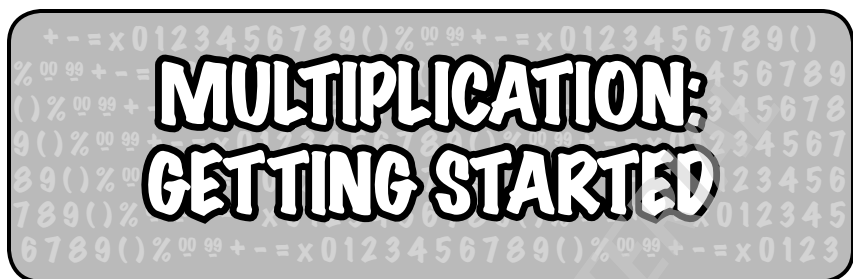


# Chapter 1



How well do you know your multiplication tables? Do you know them up to the 15 or 20 times tables? Do you know how to solve problems like  $14 \times 16$ , or even  $94 \times 97$ , without a calculator? Using the speed mathematics method, you will be able to solve these types of problems in your head. I am going to show you a fun, fast and easy way to master your tables and basic mathematics in minutes. I'm not going to show you how to do your tables the usual way. The other kids can do that.

Using the speed mathematics method, it doesn't matter if you forget one of your tables. Why? Because if you don't know an answer, you can simply do a lightning calculation to get an instant solution. For example, after showing her the speed mathematics methods, I asked eight-year-old Trudy, "What is 14 times 14?" Immediately she replied, "196."

I asked, "You knew that?"

She said, “No, I worked it out while I was saying it.”

Would you like to be able to do this? It may take five or ten minutes of practice before you are fast enough to beat your friends even when they are using a calculator.

## **WHAT IS MULTIPLICATION?**

How would you add the following numbers?

$$6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 = ?$$

You could keep adding sixes until you get the answer. This takes time and, because there are so many numbers to add, it is easy to make a mistake.

The easy method is to count how many sixes there are to add together, and then use multiplication to get the answer.

How many sixes are there? Count them.

There are eight.

You have to find out what eight sixes added together would make. People often memorize the answers or use a chart, but you are going to learn a very easy method to calculate the answer.

As multiplication, the problem is written like this:

$$8 \times 6 =$$

This means there are eight sixes to be added. This is easier to write than  $6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 =$ .

The solution to this problem is:

$$8 \times 6 = 48$$

## THE SPEED MATHEMATICS METHOD

I am now going to show you the speed mathematics way of working this out. The first step is to draw circles under each of the numbers. The problem now looks like this:

$$\begin{array}{ccc} 8 & \times & 6 \\ \bigcirc & & \bigcirc \end{array} =$$

We now look at each number and ask, how many more do we need to make 10?

We start with the 8. If we have 8, how many more do we need to make 10?

The answer is 2. Eight plus 2 equals 10. We write 2 in the circle below the 8. Our equation now looks like this:

$$\begin{array}{ccc} 8 & \times & 6 \\ \bigcirc 2 & & \bigcirc \end{array} =$$

We now go to the 6. How many more to make 10? The answer is 4. We write 4 in the circle below the 6.

This is how the problem looks now:

$$\begin{array}{ccc} 8 & \times & 6 \\ \bigcirc 2 & & \bigcirc 4 \end{array} =$$

We now take away, or subtract, crossways or diagonally. We either take 2 from 6 or 4 from 8. It doesn't matter which way we subtract—the answer will be the same, so choose the calculation that looks easier. Two from 6 is 4, or 4 from 8 is 4. Either way the answer is 4. You only take away one time. Write 4 after the equals sign.

$$\begin{array}{ccc} 8 & \times & 6 \\ \bigcirc 2 & & \bigcirc 4 \end{array} = 4$$

For the last part of the answer, you “times,” or multiply, the numbers in the circles. What is 2 times 4? Two times 4 means two fours added together. Two fours are 8. Write the 8 as the last part of the answer. The answer is 48.

$$\begin{array}{ccccccc} 8 & \times & 6 & = & 48 \\ \textcircled{2} & \text{---} & \textcircled{4} & & \end{array}$$

Easy, wasn't it? This is much easier than repeating your multiplication tables every day until you remember them. And this way, it doesn't matter if you forget the answer, because you can simply work it out again.

Do you want to try another one? Let's try 7 times 8. We write the problem and draw circles below the numbers as before:

$$\begin{array}{ccccccc} 7 & \times & 8 & = \\ \textcircled{\phantom{0}} & & \textcircled{\phantom{0}} & & \end{array}$$

How many more do we need to make 10? With the first number, 7, we need 3, so we write 3 in the circle below the 7. Now go to the 8. How many more to make 10? The answer is 2, so we write 2 in the circle below the 8.

Our problem now looks like this:

$$\begin{array}{ccccccc} 7 & \times & 8 & = \\ \textcircled{3} & & \textcircled{2} & & \end{array}$$

Now take away crossways. Either take 3 from 8 or 2 from 7. Whichever way we do it, we get the same answer. Seven minus 2 is 5 or 8 minus 3 is 5. Five is our answer either way. Five is the first digit of the answer. You only do this calculation once, so choose the way that looks easier.

The calculation now looks like this:

$$\begin{array}{ccccc} 7 & \times & 8 & = & 5 \\ \textcircled{3} & & \textcircled{2} & & \end{array}$$

For the final digit of the answer we multiply the numbers in the circles: 3 times 2 (or 2 times 3) is 6. Write the 6 as the second digit of the answer.

Here is the finished calculation:

$$\begin{array}{ccccc} 7 & \times & 8 & = & 56 \\ \textcircled{3} & & \textcircled{2} & & \end{array}$$

Seven eights are 56.

How would you solve this problem in your head? Take both numbers from 10 to get 3 and 2 in the circles. Take away crossways. Seven minus 2 is 5. We don't say five, we say, "Fifty . . ." Then multiply the numbers in the circles. Three times 2 is 6. We would say, "Fifty . . . six."

With a little practice you will be able to give an instant answer. And, after calculating 7 times 8 a dozen or so times, you will find you remember the answer, so you are learning your tables as you go.

### Test yourself

Here are some problems to try by yourself. Do all of the problems, even if you know your tables well. This is the basic strategy we will use for almost all of our multiplication.

- |                   |                   |
|-------------------|-------------------|
| a) $9 \times 9 =$ | e) $8 \times 9 =$ |
| b) $8 \times 8 =$ | f) $9 \times 6 =$ |
| c) $7 \times 7 =$ | g) $5 \times 9 =$ |
| d) $7 \times 9 =$ | h) $8 \times 7 =$ |

How did you do? The answers are:

- |       |       |       |       |
|-------|-------|-------|-------|
| a) 81 | b) 64 | c) 49 | d) 63 |
| e) 72 | f) 54 | g) 45 | h) 56 |

Isn't this the easiest way to learn your tables?

Now, cover your answers and do them again in your head. Let's look at  $9 \times 9$  as an example. To calculate  $9 \times 9$ , you have 1 below 10 each time. Nine minus 1 is 8. You would say, "Eighty . . ." Then you multiply 1 times 1 to get the second half of the answer, 1. You would say, "Eighty . . . one."

If you don't know your tables well, it doesn't matter. You can calculate the answers until you do know them, and no one will ever know.

## Multiplying numbers just below 100

Does this method work for multiplying larger numbers? It certainly does. Let's try it for  $96 \times 97$ .

$$96 \times 97 =$$

What do we take these numbers up to? How many more to make what? How many to make 100, so we write 4 below 96 and 3 below 97.

$$\begin{array}{ccccc} 96 & \times & 97 & = & \\ \textcircled{4} & & \textcircled{3} & & \end{array}$$

What do we do now? We take away crossways: 96 minus 3 or 97 minus 4 equals 93. Write that down as the first part of the answer. What do we do next? Multiply the numbers in the circles: 4 times 3 equals 12. Write this down for the last part of the answer. The full answer is 9,312.

$$\begin{array}{ccccc} 96 & \times & 97 & = & 9,312 \\ \textcircled{4} & & \textcircled{3} & & \end{array}$$

Which method do you think is easier, this method or the one you learned in school? I definitely think this method; don't you agree?

Let's try another. Let's do  $98 \times 95$ .

$$98 \times 95 =$$

First we draw the circles.

$$98 \times 95 =$$



How many more do we need to make 100? With 98 we need 2 more and with 95 we need 5. Write 2 and 5 in the circles.

$$98 \times 95 =$$



Now take away crossways. You can do either 98 minus 5 or 95 minus 2.

$$98 - 5 = 93$$

or

$$95 - 2 = 93$$

The first part of the answer is 93. We write 93 after the equals sign.

$$98 \times 95 = \mathbf{93}$$



Now multiply the numbers in the circles.

$$2 \times 5 = 10$$

Write 10 after the 93 to get an answer of 9,310.

$$98 \times 95 = \mathbf{9,310}$$



Easy. With a couple of minutes' practice you should be able to do these in your head. Let's try one now.

$$96 \times 96 =$$

In your head, draw circles below the numbers.

What goes in these imaginary circles? How many to make 100? Four and 4. Picture the equation inside your head. Mentally write 4 and 4 in the circles.

Now take away crossways. Either way you are taking 4 from 96. The result is 92. You would say, "Nine thousand, two hundred . . ." This is the first part of the answer.

Now multiply the numbers in the circles: 4 times 4 equals 16. Now you can complete the answer: 9,216. You would say, "Nine thousand, two hundred . . . and sixteen."

This will become very easy with practice.

Try it out on your friends. Offer to race them and let them use a calculator. Even if you aren't fast enough to beat them, you will still earn a reputation for being a brain.

## **Beating the calculator**

To beat your friends when they are using a calculator, you only have to start calling the answer before they finish pushing the buttons. For instance, if you were calculating 96 times 96, you would ask yourself how many to make 100, which is 4, and then take 4 from 96 to get 92. You can then start saying, "Nine thousand, two hundred . . ." While you are saying the first part of the answer you can multiply 4 times 4 in your head, so you can continue without a pause, ". . . and sixteen."

You have suddenly become a math genius!



**Test yourself**

Here are some more problems for you to do by yourself.

a)  $96 \times 96 =$       e)  $98 \times 94 =$

b)  $97 \times 95 =$       f)  $97 \times 94 =$

c)  $95 \times 95 =$       g)  $98 \times 92 =$

d)  $98 \times 95 =$       h)  $97 \times 93 =$

The answers are:

a) 9,216      b) 9,215      c) 9,025      d) 9,310

e) 9,212      f) 9,118      g) 9,016      h) 9,021

Did you get them all right? If you made a mistake, go back and find where you went wrong and try again. Because the method is so different, it is not uncommon to make mistakes at first.

Are you impressed?

Now, do the last exercise again, but this time, do all of the calculations in your head. You will find it much easier than you imagine. You need to do at least three or four calculations in your head before it really becomes easy. So, try it a few times before you give up and say it is too difficult.

I showed this method to a boy in first grade and he went home and showed his dad what he could do. He multiplied 96 times 98 in his head. His dad had to get his calculator out to check if he was right!

Keep reading, and in the next chapters you will learn how to use the speed math method to multiply any numbers.