Review the examples in Exercise No. 253 on page 98, No. 256 on page 98 and No. 259 above. Also add the following.

1. $\frac{1}{2} + \frac{1}{6}$    4. $\frac{1}{3} + \frac{5}{12}$    7. $\frac{2}{3} + \frac{1}{12}$    10. $\frac{2}{3} + \frac{11}{12}$

2. $\frac{2}{3} + \frac{1}{6}$    5. $\frac{1}{3} + \frac{7}{12}$    8. $\frac{2}{3} + \frac{5}{12}$

3. $\frac{1}{3} + \frac{1}{12}$    6. $\frac{1}{3} + \frac{11}{12}$    9. $\frac{2}{3} + \frac{7}{12}$

### Exercise No. 262
### Mental Division

Divide mentally by 5 the answers to Exercise No. 240 as given on page 175.

### Exercise No. 263
### Subtraction of Fractions

Perform mentally the following subtractions.

| | | | |
|---|---|---|---|
| 1. $\frac{3}{4} - \frac{1}{2}$ | 8. $\frac{5}{8} - \frac{1}{4}$ | 16. $\frac{11}{16} - \frac{1}{2}$ | 24. $\frac{7}{16} - \frac{1}{4}$ |
| 2. $1\frac{1}{4} - \frac{1}{2}$ | 9. $\frac{7}{8} - \frac{1}{4}$ | 17. $\frac{13}{16} - \frac{1}{2}$ | 25. $\frac{9}{16} - \frac{1}{4}$ |
| 3. $\frac{5}{8} - \frac{1}{2}$ | 10. $1\frac{1}{8} - \frac{1}{4}$ | 18. $\frac{15}{16} - \frac{1}{2}$ | 26. $\frac{11}{16} - \frac{1}{4}$ |
| 4. $\frac{7}{8} - \frac{1}{2}$ | 11. $\frac{7}{8} - \frac{3}{4}$ | 19. $1\frac{1}{16} - \frac{1}{2}$ | 27. $\frac{13}{16} - \frac{1}{4}$ |
| 5. $1\frac{1}{8} - \frac{1}{2}$ | 12. $1\frac{1}{8} - \frac{3}{4}$ | 20. $1\frac{3}{16} - \frac{1}{2}$ | 28. $\frac{15}{16} - \frac{1}{4}$ |
| 6. $1\frac{3}{8} - \frac{1}{2}$ | 13. $1\frac{3}{8} - \frac{3}{4}$ | 21. $1\frac{5}{16} - \frac{1}{2}$ | 29. $1\frac{1}{16} - \frac{1}{4}$ |
| 7. $\frac{3}{8} - \frac{1}{4}$ | 14. $1\frac{5}{8} - \frac{3}{4}$ | 22. $1\frac{7}{16} - \frac{1}{2}$ | 30. $1\frac{3}{16} - \frac{1}{4}$ |
| | 15. $\frac{9}{16} - \frac{1}{2}$ | 23. $\frac{5}{16} - \frac{1}{4}$ | |

### Exercise No. 264
### Mental Multiplication

Multiply mentally by 210 the numbers in Table I on page 7.

### Exercise No. 265
### Subtraction of Fractions

Review the last twenty examples in Exercise No. 263 above, and also perform the following subtractions.

| | | | |
|---|---|---|---|
| 1. $\frac{13}{16} - \frac{3}{4}$ | 4. $1\frac{3}{16} - \frac{3}{4}$ | 7. $1\frac{9}{16} - \frac{3}{4}$ | 10. $\frac{5}{16} - \frac{1}{8}$ |
| 2. $\frac{15}{16} - \frac{3}{4}$ | 5. $1\frac{5}{16} - \frac{3}{4}$ | 8. $1\frac{11}{16} - \frac{3}{4}$ | |
| 3. $1\frac{1}{16} - \frac{3}{4}$ | 6. $1\frac{7}{16} - \frac{3}{4}$ | 9. $\frac{3}{16} - \frac{1}{8}$ | |

## Exercise No. 266
### Mental Division
Divide mentally by 6 the answers to Exercise No. 243 as given on page 175.

## Exercise No. 267
### Addition of Fractions
Review the examples in Exercise No. 256 on page 98 , No. 259 on page 99 and No. 261 on page 99 . Also perform the following additions.

1. $\frac{1}{6} + \frac{1}{12}$
2. $\frac{1}{6} + \frac{5}{12}$
3. $\frac{1}{6} + \frac{7}{12}$

4. $\frac{1}{6} + \frac{11}{12}$
5. $\frac{5}{6} + \frac{1}{12}$
6. $\frac{5}{6} + \frac{5}{12}$

7. $\frac{5}{6} + \frac{7}{12}$
8. $\frac{5}{6} + \frac{11}{12}$
9. $\frac{1}{2} + \frac{1}{3}$

10. $\frac{1}{2} + \frac{2}{3}$

## Exercise No. 268
### Mental Multiplication
Multiply mentally by 220 the numbers in Table I on page 7 .

## Exercise No. 269
### Subtraction of Fractions
Review the last ten examples in Exercise No. 263 on page 100 and No. 265 on page 100. Also perform the following subtractions.

1. $\frac{7}{16} - \frac{1}{8}$
2. $\frac{9}{16} - \frac{1}{8}$
3. $\frac{11}{16} - \frac{1}{8}$

4. $\frac{13}{16} - \frac{1}{8}$
5. $\frac{15}{16} - \frac{1}{8}$
6. $1\frac{1}{16} - \frac{1}{8}$

7. $\frac{7}{16} - \frac{3}{8}$
8. $\frac{9}{16} - \frac{3}{8}$
9. $\frac{11}{16} - \frac{3}{8}$

10. $\frac{13}{16} - \frac{3}{8}$

## Exercise No. 270
### Mental Division
Divide mentally by 7 the answers to Exercise No. 245 as given on page 176.

## Exercise No. 271
### Addition of Fractions

Review the examples in Exercise No. 259 on page 99 , No. 261 on page 99 and No. 267 on page 101. Also perform the following additions.

1. $\frac{1}{2} + \frac{1}{6}$      4. $\frac{1}{4} + \frac{5}{6}$      7. $\frac{1}{8} + \frac{1}{6}$      10. $\frac{7}{8} + \frac{1}{6}$
2. $\frac{1}{2} + \frac{5}{6}$      5. $\frac{3}{4} + \frac{1}{6}$      8. $\frac{3}{8} + \frac{1}{6}$
3. $\frac{1}{4} + \frac{1}{6}$      6. $\frac{3}{4} + \frac{5}{6}$      9. $\frac{5}{8} + \frac{1}{6}$

## Exercise No. 272
### Mental Multiplication

Multiply mentally by 230 the numbers in Table I on page 7 .

## Exercise No. 273
### Subtraction of Fractions

Review the examples in Exercise No. 265 on page 100 and No. 269 on page 101. Also perform the following subtractions.

1. $\frac{15}{16} - \frac{3}{8}$      4. $1\frac{5}{16} - \frac{3}{8}$      7. $\frac{15}{16} - \frac{5}{8}$      10. $1\frac{5}{16} - \frac{5}{8}$
2. $1\frac{1}{16} - \frac{3}{8}$      5. $\frac{11}{16} - \frac{5}{8}$      8. $1\frac{1}{16} - \frac{5}{8}$
3. $1\frac{3}{16} - \frac{3}{8}$      6. $\frac{13}{16} - \frac{5}{8}$      9. $1\frac{3}{16} - \frac{5}{8}$

## Exercise No. 274
### Mental Division

Divide mentally by 8 the answers to Exercise No. 247 as given on page 176.

## Exercise No. 275
### Addition of Fractions

Review the examples in Exercise No. 261 on page 99 , No. 267 on page 101 and No. 271 on this page. Also perform the following additions.

1. $\frac{1}{8} + \frac{5}{8}$     4. $\frac{7}{8} + \frac{5}{8}$     7. $\frac{1}{2} + \frac{7}{12}$     10. $\frac{1}{4} + \frac{5}{12}$

2. $\frac{3}{8} + \frac{5}{8}$     5. $\frac{1}{2} + \frac{1}{12}$     8. $\frac{1}{2} + \frac{11}{12}$

3. $\frac{5}{8} + \frac{5}{8}$     6. $\frac{1}{2} + \frac{5}{12}$     9. $\frac{1}{4} + \frac{1}{12}$

## Exercise No. 276
### Mental Multiplication

Multiply mentally by 240 the numbers in Table I on page 7.

## Exercise No. 277
### Subtraction of Fractions

Review the examples in Exercise No. 269 on page 101 and No. 273 on page 102. Also perform the following.

1. $1\frac{7}{16} - \frac{5}{8}$     4. $1\frac{1}{16} - \frac{7}{8}$     7. $1\frac{7}{16} - \frac{7}{8}$     10. $1\frac{13}{16} - \frac{7}{8}$

2. $1\frac{9}{16} - \frac{5}{8}$     5. $1\frac{3}{16} - \frac{7}{8}$     8. $1\frac{9}{16} - \frac{7}{8}$

3. $1\frac{5}{16} - \frac{7}{8}$     6. $1\frac{5}{16} - \frac{7}{8}$     9. $1\frac{11}{16} - \frac{7}{8}$

## Exercise No. 278
### Mental Division

Divide mentally by 9 the answers to Exercise No. 251 as given on page 176.

## Exercise No. 279
### Addition of Fractions

Review the examples in Exercise No. 267 on page 101, No. 271 on page 102 and No. 275 on this page. Also perform the following additions.

1. $\frac{1}{4} + \frac{7}{12}$     4. $\frac{3}{4} + \frac{5}{12}$     7. $\frac{1}{8} + \frac{1}{12}$     10. $\frac{1}{8} + \frac{11}{12}$

2. $\frac{1}{4} + \frac{11}{12}$     5. $\frac{3}{4} + \frac{7}{12}$     8. $\frac{1}{8} + \frac{5}{12}$

3. $\frac{3}{4} + \frac{1}{12}$     6. $\frac{3}{4} + \frac{11}{12}$     9. $\frac{1}{8} + \frac{7}{12}$

## Exercise No. 280
### Mental Multiplication

Multiply mentally by 250 the numbers in Table I on page 7 .

## Exercise No. 281
### Subtraction of Fractions

Review the examples in Exercise No. 273 on page 102 and No. 277 on page 103. Also perform the following subtractions.

1. $\frac{1}{2} - \frac{1}{3}$
2. $\frac{5}{6} - \frac{2}{3}$
3. $\frac{5}{12} - \frac{1}{3}$
4. $\frac{3}{4} - \frac{1}{3}$
5. $\frac{11}{12} - \frac{1}{3}$
6. $1\frac{1}{4} - \frac{1}{3}$
7. $\frac{3}{4} - \frac{2}{3}$
8. $1\frac{1}{12} - \frac{2}{3}$
9. $1\frac{1}{4} - \frac{2}{3}$
10. $1\frac{7}{12} - \frac{2}{3}$

## Exercise No. 282
### Mental Division

Divide mentally the following. Express remainders as such instead of as fractions.

1. $328 \div 121$
2. $593 \div 232$
3. $794 \div 343$
4. $1249 \div 451$
5. $1580 \div 562$
6. $1835 \div 623$
7. $1774 \div 731$
8. $1786 \div 842$
9. $2114 \div 953$
10. $439 \div 161$
11. $406 \div 131$
12. $776 \div 242$
13. $1164 \div 353$
14. $1574 \div 464$
15. $1998 \div 571$
16. $690 \div 141$
17. $1208 \div 252$
18. $1704 \div 363$
19. $2178 \div 474$
20. $2620 \div 585$

## Exercise No. 283
### Addition of Fractions

Review the examples in Exercise No. 271 on page 102, No. 275 on page 103 and No. 279 on page 103. Also perform the following additions.

1. $\frac{3}{8} + \frac{1}{12}$
2. $\frac{3}{8} + \frac{5}{12}$
3. $\frac{3}{8} + \frac{7}{12}$
4. $\frac{3}{8} + 1\frac{1}{12}$
5. $\frac{5}{8} + \frac{1}{12}$
6. $\frac{5}{8} + \frac{5}{12}$
7. $\frac{5}{8} + \frac{7}{12}$
8. $\frac{5}{8} + \frac{11}{12}$
9. $\frac{7}{8} + 1\frac{1}{12}$
10. $\frac{7}{8} + \frac{5}{12}$

## Exercise No. 284

### Multiplying Two Figures by Two

With this exercise we start the general multiplication of two numbers of two places each. You have had some experience with such numbers in using the numbers up to .25 as direct multipliers. In the succeeding exercises, however, the multipliers are greater than 25 and the operation is performed differently.

Multiply the whole of the multiplicand by the first figure of the multiplier; next multiply the whole of the multiplicand by the second figure of the multiplier; and finally add the two partial products.

When you multiply the first figure of the multiplicand by the first figure of the multiplier you will get a number of either three places, as in the first example (where $20 \times 40$ produces 800), or four places, as in the second example (where $2 \times 5$ produces 10). Add to this first result as you work along from left to right. Similarly, when you multiply the first figure of the multiplicand by the second figure of the multiplier, you will get a number of either two or three places.

Repeat to yourself the original example and the partial products as often as you find necessary. The need for such repetitions will grow less as you become more practised.

Taking the first example: repeat, $41 \times 26$, $41 \times 26$, $41 \times 26$. $40 \times 20$ is 800, $1 \times 2$ is 2, 820. (say $1 \times 2$ rather than $1 \times 20$ because the former method is simpler when dealing with large numbers. When you think of the 2 as following the 8 it of course becomes a 20 in the product.) Repeat 820, 820, 820. $40 \times 6$ is 240, $1 \times 6$ is 6, 246. Repeat $820 + 246$, $820 + 246$, $820 + 246$. Add: 1020, 1060, 1066.

The second example is performed: 1000, 1020; 350, 357. $1020 + 357$, 1320, 1370, 1377.

Most of the examples in this exercise are very simple and there can be no objection to your shortening the method given, which is a general method applicable to increasingly larger numbers. Thus in the examples illustrated you should be able to note at a glance that the first partial products are 820 and 1020.

| | | |
|---|---|---|
| 1. 41 × 26 | 8. 41 × 34 | 15. 41 × 33 |
| 2. 51 × 27 | 9. 51 × 26 | 16. 51 × 34 |
| 3. 61 × 28 | 10. 61 × 27 | 17. 61 × 26 |
| 4. 71 × 29 | 11. 71 × 28 | 18. 71 × 27 |
| 5. 81 × 31 | 12. 81 × 29 | 19. 81 × 28 |
| 6. 91 × 32 | 13. 91 × 31 | 20. 91 × 29 |
| 7. 31 × 33 | 14. 31 × 32 | |

## Exercise No. 285
### Subtraction of Fractions

Review the examples in Exercise No. 277 on page 103 and No. 281 on page 104. Also perform the following subtractions.

| | | | |
|---|---|---|---|
| 1. $\frac{1}{4} - \frac{1}{6}$ | 4. $1\frac{1}{12} - \frac{1}{6}$ | 7. $1\frac{5}{12} - \frac{5}{8}$ | 10. $1\frac{1}{6} - \frac{1}{2}$ |
| 2. $\frac{7}{12} - \frac{1}{6}$ | 5. $1\frac{1}{12} - \frac{5}{6}$ | 8. $1\frac{3}{4} - \frac{5}{6}$ | |
| 3. $\frac{3}{4} - \frac{1}{6}$ | 6. $1\frac{1}{4} - \frac{5}{8}$ | 9. $\frac{5}{6} - \frac{1}{2}$ | |

## Exercise No. 286
### Mental Division

Divide mentally the following.

| | | |
|---|---|---|
| 1. 445 ÷ 222 | 6. 2274 ÷ 632 | 11. 2830 ÷ 641 |
| 2. 695 ÷ 333 | 7. 2747 ÷ 743 | 12. 3233 ÷ 752 |
| 3. 1258 ÷ 441 | 8. 3242 ÷ 854 | 13. 3624 ÷ 863 |
| 4. 1655 ÷ 552 | 9. 3747 ÷ 961 | 14. 3989 ÷ 974 |
| 5. 1700 ÷ 663 | 10. 533 ÷ 172 | 15. 902 ÷ 185 |

**16.** 845 ÷ 151     **18.** 2013 ÷ 373     **20.** 3094 ÷ 595
**17.** 1440 ÷ 262     **19.** 2564 ÷ 484

## Exercise No. 287
### Addition of Fractions

Review the examples in Exercise No. 275 on page 103, No. 279 on page 103 and No. 283 on page 104. Also perform the following additions.

**1.** $\frac{7}{8} + \frac{7}{12}$     **4.** $\frac{1}{5} + \frac{3}{10}$     **7.** $\frac{2}{5} + \frac{1}{10}$     **10.** $\frac{3}{5} + \frac{9}{10}$

**2.** $\frac{7}{8} + \frac{11}{12}$     **5.** $\frac{1}{5} + \frac{7}{10}$     **8.** $\frac{2}{5} + \frac{3}{10}$

**3.** $\frac{1}{5} + \frac{1}{10}$     **6.** $\frac{1}{5} + \frac{9}{10}$     **9.** $\frac{2}{5} + \frac{7}{10}$

## Exercise No. 288
### Multiplying Two Figures by Two

In doing exercises of this type always use the second number as the multiplier. Using the first example to illustrate, find 30 times 42 and then 5 times 42; do not work the other way around by finding 40 times 35 and then 2 times 35. This caution is given because of the special way in which the exercises are graded.

**1.** 42 × 35     **8.** 42 × 43     **15.** 42 × 42
**2.** 52 × 36     **9.** 52 × 35     **16.** 52 × 43
**3.** 62 × 37     **10.** 62 × 36     **17.** 62 × 34
**4.** 72 × 38     **11.** 72 × 37     **18.** 72 × 35
**5.** 82 × 39     **12.** 82 × 38     **19.** 82 × 36
**6.** 92 × 41     **13.** 92 × 39     **20.** 92 × 37
**7.** 32 × 42     **14.** 32 × 41

## Exercise No. 289
### Subtraction of Fractions

Review the examples in Exercise No. 277 on page 103 and No. 281 on page 104. Also perform the following subtractions.

1. $\frac{2}{3} - \frac{1}{2}$     4. $1\frac{1}{3} - \frac{1}{4}$     7. $\frac{7}{24} - \frac{1}{8}$     10. $1\frac{1}{24} - \frac{7}{8}$

2. $1\frac{1}{3} - \frac{1}{2}$     5. $\frac{11}{12} - \frac{3}{4}$     8. $\frac{19}{24} - \frac{3}{8}$

3. $\frac{5}{12} - \frac{1}{4}$     6. $1\frac{7}{12} - \frac{3}{4}$     9. $\frac{19}{24} - \frac{5}{8}$

### Exercise No. 290
### Mental Division

| | | |
|---|---|---|
| 1. 1479 ÷ 721 | 8. 1523 ÷ 451 | 15. 3012 ÷ 685 |
| 2. 2435 ÷ 832 | 9. 1966 ÷ 562 | 16. 3347 ÷ 656 |
| 3. 2036 ÷ 943 | 10. 2421 ÷ 673 | 17. 4498 ÷ 761 |
| 4. 387 ÷ 151 | 11. 1156 ÷ 241 | 18. 4924 ÷ 872 |
| 5. 623 ÷ 262 | 12. 1643 ÷ 352 | 19. 5547 ÷ 983 |
| 6. 745 ÷ 233 | 13. 2128 ÷ 463 | 20. 1067 ÷ 194 |
| 7. 1134 ÷ 344 | 14. 2581 ÷ 574 | |

### Exercise No. 291
#### Addition of Fractions

Review the examples in Exercise No. 279 on page 103, No. 283 on page 104 and No. 287 on page 107. Also perform the following additions.

1. $\frac{3}{5} + \frac{1}{10}$     4. $\frac{3}{5} + \frac{9}{10}$     7. $\frac{4}{5} + \frac{7}{10}$     10. $\frac{1}{2} + \frac{2}{5}$

2. $\frac{3}{5} + \frac{3}{10}$     5. $\frac{4}{5} + \frac{1}{10}$     8. $\frac{4}{5} + \frac{9}{10}$

3. $\frac{3}{5} + \frac{7}{10}$     6. $\frac{4}{5} + \frac{3}{10}$     9. $\frac{1}{2} + \frac{1}{5}$

### Exercise No. 292
#### Mental Multiplication

Multiply mentally the following.

| | | |
|---|---|---|
| 1. 43 × 44 | 8. 43 × 52 | 15. 43 × 51 |
| 2. 53 × 45 | 9. 53 × 44 | 16. 53 × 52 |
| 3. 63 × 46 | 10. 63 × 45 | 17. 63 × 44 |
| 4. 73 × 47 | 11. 73 × 46 | 18. 78 × 45 |
| 5. 83 × 48 | 12. 83 × 47 | 19. 83 × 46 |
| 6. 93 × 49 | 13. 93 × 48 | 20. 93 × 47 |
| 7. 33 × 51 | 14. 33 × 49 | |

### Exercise No. 293
#### Subtraction of Fractions

Review the examples in Exercise No. 281 on page 104 and No. 289 on page 108. Also do the following.

1. $\frac{23}{24} - \frac{1}{8}$     4. $1\frac{17}{24} - \frac{7}{8}$     7. $1\frac{1}{12} - \frac{1}{2}$     10. $\frac{2}{3} - \frac{1}{4}$

2. $1\frac{5}{24} - \frac{3}{8}$     5. $\frac{7}{12} - \frac{1}{2}$     8. $1\frac{5}{12} - \frac{1}{2}$

3. $1\frac{11}{24} - \frac{5}{8}$     6. $\frac{11}{12} - \frac{1}{2}$     9. $\frac{1}{2} - \frac{1}{4}$

### Exercise No. 294
#### Mental Division

Divide mentally the following.

1. $444 \div 131$     8. $4716 \div 963$     15. $3573 \div 693$

2. $795 \div 242$     9. $815 \div 174$     16. $971 \div 141$

3. $1154 \div 353$     10. $1348 \div 285$     17. $1712 \div 252$

4. $1424 \div 464$     11. $1421 \div 255$     18. $2255 \div 363$

5. $1767 \div 571$     12. $2118 \div 366$     19. $2955 \div 474$

6. $3186 \div 740$     13. $2676 \div 471$     20. $3820 \div 585$

7. $3493 \div 852$     14. $3375 \div 582$

### Exercise No. 295
#### Addition of Fractions

Review the examples in Exercise No. 279 on page 103, No. 283 on page 104 and No. 292 on page 108. Also perform the following additions.

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

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

3. $\frac{1}{2} + \frac{1}{10}$     6. $\frac{1}{2} + \frac{9}{10}$     9. $\frac{1}{4} + \frac{3}{5}$

### Exercise No. 296
### Mental Multiplication
Multiply mentally the following.

1. $44 \times 53$
2. $54 \times 54$
3. $64 \times 55$
4. $74 \times 56$
5. $84 \times 57$
6. $94 \times 58$
7. $34 \times 59$

8. $44 \times 61$
9. $54 \times 53$
10. $64 \times 54$
11. $74 \times 55$
12. $84 \times 56$
13. $94 \times 57$
14. $34 \times 58$

15. $44 \times 59$
16. $59 \times 61$
17. $64 \times 53$
18. $74 \times 54$
19. $84 \times 55$
20. $94 \times 56$

### Exercise No. 297
### Subtraction of Fractions
Review the examples in Exercise No. 289 on page 108 and No. 293 on page 109. Also perform the following subtractions.

1. $\frac{5}{6} - \frac{1}{4}$
2. $1\frac{1}{6} - \frac{1}{4}$
3. $\frac{5}{6} - \frac{3}{4}$

4. $1\frac{1}{6} - \frac{3}{4}$
5. $1\frac{1}{3} - \frac{3}{4}$
6. $1\frac{2}{3} - \frac{3}{4}$

7. $\frac{5}{24} - \frac{1}{8}$
8. $\frac{13}{24} - \frac{1}{8}$
9. $\frac{17}{24} - \frac{1}{8}$

10. $1\frac{1}{24} - \frac{1}{8}$

### Exercise No. 298
### Mental Division
Divide mentally the following.

1. $3989 \div 754$
2. $4967 \div 865$
3. $5192 \div 976$
4. $1002 \div 181$
5. $1566 \div 292$
6. $4486 \div 696$
7. $4632 \div 747$

8. $5206 \div 851$
9. $6381 \div 962$
10. $1153 \div 173$
11. $982 + 131$
12. $1829 \div 242$
13. $2706 \div 353$
14. $3433 \div 464$

15. $4089 \div 575$
16. $1200 \div 141$
17. $2141 \div 252$
18. $3084 \div 363$
19. $4152 \div 474$
20. $5101 \div 585$

## Exercise No. 299
### Addition of Fractions

Review the examples in Exercise No. 283 on page 104, No. 292 on page 108 and No. 295 on page 109. Also perform the following additions.

1. $\frac{1}{4} + \frac{1}{10}$
2. $\frac{1}{4} + \frac{3}{10}$
3. $\frac{1}{4} + \frac{7}{10}$
4. $\frac{3}{4} + \frac{9}{10}$
5. $\frac{3}{4} + \frac{1}{5}$
6. $\frac{3}{4} + \frac{2}{5}$
7. $\frac{3}{4} + \frac{3}{5}$
8. $\frac{3}{4} + \frac{4}{5}$
9. $\frac{3}{4} + \frac{1}{10}$
10. $\frac{3}{4} + \frac{3}{10}$

## Exercise No. 300
### Mental Multiplication

Multiply mentally the following.

1. $45 \times 62$
2. $55 \times 63$
3. $65 \times 64$
4. $75 \times 65$
5. $85 \times 66$
6. $95 \times 67$
7. $35 \times 68$
8. $45 \times 69$
9. $55 \times 62$
10. $65 \times 63$
11. $75 \times 64$
12. $85 \times 65$
13. $95 \times 66$
14. $35 \times 67$
15. $45 \times 68$
16. $55 \times 69$
17. $65 \times 62$
18. $75 \times 63$
19. $85 \times 64$
20. $95 \times 65$

## Exercise No. 301
### Subtraction of Fractions

Review the examples in Exercise No. 293 on page 109 and No. 297 on page 110. Also perform the following subtractions.

1. $\frac{11}{24} - \frac{3}{8}$
2. $\frac{19}{24} - \frac{3}{8}$
3. $\frac{23}{24} - \frac{3}{8}$
4. $1\frac{7}{24} - \frac{3}{8}$
5. $\frac{17}{24} - \frac{5}{8}$
6. $1\frac{11}{24} - \frac{5}{8}$
7. $1\frac{5}{24} - \frac{5}{8}$
8. $1\frac{13}{24} - \frac{5}{8}$
9. $\frac{23}{24} - \frac{7}{8}$
10. $1\frac{7}{24} - \frac{7}{8}$

## Exercise No. 302
### Mental Division

Divide mentally the following.

1. $1714 \div 284$
2. $2399 \div 395$
3. $2714 \div 446$
4. $3507 \div 557$
5. $4617 \div 661$
6. $5303 \div 686$

| | | |
|---|---|---|
| 7. 5886 ÷ 797 | 12. 6588 ÷ 747 | 17. 2502 ÷ 263 |
| 8. 6665 ÷ 838 | 13. 7189 ÷ 858 | 18. 3440 ÷ 374 |
| 9. 7233 ÷ 941 | 14. 8238 ÷ 969 | 19. 4450 ÷ 485 |
| 10. 1084 ÷ 152 | 15. 1385 ÷ 171 | 20. 5423 ÷ 596 |
| 11. 5757 ÷ 696 | 16. 1493 ÷ 152 | |

### Exercise No. 303
#### Addition of Fractions

Review the examples in Exercise No. 292 on page 108, No. 295 on page 109 and No. 299 on page 111. Also perform the following additions.

1. $\frac{3}{4} + \frac{7}{10}$   4. $\frac{1}{8} + \frac{2}{8}$   7. $\frac{1}{8} + \frac{1}{10}$   10. $\frac{1}{8} + \frac{9}{10}$

2. $\frac{3}{4} + \frac{9}{10}$   5. $\frac{1}{8} + \frac{3}{8}$   8. $\frac{1}{8} + \frac{3}{10}$

3. $\frac{1}{8} + \frac{1}{5}$   6. $\frac{1}{8} + \frac{4}{5}$   9. $\frac{1}{8} + \frac{7}{10}$

### Exercise No. 304
#### Mental Multiplication

Multiply mentally the following.

| | | |
|---|---|---|
| 1. 46 × 71 | 8. 46 × 78 | 15. 46 × 77 |
| 2. 56 × 72 | 9. 56 × 71 | 16. 56 × 78 |
| 3. 66 × 73 | 10. 66 × 72 | 17. 66 × 71 |
| 4. 76 × 74 | 11. 76 × 73 | 18. 76 × 72 |
| 5. 86 × 75 | 12. 86 × 74 | 19. 86 × 73 |
| 6. 96 × 76 | 13. 96 × 75 | 20. 96 × 74 |
| 7. 36 × 77 | 14. 36 × 76 | |

### Exercise No. 305
#### Subtraction of Fractions

Review the examples in Exercise No. 297 on page 110 and No. 301 on page 111. Also perform the following subtractions.

1. $1\frac{11}{24} - \frac{7}{8}$   4. $\frac{2}{3} - \frac{1}{8}$   7. $\frac{1}{2} - \frac{2}{5}$   10. $1\frac{3}{10} - \frac{2}{5}$

2. $1\frac{19}{24} - \frac{7}{8}$   5. $\frac{9}{10} - \frac{1}{8}$   8. $\frac{7}{10} - \frac{2}{5}$

3. $\frac{3}{10} - \frac{1}{8}$   6. $1\frac{1}{10} - \frac{1}{8}$   9. $1\frac{1}{10} - \frac{2}{5}$

## Exercise No. 306
### Mental Division
Divide mentally the following.

| | | |
|---|---|---|
| **1.** 5338 ÷ 772 | **8.** 3606 ÷ 485 | **15.** 5954 ÷ 666 |
| **2.** 5393 ÷ 883 | **9.** 4518 ÷ 596 | **16.** 5887 ÷ 647 |
| **3.** 6001 ÷ 994 | **10.** 4711 ÷ 637 | **17.** 7123 ÷ 758 |
| **4.** 908 ÷ 145 | **11.** 2284 ÷ 282 | **18.** 8221 ÷ 869 |
| **5.** 1576 ÷ 256 | **12.** 3183 ÷ 393 | **19.** 9257 ÷ 973 |
| **6.** 1859 ÷ 263 | **13.** 3956 ÷ 444 | **20.** 1721 ÷ 184 |
| **7.** 2736 ÷ 374 | **14.** 4795 ÷ 555 | |

## Exercise No. 307
### Addition of Fractions
Review the examples in Exercise No. 295 on page 109, No. 297 on page 110 and No. 303 on page 112. Also perform the following additions.

| | | | |
|---|---|---|---|
| **1.** $\frac{2}{8} + \frac{1}{5}$ | **4.** $\frac{2}{8} + \frac{1}{5}$ | **7.** $\frac{3}{8} + \frac{7}{10}$ | **10.** $\frac{5}{8} + \frac{2}{5}$ |
| **2.** $\frac{3}{8} + \frac{2}{5}$ | **5.** $\frac{3}{8} + \frac{2}{10}$ | **8.** $\frac{2}{8} + \frac{9}{10}$ | |
| **3.** $\frac{3}{8} + \frac{2}{5}$ | **6.** $\frac{3}{8} + \frac{3}{10}$ | **9.** $\frac{5}{8} + \frac{1}{5}$ | |

## Exercise No. 308
### Mental Multiplication
Perform mentally the following multiplications.

| | | |
|---|---|---|
| **1.** 47 × 79 | **8.** 47 × 87 | **15.** 47 × 86 |
| **2.** 57 × 81 | **9.** 57 × 79 | **16.** 57 × 87 |
| **3.** 67 × 82 | **10.** 67 × 81 | **17.** 67 × 79 |
| **4.** 77 × 83 | **11.** 77 × 82 | **18.** 77 × 81 |
| **5.** 87 × 84 | **12.** 87 × 83 | **19.** 87 × 82 |
| **6.** 97 × 85 | **13.** 97 × 84 | **20.** 97 × 83 |
| **7.** 37 × 86 | **14.** 37 × 85 | |

### Exercise No. 309

#### Subtraction of Fractions

Review the examples in Exercise No. 301 on page 111 and No. 305 on page 112.  Also perform the following subtractions.

1. $\frac{7}{10} - \frac{3}{5}$       4. $1\frac{1}{2} - \frac{3}{5}$       7. $1\frac{1}{2} - \frac{4}{5}$       10. $\frac{9}{10} - \frac{1}{2}$

2. $\frac{9}{10} - \frac{3}{5}$       5. $\frac{9}{10} - \frac{4}{5}$       8. $1\frac{7}{10} - \frac{4}{5}$

3. $1\frac{3}{10} - \frac{3}{5}$       6. $1\frac{1}{10} - \frac{4}{5}$       9. $\frac{7}{10} - \frac{1}{2}$

### Exercise No. 310

#### Mental Division

Divide mentally the following.

1. $5365 \div 748$       8. $8304 \div 999$       15. $6720 \div 679$

2. $6599 \div 851$       9. $6075 \div 741$       16. $7831 \div 784$

3. $7445 \div 962$       10. $5241 \div 652$       17. $8917 \div 895$

4. $1243 \div 173$       11. $2682 \div 295$       18. $9441 \div 946$

5. $2220 \div 284$       12. $3411 \div 346$       19. $1563 \div 157$

6. $6293 \div 777$       13. $4471 \div 457$       20. $2627 \div 268$

7. $7548 \div 888$       14. $5667 \div 568$

### Exercise No. 311

#### Addition of Fractions

Review the examples in Exercise No. 297 on page 110, No. 303 on page 112 and No. 307 on page 113.  Also add the following.

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

2. $\frac{5}{8} + \frac{4}{5}$       5. $\frac{5}{8} + \frac{7}{10}$       8. $\frac{7}{8} + \frac{2}{5}$

3. $\frac{5}{8} + \frac{1}{10}$       6. $\frac{5}{8} + \frac{9}{10}$       9. $\frac{7}{8} + \frac{3}{5}$

### Exercise No. 312

#### Mental Multiplication

Multiply mentally the following.

| | | |
|---|---|---|
| **1.** $48 \times 88$ | **8.** $48 \times 96$ | **15.** $48 \times 95$ |
| **2.** $58 \times 89$ | **9.** $58 \times 88$ | **16.** $58 \times 96$ |
| **3.** $68 \times 91$ | **10.** $68 \times 89$ | **17.** $68 \times 88$ |
| **4.** $78 \times 92$ | **11.** $78 \times 91$ | **18.** $78 \times 89$ |
| **5.** $88 \times 93$ | **12.** $88 \times 92$ | **19.** $88 \times 91$ |
| **6.** $98 \times 94$ | **13.** $98 \times 93$ | **20.** $98 \times 92$ |
| **7.** $38 \times 95$ | **14.** $38 \times 94$ | |

### Exercise No. 313
#### Subtraction of Fractions

Review the examples in Exercise No. 305 on page 112 and No. 309 on page 114. Also perform the following subtractions.

| | | | |
|---|---|---|---|
| **1.** $1\frac{1}{10} - \frac{1}{2}$ | **4.** $\frac{4}{5} - \frac{1}{2}$ | **7.** $\frac{9}{20} - \frac{1}{4}$ | **10.** $1\frac{1}{20} - \frac{1}{4}$ |
| **2.** $1\frac{3}{10} - \frac{1}{2}$ | **5.** $1\frac{1}{5} - \frac{1}{2}$ | **8.** $\frac{13}{20} - \frac{1}{4}$ | |
| **3.** $\frac{3}{5} - \frac{1}{2}$ | **6.** $1\frac{3}{5} - \frac{1}{2}$ | **9.** $\frac{17}{20} - \frac{1}{4}$ | |

### Exercise No. 314
#### Addition of Fractions

Review the examples in Exercise No. 303 on page 112, No. 307 on page 113 and No. 311 on page 114. Also perform the following additions.

| | | | |
|---|---|---|---|
| **1.** $\frac{7}{8} + \frac{1}{10}$ | **4.** $\frac{7}{8} + \frac{9}{10}$ | **7.** $\frac{1}{3} + \frac{3}{5}$ | **10.** $\frac{1}{3} + \frac{9}{10}$ |
| **2.** $\frac{7}{8} + \frac{3}{10}$ | **5.** $\frac{1}{3} + \frac{1}{5}$ | **8.** $\frac{1}{3} + \frac{4}{5}$ | |
| **3.** $\frac{7}{8} + \frac{7}{10}$ | **6.** $\frac{1}{3} + \frac{2}{5}$ | **9.** $\frac{1}{3} + \frac{1}{10}$ | |

### Exercise No. 315
#### Mental Multiplication

Multiply the following mentally.

| | | |
|---|---|---|
| **1.** $49 \times 95$ | **8.** $49 \times 97$ | **15.** $49 \times 99$ |
| **2.** $59 \times 96$ | **9.** $59 \times 98$ | **16.** $59 \times 95$ |
| **3.** $69 \times 97$ | **10.** $69 \times 99$ | **17.** $69 \times 96$ |
| **4.** $79 \times 98$ | **11.** $79 \times 95$ | **18.** $79 \times 97$ |
| **5.** $89 \times 99$ | **12.** $89 \times 96$ | **19.** $89 \times 98$ |
| **6.** $99 \times 95$ | **13.** $99 \times 97$ | **20.** $99 \times 99$ |
| **7.** $39 \times 96$ | **14.** $39 \times 98$ | |

### Exercise No. 316
#### Subtraction of Fractions

Review the examples in Exercise No. 309 on page 114 and No. 313 on page 115. Also perform the following subtractions.

1. $\frac{7}{20} - \frac{1}{4}$    4. $1\frac{3}{20} - \frac{1}{4}$    7. $1\frac{7}{20} - \frac{3}{4}$    10. $1\frac{1}{20} - \frac{3}{4}$
2. $\frac{11}{20} - \frac{1}{4}$    5. $\frac{19}{20} - \frac{3}{4}$    8. $1\frac{11}{20} - \frac{3}{4}$
3. $\frac{19}{20} - \frac{1}{4}$    6. $1\frac{3}{20} - \frac{3}{4}$    9. $\frac{17}{20} - \frac{3}{4}$

### Exercise No. 317
#### Addition of Fractions

Review the examples in Exercise No. 307 on page 113, No. 311 on page 114 and No. 314 on page 115. Also perform the following additions.

1. $\frac{1}{3} + \frac{7}{10}$    4. $\frac{2}{3} + \frac{2}{5}$    7. $\frac{2}{3} + \frac{1}{10}$    10. $\frac{2}{3} + \frac{9}{10}$
2. $\frac{1}{3} + \frac{9}{10}$    5. $\frac{2}{3} + \frac{3}{5}$    8. $\frac{2}{3} + \frac{3}{10}$
3. $\frac{2}{3} + \frac{1}{5}$    6. $\frac{2}{3} + \frac{4}{5}$    9. $\frac{2}{3} + \frac{7}{10}$

### Exercise No. 318
#### Subtraction of Fractions

Review the examples in Exercise No. 313 on page 115 and No. 316 on this page. Also perform the following subtractions.

1. $1\frac{9}{20} - \frac{3}{4}$    4. $\frac{21}{40} - \frac{1}{8}$    7. $\frac{9}{40} - \frac{1}{8}$    10. $1\frac{1}{40} - \frac{1}{8}$
2. $1\frac{13}{20} - \frac{3}{4}$    5. $\frac{29}{40} - \frac{1}{8}$    8. $\frac{17}{40} - \frac{1}{8}$
3. $\frac{13}{40} - \frac{1}{8}$    6. $\frac{37}{40} - \frac{1}{8}$    9. $\frac{33}{40} - \frac{1}{8}$

### Exercise No. 319
#### Mental Division

Divide the following mentally.

1. $1066 \div 26$        3. $1708 \div 28$        5. $2511 \div 31$
2. $1377 \div 27$        4. $2059 \div 29$        6. $2912 \div 32$

| | | |
|---|---|---|
| **7.** 1023 ÷ 33 | **12.** 2349 ÷ 29 | **17.** 1586 ÷ 26 |
| **8.** 1394 ÷ 34 | **13.** 2821 ÷ 31 | **18.** 1917 ÷ 27 |
| **9.** 1326 ÷ 26 | **14.** 992 ÷ 32 | **19.** 2268 ÷ 28 |
| **10.** 1647 ÷ 27 | **15.** 1353 ÷ 33 | **20.** 2639 ÷ 29 |
| **11.** 1988 ÷ 28 | **16.** 1734 ÷ 34 | |

### Exercise No. 320
### Addition of Fractions

Review the examples in Exercise No. 311 on page 114, No. 314 on page 115 and No. 315 on page 115. Also perform the following additions.

| | | | |
|---|---|---|---|
| **1.** $\frac{1}{8} + \frac{3}{8}$ | **4.** $\frac{1}{8} + \frac{4}{8}$ | **7.** $\frac{3}{8} + \frac{7}{10}$ | **10.** $\frac{5}{8} + \frac{2}{8}$ |
| **2.** $\frac{1}{8} + \frac{2}{8}$ | **5.** $\frac{1}{8} + \frac{1}{10}$ | **8.** $\frac{4}{8} + \frac{9}{10}$ | |
| **3.** $\frac{3}{8} + \frac{2}{8}$ | **6.** $\frac{1}{8} + \frac{9}{10}$ | **9.** $\frac{5}{8} + \frac{1}{8}$ | |

### Exercise No. 321
### Subtraction of Fractions

Review the examples in Exercise No. 314 on page 115, No. 316 on page 116 and No. 320 above. Also perform the following subtractions.

| | | | |
|---|---|---|---|
| **1.** $\frac{23}{40} - \frac{3}{8}$ | **4.** $1\frac{7}{40} - \frac{3}{8}$ | **7.** $1\frac{9}{40} - \frac{3}{8}$ | **10.** $1\frac{1}{40} - \frac{5}{8}$ |
| **2.** $\frac{31}{40} - \frac{3}{8}$ | **5.** $\frac{19}{40} - \frac{3}{8}$ | **8.** $1\frac{11}{40} - \frac{3}{8}$ | |
| **3.** $\frac{39}{40} - \frac{3}{8}$ | **6.** $\frac{27}{40} - \frac{3}{8}$ | **9.** $\frac{33}{40} - \frac{5}{8}$ | |

### Exercise No. 322
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** 1470 ÷ 35 | **8.** 1806 ÷ 43 | **15.** 1764 ÷ 42 |
| **2.** 1872 ÷ 36 | **9.** 1820 ÷ 35 | **16.** 2236 ÷ 43 |
| **3.** 2294 ÷ 37 | **10.** 2232 ÷ 36 | **17.** 2108 ÷ 34 |
| **4.** 2736 ÷ 38 | **11.** 2664 ÷ 37 | **18.** 2520 ÷ 35 |
| **5.** 3198 ÷ 39 | **12.** 3116 ÷ 38 | **19.** 2952 ÷ 36 |
| **6.** 3772 ÷ 41 | **13.** 3588 ÷ 39 | **20.** 3404 ÷ 37 |
| **7.** 1344 ÷ 42 | **14.** 1312 ÷ 41 | |

### Exercise No. 323
### Addition of Fractions

Review the examples in Exercise No. 314 on page 115, No. 317 on page 116 and No. 320 on page 117. Also perform the following additions.

1. $\frac{5}{8} + \frac{3}{5}$   3. $\frac{5}{8} + \frac{1}{10}$   5. $\frac{5}{8} + \frac{7}{10}$
2. $\frac{5}{8} + \frac{4}{5}$   4. $\frac{5}{8} + \frac{3}{10}$   6. $\frac{5}{8} + \frac{9}{10}$

### Exercise No. 324
### Subtraction of Fractions

Review the examples in Exercise No. 318 on page 116 and No. 321 on page 117. Also perform the following subtractions.

1. $1\frac{9}{40} - \frac{5}{8}$   4. $\frac{37}{40} - \frac{5}{8}$   7. $1\frac{3}{40} - \frac{7}{8}$   10. $1\frac{27}{40} - \frac{7}{8}$
2. $1\frac{17}{40} - \frac{5}{8}$   5. $1\frac{11}{40} - \frac{5}{8}$   8. $1\frac{11}{40} - \frac{7}{8}$
3. $\frac{29}{40} - \frac{5}{8}$   6. $1\frac{21}{40} - \frac{5}{8}$   9. $1\frac{19}{40} - \frac{7}{8}$

### Exercise No. 325
### Mental Division

Divide the following mentally.

1. $1892 \div 44$   8. $2236 \div 52$   15. $2193 \div 51$
2. $2385 \div 45$   9. $2332 \div 44$   16. $2756 \div 52$
3. $2898 \div 46$   10. $2835 \div 45$   17. $2772 \div 44$
4. $3431 \div 47$   11. $3358 \div 46$   18. $3285 \div 45$
5. $3984 \div 48$   12. $3901 \div 47$   19. $3818 \div 46$
6. $4557 \div 49$   13. $4464 \div 48$   20. $4371 \div 47$
7. $1683 \div 51$   14. $1617 \div 49$

### Exercise No. 326
### Addition of Fractions

Review the examples in Exercise No. 317 on page 116, No. 320 on page 117 and No. 323 on this page.

### Exercise No. 327
### Subtraction of Fractions

Review the examples in Exercise No. 321 on page 117 and No. 324 on page 118. Also perform the following subtractions.

1. $\frac{39}{40} - \frac{7}{8}$    4. $1\frac{31}{40} - \frac{7}{8}$    7. $\frac{14}{15} - \frac{1}{3}$    10. $\frac{19}{30} - \frac{1}{3}$
2. $1\frac{7}{40} - \frac{7}{8}$    5. $\frac{8}{15} - \frac{1}{3}$    8. $1\frac{2}{15} - \frac{1}{3}$
3. $1\frac{23}{40} - \frac{7}{8}$    6. $\frac{11}{15} - \frac{1}{3}$    9. $\frac{13}{30} - \frac{1}{3}$

### Exercise No. 328
### Mental Division

Divide the following mentally.

1. $2332 \div 53$      8. $2684 \div 61$      15. $2596 \div 59$
2. $2916 \div 54$      9. $2862 \div 53$      16. $3294 \div 61$
3. $3520 \div 55$      10. $3456 \div 54$      17. $3392 \div 53$
4. $4144 \div 56$      11. $4070 \div 55$      18. $3996 \div 54$
5. $4788 \div 57$      12. $4704 \div 56$      19. $4620 \div 55$
6. $5452 \div 58$      13. $5358 \div 57$      20. $5264 \div 56$
7. $2006 \div 59$      14. $1972 \div 58$

### Exercise No. 329
### Addition of Fractions

Review the examples in Exercise No. 320 on page 117 and 323 on page 118.

### Exercise No. 330
### Subtraction of Fractions

Review the examples in Exercise No. 321 on page 117 and No. 324 on page 118. Also perform the following subtractions.

1. $1\frac{1}{30} - \frac{1}{3}$    4. $1\frac{1}{15} - \frac{2}{3}$    7. $\frac{28}{30} - \frac{2}{3}$    10. $1\frac{17}{30} - \frac{2}{3}$
2. $1\frac{7}{30} - \frac{1}{3}$    5. $1\frac{4}{15} - \frac{2}{3}$    8. $\frac{29}{30} - \frac{2}{3}$
3. $\frac{13}{15} - \frac{2}{3}$    6. $1\frac{7}{15} - \frac{2}{3}$    9. $1\frac{11}{30} - \frac{2}{3}$

### Exercise No. 331
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** $2790 \div 62$ | **8.** $3105 \div 69$ | **15.** $3060 \div 68$ |
| **2.** $3465 \div 63$ | **9.** $3410 \div 62$ | **16.** $3795 \div 69$ |
| **3.** $4160 \div 64$ | **10.** $4095 \div 63$ | **17.** $4030 \div 62$ |
| **4.** $4875 \div 65$ | **11.** $4800 \div 64$ | **18.** $4725 \div 63$ |
| **5.** $5610 \div 66$ | **12.** $5525 \div 65$ | **19.** $5440 \div 64$ |
| **6.** $6365 \div 67$ | **13.** $6270 \div 66$ | **20.** $6175 \div 65$ |
| **7.** $2380 \div 68$ | **14.** $2345 \div 67$ | |

### Exercise No. 332
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** $3266 \div 71$ | **8.** $3588 \div 78$ | **15.** $3542 \div 77$ |
| **2.** $4032 \div 72$ | **9.** $3976 \div 71$ | **16.** $4368 \div 78$ |
| **3.** $4818 \div 73$ | **10.** $4752 \div 72$ | **17.** $4686 \div 71$ |
| **4.** $5624 \div 74$ | **11.** $5548 \div 73$ | **18.** $5472 \div 72$ |
| **5.** $6450 \div 75$ | **12.** $6364 \div 74$ | **19.** $6278 \div 73$ |
| **6.** $7296 \div 76$ | **13.** $7200 \div 75$ | **20.** $7104 \div 74$ |
| **7.** $2772 \div 77$ | **14.** $2736 \div 76$ | |

### Exercise No. 333
### Subtraction of Fractions

Review the examples in Exercise No. 324 on page 118 and No. 330 on page 119. Also perform the following subtractions.

| | | | |
|---|---|---|---|
| **1.** $\frac{11}{30} - \frac{1}{6}$ | **4.** $\frac{29}{30} - \frac{1}{6}$ | **7.** $1\frac{3}{5} - \frac{1}{6}$ | **10.** $1\frac{7}{30} - \frac{5}{6}$ |
| **2.** $\frac{17}{30} - \frac{1}{6}$ | **5.** $\frac{4}{15} - \frac{1}{6}$ | **8.** $1\frac{1}{15} - \frac{1}{6}$ | |
| **3.** $\frac{23}{30} - \frac{1}{6}$ | **6.** $\frac{7}{15} - \frac{1}{6}$ | **9.** $1\frac{1}{30} - \frac{5}{6}$ | |

### Exercise No. 334
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** $3713 \div 79$ | **4.** $6391 \div 83$ | **7.** $3182 \div 86$ |
| **2.** $4617 \div 81$ | **5.** $7308 \div 84$ | **8.** $4089 \div 87$ |
| **3.** $5494 \div 82$ | **6.** $8245 \div 85$ | **9.** $4503 \div 79$ |

| | | |
|---|---|---|
| **10.** 5427 ÷ 81 | **14.** 3145 ÷ 85 | **18.** 6237 ÷ 81 |
| **11.** 6314 ÷ 82 | **15.** 4042 ÷ 86 | **19.** 7134 ÷ 82 |
| **12.** 7221 ÷ 83 | **16.** 4959 ÷ 87 | **20.** 8051 ÷ 83 |
| **13.** 8148 ÷ 84 | **17.** 5293 ÷ 79 | |

## Exercise No. 335
### Subtraction of Fractions

Review the examples in Exercise No. 330 on page 119 and No. 333 on page 120. Also perform the following subtractions.

**1.** $1\frac{13}{30} - \frac{5}{8}$    **3.** $\frac{14}{15} - \frac{5}{8}$    **5.** $1\frac{8}{15} - \frac{5}{6}$

**2.** $1\frac{19}{30} - \frac{5}{8}$    **4.** $1\frac{2}{15} - \frac{5}{8}$    **6.** $1\frac{11}{15} - \frac{5}{8}$

## Exercise No. 336
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** 4224 ÷ 88 | **8.** 4608 ÷ 96 | **15.** 4560 ÷ 95 |
| **2.** 5162 ÷ 89 | **9.** 5104 ÷ 88 | **16.** 5568 ÷ 96 |
| **3.** 6188 ÷ 91 | **10.** 6052 ÷ 89 | **17.** 5984 ÷ 88 |
| **4.** 7176 ÷ 92 | **11.** 7098 ÷ 91 | **18.** 6942 ÷ 89 |
| **5.** 8184 ÷ 93 | **12.** 8096 ÷ 92 | **19.** 8008 ÷ 91 |
| **6.** 9212 ÷ 94 | **13.** 9114 ÷ 93 | **20.** 9016 ÷ 92 |
| **7.** 3610 ÷ 95 | **14.** 3572 ÷ 94 | |

## Exercise No. 337
### Mental Division

Divide the following mentally.

| | | |
|---|---|---|
| **1.** 4655 ÷ 95 | **8.** 4753 ÷ 97 | **15.** 4851 ÷ 99 |
| **2.** 5664 ÷ 96 | **9.** 5782 ÷ 98 | **16.** 5605 ÷ 95 |
| **3.** 6693 ÷ 97 | **10.** 6831 ÷ 99 | **17.** 6624 ÷ 96 |
| **4.** 7742 ÷ 98 | **11.** 7505 ÷ 95 | **18.** 7663 ÷ 97 |
| **5.** 8811 ÷ 99 | **12.** 8544 ÷ 96 | **19.** 8722 ÷ 98 |
| **6.** 9405 ÷ 95 | **13.** 9603 ÷ 97 | **20.** 9801 ÷ 99 |
| **7.** 3744 ÷ 96 | **14.** 3822 ÷ 98 | |

# DECIMALS IN GENERAL

For the purposes of this book our interest in decimals centers in the equivalence of value between certain decimals and common fractions. Decimal parts of a number that may be represented as simple fractions of that number are known as *aliquot parts* of it. Thus, $12\frac{1}{2}$, 25 and $33\frac{1}{3}$ are aliquot parts of 100, being respectively equal to $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{1}{3}$ of 100.

A knowledge of aliquot parts simplifies many arithmetical calculations. Thus if it be required to multiply 7928 by 25, the simplest way is to annex two 0's to 7928, making it 792800, and then divide by 4, since 25 is $\frac{1}{4}$ of 100. The answer, which may easily be figured mentally, comes to 198200.

Again, if we wanted to know the cost of 25 gross of penholders at $66\frac{2}{3}$¢ per dozen, we would figure that 1 gross costs $\$\frac{2}{3} \times 12$, or $8, and that 25 gross therefore cost $200.

Everybody with any degree of arithmetical training or experience is familiar with the equivalent decimal values for halves, quarters, eighths, thirds, sixths, fifths, tenths, twentieths, twenty-fifths and fiftieths. It is not difficult to extend the list of memorized values so as to include sixteenths and twelfths, and with this knowledge to make rapid calculations of values in thirty-seconds and twenty-fourths.

The succeeding exercises in decimals are designed toward this end. The student is drilled in representing the values of various fractions as decimals of an increasingly higher number of

places. No tables are given because values are more quickly learned by repeated calculation than by any effort at mere memorization.

### Exercise No. 338
#### Two-Place Decimal Values

Express the following fractions as decimals of two places. Use fractional terminations where necessary. Thus, $\frac{1}{3}$ expressed as a two-place decimal becomes .33$\frac{1}{3}$.

| | | | |
|---|---|---|---|
| **1.** $\frac{1}{8}$ | **4.** $\frac{7}{8}$ | **7.** $\frac{1}{6}$ | **10.** $\frac{2}{3}$ |
| **2.** $\frac{3}{8}$ | **5.** $\frac{1}{3}$ | **8.** $\frac{5}{8}$ | **11.** $\frac{3}{8}$ |
| **3.** $\frac{5}{8}$ | **6.** $\frac{2}{3}$ | **9.** $\frac{1}{3}$ | **12.** $\frac{1}{3}$ |

Repeat this exercise three times.

### Exercise No. 339
#### Multiplying Three Figures by Two

Multiply mentally the following.

No new principles are involved in multiplications of this type. The student is simply asked to apply the methods which he has already learned to larger numbers.

| | | | |
|---|---|---|---|
| **1.** $111 \times 26$ | **4.** $442 \times 29$ | **7.** $721 \times 33$ | **10.** $152 \times 27$ |
| **2.** $222 \times 27$ | **5.** $551 \times 31$ | **8.** $832 \times 34$ | |
| **3.** $331 \times 28$ | **6.** $612 \times 32$ | **9.** $941 \times 26$ | |

### Exercise No. 340
#### Two-Place Decimal Values

Review the examples in Exercise No. 338 above.

Express the following as decimals of two places.

| | | | |
|---|---|---|---|
| **1.** $\frac{1}{16}$ | **5.** $\frac{9}{16}$ | **9.** $\frac{1}{12}$ | **13.** $\frac{1}{32}$ |
| **2.** $\frac{3}{16}$ | **6.** $\frac{11}{16}$ | **10.** $\frac{5}{12}$ | **14.** $\frac{1}{24}$ |
| **3.** $\frac{5}{16}$ | **7.** $\frac{13}{16}$ | **11.** $\frac{7}{12}$ | |
| **4.** $\frac{7}{16}$ | **8.** $\frac{15}{16}$ | **12.** $\frac{11}{12}$ | |

Repeat this exercise three times.

## Exercise No. 341
### Multiplying Three Figures by Two
Multiply mentally the following.

1. $121 \times 35$    4. $451 \times 38$    7. $731 \times 42$    10. $161 \times 36$
2. $232 \times 36$    5. $562 \times 39$    8. $842 \times 43$
3. $343 \times 37$    6. $623 \times 41$    9. $953 \times 35$

# SHORT CUTS

There are a number of devices for shortening the work of calculation in specific cases, though most of the methods usually included under this head have only a limited practical value because they are applicable only in highly special cases. A few methods, like horizontal addition and combined addition and subtraction have first-class utility. A variety of short cuts of varying degrees of value are given in the following pages without any attempt to classify them. The student should become familiar with all of them because there is always benefit in viewing numbers from as many angles as possible.

#### Horizontal Addition

The term *horizontal addition* is applied to the adding of numbers that are not arranged in column form. There is often an unnecessary waste of time in arranging numbers in the form of columns. This is particularly true when the numbers to be added are on bills, invoices, etc. Values on such papers may be totalled by writing down each partial sum as it is arrived at, and then making a final addition.

Consider the first of the following examples. The sum of the units is 37, the sum of the tens is 45, etc. The sums of the various orders are successively set down in the form shown below, and then added.

$$
\begin{array}{r}
37 \\
45 \\
14 \\
\underline{16} \\
17887
\end{array}
$$

The process might of course be shortened somewhat by adding two orders at a time.

Add the following.

1. $32 + $183 + $54 + $3486 + $569 + $9375 + $85
   + $4103
2. $875 + $284 + $37 + $5200 + $398 + $62 + $74
   + $2168 + $720
3. 763 + 827 + 49 + 5283 + 768 + 2175
4. 1536 + 8973 + 5178 + 926 + 8259 + 36 + 867
5. 9365 + 8375 + 1473 + 826 + 4123 + 15378
6. 986 + 325 + 7261 + 5820 + 569 + 8371
7. 6275 + 5183 + 985 + 3267 + 75 + 1528
8. 1738 + 9168 + 8273 + 5298 + 9 + 6832 + 65
9. $783.52 + $41.27 + $837.45 + $9681.73 + $48.26 +
   $912.78 + $91.75 + $683.12 + $41.83 + $591.87 +
   $291.83 + $758.32 + $58.67
10. 46235 + 8976 + 5807 + 98397 + 68325 + 892 +
    5140 + 6839 + 326 + 2125

### Exercise No. 343

#### Multiplying Three Figures by Two

Multiply mentally the following.

| | | | |
|---|---|---|---|
| 1. 131 × 44 | 4. 464 × 47 | 7. 743 × 51 | 10. 172 × 45 |
| 2. 242 × 45 | 5. 571 × 48 | 8. 854 × 52 | |
| 3. 353 × 46 | 6. 632 × 49 | 9. 961 × 44 | |

### Exercise No. 344

#### Four-Place Decimal Values

Review the examples in Exercises No. 338 and 340 on page 123.

Express the fractions listed in Exercise No. 340 as decimals of four places. This is done by simply writing the value as parts of 100 of the terminal fractions of the proper two-place decimals. Thus, $\frac{1}{16}$, which is $.06\frac{1}{4}$ as a two-place decimal, becomes .0625 as a decimal of four places. Again, $\frac{1}{12}$ is $.08\frac{1}{3}$ or $.0833\frac{1}{3}$.

### Exercise No. 345
### Multiplying Three Figures by Two

Multiply mentally the following.

1. 141 × 53   4. 474 × 56   7. 752 × 59   10. 185 × 54
2. 252 × 54   5. 585 × 57   8. 863 × 61
3. 363 × 55   6. 641 × 58   9. 974 × 53

### Exercise No. 346
### Combined Addition and Subtraction

It sometimes becomes necessary to subtract the sum of several numbers from a single number. If the numbers to be added are arranged in column form, this may be done at what amounts to one operation by a very simple process.

The numbers may be arranged either as a sum with a missing addend, as in the examples given for practice, or else with the minuend written at the top with underscoring and the difference written at the bottom, as in the examples shown for illustration.

The so-called carry method of subtraction is used. The sum of each successive column is subtracted from the corresponding figure of the minuend plus as many tens as may be necessary to make the subtraction possible. The number of tens thus used is then added to the next column.

To illustrate: from 122808 take the sum of 35635, and 68921.

$$\underline{122808}$$

$$35635$$
$$\underline{68921}$$

$$18252$$

The sum of 5 and 1 is subtracted from 8; write 2 and carry 0. Subtract 5 from 10; write 5 and carry 1 because 1 ten was used to make the subtraction possible. With

1 to carry, the next column adds to 16; subtract this from 18 and again carry 1. The next column adds to 14; subtract this from 22 and carry 2 because 2 tens were needed to make the subtraction possible in this case. Carrying 2 and subtracting from 12 gives the final necessary figure, 1.

The method of carrying may be made still more clear by taking an example that involves larger numbers; from 3744 subtract the sum of 366, 466, 566, 666, 766, 266 and 466.

$$\begin{array}{r} \underline{3744} \\ 366 \\ 466 \\ 566 \\ 666 \\ 766 \\ 266 \\ \underline{466} \\ 182 \end{array}$$

The sum of the first column, 42, is subtracted from 44 because 44 is the next higher number ending in 4 from which a subtraction can be made; 4 is carried. The sum of the second column, 46, is subtracted from 54 because 54 is the next higher number ending in 4 from which a subtraction can be made; 5 is carried. The sum of the hundreds' column subtracted from 39 leaves 1.

In the following examples fill in in each case the missing number that will make all the numbers add to the total shown.

| 1. | $24.96 | 2. | 6016 | 3. | $29.44 | 4. | 6144 |
|---|---|---|---|---|---|---|---|
| | 6.24 | | 376 | | 7.36 | | 384 |
| | 1.56 | | 141 | | 1.84 | | 24576 |
| | 12.48 | | 188 | | 3.68 | | 3072 |
| | .98 | | 1504 | | 58.88 | | 145 |
| | 3.12 | | 752 | | 1.38 | | 49152 |
| | (?) | | (?) | | (?) | | (?) |
| | $149.18 | | 105233 | | $220.34 | | 181777 |

| 5. | 864 | 6. | $168.86 | 7. | $475.17 | 8. | $286.09 |
|---|---|---|---|---|---|---|---|
| | 108 | | 10.56 | | 46.82 | | 5304.62 |
| | 81 | | 1.32 | | 120.08 | | 20463.20 |
| | 5296 | | .96 | | 2461.50 | | 607.05 |
| | 3456 | | 2.64 | | 500.07 | | 6315.46 |
| | 432 | | 84.48 | | 1208.92 | | 73.90 |
| | (?) | | (?) | | (?) | | (?) |
| | 11965 | | $944.66 | | $12933.16 | | $63452.87 |

### Exercise No. 347

#### Multiplying Three Figures by Two

Multiply mentally the following.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. $151 \times 62$ | 4. $484 \times 65$ | 7. $761 \times 68$ | 10. $194 \times 63$ |
| 2. $262 \times 63$ | 5. $595 \times 66$ | 8. $872 \times 69$ | |
| 3. $373 \times 64$ | 6. $656 \times 67$ | 9. $983 \times 62$ | |

### Exercise No. 348

#### Five-Place Decimal Values

Review the examples in Exercises No. 338 and 340 on page 123 and No. 344 on page 126.

Express the following fractions as decimals of five places.

To find values in thirty-seconds, add .0312½ to the next lower value in sixteenths, etc. The calculation is clearer in the mind if both sixteenths and thirty-seconds are first thought of as decimals of four places. Changing the four-place answer to five places is the work of an instant.

To find values in twenty-fourths, add .0416⅔ to the next lower value in twelfths, etc. In writing answers, drop final ½, and raise final ⅔ to make the last figure a 7.

| | | | | |
|---|---|---|---|---|
| 1. $\frac{1}{32}$ | 4. $\frac{7}{32}$ | 7. $\frac{13}{32}$ | 10. $\frac{19}{32}$ | 13. $\frac{25}{32}$ |
| 2. $\frac{3}{32}$ | 5. $\frac{9}{32}$ | 8. $\frac{15}{32}$ | 11. $\frac{21}{32}$ | 14. $\frac{27}{32}$ |
| 3. $\frac{5}{32}$ | 6. $\frac{11}{32}$ | 9. $\frac{17}{32}$ | 12. $\frac{23}{32}$ | 15. $\frac{29}{32}$ |

**16.** $\frac{3\frac{1}{2}}{3\frac{1}{2}}$    **18.** $\frac{5}{3\frac{1}{4}}$    **20.** $\frac{1\frac{1}{4}}{3\frac{1}{4}}$    **22.** $\frac{1\frac{7}{3}}{3\frac{1}{4}}$    **24.** $\frac{2\frac{1}{4}}{3\frac{1}{2}}$

**17.** $\frac{1}{3\frac{1}{4}}$    **19.** $\frac{7}{3\frac{1}{4}}$    **21.** $\frac{1\frac{3}{2}}{3\frac{1}{4}}$    **23.** $\frac{1\frac{9}{2}}{3\frac{1}{4}}$

## Exercise No. 349

### Multiplying Three Figures by Two

Multiply mentally the following.

**1.** 141 × 71    **4.** 474 × 74    **7.** 747 × 77    **10.** 173 × 72
**2.** 252 × 72    **5.** 585 × 75    **8.** 851 × 78
**3.** 363 × 73    **6.** 696 × 76    **9.** 962 × 71

## Exercise No. 350

### Multiplying by a Near Number

It sometimes happens that a multiplier is a little more or a little less than 100, 1000, 10000, etc. In cases of this kind it is quickest to multiply by the round number and then add or subtract the necessary difference. For example, multiply $385.20 by 998. We multiply the dollar value by 1000 and subtract from this product twice $385.20, thus:

$$\$385200$$
$$\underline{770.40}$$
$$\$384429.60$$

Multiply the following. The student should be able to do most of these mentally.

**1.** $425 × 999    **4.** $258.30 × 104    **7.** $989 × 992
**2.** $865 × 98    **5.** $827.58 × 1003    **8.** $99 × 97
**3.** $735.25 × 998    **6.** $516 × 1.02    **9.** $1005 × 1002

## Exercise No. 351

### Multiplying Three Figures by Two

Multiply mentally the following.

1. $131 \times 79$   4. $464 \times 83$   7. $797 \times 86$   10. $152 \times 81$
2. $242 \times 81$   5. $575 \times 84$   8. $838 \times 87$
3. $353 \times 82$   6. $686 \times 85$   9. $941 \times 79$

### Exercise No. 352
### Review of Decimals

Review the examples in Exercise No. 340 on page 123, No. 344 on page 126 and No. 348 on page 129.

### Exercise No. 353
### Multiplying Three Figures by Two

Multiply mentally the following.

1. $141 \times 88$   4. $474 \times 92$   7. $747 \times 95$   10. $171 \times 89$
2. $252 \times 89$   5. $585 \times 93$   8. $858 \times 96$
3. $363 \times 91$   6. $696 \times 94$   9. $969 \times 88$

### Exercise No. 354
### Aliquot Parts in Multiplication

Reference has already been made to the fact that multiplication may be simplified by considering one of the factors as an aliquot part of some number ending in two or more 0's. Thus, $628 \times 25$ would be solved by multiplying 628 by 100 and dividing by 4; the answer comes to 15700. Again, multiplying $56 \times 75$ would be done most quickly by taking $\frac{3}{4}$ of 56 and then multiplying by 100.

Perform the following multiplications by the method of aliquot parts.

1. $\$35 \times 15$   6. $\$36 \times 25$   11. $\$35 \times 18$
2. $\$42 \times 18$   7. $\$52 \times 250$   12. $\$28 \times 450$
3. $\$24 \times 16$   8. $\$42 \times 350$   13. $\$36 \times 33\frac{1}{3}$
4. $\$18 \times 45$   9. $\$150 \times 48$   14. $\$72 \times 16\frac{2}{3}$
5. $\$72 \times 75$   10. $\$64 \times 25$   15. $\$96 \times 12\frac{1}{2}$

### Exercise No. 355
### Multiplying Three Figures by Two
Multiply mentally the following.  Do not use short cuts.

1. $152 \times 95$    4. $485 \times 98$    7. $758 \times 96$    10. $194 \times 99$
2. $263 \times 96$    5. $596 \times 99$    8. $869 \times 97$
3. $374 \times 97$    6. $647 \times 95$    9. $973 \times 98$

### Exercise No. 356
### Review of Decimals
Review the examples in Exercise No. 344 on page 126 and No. 348 on page 129.

### Exercise No. 357
### Multiplying Three Figures by Three
Multiply mentally the following.  Add together the first two partial products before determining the third.

1. $111 \times 101$     5. $551 \times 141$     9. $941 \times 181$
2. $222 \times 111$     6. $612 \times 151$    10. $152 \times 191$
3. $331 \times 121$     7. $721 \times 161$
4. $442 \times 131$     8. $832 \times 171$

### Exercise No. 358
### Simplifying the Multiplier
Sometimes a multiplier is of such a nature that one part of it may be taken as an exact multiple of another.  In such cases an operation is eliminated by making a single multiplication of the first-found partial product instead of two multiplications of the original multiplicand.  In the example at the left above, the 18 in the multiplier is equal to 3 times the 6.  We therefore multiply the first partial product by 3 instead of multiplying the original multiplicand by 18.  In the example at the right, 56 being equal

to 8 times 7, we multiply first by 8, placing the result in the proper position, and then multiply this partial product by 7.

```
    2574              5462
     186               856

   15444             43696
   46332            305872

  478764           4675472
```

Multiply the following by this method.

1. $385.85 × 642
2. $742.50 × 328
3. $82615 × 729
4. $4265.25 × 255
5. $9541.12 × 546
6. $172.48 × 763
7. $2153.28 × 18624
8. $530.75 × 16412

### Exercise No. 359
### Multiplying Three Figures by Three
Multiply mentally the following.

1. 121 × 202
2. 232 × 212
3. 343 × 222
4. 451 × 232
5. 562 × 242
6. 623 × 252
7. 731 × 262
8. 842 × 272
9. 953 × 282
10. 161 × 292

### Exercise No. 360
### Review of Decimals
Review the examples in Exercise No. 348 on page 129.

### Exercise No. 361
### Multiplying Three Figures by Three
Multiply mentally the following.

1. 131 × 303
2. 242 × 313
3. 353 × 323
4. 464 × 333
5. 571 × 343
6. 632 × 353
7. 743 × 363
8. 854 × 373
9. 961 × 383
10. 172 × 393

### Exercise No. 362
### Multiplication by Factoring

When a multiplier can be taken as the product of two factors, it may be quicker to make separate multiplications by each of these factors than to proceed in the ordinary manner. Take the example 632 × 156. In the illustrations below, the one at the left shows the ordinary method. At the right the multiplier is split up into the factors 13 and 12; the multiplicand is multiplied by 13 and the result is then multiplied by 12.

```
      632              632
      156               13
     ────             ────
     3792             8216
     3160               12
      632            ────
     ────           98592
    98592
```

Multiply the following by this method.

| | | |
|---|---|---|
| **1.** 759 × 182 | **4.** 656 × 285 | **7.** 542 × 221 |
| **2.** 684 × 169 | **5.** 309 × 289 | **8.** 327 × 224 |
| **3.** 327 × 228 | **6.** 728 × 324 | **9.** 986 × 196 |

### Exercise No. 363
### Multiplying Three Figures by Three
Multiply mentally the following.

| | | |
|---|---|---|
| **1.** 141 × 404 | **5.** 585 × 444 | **9.** 974 × 484 |
| **2.** 252 × 414 | **6.** 641 × 454 | **10.** 185 × 494 |
| **3.** 363 × 424 | **7.** 752 × 464 | |
| **4.** 474 × 434 | **8.** 863 × 474 | |

### Exercise No. 364
### Factors Between 11 and 19

A quick way to calculate the product of two numbers between 11 and 19 is to add the units of one number to the whole of the other, annex 0 and add the product of the units of both numbers. Thus, to multiply 16 × 18:

16 and 8 are 24; call this 240 and add 48, making 288. The same result would be reached by adding 6 to 18. Multiply by this method:

| | | |
|---|---|---|
| **1.** 14 × 15 | **4.** 15 × 16 | **7.** 16 × 17 |
| **2.** 18 × 19 | **5.** 13 × 15 | **8.** 14 × 16 |
| **3.** 15 × 17 | **6.** 13 × 19 | **9.** 19 × 19 |

### Exercise No. 365
### Multiplying Three Figures by Three
Multiply mentally the following.

| | | |
|---|---|---|
| **1.** 151 × 505 | **5.** 595 × 545 | **9.** 983 × 585 |
| **2.** 262 × 515 | **6.** 656 × 555 | **10.** 194 × 595 |
| **3.** 373 × 525 | **7.** 761 × 565 | |
| **4.** 484 × 535 | **8.** 872 × 575 | |

### Exercise No. 366
### Multiplying by 11
When the multiplicand consists of two figures the sum of which is less than 10, the product is found by writing the two figures of the multiplicand with their sum between them. Thus, to multiply 62 by 11 we write 6 and 2 with the sum of 6 and 2 between these figures, obtaining 682.

To multiply larger numbers by 11, apply the following rule. Beginning at the right, write the units' figure of the multiplicand, then successively the units plus the tens, the tens plus the hundreds, the hundreds plus the thousands, etc., carrying wherever necessary, and ending with the highest order of the multiplicand, or the highest order plus the carrying figure. Thus, to multiply 4762 by 11: write 2; add 2 and 6 and write 8; add 6 and 7, write 3 and carry 1; add 7 and 4, increase it by the 1 carried, write 2 and carry 1; add this 1 to 4 and write 5. Answer, 52382.

Multiply the following by this method.

1. $5136 × 11
2. $72638 × 11
3. $514832 × 11
4. $37281.05 × 11

5. $41268.45 × 11
6. $3275.75 × 11
7. $48263.25 × 11
8. $94873.30 × 11

### Exercise No. 367

#### Multiplying Three Figures by Three

Multiply mentally the following.

1. 141 × 606
2. 252 × 616
3. 363 × 626
4. 474 × 636

5. 585 × 646
6. 696 × 656
7. 747 × 666
8. 851 × 676

9. 962 × 686
10. 173 × 696

### Exercise No. 368

#### Multiplying by 21, 31, 41, etc.

Setting down the product from right to left, write the units' figure of the multiplicand, then multiply each order of the multiplicand by the tens' figure of the multiplier, increasing the result in each case by the next higher order of the multiplicand and any necessary carrying figure.

Example, multiply 387 by 41; write 7; multiply 7 by 4, add the 8 of the multiplicand, making 36, write 6 and carry 3; multiply 8 by 4, add the 3 of the multiplicand and the carried 3, making 38, write 8 and carry 3; multiply 3 by 4 and add the carried 3 making 15, write 15. Answer, 15867.

Multiply by this method:

1. $2735.50 × 51
2. $1824.75 × 81
3. $5104.30 × 31
4. $6238.65 × 21

5. $7415.40 × 61
6. $8291.25 × 91
7. $2134.15 × 71
8. $5827.80 × 41

### Exercise No. 369
### Multiplying Three Figures by Three
Multiply mentally the following.

| | | |
|---|---|---|
| 1. 131 × 707 | 5. 575 × 747 | 9. 941 × 787 |
| 2. 242 × 717 | 6. 686 × 757 | 10. 152 × 797 |
| 3. 353 × 727 | 7. 797 × 767 | |
| 4. 464 × 737 | 8. 838 × 777 | |

### Exercise No. 370
### Squares of Numbers

The square of a number is the number multiplied by itself. Squares may be determined quickly if the given number is considered to be the sum of two numbers. In algebra such a sum would ordinarily be taken as $a + b$ and its square would be $a^2 + 2ab + b^2$. In regular arithmetical cases $a$ becomes the tens of the number and $b$ the units. Thus, 25 is 20 + 5, and 146 is 140 + 6. The algebraic formula for the square of the sum of two numbers is expressed as the square of the first plus twice the product of the first by the second plus the square of the second. Thus, 25 squared is 20 × 20 (400) plus 2 × 20 × 5 (200) plus 5 × 5 (25); the total is 625.

In computing squares by this principle you may immediately annex the square of the second to the square of the first, and then add twice the product of the first by the second. Thus in squaring 25 you would immediately say 425, and then add to this 2 × 20 × 5 (200), making 625. In squaring 146 you immediately say 19636 and add to this 2 × 140 × 6 (1680), making 21316. Always allow two places for the square of the second. Thus in squaring 61 the first partial product is 3601, to which 120 is added to make 3721.

In squaring numbers on paper the following method will be found rapid where large numbers are involved. Set the given number down twice as if for regular multiplication. Assuming that it is considered to consist of tens and units,

multiply units by units, write units in the result and carry the tens. Add the two given tens together, multiply this sum by the given units, add the carried figure, write tens in the result and carry hundreds. Multiply tens by tens, add the carried figure and write the result.

| 67 | 134 | 1613 |
|---|---|---|
| 67 | 134 | 1613 |
| 4489 | 17956 | 2601769 |

In the first illustrative example at the left, $7 \times 7 = 49$, write 9 and carry 4; $6 + 6 = 12$, $12 \times 7 = 84$, $84 + 4 = 88$, write 8 and carry 8; $6 \times 6 = 36$, $36 + 8 = 44$.

In the second example, $4 \times 4 = 16$, write 6 and carry 1; $13 + 13 = 26$, $26 \times 4 = 104$, $104 + 1 = 105$, write 5 and carry 10; $13 \times 13 = 169$, $169 + 10 = 179$, write 179.

The third example is worked somewhat differently because here the parts of the number are considered to be 1600 and 13. $13 \times 13 = 169$, write 69 (two figures) and carry 1; $16 + 16 = 32$, $32 \times 13 = 416$, $416 + 1 = 417$, write 17 and carry 4; $16 \times 16 = 256$, $256 + 4 = 260$, write 260.

Find the squares of the following numbers. Do all the examples first by the first method, then by the second method.

| | | | | |
|---|---|---|---|---|
| **1.** 74 | **4.** 64 | **7.** 124 | **10.** 197 | **13.** 1314 |
| **2.** 93 | **5.** 38 | **8.** 146 | **11.** 1112 | **14.** 1516 |
| **3.** 82 | **6.** 112 | **9.** 168 | **12.** 1213 | **15.** 1719 |

## Exercise No. 371
### Multiplying Three Figures by Three
Multiply mentally the following.

| | | |
|---|---|---|
| **1.** $141 \times 808$ | **5.** $585 \times 848$ | **9.** $969 \times 888$ |
| **2.** $252 \times 818$ | **6.** $696 \times 858$ | **10.** $171 \times 898$ |
| **3.** $363 \times 828$ | **7.** $747 \times 868$ | |
| **4.** $474 \times 838$ | **8.** $858 \times 878$ | |

## Exercise No. 372
### Multiplying When Units Are Alike
The following method is a variation of that explained in connection with the squaring of numbers.

$$\begin{array}{r} 47 \\ 67 \\ \hline 3149 \end{array} \qquad \begin{array}{r} 613 \\ 913 \\ \hline 559669 \end{array}$$

In the illustration at the left, $7 \times 7 = 49$, write 9 and carry 4; $6 + 4 = 10$, $10 \times 7 = 70$, $70 + 4 = 74$, write 4 and carry 7; $4 \times 6 = 24$, $24 + 7 = 31$, write 31.

In the illustration at the right, $13 \times 13 = 169$, write 69 and carry 1; $6 + 9 = 15$, $15 \times 13 = 195$, $195 + 1 = 196$, write 96 and carry 1; $6 \times 9 = 54$, $54 + 1 = 55$, write 55.

Perform the following multiplications by this method.

1. $136 \times 56$       4. $195 \times 115$      7. $516 \times 816$
2. $159 \times 79$      5. $234 \times 174$      8. $714 \times 314$
3. $172 \times 92$      6. $217 \times 197$      9. $217 \times 917$

## Exercise No. 373
### Multiplying Three Figures by Three

1. $152 \times 909$      5. $596 \times 949$      9. $973 \times 989$
2. $263 \times 919$      6. $647 \times 959$      10. $184 \times 999$
3. $374 \times 929$      7. $758 \times 969$
4. $485 \times 939$      8. $869 \times 979$

## Exercise No. 374
### Multiplying When Tens or Hundreds Are Alike
This is a variation of the method explained in Exercise No. 372 above.

$$\begin{array}{r} 83 \\ 89 \\ \hline 7387 \end{array} \qquad \begin{array}{r} 717 \\ 714 \\ \hline 511938 \end{array}$$

In the example on page 139, $3 \times 9 = 27$, write 7 and carry 2; $3 + 9 = 12$, $12 \times 8 = 96$, $96 + 2 = 98$, write 8 and carry 9; $8 \times 8 = 64$, $64 + 9 = 73$, write 73.

In the example on page 139, $17 \times 14 = 238$, write 38 and carry 2; $17 + 14 = 31$, $31 \times 7 = 217$, $217 + 2 = 219$, write 19 and carry 2; $7 \times 7 = 49$, $49 + 2 = 51$, write 51.

Multiply the following by this method.

| | | |
|---|---|---|
| **1.** $92 \times 93$ | **4.** $92 \times 97$ | **7.** $416 \times 418$ |
| **2.** $62 \times 65$ | **5.** $213 \times 215$ | **8.** $509 \times 519$ |
| **3.** $84 \times 87$ | **6.** $321 \times 312$ | **9.** $913 \times 917$ |

### Exercise No. 375

### Square of Numbers Ending in 5

If a number to be squared consists of tens and units, and if the units are 5, then twice the product of the first part by the second is equal to the given number of tens. Thus, in $25 \times 25$, $20 \times 5 \times 2$ is equal to $20 \times 10$; in $35 \times 35$, $30 \times 5 \times 2$ is equal to $30 \times 10$. Accordingly when dealing with numbers of this type we may at once annex 25 to the product of the given tens multiplied by one more than the given tens. That is to say, $25 \times 25 = 625$, in which the 6 represents $3 \times 2$; $35 \times 35 = 1225$ in which the 12 represents $4 \times 3$; $45 \times 45 = 2025$, in which the 20 represents $5 \times 4$, etc.

Find the squares of the following numbers by this method.

| | | | | |
|---|---|---|---|---|
| **1.** 45 | **4.** 75 | **7.** 115 | **10.** 175 | **13.** 335 |
| **2.** 55 | **5.** 85 | **8.** 135 | **11.** 195 | **14.** 355 |
| **3.** 65 | **6.** 95 | **9.** 155 | **12.** 315 | **15.** 375 |

### Exercise No. 376

### Multiplying Like Tens with Units Making 10

The principle explained above applies to any case in which the tens are alike and the sum of the units is 10.

Thus the product of 46 × 44 is 2024. We arrive at this by multiplying 4 × 5, making 20, and writing after this the product of 4 × 6 or 24.

Multiply in this manner the following.

| | | |
|---|---|---|
| **1.** 23 × 27 | **4.** 103 × 107 | **7.** 178 × 172 |
| **2.** 41 × 49 | **5.** 112 × 118 | **8.** 169 × 161 |
| **3.** 36 × 34 | **6.** 154 × 156 | **9.** 192 × 198 |

## Exercise No. 377

### Squaring Numbers Ending in 25

When a number ends in 25, like 725 for instance, we may take it as the sum of two numbers of which one represents hundreds and the other tens and units. In such cases twice the product of the first part by the second is equal to 50 times the first part. The result of this multiplication is a certain number of thousands.

To find the square of 725 we first write 0625 after the square of 7, making 490625. To this we add as many thousands as are represented by 7 × 5. 490625 + 35000 = 525625.

Another method of finding these squares is by setting the numbers down as in the following illustration.

$$
\begin{array}{r}
725 \\
725 \\
\hline
525625
\end{array}
$$

At once write 625 as the square of 25. Multiply 7 by 5, write 5 and carry 3; multiply 7 by 7, add 3, write 52.

Find the square of the following numbers by both of the foregoing methods.

| | | | | |
|---|---|---|---|---|
| **1.** 525 | **3.** 825 | **5.** 1225 | **7.** 1625 | **9.** 1825 |
| **2.** 625 | **4.** 1025 | **6.** 1325 | **8.** 1725 | **10.** 1925 |

## Exercise No. 378

### Multiplying a Sum by a Difference

The algebraic product of $a + b$ and $a - b$ is $a^2 - b^2$. When numbers to be multiplied can be expressed as the sum of and the difference between two numbers, the product equals the square of the first minus the square of the second. Thus $63 \times 57$ may be expressed as $60 + 3$ multiplied by $60 - 3$. The product equals $60 \times 60$ minus $3 \times 3$. This comes to $3600 - 9$ or $3591$.

There is no limit to the combinations of numbers for which this principle would hold true, but for practical purposes we may be satisfied to recognize those in which the units add to 10 and the tens have a difference of 1.

Multiply the following by this method.

| | | |
|---|---|---|
| **1.** $72 \times 68$ | **4.** $101 \times 119$ | **7.** $152 \times 168$ |
| **2.** $83 \times 77$ | **5.** $123 \times 137$ | **8.** $173 \times 187$ |
| **3.** $94 \times 86$ | **6.** $146 \times 154$ | **9.** $182 \times 198$ |

## Exercise No. 379

### Multiplying Mixed Numbers with Like Integers

When integers are alike in mixed numbers, as in $9\frac{1}{4} \times 9\frac{3}{4}$, their product is found by multiplying one integer by the other plus the sum of the two fractions; to this partial product add that obtained by multiplying together the two fractions.

$$\begin{array}{r} 9\frac{1}{4} \\ 9\frac{3}{4} \\ \hline 90\frac{3}{16} \end{array} \qquad \begin{array}{r} 8\frac{3}{4} \\ 8\frac{5}{8} \\ \hline 76\frac{2}{3} \\ \frac{5}{8} \\ \hline 77\frac{7}{24} \end{array}$$

In the illustrative example at the left, 9 is multiplied by $9 + \frac{1}{4} + \frac{3}{4}$, or 10. The product of this is 90, and to 90 is added the product of $\frac{1}{4}$ and $\frac{3}{4}$, or $\frac{3}{16}$.

In the second example 8 is multiplied by $8 + \frac{3}{4} + \frac{5}{8}$, or $9\frac{7}{13}$, producing $76\frac{2}{3}$. To this is added the product of $\frac{3}{4} \times \frac{5}{8}$, or $\frac{5}{8}$, making a total of $77\frac{7}{24}$.

Multiply the following.

1. $9\frac{1}{3} \times 9\frac{2}{3}$      5. $3\frac{1}{3} \times 3\frac{2}{3}$      9. $5\frac{1}{4} \times 5\frac{1}{2}$
2. $10\frac{2}{5} \times 10\frac{3}{5}$      6. $60\frac{2}{5} \times 60\frac{3}{4}$      10. $8\frac{3}{4} \times 8\frac{1}{3}$
3. $12\frac{5}{8} \times 12\frac{1}{2}$      7. $40\frac{3}{4} \times 40\frac{1}{4}$      11. $6\frac{5}{8} \times 6\frac{3}{8}$
4. $18\frac{1}{2} \times 18\frac{1}{3}$      8. $25\frac{3}{5} \times 25\frac{2}{5}$      12. $12\frac{1}{8} \times 12\frac{5}{8}$

## Exercise No. 380

### Multiplying by a Number Nearly Whole

Sometimes a multiplier lacks a single fractional unit of being a whole number. Examples would be $5\frac{2}{3}$, $6\frac{3}{4}$ and $7\frac{4}{5}$, which respectively lack $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$ of being 6, 7 and 8. In cases of this kind raise the multiplier to the next larger whole number, and after multiplying the multiplicand by this number, subtract from the product the necessary fractional part of the multiplicand. Thus, to multiply 64 by $3\frac{7}{8}$, we multiply 64 by 4, obtaining 256, and from this we subtract $\frac{1}{8}$ of 64, or 8, arriving at a final result of 248.

Multiply by this method the following.

1. $48 \times 5\frac{3}{4}$      4. $250 \times 3\frac{2}{5}$      7. $180 \times 7\frac{9}{10}$
2. $75 \times 10\frac{2}{3}$      5. $522 \times 4\frac{5}{6}$      8. $720 \times 2\frac{11}{12}$
3. $136 \times 6\frac{5}{6}$      6. $672 \times 8\frac{6}{7}$      9. $342 \times 9\frac{5}{6}$

## Exercise No. 381

### Aliquot Parts in Division

The method of aliquot parts is as applicable to division as it is to multiplication. In ordinary cases we determine how many times the given divisor is contained exactly in some multiple of 10. We multiply the given dividend by the result of such division, and point off the product decimally in such a way as to express division by the proper multiple of 10. Thus, to divide 1840 by 25, we obtain a multiplier of 4 by dividing 25 into 100. Multiplying 1840 by 4 we get 7360, and dividing this decimally by 100 we obtain 73.60

$$6375 \div 7\tfrac{1}{2}$$

$$
\begin{array}{r}
6375 \\
2125 \\
\hline
850.0
\end{array}
$$

Another method of using aliquot parts is illustrated by the example shown above. The problem is to divide 6375 by $7\tfrac{1}{2}$. We note that $7\tfrac{1}{2}$ lacks one-third of itself of being 10. We therefore add one-third of itself to 6375 and divide the resulting sum decimally by 10.

Divide by the foregoing methods:

| | | |
|---|---|---|
| **1.** $580 \div 25$ | **4.** $875 \div 250$ | **7.** $1527 \div 150$ |
| **2.** $750 \div 16\tfrac{2}{3}$ | **5.** $640 \div 125$ | **8.** $918 \div 15$ |
| **3.** $450 \div 12\tfrac{1}{2}$ | **6.** $435 \div 33\tfrac{1}{3}$ | **9.** $582 \div 7\tfrac{1}{2}$ |

### Exercise No. 382

#### Cubes of Numbers

The algebraic formula for the cube of the sum of two numbers, $a$ and $b$, is $a^3 + 3a^2b + 3ab^2 + b^3$. This may be expressed as the cube of the first plus three times the square of the first multiplied by the second, plus three times the first multiplied by the square of the second plus the cube of the second.

By applying this formula it is not difficult to calculate mentally the cubes of numbers of two places. Suppose, for instance, that we want to find the cube of 26. We immediately annex the cube of 6 (216) to the cube of 2 (8), obtaining 8216. (Always allow three places for the cube of the second.) Multiplying $3 \times 400$ (square of 20) $\times 6$, we get 7200, which, added to 8216, makes 15416. Multiplying $3 \times 20 \times 36$ (square of 6) we obtain 2160, which, added to 15416 gives 17576 as the cube of 26.

Cubes may be readily written down from right to left by using a different method.

$$
\begin{array}{lll}
\underline{26^3} & 6 \times 6 \times 6 = 216 & 6 \\
17576 & (6 \times 6 \times 2 \times 3) + 21 = 237 & 7 \\
& (6 \times 2 \times 2 \times 3) + 23 = 95 & 5 \\
& (2 \times 2 \times 2) + 9 = 17 & 17
\end{array}
$$

All the necessary writing is shown on p. 144 at the left. The method of making the calculation is analyzed at the right. The cube of 6 is 216, write 6 and carry 21. The square of 6 (36) multiplied by 2 (72) multiplied by 3 (216) plus 21 comes to 237, write 7 and carry 23. The product of 6 times the square of 2 (24) multiplied by 3 (72) plus 23 comes to 95, write 5 and carry 9. The cube of 2 is 8, which, added to 9, makes 17.

Before attempting the examples which follow the student ought to make himself thoroughly familiar with the cubes of the numbers from 1 to 9, so that he will not have to slow up to make such computations in the course of the example.

Find the cubes of the following numbers by both of the foregoing methods.

| | | | | |
|---|---|---|---|---|
| **1.** 14 | **4.** 46 | **7.** 65 | **10.** 84 | **13.** 95 |
| **2.** 27 | **5.** 59 | **8.** 71 | **11.** 86 | **14.** 97 |
| **3.** 33 | **6.** 62 | **9.** 73 | **12.** 88 | **15.** 99 |

## Exercise No. 383
### Algebraic Multiplication

Arithmetical products may be directly written down from right to left by using the method of cross-multiplication employed in algebra. A certain pattern is followed in multiplying each figure by every other figure. The operations are best explained by illustration.

$$
\begin{array}{r}
47 \\
26 \\
\hline
1222
\end{array}
\qquad
\begin{array}{r}
345 \\
678 \\
\hline
234910
\end{array}
$$

In the example at the left, $7 \times 6 = 42$, write 2 and carry 4; 4 plus $4 \times 6$ (28) plus $2 \times 7$ comes to 42, write 2 and carry 4; 4 plus $4 \times 2$ is 12, write 12. (It is best to start each part of the calculation with the carried number, which otherwise might not be easy to remember.)

In the second example, multiply $5 \times 8$; then $4 \times 8$ and $7 \times 5$; then $3 \times 8$, $6 \times 5$ and $4 \times 7$; then $3 \times 7$ and $6 \times 4$; finally $3 \times 6$. Carry as may be necessary.

# THE ART OF CALCULATION

## Table IV
## Prime and Composite Numbers

| | | | |
|---|---|---|---|
| 1    Prime | 41    Prime | 71    Prime | 98 = 2 × 49 |
| 2    Prime | 42 = 2 × 21 | 72 = 2 × 36 | 7 × 14 |
| 3    Prime | 3 × 14 | 3 × 24 | 99 = 3 × 33 |
| 4 = 2 × 2 | 6 × 7 | 4 × 18 | 9 × 11 |
| 5    Prime | 43    Prime | 6 × 12 | 100 = 2 × 50 |
| 6 = 2 × 3 | 44 = 2 × 22 | 8 × 9 | 4 × 25 |
| 7    Prime | 4 × 11 | 73    Prime | 5 × 20 |
| 8 = 2 × 4 | 45 = 3 × 15 | 74 = 2 × 37 | 10 × 10 |
| 9 = 3 × 3 | 5 × 9 | 75 = 3 × 25 | 101    Prime |
| 10 = 2 × 5 | 46 = 2 × 23 | 5 × 15 | 102 = 2 × 51 |
| 11    Prime | 47    Prime | 76 = 2 × 38 | 3 × 34 |
| 12 = 2 × 6 | 48 = 2 × 24 | 4 × 19 | 6 × 17 |
| 3 × 4 | 3 × 16 | 77 = 7 × 11 | 103    Prime |
| 13    Prime | 4 × 12 | 78 = 2 × 39 | 104 = 2 × 52 |
| 14 = 2 × 7 | 6 × 8 | 3 × 26 | 4 × 26 |
| 15 = 3 × 5 | 49 = 7 × 7 | 6 × 13 | 8 × 13 |
| 16 = 2 × 8 | 50 = 2 × 25 | 79    Prime | 105 = 3 × 35 |
| 4 = 4 | 5 × 10 | 80 = 2 × 40 | 5 × 21 |
| 17    Prime | 51 = 3 × 17 | 4 × 20 | 7 × 15 |
| 18 = 2 × 9 | 52 = 2 × 26 | 5 × 16 | 106 = 2 × 53 |
| 3 × 6 | 4 × 13 | 8 × 10 | 107    Prime |
| 19    Prime | 53    Prime | 81 = 3 × 27 | 108 = 2 × 54 |
| 20 = 2 × 10 | 54 = 2 × 27 | 9 × 9 | 3 × 36 |
| 4 × 5 | 3 × 18 | 82 = 2 × 41 | 4 × 27 |
| 21 = 3 × 7 | 6 × 9 | 83    Prime | 6 × 18 |
| 22 = 2 × 11 | 55 = 5 × 11 | 84 = 2 × 42 | 9 × 12 |
| 23    Prime | 56 = 2 × 28 | 3 × 28 | 109    Prime |
| 24 = 2 × 12 | 4 × 14 | 4 × 21 | 110 = 2 × 55 |
| 3 × 8 | 7 × 8 | 6 × 14 | 5 × 22 |
| 4 × 6 | 57 = 3 × 19 | 7 × 12 | 10 × 11 |
| 25 = 5 × 5 | 58 = 2 × 29 | 85 = 5 × 17 | 111 = 3 × 37 |
| 26 = 2 × 13 | 59    Prime | 86 = 2 × 43 | 112 = 2 × 56 |
| 27 = 3 × 9 | 60 = 2 × 30 | 87 = 3 × 29 | 4 × 28 |
| 28 = 2 × 14 | 3 × 20 | 88 = 2 × 44 | 7 × 16 |
| 4 × 7 | 4 × 15 | 4 × 22 | 8 × 14 |
| 29    Prime | 5 × 12 | 8 × 11 | 113    Prime |
| 30 = 2 × 15 | 6 × 10 | 89    Prime | 114 = 2 × 57 |
| 3 × 10 | 61    Prime | 90 = 2 × 45 | 3 × 38 |
| 5 × 6 | 62 = 2 × 31 | 3 × 30 | 6 × 19 |
| 31    Prime | 63 = 3 × 21 | 5 × 18 | 115 = 5 × 23 |
| 32 = 2 × 16 | 7 × 9 | 6 × 15 | 116 = 2 × 58 |
| 4 × 8 | 64 = 2 × 32 | 9 × 10 | 4 × 29 |
| 33 = 3 × 11 | 4 × 16 | 91 = 7 × 13 | 117 = 3 × 39 |
| 34 = 2 × 17 | 8 × 8 | 92 = 2 × 46 | 9 × 13 |
| 35 = 5 × 7 | 65 = 5 × 13 | 4 × 23 | 118 = 2 × 59 |
| 36 = 2 × 18 | 66 = 2 × 33 | 93 = 3 × 31 | 119 = 7 × 17 |
| 3 × 12 | 3 × 22 | 94 = 2 × 47 | 120 = 2 × 60 |
| 4 × 9 | 6 × 11 | 95 = 5 × 19 | 3 × 40 |
| 6 × 6 | 67    Prime | 96 = 2 × 48 | 4 × 30 |
| 37    Prime | 68 = 2 × 34 | 3 × 32 | 5 × 24 |
| 38 = 2 × 19 | 4 × 17 | 4 × 24 | 6 × 20 |
| 39 = 3 × 13 | 69 = 3 × 23 | 6 × 16 | 8 × 15 |
| 40 = 2 × 20 | 70 = 2 × 35 | 8 × 12 | 10 × 12 |
| 4 × 10 | 5 × 14 | 97    Prime | 121 = 11 × 11 |
| 5 × 8 | 7 × 10 | | 122 = 2 × 61 |

## Table IV (Continued)

| | | | |
|---|---|---|---|
| $123 = 3 \times 41$ | 149    Prime | 173    Prime | $196 = 2 \times 98$ |
| $124 = 2 \times 62$ | $150 = 2 \times 75$ | $174 = 2 \times 87$ | $4 \times 49$ |
| $4 \times 31$ | $3 \times 50$ | $3 \times 58$ | $7 \times 28$ |
| $125 = 5 \times 25$ | $5 \times 30$ | $6 \times 29$ | $14 \times 14$ |
| $126 = 2 \times 63$ | $6 \times 25$ | $175 = 5 \times 35$ | 197    Prime |
| $3 \times 42$ | $10 \times 15$ | $7 \times 25$ | $198 = 2 \times 99$ |
| $6 \times 21$ | 151    Prime | $176 = 2 \times 88$ | $3 \times 66$ |
| $7 \times 18$ | $152 = 2 \times 76$ | $4 \times 44$ | $6 \times 33$ |
| $9 \times 14$ | $4 \times 38$ | $8 \times 22$ | $9 \times 22$ |
| 127    Prime | $8 \times 19$ | $11 \times 16$ | $11 \times 18$ |
| $128 = 2 \times 64$ | $153 = 3 \times 51$ | $177 = 3 \times 59$ | 199    Prime |
| $4 \times 32$ | $9 \times 17$ | $178 = 2 \times 89$ | $200 = 2 \times 100$ |
| $8 \times 16$ | $154 = 2 \times 77$ | 179    Prime | $4 \times 50$ |
| $129 = 3 \times 43$ | $7 \times 22$ | $180 = 2 \times 90$ | $5 \times 40$ |
| $130 = 2 \times 65$ | $11 \times 14$ | $3 \times 60$ | $8 \times 25$ |
| $5 \times 26$ | $155 = 5 \times 31$ | $4 \times 45$ | $10 \times 20$ |
| $10 \times 13$ | $156 = 2 \times 78$ | $5 \times 36$ | $201 = 3 \times 67$ |
| 131    Prime | $3 \times 52$ | $6 \times 30$ | $202 = 2 \times 101$ |
| $132 = 2 \times 66$ | $4 \times 39$ | $9 \times 20$ | $203 = 7 \times 29$ |
| $3 \times 44$ | $6 \times 26$ | $10 \times 18$ | $204 = 2 \times 102$ |
| $4 \times 33$ | $12 \times 13$ | $12 \times 15$ | $3 \times 68$ |
| $6 \times 22$ | 157    Prime | 181    Prime | $4 \times 51$ |
| $11 \times 12$ | $158 = 2 \times 79$ | $182 = 2 \times 91$ | $6 \times 34$ |
| $133 = 7 \times 19$ | $159 = 3 \times 53$ | $7 \times 26$ | $12 \times 17$ |
| $134 = 2 \times 67$ | $160 = 2 \times 80$ | $13 \times 14$ | $205 = 5 \times 41$ |
| $135 = 3 \times 45$ | $4 \times 40$ | $183 = 3 \times 61$ | $206 = 2 \times 103$ |
| $5 \times 27$ | $5 \times 32$ | $184 = 2 \times 92$ | $207 = 3 \times 69$ |
| $9 \times 15$ | $8 \times 20$ | $4 \times 46$ | $9 \times 23$ |
| $136 = 2 \times 68$ | $10 \times 16$ | $8 \times 23$ | $208 = 2 \times 104$ |
| $4 \times 34$ | $161 = 7 \times 23$ | $185 = 5 \times 37$ | $4 \times 52$ |
| $8 \times 17$ | $162 = 2 \times 81$ | $186 = 2 \times 93$ | $8 \times 26$ |
| 137    Prime | $3 \times 54$ | $3 \times 62$ | $13 \times 16$ |
| $138 = 2 \times 69$ | $6 \times 27$ | $6 \times 31$ | $209 = 11 \times 19$ |
| $3 \times 46$ | $9 \times 18$ | $187 = 11 \times 17$ | $210 = 2 \times 105$ |
| $6 \times 23$ | 163    Prime | $188 = 2 \times 94$ | $3 \times 70$ |
| 139    Prime | $164 = 2 \times 82$ | $4 \times 47$ | $5 \times 42$ |
| $140 = 2 \times 70$ | $4 \times 41$ | $189 = 3 \times 63$ | $6 \times 35$ |
| $4 \times 35$ | $165 = 3 \times 55$ | $7 \times 27$ | $7 \times 30$ |
| $5 \times 28$ | $5 \times 33$ | $9 \times 21$ | $10 \times 21$ |
| $7 \times 20$ | $11 \times 15$ | $190 = 2 \times 95$ | $14 \times 15$ |
| $10 \times 14$ | $166 = 2 \times 83$ | $5 \times 38$ | 211    Prime |
| $141 = 3 \times 47$ | 167    Prime | $10 \times 19$ | $212 = 2 \times 106$ |
| $142 = 2 \times 71$ | $168 = 2 \times 84$ | 191    Prime | $4 \times 53$ |
| $143 = 11 \times 13$ | $3 \times 56$ | $192 = 2 \times 96$ | $213 = 3 \times 71$ |
| $144 = 2 \times 72$ | $4 \times 42$ | $3 \times 64$ | $214 = 2 \times 107$ |
| $3 \times 48$ | $6 \times 28$ | $4 \times 48$ | $215 = 5 \times 43$ |
| $4 \times 36$ | $7 \times 24$ | $6 \times 32$ | $216 = 2 \times 108$ |
| $6 \times 24$ | $8 \times 21$ | $8 \times 24$ | $3 \times 72$ |
| $8 \times 18$ | $12 \times 14$ | $12 \times 16$ | $4 \times 54$ |
| $9 \times 16$ | $169 = 13 \times 13$ | 193    Prime | $6 \times 36$ |
| $12 \times 12$ | $170 = 2 \times 85$ | $194 = 2 \times 97$ | $8 \times 27$ |
| $145 = 5 \times 29$ | $5 \times 34$ | $195 = 3 \times 65$ | $9 \times 24$ |
| $146 = 2 \times 73$ | $10 \times 17$ | $5 \times 39$ | $12 \times 18$ |
| $147 = 3 \times 49$ | $171 = 3 \times 57$ | $13 \times 15$ | $217 = 7 \times 31$ |
| $7 \times 21$ | $9 \times 19$ | | $218 = 2 \times 109$ |
| $148 = 2 \times 74$ | $172 = 2 \times 86$ | | $219 = 3 \times 73$ |
| $4 \times 37$ | $4 \times 43$ | | |

## Table IV (Continued)

| | | | |
|---|---|---|---|
| 220 = 2 × 110 | 240 = 2 × 120 | 261 = 3 × 87 | 283   Prime |
| 4 × 55 | 3 × 80 | 9 × 29 | 284 = 2 × 142 |
| 5 × 44 | 4 × 60 | 262 = 2 × 131 | 4 × 71 |
| 10 × 22 | 5 × 48 | 263   Prime | 285 = 3 × 95 |
| 11 × 20 | 6 × 40 | 264   2 × 132 | 5 × 57 |
| 221 = 13 × 17 | 8 × 30 | 3 × 88 | 15 × 19 |
| 222 = 2 × 111 | 10 × 24 | 4 × 66 | 286 = 2 × 143 |
| 3 × 74 | 12 × 20 | 6 × 44 | 11 × 26 |
| 6 × 37 | 15 × 16 | 8 × 33 | 13 × 22 |
| 223   Prime | 241   Prime | 11 × 24 | 287 = 7 × 41 |
| 224 = 2 × 112 | 242 = 2 × 121 | 12 × 22 | 288 = 2 × 144 |
| 4 × 56 | 11 × 22 | 265 = 5 × 53 | 3 × 96 |
| 7 × 32 | 243 = 3 × 81 | 266 = 2 × 133 | 4 × 72 |
| 8 × 28 | 9 × 27 | 7 × 38 | 6 × 48 |
| 14 × 16 | 244 = 2 × 122 | 14 × 19 | 8 × 36 |
| 225 = 3 × 75 | 4 × 61 | 267 = 3 × 89 | 9 × 32 |
| 5 × 45 | 245 = 5 × 49 | 268 = 2 × 134 | 12 × 24 |
| 9 × 25 | 7 × 35 | 4 × 67 | 16 × 18 |
| 15 × 15 | 246 = 2 × 123 | 269   Prime | 289 = 17 × 17 |
| 226 = 2 × 113 | 3 × 82 | 270 = 2 × 135 | 290 = 2 × 145 |
| 227   Prime | 6 × 41 | 3 × 90 | 5 × 58 |
| 228 = 2 × 114 | 247 = 13 × 19 | 5 × 54 | 10 × 29 |
| 3 × 76 | 248 = 2 × 124 | 6 × 45 | 291 = 3 × 97 |
| 4 × 57 | 4 × 62 | 9 × 30 | 292 = 2 × 146 |
| 6 × 38 | 8 × 31 | 10 × 27 | 4 × 73 |
| 12 × 19 | 249 = 3 × 83 | 15 × 18 | 293   Prime |
| 229   Prime | 250 = 2 × 125 | 271   Prime | 294 = 2 × 147 |
| 230 = 2 × 115 | 5 × 50 | 272 = 2 × 136 | 3 × 98 |
| 5 × 46 | 10 × 25 | 4 × 68 | 6 × 49 |
| 10 × 23 | 251   Prime | 8 × 34 | 7 × 42 |
| 231 = 3 × 77 | 252 = 2 × 126 | 16 × 17 | 14 × 21 |
| 7 × 33 | 3 × 84 | 273 = 3 × 91 | 295 = 5 × 59 |
| 11 × 21 | 4 × 63 | 7 × 39 | 296 = 2 × 148 |
| 232 = 2 × 116 | 6 × 42 | 13 × 21 | 4 × 74 |
| 4 × 58 | 7 × 36 | 274 = 2 × 137 | 8 × 37 |
| 8 × 29 | 9 × 28 | 275 = 5 × 55 | 297 = 3 × 99 |
| 233   Prime | 12 × 21 | 11 × 25 | 9 × 33 |
| 234 = 2 × 117 | 14 × 18 | 276 = 2 × 138 | 11 × 27 |
| 3 × 78 | 253 = 11 × 23 | 3 × 92 | 298 = 2 × 149 |
| 6 × 39 | 254 = 2 × 127 | 4 × 69 | 299 = 13 × 23 |
| 9 × 26 | 255 = 3 × 85 | 6 × 46 | 300 = 2 × 150 |
| 13 × 18 | 5 × 51 | 12 × 23 | 3 × 100 |
| 235 = 5 × 47 | 15 × 17 | 277   Prime | 4 × 75 |
| 236 = 2 × 118 | 256 = 2 × 128 | 278 = 2 × 139 | 5 × 60 |
| 4 × 59 | 4 × 64 | 279 = 3 × 93 | 6 × 50 |
| 237 = 3 × 79 | 8 × 32 | 9 × 31 | 10 × 30 |
| 238 = 2 × 119 | 16 × 16 | 280 = 2 × 140 | 12 × 25 |
| 7 × 34 | 257   Prime | 4 × 70 | 15 × 20 |
| 14 × 17 | 258 = 2 × 129 | 5 × 56 | 301 = 7 × 43 |
| 239   Prime | 3 × 86 | 7 × 40 | 302 = 2 × 151 |
| | 6 × 43 | 8 × 35 | 303 = 3 × 101 |
| | 259 = 7 × 37 | 10 × 28 | 304 = 2 × 152 |
| | 260 = 2 × 130 | 14 × 20 | 4 × 76 |
| | 4 × 65 | 281   Prime | 8 × 38 |
| | 5 × 52 | 282 = 2 × 141 | 16 × 19 |
| | 10 × 26 | 3 × 94 | 305 = 5 × 61 |
| | 13 × 20 | 6 × 47 | |

## Table IV (Continued)

| | | | |
|---|---|---|---|
| 306 = 2 × 153 | 326 = 2 × 163 | 348 = 2 × 174 | 368 = 2 × 184 |
| 3 × 102 | 327 = 3 × 109 | 3 × 116 | 4 × 92 |
| 6 × 51 | 328 = 2 × 164 | 4 × 87 | 8 × 46 |
| 9 × 34 | 4 × 82 | 6 × 58 | 16 × 23 |
| 17 × 18 | 8 × 41 | 12 × 29 | 369 = 3 × 123 |
| 307 Prime | 329 = 7 × 47 | 349 Prime | 9 × 41 |
| 308 = 2 × 154 | 330 = 2 × 165 | 350 = 2 × 175 | 370 = 2 × 185 |
| 4 × 77 | 3 × 110 | 5 × 70 | 5 × 74 |
| 7 × 44 | 5 × 66 | 7 × 50 | 10 × 37 |
| 11 × 28 | 6 × 55 | 10 × 35 | 371 = 7 × 53 |
| 14 × 22 | 10 × 33 | 14 × 25 | 372 = 2 × 186 |
| 309 = 3 × 103 | 11 × 30 | 351 = 3 × 117 | 3 × 124 |
| 310 = 2 × 155 | 15 × 22 | 9 × 39 | 4 × 93 |
| 5 × 62 | 331 Prime | 13 × 27 | 6 × 62 |
| 10 × 31 | 332 = 2 × 166 | 352 = 2 × 176 | 12 × 31 |
| 311 = Prime | 4 × 83 | 4 × 88 | 373 Prime |
| 312 = 2 × 156 | 333 = 3 × 111 | 8 × 44 | 374 = 2 × 187 |
| 3 × 104 | 9 × 37 | 11 × 32 | 11 × 34 |
| 4 × 78 | 334 = 2 × 167 | 16 × 22 | 17 × 22 |
| 6 × 52 | 335 = 5 × 67 | 353 Prime | 375 = 3 × 125 |
| 8 × 39 | 336 = 2 × 168 | 354 = 2 × 177 | 5 × 75 |
| 12 × 26 | 3 × 112 | 3 × 118 | 15 × 25 |
| 13 × 24 | 4 × 84 | 6 × 59 | 376 = 2 × 188 |
| 313 Prime | 6 × 56 | 355 = 5 × 71 | 4 × 94 |
| 314 = 2 × 157 | 7 × 48 | 356 = 2 × 178 | 8 × 47 |
| 315 = 3 × 105 | 8 × 42 | 4 × 89 | 377 = 13 × 29 |
| 5 × 63 | 12 × 28 | 357 = 3 × 119 | 378 = 2 × 189 |
| 7 × 45 | 14 × 24 | 7 × 51 | 3 × 126 |
| 9 × 35 | 16 × 21 | 17 × 21 | 6 × 63 |
| 15 × 21 | 337 Prime | 358 = 2 × 179 | 7 × 54 |
| 316 = 2 × 158 | 338 = 2 × 169 | 359 Prime | 9 × 42 |
| 4 × 79 | 13 × 26 | 360 = 2 × 180 | 14 × 27 |
| 317 Prime | 339 = 3 × 113 | 3 × 120 | 18 × 21 |
| 318 = 2 × 159 | 340 = 2 × 170 | 4 × 90 | 379 Prime |
| 3 × 106 | 4 × 85 | 5 × 72 | 380 = 2 × 190 |
| 6 × 53 | 5 × 68 | 6 × 60 | 4 × 95 |
| 319 = 11 × 29 | 10 × 34 | 8 × 45 | 5 × 76 |
| 320 = 2 × 160 | 17 × 20 | 9 × 40 | 10 × 38 |
| 4 × 80 | 341 = 11 × 31 | 10 × 36 | 19 × 20 |
| 5 × 64 | 342 = 2 × 171 | 12 × 30 | 381 = 3 × 127 |
| 8 × 40 | 3 × 114 | 15 × 24 | 382 = 2 × 191 |
| 10 × 32 | 6 × 57 | 18 × 20 | 383 Prime |
| 16 × 20 | 9 × 38 | 361 = 19 × 19 | 384 = 2 × 192 |
| 321 = 3 × 107 | 18 × 19 | 362 = 2 × 181 | 3 × 128 |
| 322 = 2 × 161 | 343 = 7 × 49 | 363 = 3 × 121 | 4 × 96 |
| 7 × 46 | 344 = 2 × 172 | 11 × 33 | 6 × 64 |
| 14 × 23 | 4 × 86 | 364 = 2 × 182 | 8 × 48 |
| 323 = 17 × 19 | 8 × 43 | 4 × 91 | 12 × 32 |
| 324 = 2 × 162 | 345 = 3 × 115 | 7 × 52 | 16 × 24 |
| 3 × 108 | 5 × 69 | 13 × 28 | 385 = 5 × 77 |
| 4 × 81 | 15 × 23 | 14 × 26 | 7 × 55 |
| 6 × 54 | 346 = 2 × 173 | 365 = 5 × 73 | 11 × 35 |
| 9 × 36 | 347 Prime | 366 = 2 × 183 | 386 = 2 × 193 |
| 12 × 27 | | 3 × 122 | 387 = 3 × 129 |
| 18 × 18 | | 6 × 61 | 9 × 43 |
| 325 = 5 × 65 | | 367 Prime | 388 = 2 × 194 |
| 13 × 25 | | | 4 × 97 |

## Table IV (Continued)

| | | | |
|---|---|---|---|
| 389    Prime | $408 = 2 \times 204$ | $429 = 3 \times 143$ | $448 = 2 \times 224$ |
| $390 = 2 \times 195$ | $3 \times 136$ | $11 \times 39$ | $4 \times 112$ |
| $3 \times 130$ | $4 \times 102$ | $13 \times 33$ | $7 \times 64$ |
| $5 \times 78$ | $6 \times 68$ | $430 = 2 \times 215$ | $8 \times 56$ |
| $6 \times 65$ | $8 \times 51$ | $5 \times 86$ | $14 \times 32$ |
| $10 \times 39$ | $12 \times 34$ | $10 \times 43$ | $16 \times 28$ |
| $13 \times 30$ | $17 \times 24$ | 431    Prime | 449    Prime |
| $15 \times 26$ | 409    Prime | $432 = 2 \times 216$ | $450 = 2 \times 225$ |
| $391 = 17 \times 23$ | $410 = 2 \times 205$ | $3 \times 144$ | $3 \times 150$ |
| $392 = 2 \times 196$ | $5 \times 82$ | $4 \times 108$ | $5 \times 90$ |
| $4 \times 98$ | $10 \times 41$ | $6 \times 72$ | $6 \times 75$ |
| $7 \times 56$ | $411 = 3 \times 137$ | $8 \times 54$ | $9 \times 50$ |
| $8 \times 49$ | $412 = 2 \times 206$ | $9 \times 48$ | $10 \times 45$ |
| $14 \times 28$ | $4 \times 103$ | $12 \times 36$ | $15 \times 30$ |
| $393 = 3 \times 131$ | $413 = 7 \times 59$ | $16 \times 27$ | $18 \times 25$ |
| $394 = 2 \times 197$ | $414 = 2 \times 207$ | $18 \times 24$ | $451 = 11 \times 41$ |
| $395 = 5 \times 79$ | $3 \times 138$ | 433    Prime | $452 = 2 \times 226$ |
| $396 = 2 \times 198$ | $6 \times 69$ | $434 = 2 \times 217$ | $4 \times 113$ |
| $3 \times 132$ | $9 \times 46$ | $7 \times 62$ | $453 = 3 \times 151$ |
| $4 \times 99$ | $18 \times 23$ | $14 \times 31$ | $454 = 2 \times 227$ |
| $6 \times 66$ | $415 = 5 \times 83$ | $435 = 3 \times 145$ | $455 = 5 \times 91$ |
| $9 \times 44$ | $416 = 2 \times 208$ | $5 \times 87$ | $7 \times 65$ |
| $11 \times 36$ | $4 \times 104$ | $15 \times 29$ | $13 \times 35$ |
| $12 \times 33$ | $8 \times 52$ | $436 = 2 \times 218$ | $456 = 2 \times 228$ |
| $18 \times 22$ | $13 \times 32$ | $4 \times 109$ | $3 \times 152$ |
| 397    Prime | $16 \times 26$ | $437 = 19 \times 23$ | $4 \times 114$ |
| $398 = 2 \times 199$ | $417 = 3 \times 139$ | $438 = 2 \times 219$ | $6 \times 76$ |
| $399 = 3 \times 133$ | $418 = 2 \times 109$ | $3 \times 146$ | $8 \times 57$ |
| $7 \times 57$ | $11 \times 38$ | $6 \times 73$ | $12 \times 38$ |
| $19 \times 21$ | $19 \times 22$ | 439    Prime | $19 \times 24$ |
| $400 = 2 \times 200$ | 419    Prime | $440 = 2 \times 220$ | 457    Prime |
| $4 \times 100$ | $420 = 2 \times 210$ | $4 \times 110$ | $458 = 2 \times 229$ |
| $5 \times 80$ | $3 \times 140$ | $5 \times 88$ | $459 = 3 \times 153$ |
| $8 \times 50$ | $4 \times 105$ | $8 \times 55$ | $9 \times 51$ |
| $10 \times 40$ | $5 \times 84$ | $10 \times 44$ | $17 \times 27$ |
| $16 \times 25$ | $6 \times 70$ | $11 \times 40$ | $460 = 2 \times 230$ |
| $20 \times 20$ | $7 \times 60$ | $20 \times 22$ | $4 \times 115$ |
| 401    Prime | $10 \times 42$ | $441 = 3 \times 147$ | $5 \times 92$ |
| $402 = 2 \times 201$ | $12 \times 35$ | $7 \times 63$ | $10 \times 46$ |
| $3 \times 134$ | $14 \times 30$ | $9 \times 49$ | $20 \times 23$ |
| $6 \times 67$ | $15 \times 28$ | $21 \times 21$ | 461    Prime |
| $403 = 13 \times 31$ | $20 \times 21$ | $442 = 2 \times 221$ | $462 = 2 \times 231$ |
| $404 = 2 \times 202$ | 421    Prime | $13 \times 34$ | $3 \times 154$ |
| $4 \times 101$ | $422 = 2 \times 211$ | $17 \times 26$ | $6 \times 77$ |
| $405 = 3 \times 135$ | $423 = 3 \times 141$ | 443    Prime | $7 \times 66$ |
| $5 \times 81$ | $9 \times 47$ | $444 = 2 \times 222$ | $11 \times 42$ |
| $9 \times 45$ | $424 = 2 \times 212$ | $3 \times 148$ | $14 \times 33$ |
| $15 \times 27$ | $4 \times 106$ | $4 \times 111$ | $21 \times 22$ |
| $406 = 2 \times 203$ | $8 \times 53$ | $6 \times 74$ | 463    Prime |
| $7 \times 58$ | $425 = 5 \times 85$ | $12 \times 37$ | $464 = 2 \times 232$ |
| $14 \times 29$ | $17 \times 25$ | $445 = 5 \times 89$ | $4 \times 116$ |
| $407 = 11 \times 37$ | $426 = 2 \times 213$ | $446 = 2 \times 223$ | $8 \times 58$ |
| | $3 \times 142$ | $447 = 3 \times 149$ | $16 \times 29$ |
| | $6 \times 71$ | | $465 = 3 \times 155$ |
| | $427 = 7 \times 61$ | | $5 \times 93$ |
| | $428 = 2 \times 214$ | | $15 \times 31$ |
| | $4 \times 107$ | | $466 = 2 \times 233$ |

## Table IV (Continued)

467   Prime
468 = 2 × 234
        3 × 156
        4 × 117
        6 × 78
        9 × 52
        12 × 39
        13 × 36
        18 × 26
469 = 7 × 67
470 = 2 × 235
        5 × 94
        10 × 47
471 = 3 × 157
472 = 2 × 236
        4 × 118
        8 × 59
473 = 11 × 43
474 = 2 × 237
        3 × 158
        6 × 79
475 = 5 × 95
        19 × 25
476 = 2 × 238
        4 × 119
        7 × 68
        14 × 34
        17 × 28
477 = 3 × 159
        9 × 53
478 = 2 × 238
479   Prime
480 = 2 × 240
        3 × 160
        4 × 120
        5 × 96
        6 × 80
        8 × 60
        10 × 48
        12 × 40
        15 × 32
        16 × 30
        20 × 24
481 = 13 × 37
482 = 2 × 241
483 = 3 × 161
        7 × 69
        21 × 23
484 = 2 × 242
        4 × 121
        11 × 44
        22 × 22
485 = 5 × 97

486 = 2 × 243
        3 × 162
        6 × 81
        9 × 54
        18 × 27
487   Prime
488 = 2 × 244
        4 × 122
        8 × 61
489 = 3 × 163
490 = 2 × 245
        5 × 98
        7 × 70
        10 × 49
        14 × 35
491   Prime
492 = 2 × 246
        3 × 164
        4 × 123
        6 × 82
        12 × 41
493 = 17 × 29
494 = 2 × 247
        13 × 38
        19 × 26
495 = 3 × 165
        5 × 99
        9 × 55
        11 × 45
        15 × 33
496 = 2 × 298
        4 × 124
        8 × 62
        16 × 31
497 = 7 × 71
498 = 2 × 299
        3 × 166
        6 × 83
499   Prime
500 = 2 × 250
        4 × 125
        5 × 100
        10 × 50
        20 × 25
501 = 3 × 167
502 = 2 × 251
503   Prime

504 = 2 × 252
        3 × 168
        4 × 126
        6 × 84
        7 × 72
        8 × 63
        9 × 56
        12 × 42
        14 × 36
        18 × 28
        21 × 24
505 = 5 × 101
506 = 2 × 253
        11 × 46
        22 × 23
507 = 3 × 169
        13 × 39
508 = 2 × 254
        4 × 127
509   Prime
510 = 2 × 255
        3 × 170
        5 × 102
        6 × 85
        10 × 51
        15 × 34
        17 × 30
511 = 7 × 73
512 = 2 × 256
        4 × 128
        8 × 64
        16 × 32
513 = 3 × 171
        9 × 57
        19 × 27
514 = 2 × 257
515 = 5 × 103
516 = 2 × 258
        3 × 172
        4 × 129
        6 × 86
        12 × 43
517 = 11 × 47
518 = 2 × 259
        7 × 74
        14 × 37
519 = 3 × 173
520 = 2 × 260
        4 × 130
        5 × 104
        8 × 65
        10 × 52
        13 × 40
        20 × 26
521   Prime

522 = 2 × 261
        3 × 174
        6 × 87
        9 × 58
        18 × 29
523   Prime
524 = 2 × 262
        4 × 131
525 = 3 × 175
        5 × 105
        7 × 75
        15 × 35
        21 × 25
526 = 2 × 263
527 = 17 × 31
528 = 2 × 264
        3 × 176
        4 × 132
        6 × 88
        8 × 66
        11 × 48
        12 × 44
        16 × 33
        22 × 24
529 = 23 × 23
530 = 2 × 265
        5 × 106
        10 × 53
531 = 3 × 177
        9 × 59
532 = 2 × 266
        4 × 133
        7 × 76
        14 × 38
        19 × 28
533 = 13 × 41
534 = 2 × 267
        3 × 178
        6 × 89
535 = 5 × 107
536 = 2 × 268
        4 × 134
        8 × 67
537 = 3 × 179
538 = 2 × 269
539 = 7 × 77
        11 × 49

## Table IV (Continued)

540 = 2 × 270  
3 × 180  
4 × 135  
5 × 108  
6 × 90  
9 × 60  
10 × 54  
12 × 45  
15 × 36  
18 × 30  
20 × 27  
541    Prime  
542 = 2 × 271  
543 = 3 × 181  
544 = 2 × 272  
4 × 136  
8 × 68  
16 × 34  
17 × 32  
545 = 5 × 109  
546 = 2 × 273  
3 × 182  
6 × 91  
7 × 78  
13 × 42  
14 × 39  
21 × 26  
547    Prime  
548 = 2 × 274  
4 × 137  
549 = 3 × 183  
9 × 61  
550 = 2 × 275  
5 × 110  
10 × 55  
11 × 50  
22 × 25  
551 = 19 × 29  
552 = 2 × 276  
3 × 184  
4 × 138  
6 × 92  
8 × 69  
12 × 46  
23 × 24  
553 = 7 × 79  
554 = 2 × 277  
555 = 3 × 185  
5 × 111  
15 × 37  
556 = 2 × 278  
4 × 139  
557    Prime  

558 = 2 × 279  
3 × 186  
6 × 93  
9 × 62  
18 × 31  
559 = 13 × 43  
560 = 2 × 280  
4 × 140  
5 × 112  
7 × 80  
8 × 70  
10 × 56  
14 × 40  
16 × 35  
20 × 28  
561 = 3 × 187  
11 × 51  
17 × 33  
562 = 2 × 281  
563    Prime  
564 = 2 × 282  
3 × 188  
4 × 141  
6 × 94  
12 × 47  
565 = 5 × 113  
566 = 2 × 283  
567 = 3 × 189  
7 × 81  
9 × 63  
21 × 27  
568 = 2 × 284  
4 × 142  
8 × 71  
569    Prime  
570 = 2 × 285  
3 × 190  
5 × 114  
6 × 95  
10 × 57  
15 × 38  
19 × 30  
571    Prime  
572 = 2 × 286  
4 × 143  
11 × 52  
13 × 44  
22 × 26  
573 = 3 × 191  
574 = 2 × 287  
7 × 82  
14 × 41  
575 = 5 × 115  
23 × 25  

576 = 2 × 288  
3 × 192  
4 × 144  
6 × 96  
8 × 72  
9 × 64  
12 × 48  
16 × 36  
18 × 32  
24 × 24  
577    Prime  
578 = 2 × 289  
17 × 34  
579 = 3 × 193  
580 = 2 × 290  
4 × 145  
5 × 116  
10 × 58  
20 × 29  
581 = 7 × 83  
582 = 2 × 291  
3 × 194  
6 × 97  
583 = 11 × 53  
584 = 2 × 292  
4 × 146  
8 × 73  
585 = 3 × 195  
5 × 117  
9 × 65  
13 × 45  
15 × 39  
586 = 2 × 293  
587    Prime  
588 = 2 × 294  
3 × 196  
4 × 147  
6 × 98  
7 × 84  
12 × 49  
14 × 42  
21 × 28  
589 = 19 × 31  
590 = 2 × 295  
5 × 118  
10 × 59  
591 = 3 × 197  
592 = 2 × 296  
4 × 148  
8 × 74  
16 × 37  
593    Prime  

594 = 2 × 297  
3 × 198  
6 × 99  
9 × 66  
11 × 54  
18 × 33  
22 × 27  
595 = 5 × 119  
7 × 85  
17 × 35  
596 = 2 × 298  
4 × 149  
597 = 3 × 199  
598 = 2 × 299  
13 × 46  
23 × 26  
599    Prime  
600 = 2 × 300  
3 × 200  
4 × 150  
5 × 120  
6 × 100  
8 × 75  
10 × 60  
12 × 50  
15 × 40  
20 × 30  
24 × 25  
601    Prime  
602 = 2 × 301  
7 × 86  
14 × 43  
603 = 3 × 201  
9 × 67  
604 = 2 × 302  
4 × 151  
605 = 5 × 121  
11 × 55  
606 = 2 × 303  
3 × 202  
6 × 101  
607    Prime  
608 = 2 × 304  
4 × 152  
8 × 76  
16 × 38  
19 × 32  
609 = 3 × 203  
7 × 87  
21 × 29  
610 = 2 × 305  
5 × 122  
10 × 61  
611 = 13 × 47

## Table IV (Concluded)

| | | | |
|---|---|---|---|
| 612 = 2 × 306 | 616 = 2 × 308 | 619    Prime | 624 = 2 × 312 |
| 3 × 204 | 4 × 154 | 620 = 2 × 310 | 3 × 208 |
| 4 × 152 | 7 × 88 | 4 × 155 | 4 × 156 |
| 6 × 102 | 8 × 77 | 5 × 124 | 6 × 104 |
| 9 × 68 | 11 × 56 | 10 × 62 | 8 × 78 |
| 12 × 51 | 14 × 44 | 20 × 31 | 12 × 52 |
| 17 × 36 | 22 × 28 | 621 = 3 × 207 | 13 × 48 |
| 18 × 34 | 617    Prime | 9 × 69 | 16 × 39 |
| 613    Prime | 618 = 2 × 309 | 23 × 27 | 24 × 26 |
| 614 = 2 × 307 | 3 × 206 | 622 = 2 × 311 | 625 = 5 × 125 |
| 615 = 3 × 205 | 6 × 103 | 623 = 7 × 89 | 25 × 25 |
| 5 × 123 | | | |
| 15 × 41 | | | |

# ANSWERS

The references at the head of each section are to the numbers of the exercises.

| No. 1 | | | | |
|---|---|---|---|---|
|  | 30 | 70 | 69 | 53 |
|  | 86 | 54 | 25 | 109 |
| 1. 32 | 42 | 110 | 81 | 65 |
| 2. 30 | 98 | 66 | 37 | 21 |
| 3. 29 | 26 | 22 | 93 | 77 |
| 4. 29 | 82 | 78 | 49 | 40 |
| 5. 29 | 38 | 34 | 105 | 96 |
| 6. 31 | 94 | 90 | 68 | 52 |
| 7. 31 | 50 | 53 | 24 | 108 |
| 8. 18 | 106 | 109 | 80 | 64 |
| 9. 37 | 62 | 65 | 36 | 48 |
| 10. 31 | 25 | 21 | 92 | 104 |
| 11. 25 | 81 | 77 | 20 | 60 |
| 12. 35 | 37 | 61 | 76 | 16 |
| 13. 34 | 93 | 17 | 32 | 72 |
| 14. 29 | 49 | 73 | 88 | 28 |
| 15. 26 | 105 | 29 | 44 | 84 |
| 16. 25 | 33 | 85 | 100 | 47 |
| 17. 30 | 89 | 41 | 56 | 103 |
| 18. 33 | 45 | 97 | 19 | 59 |
| 19. 27 | 101 | 60 | 75 | 15 |
| 20. 30 | 57 | 16 | 31 | 71 |
| 21. 33 | 13 | 72 | 87 | 55 |
| 22. 26 | 69 | 28 | 43 | 111 |
| 23. 28 | 32 | 84 | 99 | 67 |
| 24. 27 | 88 |  | 27 | 23 |
|  | 44 |  | 83 | 79 |
|  | 100 | No. 3 | 39 | 35 |
| No. 2 | 56 |  | 95 | 91 |
|  | 40 | 1. 59 | 51 | 54 |
| 12 | 96 | 2. 51 | 107 | 110 |
| 68 | 52 | 3. 56 | 63 | 66 |
| 24 | 108 | 4. 70 | 26 | 22 |
| 80 | 64 | 5. 62 | 82 | 78 |
| 36 | 20 | 6. 55 | 38 | 62 |
| 92 | 76 | 7. 57 | 94 | 18 |
| 48 | 39 | 8. 59 | 50 | 74 |
| 104 | 95 | 9. 53 | 106 | 30 |
| 67 | 51 | 10. 51 | 34 | 86 |
| 23 | 107 | 11. 69 | 90 | 42 |
| 79 | 63 | 12. 58 | 46 | 98 |
| 35 | 47 | 13. 60 | 102 | 61 |
| 91 | 103 | 14. 65 | 58 | 17 |
| 19 | 59 | 15. 59 | 14 | 73 |
| 75 | 15 | 16. 61 | 70 | 29 |
| 31 | 71 | 17. 53 | 33 | 85 |
| 87 | 27 | 18. 53 | 89 |  |
| 43 | 83 |  | 45 |  |
| 99 | 46 | No. 4 | 101 | No. 5 |
| 55 | 102 |  | 57 |  |
| 18 | 58 |  | 41 | 14 |
| 74 | 14 | 13 | 97 | 70 |

| | | | | |
|---|---|---|---|---|
| 26 | 109 | 46 | 113 | 29 |
| 82 | 65 | 102 | 69 | 85 |
| 38 | 49 | 58 | 25 | 41 |
| 94 | 105 | 21 | 81 | 97 |
| 50 | 61 | 77 | 37 | 53 |
| 106 | 17 | 33 | 93 | 109 |
| 69 | 73 | 89 | 56 | 37 |
| 25 | 29 | 45 | 112 | 93 |
| 81 | 85 | 101 | 68 | 49 |
| 37 | 48 | 29 | 24 | 105 |
| 93 | 104 | 85 | 80 | 61 |
| 21 | 60 | 41 | 64 | 17 |
| 77 | 16 | 97 | 20 | 73 |
| 33 | 72 | 53 | 76 | 36 |
| 89 | 56 | 109 | 32 | 92 |
| 45 | 112 | 65 | 88 | 48 |
| 101 | 68 | 28 | 44 | 104 |
| 57 | 24 | 84 | 100 | 60 |
| 20 | 80 | 40 | 63 | 44 |
| 76 | 36 | 96 | 19 | 100 |
| 32 | 92 | 52 | 75 | 56 |
| 88 | 55 | 108 | 31 | 112 |
| 44 | 111 | 36 | 87 | 68 |
| 100 | 67 | 92 | | 24 |
| 28 | 23 | 48 | **No. 7** | 80 |
| 84 | 79 | 104 | | 43 |
| 40 | 63 | 60 | 16 | 99 |
| 96 | 19 | 16 | 72 | 55 |
| 52 | 75 | 72 | 28 | 111 |
| 108 | 31 | 35 | 84 | 67 |
| 64 | 87 | 91 | 40 | 51 |
| 27 | 43 | 47 | 96 | 107 |
| 83 | 99 | 103 | 52 | 63 |
| 39 | 62 | 59 | 108 | 19 |
| 95 | 18 | 43 | 71 | 75 |
| 51 | 74 | 99 | 27 | 31 |
| 107 | 30 | 55 | 83 | 87 |
| 35 | 86 | 111 | 39 | 50 |
| 91 | | 67 | 95 | 106 |
| 47 | | 23 | 23 | 62 |
| 103 | **No. 6** | 79 | 79 | 18 |
| 59 | | 42 | 35 | 74 |
| 15 | 15 | 98 | 91 | 58 |
| 71 | 71 | 54 | 47 | 114 |
| 34 | 27 | 110 | 103 | 70 |
| 90 | 83 | 66 | 59 | 26 |
| 46 | 39 | 50 | 22 | 82 |
| 102 | 95 | 106 | 78 | 38 |
| 58 | 51 | 62 | 34 | 94 |
| 42 | 107 | 18 | 90 | 57 |
| 98 | 70 | 74 | 46 | 113 |
| 54 | 26 | 30 | 102 | 69 |
| 110 | 82 | 86 | 30 | 25 |
| 66 | 38 | 49 | 86 | 81 |
| 22 | 94 | 105 | 42 | 65 |
| 78 | 22 | 61 | 98 | 21 |
| 41 | 78 | 17 | 54 | 77 |
| 97 | 34 | 73 | 110 | 33 |
| 53 | 90 | 57 | 66 | 89 |

| | | | | |
|---|---|---|---|---|
| 45 | 37 | 30 | 113 | 98 |
| 101 | 93 | 86 | 69 | 26 |
| 64 | 49 | 42 | 53 | 82 |
| 20 | 105 | 98 | 109 | 38 |
| 76 | 61 | 54 | 65 | 94 |
| 32 | 45 | 110 | 21 | 50 |
| 88 | 101 | 73 | 77 | 106 |
| **No. 8** | 57 | 29 | 33 | 62 |
| *(Same as No. 1)* | 113 | 85 | 89 | 25 |
| | 69 | 41 | 52 | 81 |
| **No. 9** | 25 | 97 | 108 | 37 |
| 17 | 81 | 25 | 64 | 93 |
| 73 | 44 | 81 | 20 | 49 |
| 29 | 100 | 37 | 76 | 105 |
| 85 | 56 | 93 | 60 | 33 |
| 41 | 112 | 49 | 116 | 89 |
| 97 | 68 | 105 | 72 | 45 |
| 53 | 52 | 61 | 28 | 101 |
| 109 | 108 | 24 | 84 | 57 |
| 72 | 64 | 80 | 40 | 113 |
| 28 | 20 | 36 | 96 | 69 |
| 84 | 76 | 92 | 59 | 32 |
| 40 | 32 | 48 | 115 | 88 |
| 96 | 88 | 104 | 71 | 44 |
| 24 | 51 | 32 | 27 | 100 |
| 80 | 107 | 88 | 83 | 56 |
| 36 | 63 | 44 | 67 | 112 |
| 92 | 19 | 100 | 23 | 40 |
| 48 | 75 | 56 | 79 | 96 |
| 104 | 59 | 112 | 35 | 52 |
| 60 | 115 | 68 | 91 | 108 |
| 23 | 71 | 31 | 47 | 64 |
| 79 | 27 | 87 | 103 | 20 |
| 35 | 83 | 43 | 66 | 76 |
| 91 | 39 | 99 | 22 | 39 |
| 47 | 95 | 55 | 78 | 95 |
| 103 | 58 | 111 | 34 | 51 |
| 31 | 114 | 39 | 90 | 107 |
| 87 | 70 | 95 | | 63 |
| 43 | 26 | 51 | **No. 11** | 47 |
| 99 | 82 | 107 | | 103 |
| 55 | 66 | 63 | *(Same as No. 3)* | 59 |
| 111 | 22 | 19 | | 115 |
| 67 | 78 | 75 | | 71 |
| 30 | 34 | 38 | **No. 12** | 27 |
| 86 | 90 | 94 | | 83 |
| 42 | 46 | 50 | 19 | 46 |
| 98 | 102 | 106 | 75 | 102 |
| 54 | 65 | 62 | 31 | 58 |
| 110 | 21 | 46 | 87 | 114 |
| 38 | 77 | 102 | 43 | 70 |
| 94 | 33 | 58 | 99 | 54 |
| 50 | 89 | 114 | 55 | 110 |
| 106 | | 70 | 111 | 66 |
| 62 | **No. 10** | 26 | 74 | 22 |
| 18 | 18 | 82 | 30 | 78 |
| 74 | 74 | 45 | 86 | 34 |
| | | 101 | 42 | 90 |
| | | 57 | | 53 |

| | | | | |
|---|---|---|---|---|
| 109 | **No. 14** | 84 | **14.** 656 | 61 |
| 65 | | 47 | **15.** 858 | 117 |
| 21 | 20 | 103 | | 73 |
| 77 | 76 | 59 | | 29 |
| 61 | 32 | 115 | **No. 16** | 85 |
| 117 | 88 | 71 | | 48 |
| 73 | 44 | 55 | 21 | 104 |
| 29 | 100 | 111 | 77 | 60 |
| 85 | 56 | 67 | 33 | 116 |
| 41 | 112 | 23 | 89 | 72 |
| 97 | 75 | 79 | 45 | 56 |
| 60 | 31 | 35 | 101 | 112 |
| 116 | 87 | 91 | 57 | 68 |
| 72 | 43 | 54 | 113 | 24 |
| 28 | 99 | 110 | 76 | 80 |
| 84 | 27 | 66 | 32 | 36 |
| 68 | 83 | 22 | 88 | 92 |
| 24 | 39 | 78 | 44 | 55 |
| 80 | 95 | 62 | 100 | 111 |
| 36 | 51 | 118 | 28 | 67 |
| 92 | 107 | 74 | 84 | 23 |
| 48 | 63 | 30 | 40 | 79 |
| 104 | 26 | 86 | 96 | 63 |
| 67 | 82 | 42 | 52 | 119 |
| 23 | 38 | 98 | 108 | 75 |
| 79 | 94 | 61 | 64 | 31 |
| 35 | 50 | 117 | 27 | 87 |
| 91 | 106 | 73 | 83 | 43 |
| | 34 | 29 | 39 | 99 |
| | 90 | 85 | 95 | 62 |
| | 46 | 69 | 51 | 118 |
| | 102 | 25 | 107 | 74 |
| **No. 13** | 58 | 81 | 35 | 30 |
| | 114 | 37 | 91 | 86 |
| **1.** 365 | 70 | 93 | 47 | 70 |
| **2.** 268 | 33 | 49 | 103 | 26 |
| **3.** 371 | 89 | 105 | 59 | 82 |
| **4.** 433 | 45 | 68 | 115 | 38 |
| **5.** 257 | 101 | 24 | 71 | 94 |
| **6.** 327 | 57 | 80 | 34 | 50 |
| **7.** 209 | 113 | 36 | 90 | 106 |
| **8.** 270 | 41 | 92 | 46 | 69 |
| **9.** 287 | 97 | | 102 | 25 |
| **10.** 410 | 53 | | 58 | 81 |
| **11.** 257 | 109 | **No. 15** | 114 | 37 |
| **12.** 404 | 65 | | 42 | 93 |
| **13.** 231 | 21 | **1.** 620 | 98 | |
| **14.** 217 | 77 | **2.** 777 | 54 | |
| **15.** 311 | 40 | **3.** 716 | 110 | **No. 17** |
| **16.** 303 | 96 | **4.** 562 | 66 | |
| **17.** 254 | 52 | **5.** 432 | 22 | **1.** 1059 |
| **18.** 237 | 108 | **6.** 590 | 78 | **2.** 1055 |
| **19.** 308 | 64 | **7.** 624 | 41 | **3.** 903 |
| **20.** 343 | 48 | **8.** 716 | 97 | **4.** 963 |
| **21.** 350 | 104 | **9.** 885 | 53 | **5.** 897 |
| **22.** 360 | 60 | **10.** 828 | 109 | **6.** 1113 |
| **23.** 308 | 116 | **11.** 424 | 65 | **7.** 1067 |
| **24.** 271 | 72 | **12.** 592 | 49 | **8.** 759 |
| **25.** 341 | 28 | **13.** 535 | 105 | **9.** 994 |

| | | | | |
|---|---|---|---|---|
| 10. 932 | 118 | 11.  7 | 93 | 88 |
| | 74 | 12. 34 | 49 | 72 |
| | 30 | 13. 52 | 105 | 28 |
| No. 18 | 86 | 14. 11 | 61 | 84 |
| | 49 | 15. 52 | 117 | 40 |
| 22 | 105 | | 73 | 96 |
| 78 | 61 | | 36 | 52 |
| 34 | 117 | No. 20 | 92 | 108 |
| 90 | 73 | | 48 | 71 |
| 46 | 57 | 1. 28 | 104 | 27 |
| 102 | 113 | 2. 28 | 60 | 83 |
| 58 | 69 | 3. 12 | 116 | 39 |
| 114 | 25 | 4. 19 | 44 | 95 |
| 77 | 81 | 5. 15 | 100 | |
| 33 | 37 | 6. 26 | 56 | |
| 89 | 93 | 7. 19 | 112 | |
| 45 | 56 | 8. 18 | 68 | No. 22 |
| 101 | 112 | 9. 48 | 24 | |
| 29 | 68 | 10. 21 | 80 | 1. 294 |
| 85 | 24 | 11. 39 | 43 | 2. 234 |
| 41 | 80 | 12. 17 | 99 | 3. 414 |
| 97 | 64 | 13. 26 | 55 | 4. 358 |
| 53 | 120 | 14. 58 | 111 | 5. 379 |
| 109 | 76 | 15. 28 | 67 | 6. 381 |
| 65 | 32 | 16. 18 | 51 | 7. 370 |
| 28 | 88 | 17. 29 | 107 | 8. 347 |
| 84 | 44 | 18. 19 | 63 | 9. 221 |
| 40 | 100 | 19. 29 | 119 | 10. 374 |
| 96 | 63 | | 75 | |
| 52 | 119 | | 31 | |
| 108 | 75 | No. 21 | 87 | |
| 36 | 31 | | 50 | No. 23 |
| 92 | 87 | 23 | 106 | |
| 48 | 71 | 79 | 62 | |
| 104 | 27 | 35 | 118 | 1. 521 |
| 60 | 83 | 91 | 74 | 2. 213 |
| 116 | 39 | 47 | 58 | 3. 233 |
| 72 | 95 | 103 | 114 | 4. 321 |
| 35 | 51 | 59 | 70 | 5. 331 |
| 91 | 107 | 115 | 26 | 6. 313 |
| 47 | 70 | 78 | 82 | 7. 252 |
| 103 | 26 | 34 | 38 | 8. 412 |
| 59 | 82 | 90 | 94 | 9. 212 |
| 115 | 38 | 46 | 57 | 10. 130 |
| 43 | 94 | 102 | 113 | 11. 122 |
| 99 | | 30 | 69 | 12. 441 |
| 55 | | 86 | 25 | 13. 432 |
| 111 | No. 19 | 42 | 81 | 14. 351 |
| 67 | | 98 | 65 | 15. 221 |
| 23 | 1. 12 | 54 | 121 | |
| 79 | 2. 34 | 110 | 77 | |
| 42 | 3. 21 | 66 | 33 | No. 24 |
| 98 | 4. 56 | 29 | 89 | |
| 54 | 5. 33 | 85 | 45 | 24 |
| 110 | 6. 78 | 41 | 101 | 80 |
| 66 | 7. 12 | 97 | 64 | 36 |
| 50 | 8. 13 | 53 | 120 | 92 |
| 106 | 9. 12 | 109 | 76 | 48 |
| 62 | 10. 21 | 37 | 32 | |

| | | | | |
|---|---|---|---|---|
| 104 | 115 | 31 | 91 | **22.** 437 |
| 60 | 71 | 87 | 47 | **23.** 722 |
| 116 | 27 | 43 | 103 | **24.** 109 |
| 79 | 83 | 99 | 66 | **25.** 515 |
| 35 | 39 | 55 | 122 | **26.** 209 |
| 91 | 95 | 111 | 78 | **27.** 336 |
| 47 | 58 | 39 | 34 | **28.** 107 |
| 103 | 114 | 95 | 90 | **29.** 868 |
| 31 | 70 | 51 | 74 | **30.** 419 |
| 87 | 26 | 107 | 30 | |
| 43 | 82 | 63 | 86 | |
| 99 | 66 | 119 | 42 | |
| 55 | 122 | 75 | 98 | **No. 28** |
| 111 | 78 | 38 | 54 | |
| 67 | 34 | 94 | 110 | 26 |
| 30 | 90 | 50 | 73 | 82 |
| 86 | 46 | 106 | 29 | 38 |
| 42 | 102 | 62 | 85 | 94 |
| 98 | 65 | 118 | 41 | 50 |
| 54 | 121 | 46 | 97 | 106 |
| 110 | 77 | 102 | | 62 |
| 38 | 33 | 58 | | 118 |
| 94 | 89 | 114 | | 81 |
| 50 | 73 | 70 | **No. 26** | 37 |
| 106 | 29 | 26 | | 93 |
| 62 | 85 | 82 | **1.** $655.71 | 49 |
| 118 | 41 | 45 | **2.** $751.32 | 105 |
| 74 | 97 | 101 | **3.** $604.24 | 33 |
| 37 | 53 | 57 | **4.** $577.21 | 89 |
| 93 | 109 | 113 | **5.** $718.69 | 45 |
| 49 | 72 | 69 | **6.** $769.64 | 101 |
| 105 | 28 | 53 | **7.** $488.04 | 57 |
| 61 | 84 | 109 | **8.** $691.93 | 113 |
| 117 | 40 | 65 | | 69 |
| 45 | 96 | 121 | | 32 |
| 101 | | 77 | **No. 27** | 88 |
| 57 | | 33 | | 44 |
| 113 | **No. 25** | 89 | **1.** 215 | 100 |
| 69 | | 52 | **2.** 415 | 56 |
| 25 | 25 | 108 | **3.** 209 | 112 |
| 81 | 81 | 64 | **4.** 329 | 40 |
| 44 | 37 | 120 | **5.** 778 | 96 |
| 100 | 93 | 76 | **6.** 109 | 52 |
| 56 | 49 | 60 | **7.** 214 | 108 |
| 112 | 105 | 116 | **8.** 248 | 64 |
| 68 | 61 | 72 | **9.** 128 | 120 |
| 52 | 117 | 28 | **10.** 237 | 76 |
| 108 | 80 | 84 | **11.** 403 | 39 |
| 64 | 36 | 40 | **12.** 106 | 95 |
| 120 | 92 | 96 | **13.** 125 | 51 |
| 76 | 48 | 59 | **14.** 125 | 107 |
| 32 | 104 | 115 | **15.** 136 | 63 |
| 88 | 32 | 71 | **16.** 204 | 119 |
| 51 | 88 | 27 | **17.** 109 | 47 |
| 107 | 44 | 83 | **18.** 143 | 103 |
| 63 | 100 | 67 | **19.** 107 | 59 |
| 119 | 56 | 123 | **20.** 308 | 115 |
| 75 | 112 | 79 | **21.** 309 | 71 |
| 59 | 68 | 35 | | 27 |

| | | | | |
|---|---|---|---|---|
| 83 | 83 | 110 | 35 | 118 |
| 46 | 39 | 66 | 91 | 74 |
| 102 | 95 | 122 | 47 | 30 |
| 58 | 51 | 78 | 103 | 86 |
| 114 | 107 | 62 | 59 | 70 |
| 70 | 63 | 118 | 115 | 126 |
| 54 | 119 | 74 | 71 | 82 |
| 110 | 82 | 30 | 34 | 38 |
| 66 | 38 | 86 | 90 | 94 |
| 122 | 94 | 42 | 46 | 50 |
| 78 | 50 | 98 | 102 | 106 |
| 34 | 106 | 61 | 58 | 69 |
| 90 | 34 | 117 | 114 | 125 |
| 53 | 90 | 73 | 42 | 81 |
| 109 | 46 | 29 | 98 | 37 |
| 65 | 102 | 85 | 54 | 93 |
| 121 | 58 | 69 | 110 | 79 |
| 77 | 114 | 125 | 66 | 33 |
| 61 | 70 | 81 | 112 | 89 |
| 117 | 33 | 37 | 78 | 45 |
| 73 | 89 | 93 | 41 | 101 |
| 29 | 45 | 49 | 97 | 57 |
| 85 | 101 | 105 | 53 | 113 |
| 41 | 57 | 68 | 109 | 76 |
| 97 | 113 | 124 | 65 | 32 |
| 60 | 41 | 80 | 121 | 88 |
| 116 | 97 | 36 | 49 | 44 |
| 72 | 53 | 92 | 105 | 100 |
| 28 | 109 | 76 | 61 | |
| 84 | 65 | 32 | 117 | |
| 68 | 121 | 88 | 73 | |
| 124 | 77 | 44 | 29 | **No. 31** |
| 80 | 40 | 100 | 85 | |
| 36 | 96 | 56 | 48 | 1. 621 |
| 92 | 52 | 112 | 104 | 2. 585 |
| 48 | 108 | 75 | 60 | 3. 687 |
| 104 | 54 | 31 | 116 | 4. 647 |
| 67 | 120 | 86 | 72 | 5. 630 |
| 123 | 48 | 43 | 56 | 6. 605 |
| 79 | 104 | 99 | 112 | 7. 570 |
| 35 | 60 | | 68 | 8. 671 |
| 91 | 116 | | 124 | 9. 625 |
| 75 | 72 | | 80 | 10. 624 |
| 31 | 28 | **No. 30** | 36 | |
| 87 | 84 | | 92 | |
| 43 | 47 | 28 | 55 | |
| 99 | 103 | 84 | 111 | **No. 32** |
| 55 | 59 | 40 | 67 | |
| 111 | 115 | 96 | 123 | 1. 161 |
| 74 | 71 | 52 | 79 | 2. 292 |
| 30 | 55 | 108 | 63 | 3. 71 |
| 86 | 111 | 64 | 119 | 4. 191 |
| 42 | 67 | 120 | 75 | 5. 171 |
| 98 | 123 | 83 | 31 | 6. 64 |
| | 79 | 39 | 87 | 7. 252 |
| **No. 29** | 35 | 95 | 43 | 8. 197 |
| | 91 | 51 | 99 | 9. 623 |
| 27 | 64 | 107 | 62 | 10. 284 |

11. 94
12. 387
13. 170
14. 61
15. 593
16. 195
17. 394
18. 295
19. 492
20. 681

## No. 33

1. 465
2. 579
3. 164
4. 186
5. 153
6. 48
7. 489
8. 186
9. 488
10. 377
11. 329
12. 469
13. 288
14. 56
15. 216
16. 184
17. 249
18. 77
19. 289
20. 169

## No. 34

1. $995.69
2. $1044.85
3. $954.07
4. $1002.63
5. $994.32
6. $897.80
7. $1122.66
8. $1051.42

## No. 35

1. 395
2. 297
3. 92
4. 299
5. 298
6. 195
7. 298
8. 399
9. 494

10. 497
11. 296
12. 94
13. 495
14. 294
15. 299
16. 198
17. 197
18. 397
19. 293
20. 692
21. 198
22. 294
23. 596
24. 99
25. 395

## No. 36

1. 985
2. 987
3. 975
4. 1008
5. 953
6. 1011
7. 1042
8. 1032
9. 1095
10. 1012

## No. 37

1. 347
2. 189
3. 349
4. 78
5. 107
6. 259
7. 189
8. 119
9. 66
10. 88
11. 215
12. 178
13. 178
14. 9
15. 227
16. 109
17. 114
18. 249
19. 234
20. 29
21. 298
22. 284
23. 38
24. 376
25. 129

## No. 38

1. $42357.49
2. $57112.34
3. $54738.19
4. $62369.15
5. $70468.35
6. $63801.69

## No. 39

1. $4.35
2. $5.59
3. $ .94
4. $1.48
5. $6.92
6. $7.63
7. $2.31
8. $6.84
9. $3.70
10. $2.76
11. $2.29
12. $6.76
13. $3.59
14. $5.96
15. $1.56
16. $3.89
17. $2.68
18. $6.92
19. $3.49
20. $5.97

## No. 40

(Same as No. 13)

## No. 41

1. $95513.02
2. $102635.78
3. $98506.46
4. $117398.69
5. $95153.78
6. $99073.91

## No. 42

(Same as No. 39)

## No. 43

1. $ .93
2. $1.20

3. $2.81
4. $ .65
5. $1.96
6. $5.84
7. $2.95
8. $1.65
9. $2.24
10. $ .71
11. $1.89
12. $ .73
13. $1.23
14. $1.63
15. $1.71
16. $2.48
17. $1.86
18. $1.94
19. $2.45
20. $1.63

## No. 44

(Same as No. 43)

## No. 45

2
114
26
138
50
162
74
186
112
24
136
48
160
16
128
40
152
64
176
88
14
126
38
150
62
174
30
142
54
166
78

| | | | | |
|---|---|---|---|---|
| 190 | 124 | 174 | 228 | 336 |
| 102 | 36 | 63 | 52 | 160 |
| 28 | 148 | 231 | 276 | 384 |
| 140 | 60 | 99 | 100 | 208 |
| 52 | 172 | 267 | 324 | 144 |
| 164 | 98 | 135 | 148 | 368 |
| 76 | 10 | 87 | 372 | 192 |
| 188 | 122 | 255 | 224 | 16 |
| 44 | 34 | 123 | 48 | 240 |
| 156 | 146 | 291 | 272 | 64 |
| 68 | | 159 | 96 | 288 |
| 180 | **No. 46** | 27 | 320 | 140 |
| 92 | | 195 | 32 | 364 |
| 4 | 3 | 84 | 256 | 188 |
| 116 | 171 | 252 | 80 | 12 |
| 42 | 39 | 120 | 304 | 236 |
| 154 | 207 | 288 | 128 | 172 |
| 66 | 75 | 156 | 352 | 396 |
| 178 | 243 | 108 | 176 | 220 |
| 90 | 111 | 276 | 28 | 44 |
| 58 | 279 | 144 | 252 | 268 |
| 170 | 168 | 12 | 76 | 92 |
| 82 | 36 | 180 | 300 | 316 |
| 194 | 204 | 48 | 124 | 168 |
| 106 | 72 | 216 | 348 | 392 |
| 18 | 240 | 105 | 60 | 216 |
| 130 | 24 | 273 | 284 | 40 |
| 56 | 192 | 141 | 108 | 264 |
| 168 | 60 | 9 | 332 | 200 |
| 80 | 228 | 177 | 156 | 24 |
| 192 | 96 | 129 | 380 | 248 |
| 104 | 264 | 297 | 204 | 72 |
| 72 | 132 | 165 | 56 | 292 |
| 184 | 21 | 33 | 280 | 120 |
| 96 | 189 | 201 | 104 | 344 |
| 8 | 57 | 69 | 328 | 196 |
| 120 | 225 | 237 | 152 | 20 |
| 32 | 93 | 126 | 376 | 244 |
| 144 | 261 | 294 | 88 | 68 |
| 70 | 45 | 162 | 312 | 296 |
| 182 | 213 | 30 | 136 | |
| 94 | 81 | 198 | 360 | |
| 6 | 249 | 150 | 184 | **No. 48** |
| 118 | 117 | 18 | 8 | |
| 86 | 285 | 186 | 232 | 1. $3433540.07 |
| 198 | 153 | 54 | 84 | 2. $2509179.07 |
| 110 | 42 | 222 | 308 | 3. $3688667.60 |
| 22 | 210 | 90 | 132 | 4. $3251326.81 |
| 134 | 78 | 258 | 356 | 5. $3449296.55 |
| 46 | 246 | 147 | 180 | 6. $3353169.99 |
| 158 | 114 | 15 | 116 | |
| 84 | 282 | 183 | 340 | |
| 196 | 66 | 51 | 164 | **No. 49** |
| 108 | 234 | 219 | 388 | |
| 20 | 102 | | 212 | 1. $18.53 |
| 132 | 270 | **No. 47** | 36 | 2. $25.66 |
| 100 | 138 | | 260 | 3. $23.95 |
| 12 | 6 | 4 | 112 | 4. $14.78 |

| | | | | |
|---|---|---|---|---|
| **5.** $41.76 | 170 | **No. 51** | 174 | 259 |
| **6.** $38.38 | 450 | | 510 | 651 |
| **7.** $15.74 | 230 | *(Same as* | 246 | 392 |
| **8.** $42.95 | 10 | *No. 49)* | 582 | 84 |
| **9.** $60.76 | 290 | | 318 | 476 |
| **10.** $71.19 | 105 | **No. 52** | 54 | 168 |
| **11.** $66.57 | 385 | | 390 | 560 |
| **12.** $59.85 | 165 | 6 | 168 | 56 |
| **13.** $93.72 | 445 | 342 | 504 | 448 |
| **14.** $80.90 | 225 | 78 | 240 | 140 |
| **15.** $75.68 | 145 | 414 | 576 | 532 |
| **16.** $61.52 | 425 | 150 | 312 | 224 |
| | 205 | 486 | 216 | 616 |
| | 485 | 222 | 552 | 308 |
| | 265 | 558 | 288 | 49 |
| **No. 50** | 45 | 336 | 24 | 441 |
| | 325 | 72 | 360 | 133 |
| 5 | 140 | 408 | 96 | 525 |
| 285 | 420 | 144 | 432 | 217 |
| 65 | 200 | 480 | 210 | 609 |
| 345 | 480 | 48 | 546 | 105 |
| 125 | 260 | 384 | 282 | 497 |
| 405 | 180 | 120 | 18 | 189 |
| 185 | 460 | 456 | 354 | 581 |
| 465 | 240 | 192 | 258 | 273 |
| 280 | 20 | 528 | 594 | 665 |
| 60 | 300 | 264 | 330 | 357 |
| 340 | 80 | 42 | 66 | 98 |
| 120 | 360 | 378 | 402 | 490 |
| 400 | 175 | 114 | 138 | 182 |
| 40 | 455 | 450 | 474 | 574 |
| 320 | 235 | 186 | 252 | 266 |
| 100 | 15 | 522 | 588 | 658 |
| 380 | 295 | 90 | 324 | 154 |
| 160 | 215 | 426 | 60 | 546 |
| 440 | 495 | 162 | 396 | 238 |
| 220 | 275 | 498 | 300 | 630 |
| 35 | 55 | 234 | 36 | 322 |
| 315 | 335 | 570 | 372 | 14 |
| 95 | 115 | 306 | 108 | 406 |
| 375 | 395 | 84 | 444 | 147 |
| 155 | 210 | 420 | 180 | 539 |
| 435 | 490 | 156 | 516 | 231 |
| 75 | 270 | 492 | 294 | 623 |
| 355 | 50 | 228 | 30 | 315 |
| 135 | 330 | 564 | 366 | 203 |
| 415 | 250 | 132 | 102 | 595 |
| 195 | 30 | 468 | 438 | 287 |
| 475 | 310 | 204 | | 679 |
| 255 | 90 | 540 | | 371 |
| 70 | 370 | 276 | **No. 53** | 63 |
| 350 | 150 | 12 | | 455 |
| 130 | 430 | 348 | 7 | 196 |
| 410 | 245 | 126 | 399 | 588 |
| 190 | 25 | 462 | 91 | 280 |
| 470 | 305 | 198 | 483 | 672 |
| 110 | 85 | 534 | 175 | 364 |
| 390 | 365 | 270 | 567 | 252 |

**Column 1**

644
336
28
420
112
504
245
637
329
21
413
301
693
385
77
469
161
553
294
686
378
70
462
350
42
434
126
518
210
602
343
35
427
119
511

No. 54

1. $6537136.94
2. $6295852.28
3. $6328194.91
4. $5945296.77

No. 55

1. $19.76
2. $18.86
3. $44.51
4. $26.39
5. $41.42
6. $6.20
7. $12.22
8. $19.63
9. $87.27
10. $84.51
11. $71.61

**Column 2**

12. $55.60
13. $97.15
14. $73.69
15. $61.63
16. $68.20

No. 56

8
456
104
552
200
648
296
744
448
96
544
192
640
64
512
160
608
256
704
352
56
504
152
600
248
696
120
568
216
664
312
760
408
112
560
208
656
304
752
176
624
272
720
368
16
464
168
616
264

**Column 3**

712
360
232
680
328
776
424
72
520
224
672
320
768
416
288
736
384
32
480
128
576
280
728
376
24
472
344
792
440
88
536
184
632
336
784
432
80
528
400
48
496
144
592
240
688
392
40
488
136
584

No. 57
(Same as No. 15)

No. 58
(Same as No. 55)

**Column 4**

No. 59

1. 795
2. 682
3. 564
4. 814
5. 598
6. 924
7. 810
8. 946
9. 1032
10. 912
11. 901
12. 621
13. 665
14. 308
15. 962
16. 714
17. 1008
18. 364
19. 736
20. 782
21. 855
22. 864
23. 865
24. 988
25. 667

No. 60

9
513
117
621
225
729
333
837
504
108
612
216
720
72
572
180
684
288
792
396
63
567
171
675
279
783
135

**Column 5**

639
243
747
351
855
459
126
630
234
738
342
846
198
702
306
810
414
18
522
189
693
297
801
405
261
765
369
873
477
81
585
252
756
360
864
468
324
828
432
36
540
144
648
315
819
423
27
531
387
891
495
99
603
207
711
378
882
486

| | |
|---|---|
| 90 | 374 |
| 594 | 990 |
| 450 | 506 |
| 54 | 22 |
| 558 | 608 |
| 162 | 231 |
| 666 | 847 |
| 270 | 363 |
| 774 | 979 |
| 441 | 495 |
| 45 | 319 |
| 549 | 935 |
| 153 | 451 |
| 657 | 1067 |
| | 583 |
| | 99 |
| **No. 61** | 715 |
| 11 | 308 |
| 627 | 924 |
| 143 | 440 |
| 759 | 1056 |
| 275 | 572 |
| 891 | 396 |
| 407 | 1012 |
| 1023 | 528 |
| 616 | 44 |
| 132 | 660 |
| 748 | 176 |
| 264 | 792 |
| 880 | 385 |
| 88 | 1001 |
| 704 | 517 |
| 220 | 33 |
| 836 | 649 |
| 352 | 473 |
| 968 | 1089 |
| 484 | 605 |
| 77 | 121 |
| 693 | 737 |
| 209 | 253 |
| 825 | 869 |
| 341 | 462 |
| 957 | 1078 |
| 165 | 594 |
| 781 | 110 |
| 297 | 726 |
| 913 | 550 |
| 429 | 66 |
| 1045 | 682 |
| 561 | 198 |
| 154 | 814 |
| 770 | 330 |
| 286 | 946 |
| 902 | 539 |
| 418 | 55 |
| 1034 | 671 |
| 242 | 187 |
| 858 | 803 |

**No. 62**

1. $11230083.55
2. $10797546.08
3. $8876665.99
4. $8230948.08

**No. 63**

1. $47.65
2. $6.21
3. $79.61
4. $34.74
5. $14.68
6. $27.74
7. $27.93
8. $21.85
9. $54.46
10. $13.83
11. $36.49
12. $4.46
13. $50.47
14. $8.53
15. $27.16
16. $39.87

**No. 65**

(*Same as No. 63*)

**No. 66**

1. 1827
2. 1705
3. 1170
4. 1376
5. 2511
6. 2624
7. 3772
8. 1200
9. 1537
10. 1235
11. 1408
12. 1428
13. 1407
14. 1408
15. 2016
16. 2418
17. 3772
18. 1164
19. 2015
20. 2592

**No. 67**

1. $846.98
2. $836.87
3. $666.99
4. $829.97
5. $634.22
6. $827.43
7. $857.76
8. $527.72
9. $418.44
10. $906.92
11. $447.71
12. $586.87
13. $407.46
14. $510.63
15. $533.62
16. $663.85

**No. 68**

(*Same as No. 17*)

**No. 69**

(*Same as No. 67*)

**No. 71**

1. $276.69
2. $855.51
3. $682.90
4. $520.36
5. $773.79
6. $891.54
7. $326.93
8. $245.59
9. $371.93
10. $471.54
11. $386.88
12. $330.44
13. $878.62
14. $696.89
15. $770.20
16. $674.87

**No. 72**

(*Same as No. 22*)

**No. 73**

1. 755717535
2. 756410013
3. 824293224
4. 824985702

**5.** 3674994324
**6.** 1167178458
**7.** 1236433047
**8.** 6091457406
**9.** 1690209807
**10.** 1752668607
**11.** 1511041308
**12.** 3675686802
**13.** 1306128921
**14.** 1031412036
**15.** 1442533509

### No. 74

**1.** 1536
**2.** 4606
**3.** 2646
**4.** 1495
**5.** 5313
**6.** 3230
**7.** 7347
**8.** 4814
**9.** 4284
**10.** 1295
**11.** 6624
**12.** 1624
**13.** 1886
**14.** 3618
**15.** 5494
**16.** 3861
**17.** 3344
**18.** 8608
**19.** 1612
**20.** 2655

### No. 75

(*Same as No. 71*)

### No. 76

(*Same as No. 26*)

### No. 77

12
684
156
828
300
972
444
1116
672

144
816
288
960
96
768
240
912
384
1056
528
84
756
228
900
372
1044
180
852
324
996
468
1140
612
168
840
312
984
456
1128
264
936
408
1080
552
24
696
252
924
396
1068
540
348
1020
492
1164
636
108
780
336
1008
480
1152
624
432
1104
576
48

720
192
864
420
1092
564
36
708
516
1188
660
132
804
276
948
504
1176
648
120
792
600
72
744
216
888
360
1032
588
60
732
204
876

### No. 78

(*Same as No. 34*)

### No. 79

**1.** $451.84
**2.** $189.86
**3.** $343.97
**4.** $352.59
**5.** $188.21
**6.** $145.71
**7.** $291.97
**8.** $664.63
**9.** $136.68
**10.** $86.14
**11.** $440.45
**12.** $221.48
**13.** $196.63
**14.** $146.23
**15.** $586.21
**16.** $568.49

### No. 80

**1.** 17081

**2.** 13361
**3.** 25543
**4.** 22632
**5.** 37893
**6.** 34323
**7.** 52643
**8.** 45201
**9.** 68302
**10.** 62693
**11.** 19602
**12.** 12312
**13.** 77922
**14.** 33033
**15.** 25662
**16.** 12831
**17.** 16086
**18.** 20274
**19.** 22263
**20.** 47583
**21.** 44896

### No. 81

**1.** 123782280
**2.** 123895704
**3.** 135014592
**4.** 135128016
**5.** 601943392
**6.** 191177264
**7.** 202520776
**8.** 997746448
**9.** 276846856
**10.** 287077256
**11.** 247500064
**12.** 602056816
**13.** 213936568
**14.** 168939488
**15.** 236278872

### No. 82

(*Same as No. 38*)

### No. 83

**1.** $451.84
**2.** $189.86
**3.** $343.97
**4.** $352.59
**5.** $188.21
**6.** $145.71
**7.** $291.97
**8.** $664.63
**9.** $136.68
**10.** $86.14
**11.** $440.45

12. $221.48
13. $196.63
14. $146.23
15. $586.21
16. $568.49

**No. 84**

1. 19584
2. 23793
3. 28288
4. 24466
5. 17344
6. 21483
7. 24208
8. 21346
9. 25164
10. 12691
11. 17138
12. 21918
13. 30702
14. 36206
15. 33355
16. 17199
17. 27846
18. 31003
19. 29120
20. 33948
21. 16238

**No. 86**

1. $95513.02
2. $102635.78
3. $98506.46
4. $117398.69
5. $95153.78
6. $99073.91

**No. 89**

1. 170810
2. 133610
3. 255430
4. 226320
5. 378930
6. 343230
7. 526430
8. 452010
9. 683020
10. 626930
11. 196020
12. 123120
13. 779220
14. 330330

15. 256620
16. 126310
17. 160860
18. 202740
19. 222630
20. 465830
21. 448960

**No. 90**

13
741
169
897
325
1053
481
1209
728
156
884
312
1040
104
832
260
988
416
1144
572
91
819
247
975
403
1131
195
923
351
1079
507
1235
663
182
910
338
1066
494
1222
286
1014
442
1170
598
26
754
273

1001
429
1157
585
377
1105
533
1261
689
117
845
364
1092
520
1248
676
468
1196
624
52
780
208
936
455
1183
611
39
767
559
1287
715
143
871
299
1027
546
1274
702
130
858
650
78
806
234
962
390
1118
637
65
793
221
949

**No. 91**

(*Same as No. 48*)

**No. 93**

1. 195840
2. 237930
3. 282880
4. 244660
5. 173440
6. 214830
7. 242080
8. 213460
9. 251640
10. 126910
11. 171380
12. 219180
13. 307020
14. 362060
15. 333550
16. 171990
17. 278460
18. 310030
19. 291200
20. 339480
21. 162380

**No. 94**

1. 135025095
2. 135148821
3. 147277608
4. 147401334
5. 656616308
6. 208541386
7. 220915199
8. 1088369102
9. 301992119
10. 303151719
11. 269979836
12. 656740034
13. 233367857
14. 184383812
15. 257739453

**No. 95**

(*Same as No. 54*)

**No. 97**

1. 11211
2. 24642
3. 40051
4. 57902
5. 77691
6. 92412
7. 29432

8. 21311
9. 35742
10. 52151
11. 71002
12. 91791
13. 25521
14. 48155
15. 24442
16. 49184
17. 76146
18. 44844
19. 37296
20. 97902
21. 39693

**No. 99**

1. $11230083.55
2. $10797546.08
3. $8876665.99
4. $8230948.08

**No. 101**

1. 36156
2. 59290
3. 80618
4. 22869
5. 36696
6. 52624
7. 71918
8. 93555
9. 97856
10. 103972
11. 108988
12. 84058
13. 103474
14. 108580
15. 79165
16. 57318
17. 65778
18. 77744
19. 91086
20. 35547
21. 80690

**No. 103**

1. 365
2. 268
3. 371
4. 433
5. 257
6. 327
7. 209
8. 270

9. 287
10. 410
11. 257
12. 404
13. 231
14. 217
15. 311
16. 303
17. 254
18. 237
19. 308
20. 343
21. 350
22. 360
23. 308
24. 271
25. 341

**No. 105**

1. 116081
2. 142272
3. 165481
4. 107512
5. 132181
6. 159372
7. 156996
8. 191522
9. 181692
10. 217894
11. 110564
12. 110940
13. 121598
14. 120273
15. 134316
16. 120990
17. 113970
18. 145262
19. 122811
20. 139635
21. 144284

**No. 106**

14
798
182
966
350
1134
518
1302
784
168
952
336
1120
112
896
280
1064
448
1232
616
98
882
266
1050
434
1218
210
994
378
1162
546
1330
714
196
980
364
1148
532
1316
308
1092
476
1260
644
28
812
294
1078
462
1246
630
406
1190
574
1358
742
126
910
392
1176
560
1344
728
504
1288
672
56
840
224
1008
490
1274
658
42
826
602
1386
770
154
938
322
1106
588
1372
756
140
924
700
84
868
252
1036
420
1204
686
70
854
238
1022

**No. 107**

*(Same as No. 17)*

**No. 109**

1. 136004
2. 229024
3. 268746
4. 128064
5. 160446
6. 236496
7. 195853
8. 223096
9. 368063
10. 145673
11. 187146
12. 305283
13. 355096
14. 291014
15. 348928
16. 145728
17. 336414
18. 395324

| | |
|---|---|
| 19. 430265 | |
| 20. 247275 | |
| 21. 575276 | |

**No. 110**

1. 146267910
2. 146401938
3. 159540624
4. 159674652
5. 711289224
6. 225905508
7. 239309622
8. 1178991756
9. 327137382
10. 339226182
11. 292459608
12. 711423252
13. 252799146
14. 199628136
15. 279200034

**No. 111**

(*Same as No. 26*)

**No. 113**

1. 164232
2. 227238
3. 301464
4. 377910
5. 456576
6. 497502
7. 658752
8. 172104
9. 243320
10. 279396
11. 354252
12. 427652
13. 484432
14. 588078
15. 671944
16. 175392
17. 173514
18. 257237
19. 341968
20. 429525
21. 519302

**No. 115**

(*Same as No. 34*)

**No. 118**

(*Same as No. 38*)

**No. 119**

15
855
195
1035
375
1215
555
1395
840
180
1020
360
1200
120
960
300
1140
480
1320
660
105
945
285
1125
465
1305
225
1065
405
1245
585
1425
765
210
1050
390
1230
570
1410
330
1170
510
1350
690
30
870
315
1155
495
1335
675

435
1275
615
1455
795
135
975
420
1260
600
1440
780
540
1380
720
60
900
240
1080
525
1365
705
45
885
645
1485
825
165
1005
345
1185
630
1470
810
150
990
750
90
930
270
1110
450
1290
735
75
915
255
1095

**No. 120**

(*Same as No. 41*)

**No. 122**

(*Same as No. 43*)

**No. 123**

1. 157510725
2. 157655055
3. 171803640
4. 171947970
5. 765962140
6. 243269630
7. 257704045
8. 1269714410
9. 352282645
10. 365300645
11. 314939380
12. 766106470
13. 272230435
14. 214972460
15. 300660615

**No. 124**

(*Same as No. 54*)

**No. 126**

(*Same as No. 62*)

**No. 128**

(*Same as No. 38*)

**No. 131**

16
912
208
1104
400
1296
92
1488
896
192
1088
384
1280
128
1024
320
1216
512
1408
704
112
1008

| | | | |
|---|---|---|---|
| 304 | 368 | 340 | 51 |
| 1200 | 1264 | 1292 | 1003 |
| 496 | 672 | 544 | 731 |
| 1392 | 1568 | 1496 | 1683 |
| 240 | 864 | 748 | 935 |
| 1136 | 160 | 119 | 187 |
| 432 | 1056 | 1071 | 1139 |
| 1328 | 800 | 323 | 391 |
| 624 | 96 | 1275 | 1343 |
| 1520 | 992 | 527 | 714 |
| 816 | 288 | 1479 | 1666 |
| 224 | 1184 | 255 | 918 |
| 1120 | 480 | 1207 | 170 |
| 416 | 1376 | 459 | 1122 |
| 1312 | 784 | 1411 | 850 |
| 608 | 80 | 663 | 102 |
| 1504 | 976 | 1615 | 1054 |
| 352 | 272 | 867 | 306 |
| 1248 | 1168 | 238 | 1258 |
| 544 | | 1190 | 510 |
| 1440 | | 442 | 1462 |
| 736 | | 1394 | 833 |
| 32 | | 646 | 85 |
| 928 | | 1598 | 1037 |
| 336 | | 374 | 289 |
| 1232 | | 1326 | 1241 |
| 528 | | 578 | |
| 1424 | | 1530 | |
| 720 | | 782 | |
| 464 | | 34 | |
| 1360 | | 996 | |
| 656 | | 357 | |
| 1552 | | 1309 | |
| 848 | | 561 | |
| 144 | | 1513 | |
| 1040 | | 765 | |
| 448 | | 493 | |
| 1344 | | 1445 | |
| 640 | | 697 | |
| 1536 | | 1649 | |
| 832 | | 901 | |
| 576 | | 153 | |
| 1472 | | 1105 | |
| 768 | | 476 | |
| 64 | | 1428 | |
| 960 | | 680 | |
| 256 | | 1632 | |
| 1152 | | 884 | |
| 560 | | 912 | |
| 1456 | | 1564 | |
| 752 | | 816 | |
| 48 | | 68 | |
| 944 | | 1020 | |
| 688 | | 272 | |
| 1584 | | 1224 | |
| 880 | | 595 | |
| 176 | | 1547 | |
| 1072 | | 799 | |

## No. 132

1. 168753540
2. 168908172
3. 184066656
4. 184221288
5. 820635056
6. 260633752
7. 276098468
8. 1360237064
9. 377427908
10. 391375108
11. 337419152
12. 820789688
13. 291661724
14. 230316784
15. 322121196

## No. 140

17
969
221
1173
425
1377
629
1581
952
204
1156
408
1360
136
1088

## No. 141

1. 179996355
2. 180161289
3. 196329672
4. 196494606
5. 875307972
6. 277997874
7. 294492891
8. 1450859718
9. 402573171
10. 417449571
11. 359898924
12. 875472906
13. 311093013
14. 245661108
15. 343581777

## No. 148

18
1026
234
1242
450
1458
666
1674
1008

| | | | |
|---|---|---|---|
| 216 | 1080 | 247 | 760 |
| 1224 | 288 | 1311 | 1824 |
| 432 | 1296 | 475 | 988 |
| 1440 | 630 | 1539 | 684 |
| 144 | 1638 | 703 | 1748 |
| 1152 | 846 | 1767 | 912 |
| 360 | 54 | 1064 | 76 |
| 1368 | 1062 | 228 | 1140 |
| 576 | 774 | 1292 | 304 |
| 1584 | 1782 | 456 | 1368 |
| 792 | 990 | 1520 | 665 |
| 126 | 198 | 152 | 1729 |
| 1134 | 1206 | 1216 | 893 |
| 342 | 414 | 380 | 57 |
| 1350 | 1422 | 1444 | 1121 |
| 558 | 756 | 608 | 817 |
| 1566 | 1764 | 1672 | 1881 |
| 270 | 972 | 836 | 1045 |
| 1278 | 180 | 133 | 209 |
| 486 | 1188 | 1197 | 1273 |
| 1494 | 900 | 361 | 437 |
| 702 | 108 | 1425 | 1501 |
| 1710 | 1116 | 589 | 798 |
| 918 | 324 | 1653 | 1862 |
| 252 | 1332 | 285 | 1026 |
| 1260 | 540 | 1349 | 190 |
| 468 | 1548 | 513 | 1254 |
| 1476 | 882 | 1577 | 950 |
| 684 | 90 | 741 | 114 |
| 1692 | 1098 | 1805 | 1178 |
| 396 | 306 | 969 | 342 |
| 1404 | 1314 | 266 | 1406 |
| 612 | | 1330 | 570 |
| 1620 | | 494 | 1634 |
| 828 | **No. 149** | 1558 | 931 |
| 36 | | 722 | 95 |
| 1044 | 1. 191239170 | 1786 | 1159 |
| 378 | 2. 191414406 | 418 | 323 |
| 1386 | 3. 208592688 | 1482 | 1387 |
| 594 | 4. 208767924 | 646 | |
| 1602 | 5. 929980808 | 1710 | |
| 810 | 6. 295361996 | 874 | **No. 159** |
| 522 | 7. 312887314 | 38 | |
| 1530 | 8. 1541482372 | 1102 | 1. 202481985 |
| 738 | 9. 427718434 | 399 | 2. 202667523 |
| 1746 | 10. 443524034 | 1463 | 3. 220855704 |
| 954 | 11. 382378696 | 627 | 4. 221041242 |
| 162 | 12. 930156124 | 1691 | 5. 984653804 |
| 1170 | 13. 330524302 | 855 | 6. 312726118 |
| 504 | 14. 261005432 | 551 | 7. 331281737 |
| 1512 | 15. 365042358 | 1615 | 8. 1632105026 |
| 720 | | 779 | 9. 452863697 |
| 1728 | | 1843 | 10. 469598497 |
| 936 | | 1007 | 11. 404858468 |
| 648 | **No. 156** | 171 | 12. 984839342 |
| 1656 | | 1235 | 13. 349955591 |
| 864 | 19 | 532 | 14. 276349756 |
| 72 | 1083 | 1596 | 15. 386502939 |

| No. 165 | | 13. 369386880 | 1785 |
|---|---|---|---|
|  | 180 | 14. 291694080 | 861 |
|  | 1300 | 15. 407963520 | 2037 |
| 20 | 560 |  | 1113 |
| 1140 | 1680 | **No. 172** | 189 |
| 260 | 800 |  | 1365 |
| 1380 | 1920 | 21 | 588 |
| 500 | 1040 | 1197 | 1744 |
| 1620 | 720 | 273 | 840 |
| 740 | 1840 | 1449 | 2016 |
| 1860 | 960 | 525 | 1092 |
| 1120 | 80 | 1701 | 756 |
| 240 | 1200 | 777 | 1932 |
| 1360 | 320 | 1953 | 1008 |
| 480 | 1440 | 1176 | 84 |
| 1600 | 700 | 252 | 1260 |
| 160 | 1820 | 1428 | 336 |
| 1280 | 940 | 504 | 1512 |
| 400 | 60 | 1680 | 735 |
| 1520 | 1180 | 168 | 1911 |
| 640 | 860 | 1344 | 987 |
| 1760 | 1980 | 420 | 63 |
| 880 | 1100 | 1596 | 1239 |
| 140 | 220 | 672 | 903 |
| 1260 | 1340 | 1848 | 2079 |
| 380 | 460 | 924 | 1155 |
| 1500 | 1580 | 147 | 231 |
| 620 | 840 | 1323 | 1407 |
| 1740 | 1960 | 399 | 483 |
| 300 | 1080 | 1575 | 1659 |
| 1420 | 200 | 651 | 882 |
| 540 | 1320 | 1827 | 2058 |
| 1660 | 1000 | 315 | 1134 |
| 780 | 120 | 1491 | 210 |
| 1900 | 1240 | 567 | 1386 |
| 1020 | 360 | 1743 | 1050 |
| 280 | 1480 | 819 | 126 |
| 1400 | 600 | 1995 | 1302 |
| 520 | 1720 | 1071 | 378 |
| 1640 | 980 | 294 | 1554 |
| 760 | 100 | 1470 | 630 |
| 1880 | 1220 | 546 | 1806 |
| 440 | 340 | 1722 | 1029 |
| 1560 | 1460 | 798 | 105 |
| 680 |  | 1974 | 1281 |
| 1800 | **No. 166** | 462 | 357 |
| 920 |  | 1638 | 1533 |
| 40 | 1. 213724800 | 714 |  |
| 1160 | 2. 213920640 | 1890 |  |
| 420 | 3. 233118720 | 966 | **No. 173** |
| 1540 | 4. 233314560 | 42 |  |
| 660 | 5. 1039326720 | 1218 | 1. 224967615 |
| 1780 | 6. 330090240 | 441 | 2. 225173757 |
| 900 | 7. 349676160 | 1617 | 3. 245381736 |
| 580 | 8. 1722727680 | 693 | 4. 245587878 |
| 1700 | 9. 478008960 | 1869 | 5. 1093999636 |
| 820 | 10. 495672960 | 945 | 6. 347454362 |
| 1940 | 11. 427338240 | 609 | 7. 368070583 |
| 1060 | 12. 1039522560 |  |  |

8. 1813350334
9. 503154223
10. 521747423
11. 449818012
12. 1094205778
13. 388818169
14. 307038404
15. 429424101

**No. 179**

22
1254
286
1518
550
1782
814
2046
1232
264
1496
528
1760
176
1408
440
1672
704
1936
968
154
1386
418
1650
682
1914
330
1562
604
1826
858
2090
1122
308
1540
572
1804
836
2068
484
1716
748
1980
1012
44
1276

462
1694
726
1958
990
638
1870
902
2134
1166
198
1430
616
1848
880
2112
1144
792
2024
1056
88
1320
352
1584
770
2002
1034
66
1298
946
2178
1210
242
1474
506
1738
924
2156
1188
220
1452
1100
132
1364
396
1628
660
1892
1078
110
1342
374
1606

**No. 180**

1. 236210430

2. 236426874
3. 257644752
4. 257861196
5. 1148672552
6. 364818484
7. 386465006
8. 1903972988
9. 528299486
10. 547821886
11. 472297784
12. 1148888996
13. 408249458
14. 322382728
15. 450884682

**No. 186**

23
1311
299
1587
575
1863
851
2139
1288
276
1564
552
1840
184
1472
460
1748
736
2024
1012
161
1449
437
1725
713
2001
345
1623
621
1909
897
2185
1173
322
1610
598
1886
874
2162

506
1794
782
2070
1058
46
1334
483
1771
759
2047
1035
667
1955
943
2231
1219
207
1495
644
1932
920
2208
1196
828
2116
1104
92
1380
368
1656
805
2093
1081
69
1357
989
2277
1265
253
1541
529
1817
966
2254
1242
230
1518
1150
138
1426
414
1702
690
1978
1127
115
1403

| | | | |
|---|---|---|---|
| 391 | 336 | 1776 | 1775 |
| 1679 | 1680 | 720 | 675 |
| | 624 | 2064 | 2075 |
| | 1968 | 1176 | 975 |
| **No. 187** | 912 | 120 | 2375 |
| | 2256 | 1464 | 1275 |
| **1.** 247453245 | 528 | 408 | 350 |
| **2.** 247679991 | 1872 | 1752 | 1750 |
| **3.** 269907768 | 816 | | 650 |
| **4.** 270134514 | 2160 | | 2050 |
| **5.** 1203345468 | 1104 | **No. 194** | 950 |
| **6.** 382182606 | 48 | | 2350 |
| **7.** 404859429 | 1392 | **1.** 258696060 | 550 |
| **8.** 1994595642 | 504 | **2.** 258933108 | 1950 |
| **9.** 553444749 | 1848 | **3.** 282170784 | 850 |
| **10.** 573896349 | 792 | **4.** 282407832 | 2250 |
| **11.** 494777556 | 2136 | **5.** 1258018384 | 1150 |
| **12.** 1203572214 | 1080 | **6.** 399546728 | 50 |
| **13.** 427680747 | 696 | **7.** 423253852 | 1450 |
| **14.** 337727052 | 2040 | **8.** 2085218296 | 525 |
| **15.** 472345263 | 984 | **9.** 578590012 | 1925 |
| | 2328 | **10.** 599970812 | 825 |
| | 1272 | **11.** 517257328 | 2225 |
| **No. 193** | 216 | **12.** 1258255432 | 1125 |
| | 1560 | **13.** 447112036 | 725 |
| 24 | 672 | **14.** 353071376 | 2125 |
| 1368 | 2016 | **15.** 493805844 | 1025 |
| 312 | 960 | | 2425 |
| 1656 | 2304 | | 1325 |
| 600 | 1248 | **No. 200** | 225 |
| 1944 | 864 | | 1625 |
| 888 | 2208 | 25 | 700 |
| 2232 | 1152 | 1425 | 2100 |
| 1344 | 96 | 325 | 1000 |
| 288 | 1440 | 1725 | 2400 |
| 1632 | 384 | 625 | 1300 |
| 576 | 1728 | 2025 | 900 |
| 1920 | 840 | 925 | 2300 |
| 192 | 2184 | 2325 | 1200 |
| 1536 | 1128 | 1400 | 100 |
| 480 | 72 | 300 | 1500 |
| 1824 | 1416 | 1700 | 400 |
| 768 | 1032 | 600 | 1800 |
| 2112 | 2376 | 2000 | 875 |
| 1056 | 1320 | 200 | 2275 |
| 168 | 264 | 1600 | 1175 |
| 1512 | 1608 | 500 | 75 |
| 456 | 552 | 1900 | 1475 |
| 1800 | 1896 | 800 | 1075 |
| 744 | 1008 | 2200 | 2475 |
| 2088 | 2352 | 1100 | 1375 |
| 360 | 1296 | 175 | 275 |
| 1704 | 240 | 1575 | 1675 |
| 648 | 1584 | 475 | 575 |
| 1992 | 1200 | 1875 | 1975 |
| 936 | 144 | 775 | 1050 |
| 2280 | 1488 | 2175 | 2450 |
| 1224 | 432 | 375 | 1350 |

250
1650
1250
150
1550
450
1850
750
2150
1225
125
1525
425
1825

## No. 201

1. 269938875
2. 270186225
3. 294433800
4. 294681150
5. 1312691300
6. 416910850
7. 441648275
8. 2175840950
9. 603735275
10. 626045275
11. 539737100
12. 1312938650
13. 466543325
14. 368415700
15. 515266425

## No. 204

(*Annex 0 to Answers to No. 45*)

## No. 208

(*Annex 0 to Answers to No. 46*)

## No. 212

(*Annex 0 to Answers to No. 47*)

## No. 215

(*Annex 0 to Answers to No. 50*)

## No. 219

(*Annex 0 to Answers to No. 52*)

## No. 222

(*Annex 0 to Answers to No. 53*)

## No. 226

(*Annex 0 to Answers to No. 56*)

## No. 228

(*Annex 0 to Answers to No. 60*)

## No. 229

1. 242
2. 464
3. 686
4. 902
5. 1124
6. 1246
7. 1462
8. 1684
9. 1906
10. 322
11. 444
12. 666
13. 882
14. 1104
15. 1326
16. 1442
17. 1664
18. 1886
19. 302
20. 524

## No. 232

(*Annex 0 to Answers to No. 61*)

## No. 233

1. 393

2. 726
3. 1059
4. 1392
5. 1713
6. 1896
7. 2229
8. 2562
9. 2883
10. 516
11. 699
12. 1032
13. 1353
14. 1686
15. 2019
16. 2202
17. 2523
18. 2856
19. 489
20. 822

## No. 236

(*Annex 0 to Answers to No. 77*)

## No. 237

1. 564
2. 1008
3. 1452
4. 1896
5. 2340
6. 2564
7. 3008
8. 3452
9. 3892
10. 740
11. 964
12. 1408
13. 1852
14. 2296
15. 2740
16. 2964
17. 3408
18. 3852
19. 696
20. 1140

## No. 239

(*Annex 0 to Answers to No. 90*)

## No. 240

1. 755
2. 1310
3. 1865
4. 2420
5. 2975
6. 3280
7. 3805
8. 4360
9. 4915
10. 970
11. 1275
12. 1830
13. 2355
14. 2910
15. 3465
16. 3770
17. 4325
18. 4880
19. 905
20. 1460

## No. 242

(*Annex 0 to Answers to No. 106*)

## No. 243

1. 846
2. 1512
3. 2178
4. 2844
5. 3510
6. 4176
7. 4482
8. 5106
9. 5772
10. 1038
11. 1704
12. 2370
13. 2676
14. 3342
15. 3966
16. 4632
17. 5298
18. 5964
19. 870
20. 1536

## No. 244

(*Annex 0 to Answers to No. 119*)

## No. 245

1. 917
2. 1694
3. 2471
4. 3248
5. 4025
6. 4802
7. 5579
8. 5866
9. 6587
10. 1064
11. 1841
12. 2618
13. 3395
14. 4172
15. 4459
16. 5236
17. 5957
18. 6734
19. 1211
20. 1988

## No. 246

(Annex 0 to Answers to No. 131)

## No. 247

1. 1128
2. 2016
3. 2904
4. 3792
5. 4680
6. 5568
7. 5976
8. 6864
9. 7752
10. 1368
11. 2256
12. 3144
13. 3552
14. 4440
15. 5328
16. 6216
17. 7104
18. 7992
19. 5928
20. 5216

## No. 248

1. 4/8, 3/8, 5/8
2. 3/16, 4/16, 8/16, 9/16, 10/16, 13/16, 14/16
3. 4/8, 6/8, 8/8
4. 2/12, 7/12, 9/12, 7/12, 7/12, 9/12, 10/12
5. 3/24, 7/24, 4/24, 6/24, 8/24, 14/24, 16/24, 21/24, 15/24, 20/24, 18/24, 20/24, 22/24
6. 3/10, 4/10, 5/10, 7/10, 9/10
7. 3/20, 4/20, 5/20, 9/20, 12/20, 13/20, 14/20, 15/20, 18/20
8. 4/40, 3/40, 4/40, 10/40, 12/40, 15/40, 18/40, 20/40, 24/40, 25/40, 28/40, 30/40, 32/40, 35/40, 38/40
9. 3/16, 5/16, 7/16, 9/16, 11/16, 13/16
10. 8/30, 3/30, 6/30, 10/30, 13/30, 16/30, 15/30, 18/30, 20/30, 23/30, 24/30, 25/30, 27/30

## No. 249

(Annex 0 to Answers to No. 140)

## No. 250

1. 3/4
2. 1 1/2
3. 5/8
4. 4/7
5. 1 1/3
6. 1 4/8
7. 3/5
8. 5/6
9. 7/8
10. 1 1/3
11. 7/8
12. 1 1/4
13. 1 3/8
14. 1 5/8
15. 9/16
16. 11/16
17. 13/16
18. 14/16

19. 1 7/16
20. 1 7/16
21. 1 7/16
22. 1 7/16
23. 5/16
24. 7/16
25. 7/16
26. 11/16
27. 13/16
28. 15/16
29. 1 1/16
30. 1 5/16
31. 13/16
32. 13/16
33. 1 7/16
34. 1 5/16
35. 1 5/16
36. 1 7/16
37. 1 7/16
38. 1 11/16
39. 3/16
40. 5/16

## No. 251

1. 1368
2. 2367
3. 3366
4. 4365
5. 5364
6. 5823
7. 6822
8. 7821
9. 8757
10. 1656
11. 2655
12. 3114
13. 4113
14. 5112
15. 6111
16. 7056
17. 8055
18. 8514
19. 1413
20. 2412

## No. 252

1. 121
2. 232
3. 343
4. 451
5. 562
6. 623
7. 731
8. 842
9. 953
10. 161
11. 222
12. 333
13. 441
14. 552
15. 663
16. 721
17. 832
18. 943
19. 151
20. 262

## No. 253

1. 7/16
2. 9/16
3. 11/16
4. 13/16
5. 15/16
6. 1 1/16
7. 7/16
8. 7/16
9. 11/16
10. 13/16

## No. 254

(Annex 0 to Answers to No. 148)

## No. 255

1. 131
2. 242
3. 353
4. 464
5. 571
6. 632
7. 743
8. 854
9. 961
10. 172
11. 233
12. 344
13. 451
14. 562
15. 673
16. 734
17. 841
18. 952
19. 163
20. 274

**No. 256**

1. 1 4/16
2. 1 5/16
3. 1 5/16
4. 1 6/16
5. 1 1/16
6. 1 13/16
7. 1 15/16
8. 1 7/16
9. 1 9/16
10. 1 6/16

**No. 257**

(*Annex 0 to Answers to No. 156*)

**No. 258**

1. 141
2. 252
3. 363
4. 474
5. 585
6. 641
7. 752
8. 863
9. 974
10. 185
11. 241
12. 352
13. 463
14. 574
15. 685
16. 741
17. 852
18. 963
19. 174
20. 285

**No. 259**

1. 1 7/16
2. 1 1/16
3. 1 4/16
4. 1 1/16
5. 1 2/16
6. 1 1/16
7. 1 1/16
8. 1 1/16
9. 1 14/16
10. 1 12/16

**No. 260**

(*Annex 0 to Answers to No. 165*)

**No. 261**

1. ½
2. ⅝
3. 6/13
4. ¾
5. 1 1/4
6. 1¼
7. ¾
8. 1 1/16
9. 1¼
10. 1 7/13

**No. 262**

1. 151
2. 262
3. 373
4. 484
5. 595
6. 656
7. 761
8. 872
9. 983
10. 194
11. 255
12. 366
13. 471
14. 582
15. 693
16. 754
17. 865
18. 976
19. 181
20. 292

**No. 263**

1. ½
2. ¾
3. ¼
4. ⅜
5. ⅝
6. ⅜
7. ¾
8. ⅜
9. ⅝
10. ¾
11. ⅛

12. 2/...
13. ...
14. 4/...
15. 1/16
16. 3/16
17. 5/16
18. 7/16
19. 9/16
20. 11/16
21. 13/16
22. 1 5/16
23. 1/16
24. 3/16
25. 5/16
26. 7/16
27. 9/16
28. 13/16
29. 13/16
30. 11/16

**No. 264**

(*Annex 0 to Answers to No. 172*)

**No. 265**

1. 1/16
2. 3/16
3. 5/16
4. 7/16
5. 9/16
6. 11/16
7. 13/16
8. 15/16
9. 1/16
10. 7/16

**No. 266**

1. 141
2. 252
3. 363
4. 474
5. 585
6. 696
7. 747
8. 851
9. 962
10. 173
11. 284
12. 395
13. 446
14. 557

15. 661
16. 772
17. 883
18. 994
19. 145
20. 256

**No. 267**

1. ¼
2. 1/16
3. ¾
4. 1 1/16
5. 1 1/4
6. 1¼
7. 1 5/16
8. 1¼
9. ⅝
10. 1¼

**No. 268**

(*Annex 0 to Answers to No. 179*)

**No. 269**

1. 5/16
2. 7/16
3. 9/16
4. 11/16
5. 13/16
6. 15/16
7. 1/16
8. 3/16
9. 5/16
10. 7/16

**No. 270**

1. 131
2. 242
3. 353
4. 464
5. 575
6. 686
7. 797
8. 838
9. 941
10. 152
11. 263
12. 374
13. 485

14. 596
15. 637
16. 748
17. 851
18. 962
19. 173
20. 284

### No. 271

1. $\frac{2}{3}$
2. $1\frac{1}{3}$
3. $1\frac{1}{12}$
4. $1\frac{1}{12}$
5. $1\frac{1}{4}$
6. $1\frac{7}{12}$
7. $\frac{7}{12}$
8. $\frac{11}{12}$
9. $\frac{13}{24}$
10. $1\frac{1}{24}$

### No. 272

(*Annex 0 to Answers to No. 186*)

### No. 273

1. $\frac{7}{15}$
2. $\frac{11}{15}$
3. $\frac{13}{15}$
4. $\frac{14}{15}$
5. $\frac{1}{15}$
6. $\frac{8}{15}$
7. $\frac{9}{15}$
8. $\frac{11}{15}$
9. $\frac{9}{15}$
10. $\frac{11}{15}$

### No. 274

1. 141
2. 252
3. 363
4. 474
5. 585
6. 696
7. 747
8. 858
9. 969
10. 171
11. 282

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12. 393
13. 444
14. 555
15. 666
16. 777
17. 888
18. 999
19. 741
20. 652

### No. 275

1. $\frac{21}{24}$
2. $1\frac{5}{24}$
3. $1\frac{11}{24}$
4. $1\frac{17}{24}$
5. $\frac{7}{12}$
6. $\frac{11}{12}$
7. $1\frac{1}{12}$
8. $1\frac{5}{12}$
9. $\frac{1}{3}$
10. $\frac{2}{3}$

### No. 276

(*Annex 0 to Answers to No. 193*)

### No. 277

1. $\frac{14}{16}$
2. $\frac{15}{16}$
3. $\frac{7}{16}$
4. $\frac{7}{16}$
5. $\frac{7}{16}$
6. $\frac{7}{16}$
7. $\frac{7}{16}$
8. $\frac{11}{16}$
9. $\frac{13}{16}$
10. $\frac{15}{16}$

### No. 278

1. 152
2. 263
3. 374
4. 485
5. 596
6. 647
7. 758

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8. 869
9. 973
10. 184
11. 295
12. 346
13. 437
14. 568
15. 679
16. 784
17. 895
18. 946
19. 157
20. 268

### No. 279

1. $\frac{5}{8}$
2. $1\frac{1}{8}$
3. $\frac{5}{8}$
4. $1\frac{1}{8}$
5. $1\frac{1}{8}$
6. $1\frac{3}{8}$
7. $\frac{7}{12}$
8. $\frac{13}{24}$
9. $\frac{17}{24}$
10. $1\frac{7}{24}$

### No. 280

(*Annex 0 to Answers to No. 200*)

### No. 281

1. $\frac{1}{2}$
2. $\frac{5}{8}$
3. $\frac{7}{12}$
4. $\frac{7}{12}$
5. $\frac{7}{12}$
6. $\frac{11}{12}$
7. $\frac{7}{12}$
8. $\frac{7}{12}$
9. $\frac{7}{12}$
10. $\frac{11}{12}$

### No. 282

1. 2r86
2. 2r129
3. 2r108
4. 2r347
5. 2r456
6. 2r589

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7. 2r312
8. 2r102
9. 2r208
10. 2r117
11. 3r13
12. 3r50
13. 3r105
14. 3r182
15. 3r285
16. 4r126
17. 4r200
18. 4r252
19. 4r282
20. 4r280

### No. 283

1. $\frac{11}{24}$
2. $\frac{19}{24}$
3. $\frac{23}{24}$
4. $1\frac{7}{24}$
5. $1\frac{11}{24}$
6. $1\frac{17}{24}$
7. $1\frac{5}{24}$
8. $1\frac{11}{24}$
9. $\frac{21}{24}$
10. $1\frac{7}{24}$

### No. 284

1. 1066
2. 1377
3. 1708
4. 2059
5. 2511
6. 2912
7. 1023
8. 1394
9. 1326
10. 1647
11. 1988
12. 2349
13. 2821
14. 992
15. 1353
16. 1734
17. 1586
18. 1917
19. 2268
20. 2639

### No. 285

1. $\frac{7}{12}$
2. $\frac{5}{12}$
3. $\frac{7}{12}$

4. 1⅛
5. 1⅛
6. ⅝
7. 1 7/12
8. 1¼
9. ½
10. ⅔

**No. 286**

1. 2r1
2. 2r29
3. 2r376
4. 2r551
5. 2r374
6. 3r378
7. 3r518
8. 3r680
9. 3r864
10. 3r17
11. 4r266
12. 4r225
13. 4r172
14. 4r93
15. 4r162
16. 5r90
17. 5r130
18. 5r148
19. 5r144
20. 5r119

**No. 287**

1. 1 11/12
2. 1 11/12
3. 8/15
4. 5/7
5. 9/10
6. 1 7/10
7. ½
8. 7/10
9. 1 7/10
10. 1 3/10

**No. 288**

1. 1470
2. 1872
3. 2294
4. 2736
5. 3198
6. 3772
7. 1344

8. 1806
9. 1820
10. 2232
11. 2664
12. 3116
13. 3588
14. 1312
15. 1764
16. 2236
17. 2108
18. 2520
19. 2952
20. 3404

**No. 289**

1. ½
2. ⅝
3. 9/10
4. 1 3/12
5. ¾
6. ⅝
7. ½
8. ½
9. ⅝
10. ⅝

**No. 290**

1. 2r37
2. 2r771
3. 2r150
4. 2r85
5. 2r99
6. 3r46
7. 3r102
8. 3r170
9. 3r280
10. 3r402
11. 4r192
12. 4r235
13. 4r276
14. 4r285
15. 4r272
16. 5r67
17. 5r693
18. 5r564
19. 5r632
20. 5r97

**No. 291**

1. 7/10
2. 8/10

3. 1 4/10
4. 1½
5. 9/10
6. 1 1/10
7. 1½
8. 1 1/10
9. 7/10
10. 9/10

**No. 292**

1. 1892
2. 2385
3. 2898
4. 3431
5. 3984
6. 4557
7. 1683
8. 2236
9. 2332
10. 2835
11. 3358
12. 3901
13. 4464
14. 1617
15. 2193
16. 2756
17. 2772
18. 3510
19. 3818
20. 4371

**No. 293**

1. 6/8
2. 5/8
3. 5/8
4. 4/8
5. 7/12
6. 6/12
7. 7/12
8. 11/12
9. 7/12
10. 5/12

**No. 294**

1. 3r51
2. 3r69
3. 3r95
4. 3r32
5. 3r54
6. 4r226
7. 4r85
8. 4r864

9. 4r119
10. 4r208
11. 5r146
12. 5r288
13. 5r321
14. 5r465
15. 5r108
16. 6r125
17. 6r200
18. 6r77
19. 6r111
20. 6r310

**No. 295**

1. 1 1/10
2. 1 8/10
3. ⅝
4. ⅘
5. 1½
6. 1⅔
7. 7/20
8. 11/15
9. 11/15
10. 1 1/20

**No. 296**

1. 2332
2. 2916
3. 3520
4. 4144
5. 4788
6. 5452
7. 2006
8. 2684
9. 2862
10. 3456
11. 4070
12. 4704
13. 1972
14. 2596
15. 3599
16. 3392
17. 3996
18. 4620
20. 5264

**No. 297**

1. 7/11
2. 11/12
3. 1/12
4. 1/12

5. $\frac{7}{12}$
6. $\frac{11}{12}$
7. $\frac{9}{12}$
8. $\frac{9}{12}$
9. $\frac{7}{12}$
10. $\frac{11}{12}$

## No. 298

1. 5r219
2. 5r642
3. 5r312
4. 5r97
5. 5r106
6. 6r310
7. 6r150
8. 6r100
9. 6r609
10. 6r115
11. 7r65
12. 7r135
13. 7r235
14. 7r185
15. 7r64
16. 8r72
17. 8r125
18. 8r180
19. 8r360
20. 8r421

## No. 299

1. $\frac{7}{20}$
2. $\frac{11}{20}$
3. $\frac{18}{20}$
4. $1\frac{2}{20}$
5. $\frac{13}{20}$
6. $1\frac{3}{20}$
7. $1\frac{7}{20}$
8. $1\frac{11}{20}$
9. $1\frac{7}{20}$
10. $1\frac{7}{20}$

## No. 300

1. 2790
2. 3465
3. 4160
4. 4875
5. 5610
6. 6365
7. 2380
8. 3105

9. 3410
10. 4095
11. 4800
12. 5525
13. 6270
14. 2345
15. 3060
16. 3795
17. 4030
18. 4725
19. 5440
20. 6175

## No. 301

1. $\frac{7}{12}$
2. $\frac{5}{12}$
3. $\frac{9}{12}$
4. $\frac{11}{12}$
5. $\frac{7}{12}$
6. $\frac{5}{12}$
7. $\frac{7}{12}$
8. $\frac{11}{12}$
9. $\frac{5}{12}$
10. $\frac{7}{12}$

## No. 302

1. 6r10
2. 6r29
3. 6r38
4. 6r165
5. 6r651
6. 7r501
7. 7r307
8. 7r799
9. 7r646
10. 7r20
11. 8r189
12. 8r612
13. 8r325
14. 8r486
15. 8r17
16. 9r125
17. 9r135
18. 9r74
19. 9r85
20. 9r59

## No. 303

1. $1\frac{7}{20}$
2. $1\frac{13}{20}$
3. $\frac{13}{20}$
4. $\frac{11}{20}$

5. $\frac{11}{20}$
6. $\frac{17}{20}$
7. $\frac{9}{20}$
8. $\frac{17}{20}$
9. $\frac{13}{20}$
10. $1\frac{7}{20}$

## No. 304

1. 3266
2. 4032
3. 4818
4. 5624
5. 6450
6. 7296
7. 2772
8. 3588
9. 3976
10. 4752
11. 5548
12. 6364
13. 7200
14. 2736
15. 3542
16. 4368
17. 4686
18. 5472
19. 6278
20. 7104

## No. 305

1. $\frac{7}{10}$
2. $\frac{11}{10}$
3. $\frac{7}{10}$
4. $\frac{9}{10}$
5. $\frac{7}{10}$
6. $\frac{7}{10}$
7. $\frac{7}{10}$
8. $\frac{8}{10}$
9. $\frac{7}{10}$
10. $\frac{7}{10}$

## No. 306

1. 6r706
2. 6r95
3. 6r37
4. 6r38
5. 6r40
6. 7r18
7. 7r118
8. 7r211
9. 7r346
10. 7r252
11. 8r28
12. 8r39

13. 8r404
14. 8r355
15. 8r626
16. 9r64
17. 9r301
18. 9r400
19. 9r500
20. 9r65

## No. 307

1. $\frac{13}{20}$
2. $\frac{11}{20}$
3. $\frac{16}{20}$
4. $1\frac{7}{20}$
5. $\frac{18}{20}$
6. $\frac{17}{20}$
7. $1\frac{7}{20}$
8. $1\frac{13}{20}$
9. $\frac{13}{20}$
10. $1\frac{7}{20}$

## No. 308

1. 3713
2. 4617
3. 5494
4. 6391
5. 7308
6. 8245
7. 3182
8. 4089
9. 4503
10. 5427
11. 6314
12. 7221
13. 8148
14. 3145
15. 4042
16. 4959
17. 5293
18. 6237
19. 7134
20. 8051

## No. 309

1. $\frac{7}{10}$
2. $\frac{9}{10}$
3. $\frac{7}{10}$
4. $\frac{9}{10}$
5. $\frac{7}{10}$
6. $\frac{8}{10}$
7. $\frac{7}{10}$
8. $\frac{9}{10}$

9. $\frac{1}{2}$
10. $\frac{2}{3}$

**No. 310**

1. 7r129
2. 7r642
3. 7r711
4. 7r32
5. 7r232
6. 8r77
7. 8r444
8. 8r312
9. 8r147
10. 8r25
11. 9r27
12. 9r297
13. 9r358
14. 9r555
15. 9r609
16. 9r775
17. 9r862
18. 9r927
19. 9r150
20. 9r215

**No. 311**

1. $1\frac{2}{10}$
2. $1\frac{17}{20}$
3. $\frac{21}{40}$
4. $\frac{27}{40}$
5. $1\frac{1}{8}$
6. $1\frac{11}{40}$
7. $1\frac{5}{40}$
8. $1\frac{11}{40}$
9. $1\frac{11}{40}$
10. $1\frac{17}{40}$

**No. 312**

1. 4224
2. 5162
3. 6188
4. 7176
5. 8184
6. 9212
7. 3610
8. 4608
9. 5104
10. 6052
11. 7098
12. 8096
13. 9114
14. 3572

15. 4560
16. 5568
17. 5984
18. 6942
19. 8008
20. 9016

**No. 313**

1. $\frac{3}{8}$
2. $\frac{1}{4}$
3. $\frac{7}{10}$
4. $\frac{7}{10}$
5. $\frac{7}{10}$
6. $\frac{7}{10}$
7. $\frac{1}{2}$
8. $\frac{1}{2}$
9. $\frac{2}{3}$
10. $\frac{2}{3}$

**No. 314**

1. $\frac{33}{40}$
2. $1\frac{7}{40}$
3. $1\frac{21}{40}$
4. $1\frac{11}{40}$
5. $\frac{7}{10}$
6. $\frac{11}{40}$
7. $\frac{11}{40}$
8. $1\frac{8}{40}$
9. $\frac{19}{40}$
10. $\frac{11}{40}$

**No. 315**

1. 4655
2. 5664
3. 6693
4. 7742
5. 8811
6. 9405
7. 3744
8. 4753
9. 5782
10. 6831
11. 7505
12. 8544
13. 9603
14. 3822
15. 4851
16. 5605
17. 6624
18. 7663
19. 8722
20. 9801

**No. 316**

1. $\frac{1}{10}$
2. $\frac{3}{10}$
3. $\frac{7}{10}$
4. $\frac{7}{10}$
5. $\frac{1}{2}$
6. $\frac{1}{2}$
7. $\frac{3}{5}$
8. $\frac{3}{5}$
9. $\frac{7}{10}$
10. $\frac{3}{10}$

**No. 317**

1. $1\frac{1}{10}$
2. $1\frac{7}{10}$
3. $1\frac{7}{10}$
4. $1\frac{7}{10}$
5. $1\frac{4}{10}$
6. $1\frac{7}{10}$
7. $\frac{8}{10}$
8. $\frac{9}{10}$
9. $1\frac{1}{10}$
10. $1\frac{17}{20}$

**No. 318**

1. $\frac{7}{10}$
2. $\frac{7}{10}$
3. $\frac{1}{2}$
4. $\frac{2}{5}$
5. $\frac{1}{2}$
6. $\frac{4}{5}$
7. $\frac{7}{10}$
8. $\frac{8}{10}$
9. $\frac{7}{10}$
10. $\frac{3}{10}$

**No. 319**

1. 41
2. 51
3. 61
4. 71
5. 81
6. 91
7. 31
8. 41
9. 51
10. 61
11. 71
12. 81
13. 91

14. 31
15. 41
16. 51
17. 61
18. 71
19. 81
20. 91

**No. 320**

1. $1\frac{1}{10}$
2. $\frac{17}{20}$
3. $\frac{23}{40}$
4. $\frac{33}{40}$
5. $\frac{4}{5}$
6. $\frac{7}{16}$
7. $1\frac{13}{16}$
8. $1\frac{1}{16}$
9. $1\frac{1}{20}$
10. $1\frac{7}{20}$

**No. 321**

1. $\frac{1}{2}$
2. $\frac{3}{4}$
3. $\frac{3}{4}$
4. $\frac{3}{4}$
5. $\frac{7}{10}$
6. $\frac{7}{10}$
7. $\frac{7}{10}$
8. $\frac{7}{10}$
9. $\frac{1}{2}$
10. $\frac{2}{3}$

**No. 322**

1. 42
2. 52
3. 62
4. 72
5. 82
6. 92
7. 32
8. 42
9. 52
10. 62
11. 72
12. 82
13. 92
14. 32
15. 42
16. 52
17. 62
18. 72
19. 82

20. 92

**No. 323**

1. $1\frac{11}{13}$
2. $1\frac{11}{13}$
3. $1\frac{1}{3}$
4. $1\frac{9}{10}$
5. $1\frac{7}{10}$
6. $1\frac{11}{13}$

**No. 324**

1. $\frac{3}{8}$
2. $\frac{1}{4}$
3. $\frac{7}{10}$
4. $\frac{7}{10}$
5. $\frac{7}{10}$
6. $\frac{8}{10}$
7. $\frac{1}{2}$
8. $\frac{1}{2}$
9. $\frac{1}{2}$
10. $\frac{1}{4}$

**No. 325**

1. 43
2. 53
3. 63
4. 73
5. 83
6. 93
7. 33
8. 43
9. 53
10. 63
11. 73
12. 83
13. 93
14. 33
15. 43
16. 53
17. 63
18. 73
19. 83
20. 93

**No. 327**

1. $\frac{7}{10}$
2. $\frac{8}{10}$
3. $\frac{7}{10}$
4. $\frac{7}{10}$
5. $\frac{3}{4}$
6. $\frac{3}{8}$
7. $\frac{5}{8}$
8. $\frac{5}{8}$
9. $\frac{7}{10}$
10. $\frac{7}{10}$

**No. 328**

1. 44
2. 54
3. 64
4. 74
5. 84
6. 94
7. 34
8. 44
9. 54
10. 64
11. 74
12. 84
13. 94
14. 34
15. 44
16. 54
17. 64
18. 74
19. 84
20. 94

**No. 330**

1. $\frac{7}{10}$
2. $\frac{9}{10}$
3. $\frac{1}{2}$
4. $\frac{1}{2}$
5. $\frac{3}{8}$
6. $\frac{1}{4}$
7. $\frac{7}{10}$
8. $\frac{3}{10}$
9. $\frac{7}{10}$
10. $\frac{7}{10}$

**No. 331**

1. 45
2. 55
3. 65
4. 75
5. 85
6. 95
7. 35
8. 45
9. 55
10. 65
11. 75
12. 85
13. 95
14. 35
15. 45
16. 55
17. 65
18. 75
19. 85
20. 95

**No. 332**

1. 46
2. 56
3. 66
4. 76
5. 86
6. 96
7. 36
8. 46
9. 56
10. 66
11. 76
12. 86
13. 96
14. 36
15. 46
16. 56
17. 66
18. 76
19. 86
20. 96

**No. 333**

1. $\frac{1}{2}$
2. $\frac{3}{4}$
3. $\frac{5}{8}$
4. $\frac{3}{4}$
5. $\frac{7}{10}$
6. $\frac{7}{10}$
7. $\frac{7}{10}$
8. $\frac{9}{10}$
9. $\frac{1}{2}$
10. $\frac{1}{2}$

**No. 334**

1. 47
2. 57
3. 67
4. 77
5. 87
6. 97
7. 37
8. 47
9. 57
10. 67
11. 77
12. 87
13. 97
14. 37
15. 47
16. 57
17. 67
18. 77
19. 87
20. 97

**No. 335**

1. $\frac{3}{8}$
2. $\frac{1}{4}$
3. $\frac{7}{10}$
4. $\frac{7}{10}$
5. $\frac{7}{10}$
6. $\frac{7}{10}$

**No. 336**

1. 48
2. 58
3. 68
4. 78
5. 88
6. 98
7. 38
8. 48
9. 58
10. 68
11. 78
12. 88
13. 98
14. 38
15. 48
16. 58
17. 68
18. 78
19. 88
20. 98

**No. 337**

1. 49
2. 59
3. 69
4. 79
5. 89
6. 99
7. 39
8. 49
9. 59
10. 69

11. 79
12. 89
13. 99
14. 39
15. 49
16. 59
17. 69
18. 79
19. 89
20. 99

### No. 338

1. .12½
2. .37½
3. .62½
4. .87½
5. .33⅓
6. .66⅔
7. .16⅔
8. .83⅓
9. .20
10. .40
11. .60
12. .80

### No. 339

1. 2886
2. 5994
3. 9268
4. 12818
5. 17081
6. 19584
7. 23793
8. 28288
9. 24466
10. 4104

### No. 340

1. .06¼
2. .18¾
3. .31¼
4. .43¾
5. .56¼
6. .68¾
7. .81¼
8. .93¾
9. .08⅓
10. .41⅔
11. .58⅓
12. .91⅔
13. .03⅛
14. .04⅙

### No. 341

1. 4235
2. 8352
3. 12691
4. 17138
5. 21918
6. 25543
7. 30702
8. 36206
9. 33355
10. 5796

### No. 342

1. $17887
2. $9818
3. 9865
4. 25775
5. 39540
6. 23332
7. 17313
8. 31383
9. $14822.40
10. 243062

### No. 343

1. 5764
2. 10890
3. 16238
4. 21808
5. 27408
6. 30968
7. 37893
8. 44408
9. 42284
10. 7740

### No. 344

1. .0625
2. .1875
3. .3125
4. .4375
5. .5625
6. .6875
7. .8125
8. .9375
9. .0833⅓
10. .4166⅔
11. .5833⅓
12. .9166⅔
13. .0312½
14. .0416⅔

### No. 345

1. 7473
2. 13608
3. 19965
4. 26544
5. 33345
6. 37178
7. 44368
8. 52643
9. 51622
10. 9990

### No. 346

1. $99.84
2. 96256
3. $117.76
4. 98304
5. 1728
6. $675.84
7. $8120.60
8. $30402.55

### No. 347

1. 9362
2. 16506
3. 23872
4. 31460
5. 39270
6. 43952
7. 51748
8. 60168
9. 60946
10. 12222

### No. 348

1. .03125
2. .09375
3. .15625
4. .21875
5. .28125
6. .34375
7. .40625
8. .46875
9. .53125
10. .59375
11. .65625
12. .71875
13. .78125
14. .84375
15. .90625
16. .96875
17. .04167

18. .20833
19. .29167
20. .45833
21. .54167
22. .70833
23. .79167
24. .95833

### No. 349

1. 10011
2. 18144
3. 26499
4. 35076
5. 43875
6. 52896
7. 57519
8. 66378
9. 68302
10. 12456

### No. 350

1. $424575
2. $84770
3. $733779.50
4. $26863.20
5. $830062.74
6. $526.32
7. $981088
8. $9603
9. $1007010

### No. 351

1. 10349
2. 19602
3. 28946
4. 38512
5. 48300
6. 58310
7. 68542
8. 72906
9. 74339
10. 12312

### No. 353

1. 12408
2. 22428
3. 33033
4. 43608
5. 54405
6. 65424

7. 70965
8. 82368
9. 85272
10. 15219

### No. 354

1. $525
2. $756
3. $384
4. $810
5. $5400
6. $900
7. $13000
8. $14700
9. $7200
10. $1600
11. $630
12. $12600
13. $1200
14. $1200
15. $1200

### No. 355

1. 14440
2. 25248
3. 36278
4. 47530
5. 59004
6. 61465
7. 72768
8. 84293
9. 95354
10. 19206

### No. 357

1. 11211
2. 24642
3. 40051
4. 57902
5. 77691
6. 92412
7. 116081
8. 142272
9. 170321
10. 29032

### No. 358

1. $247715.70
2. $243540
3. $60226335
4. $1087638.75

5. $5209451.52
6. $131602.24
7. $40102686.72
8. $8710669

### No. 359

1. 24442
2. 49184
3. 76146
4. 104632
5. 136004
6. 156996
7. 191522
8. 229024
9. 268746
10. 47012

### No. 361

1. 39693
2. 75746
3. 114019
4. 154512
5. 195853
6. 223096
7. 269709
8. 318542
9. 368063
10. 67596

### No. 362

1. 138138
2. 115596
3. 74556
4. 186960
5. 89301
6. 235872
7. 119782
8. 73248
9. 193256

### No. 363

1. 56964
2. 104328
3. 153912
4. 205716
5. 259740
6. 291014
7. 348928
8. 409062
9. 471416
10. 91390

### No. 364

1. 210
2. 342
3. 255
4. 240
5. 195
6. 247
7. 272
8. 224
9. 361

### No. 365

1. 76255
2. 134930
3. 195825
4. 258940
5. 324275
6. 364080
7. 429965
8. 501400
9. 575055
10. 115430

### No. 366

1. $56496
2. $799018
3. $5663152
4. $410091.55
5. $453952.95
6. $36033.25
7. $530895.75
8. $1043606.30

### No. 367

1. 85446
2. 155232
3. 227238
4. 301464
5. 377910
6. 456576
7. 497502
8. 575276
9. 659932
10. 120408

### No. 368

1. $139510.50

2. $147804.75
3. $158233.30
4. $131011.65
5. $452339.40
6. $754503.75
7. $151524.65
8. $238939.80

### No. 369

1. 92617
2. 173514
3. 256631
4. 341968
5. 429525
6. 519302
7. 611299
8. 651126
9. 740567
10. 121144

### No. 370

1. 5476
2. 8649
3. 6724
4. 4096
5. 1444
6. 12544
7. 15376
8. 21316
9. 28224
10. 38809
11. 1236544
12. 1471369
13. 1726596
14. 2298256
15. 2954961

### No. 371

1. 113928
2. 206136
3. 300564
4. 397212
5. 496080
6. 597168
7. 648396
8. 753324
9. 860472
10. 153558

### No. 372

1. 7616

2. 12561
3. 15824
4. 22425
5. 40716
6. 42749
7. 421056
8. 224196
9. 198989

No. 373

1. 138168
2. 241697
3. 347446
4. 455415
5. 565604
6. 620473
7. 734502
8. 850751
9. 962297
10. 183816

No. 374

1. 8556
2. 4030
3. 7308
4. 8924
5. 45795
6. 100152
7. 173888
8. 264171
9. 837221

No. 375

1. 2025
2. 3025

3. 4225
4. 5625
5. 7225
6. 9025
7. 13225
8. 18225
9. 24025
10. 30625
11. 38025
12. 99225
13. 112225
14. 126025
15. 140625

No. 376

1. 621
2. 2009
3. 1224
4. 11021
5. 13216
6. 24024
7. 30616
8. 27209
9. 38016

No. 377

1. 275625
2. 390625
3. 680625
4. 1050625
5. 1500625
6. 1755625
7. 2640625
8. 2975625

9. 3330625
10. 3705625

No. 378

1. 4896
2. 6391
3. 8084
4. 12019
5. 16851
6. 22484
7. 25536
8. 32351
9. 36036

No. 379

1. $90\frac{3}{8}$
2. $112\frac{2}{25}$
3. $160\frac{1}{15}$
4. $339\frac{1}{2}$
5. $12\frac{2}{3}$
6. $3681\frac{1}{20}$
7. $1625\frac{3}{33}$
8. $650\frac{8}{35}$
9. $28\frac{1}{8}$
10. $72\frac{11}{14}$
11. $42\frac{13}{24}$
12. $152\frac{8}{51}$

No. 380

1. 276
2. 800
3. $929\frac{1}{4}$
4. 950

5. 2552
6. 5952
7. 1422
8. 2100
9. 3363

No. 381

1. 23.2
2. 45
3. 36
4. 3.5
5. 5.12
6. 13.05
7. 10.18
8. 61.2
9. 77.6

No. 382

1. 2744
2. 19683
3. 35937
4. 97336
5. 205379
6. 238328
7. 274625
8. 357911
9. 389017
10. 592704
11. 636056
12. 681472
13. 857375
14. 912673
15. 970299