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Multiplying by 11 shortcut

This technique teaches you how to multiply any number by eleven, easily and quickly. We will take a few examples and from these you will see the pattern used and also how easy they are to do.

So, to begin let's try 12 time 11.

First things first you will ignore the 11 for the moment and concentrate on the 12.

Split the twelve apart, like so:

$$1 \longleftrightarrow 2$$

Add these two digits together 1 + 2 = 3

$$1+2 = 3$$

Place the answer, 3 in between the 12 to give 132

11 X 12 = 132

Let's try another:

48 X 11

again, leave the 11 alone for a moment and work with the 48

$$4 + 8 = 12$$

So now we have to put the 12 in between the 4 and 8 but **don't** do this:
4128 as that is **wrong**...

First, do this: Place the 2 from the twelve in between the 4 and 8 giving 428.

Now we need to input the 1 from the twelve into our answer also, and to do this just add the one from 12 to the 4 of 428 giving 528!

Ok, one more

74 X 11

$$7+4 = 11$$

7 (put the 1 from the right of 11 in) and 4
then add the 1 from the left of 11 to the 7

74 X 11 = 814

This is a really simple method and will save you so much time with your 11 times tables.

Is it divisible by four?

This little math trick will show you whether a number is divisible by four or not.

So, this is how it works.

Let's look at 1234

Does 4 divide evenly into 1234?

For 4 to divide into any number we have to make sure that the last number is even.

If it is an odd number, there is no way it will go in evenly.
So, for example, 4 will not go evenly into 1233 or 1235

now we know that for 4 to divide evenly into any number the number has to end with an even number.

Back to the question...

4 into 1234, the solution:

Take the last number and add it to 2 times the second last number. If 4 goes evenly into this number then you know that 4 will go evenly into the whole number.
So
4 + (2 X 3) = 10
4 goes into 10 two times with a remainder of 2 so it does not go in evenly.

Therefore 4 into 1234 does not go in completely.

Let's try 4 into 3436546

So, from our example, take the last number, 6 and add it to two times the penultimate number, 4

6 + (2 X 4) = 14
4 goes into 14 three times with two remainder.
So it doesn't go in evenly.

Let's try one more.

4 into 212334436

6 + (2 X 3) = 12
4 goes into 12 three times with 0 remainder.

Therefore 4 goes into 234436 evenly.

So what use is this trick to you?
Well if you have learnt the tutorial at Memorymentor.com about telling the day in any year, then you can use it in working out whether the year you are calculating is a leap year or not.

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Multiplying by 12 shortcut

So how does the 12's shortcut work?

Let's take a look.

12 X 7

the first thing is to always multiply the 1 of the twelve by the number we are multiplying by, in this case 7. So 1 X 7 = 7.

Multiply this 7 by 10 giving 70. (Why? We are working with BASES here. Bases are the fundamentals to easy calculations for all multiplication tables. To find out more check out our Vedic Maths ebook at http://www.memorymentor.com/big_brain.htm)

Now multiply the 7 by the 2 of twelve giving 14. Add this to 70 giving 84.

Therefore 7 X 12 = 84

Let's try another:

17 X 12

Remember, multiply the 17 by the 1 in 12 and multiply by 10
(**Just add a zero to the end**):

1 X 17 = 17, multiplied by 10 giving 170.

Multiply 17 by 2 giving 34.

Add 34 to 170 giving 204.

So 17 X 12 = 204

lets go one more

24 X 12

Multiply 24 X 1 = 24. Multiply by 10 giving 240.
Multiply 24 by 2 = 48. Add to 240 giving us 288

24 X 12 = 288 (these are Seriously Simple Sums to do aren't they?!)

Converting Kilos to pounds

In this section you will learn how to convert Kilos to Pounds, and Vice Versa.

Let's start off with looking at converting Kilos to pounds. 86 kilos into pounds:

Step one, multiply the kilos by TWO.
To do this, just double the kilos.

86 x 2 = 172

Step two, divide the answer by ten.
To do this, just put a decimal point one place in from the right.

172 / 10 = 17.2

Step three, add step two's answer to step one's answer.

172 + 17.2 = 189.2

86 Kilos = 189.2 pounds

Let's try:

50 Kilos to pounds:

Step one, multiply the kilos by TWO.
To do this, just double the kilos.

50 x 2 = 100

Step two, divide the answer by ten.
To do this, just put a decimal point one place in from the right.

100 / 10 = 10

Step three, add step two's answer to step one's answer.

100 + 10 = 110

50 Kilos = 110 pounds

Adding Time

Here is a nice simple way to add hours and minutes together:

Let's add 1 hr and 35 minutes and 3 hr 55 minutes together.

What you do is this:
make the 1 hr 35 minutes into one number, which will give us 135 and do the same for the other number, 3 hours 55 minutes, giving us 355

Now you want to add these two numbers together:

135
355
____
490

So we now have a sub total of 490.

What you need to do to this and all sub totals is **add the time constant of 40**.

No matter what the hours and minutes are, just add the 40 time constant to the sub total.

490 + 40 = 530

so we can now see our answer is 5 hrs and 30 minutes!

Temperature Conversions

This is a shortcut to convert Fahrenheit to Celsius and vice versa.

The answer you will get will not be an exact one, but it will give you an idea of the temperature you are looking at.

Fahrenheit to Celsius:

Take 30 away from the Fahrenheit, and then divide the answer by two. This is your answer in Celsius.

Example:
74 Fahrenheit - 30 = 44. Then divide by two, 22 Celsius.

So 74 Fahrenheit = 22 Celsius.

Celsius to Fahrenheit just do the reverse:

Double it, and then add 30.

30 Celsius double it, is 60, then add 30 is 90

30 Celsius = 90 Fahrenheit

Remember, the answer is not exact but it gives you a rough idea.

5 Squared Shortcut

Here is a really quick way to square any number with a 5 on the end.

Let's take 45^2

Ok, so what you have to do is split up the numbers, giving you

4 And 5^2

Forget about the 5^2 for the moment and do this:

Always add 1, adding 1 to the 4, so we get 4 + 1 = 5

Then multiply this answer, 5, by the original first number, 4

5 X 4 = 20

So what you have is 20 and 5^2

Everyone knows 5^2 = 25 right? Well it does. This is what makes it easy.

Put the two answers together and that's the answer!

2025

This works for any number ending in 5^2 but when the numbers get over 100 it tends to get a little trickier with the multiplication.

Give it a try with another number.

Try 85^2, it isn't difficult.

Split the numbers apart:

8 and 5^2

Again, forget about the 5^2

Add 1 to 8

8 + 1 = 9

Multiply 9 by the first number, which was 8

9 X 8 =72

Now, put all the numbers together, 72 and 5^2

5^2 = 25

So the answer is 7225

Try it out in a calculator once you have done it.

Decimals Equivalents of Fractions

With a little practice, it's not hard to recall the decimal equivalents of fractions up to 10/11!

First, there are 3 you should know already:

1/2 = .5
1/3 = .333...
1/4 = .25

Starting with the thirds, of which you already know one:

1/3 = .333...
2/3 = .666...

You also know 2 of the 4ths, as well, so there's only one new one to learn:

1/4 = .25
2/4 = 1/2 = .5
3/4 = .75

Fifths are very easy. Take the numerator (the number on top), double it, and stick a decimal in front of it.

1/5 = .2
2/5 = .4
3/5 = .6
4/5 = .8

There are only two new decimal equivalents to learn with the 6ths:

1/6 = .1666...
2/6 = 1/3 = .333...
3/6 = 1/2 = .5
4/6 = 2/3 = .666...
5/6 = .8333...

What about 7ths? We'll come back to them at the end. They're very unique.

8ths aren't that hard to learn, as they're just smaller steps than 4ths. If you have trouble with any of the 8ths, find the nearest 4th, and add .125 if needed:

1/8 = .125
2/8 = 1/4 = .25
3/8 = .375
4/8 = 1/2 = .5
5/8 = .625
6/8 = 3/4 = .75
7/8 = .875

9ths are almost too easy:

1/9 = .111...
2/9 = .222...
3/9 = .333...
4/9 = .444...
5/9 = .555...
6/9 = .666...
7/9 = .777...
8/9 = .888...

10ths are very easy, as well. Just put a decimal in front of the numerator:

1/10 = .1
2/10 = .2
3/10 = .3
4/10 = .4
5/10 = .5
6/10 = .6
7/10 = .7
8/10 = .8
9/10 = .9

Remember how easy 9ths were? 11th are easy in a similar way, assuming you know your multiples of 9:

1/11 = .090909...
2/11 = .181818...
3/11 = .272727...
4/11 = .363636...
5/11 = .454545...
6/11 = .545454...
7/11 = .636363...
8/11 = .727272...
9/11 = .818181...
10/11 = .909090...

As long as you can remember the pattern for each fraction, it is quite simple to work out

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the decimal place as far as you want or need to go!

Oh, I almost forgot! We haven't done 7ths yet, have we?

One-seventh is an interesting number:

1/7 = .142857142857142857...

For now, just think of one-seventh as: .142857

See if you notice any pattern in the 7ths:

1/7 = .142857...
2/7 = .285714...
3/7 = .428571...
4/7 = .571428...
5/7 = .714285...
6/7 = .857142...

Notice that the 6 digits in the 7ths ALWAYS stay in the same order and the starting digit is the only thing that changes!

If you know your multiples of 14 up to 6, it isn't difficult to work out where to begin the decimal number. Look at this:

For 1/7, think "1 * 14", giving us .14 as the starting point.
For 2/7, think "2 * 14", giving us .28 as the starting point.
For 3/7, think "3 * 14", giving us .42 as the starting point.

For 4/14, 5/14 and 6/14, you'll have to adjust upward by 1:

For 4/7, think "(4 * 14) + 1", giving us .57 as the starting point.
For 5/7, think "(5 * 14) + 1", giving us .71 as the starting point.
For 6/7, think "(6 * 14) + 1", giving us .85 as the starting point.

Practice these, and you'll have the decimal equivalents of everything from 1/2 to 10/11 at your finger tips!

If you want to demonstrate this skill to other people, and you know your multiplication tables up to the hundreds for each number 1-9, then give them a calculator and ask for a 2-digit number (3-digit number, if you're up to it!) to be divided by a 1-digit number.

If they give you 96 divided by 7, for example, you can think, "Hmm... the closest multiple of 7 is 91, which is 13 * 7, with 5 left over. So the answer is 13 and 5/7, or: 13.7142857!"

Converting Kilometres to Miles

This is a useful method for when travelling between imperial and metric countries and need to know what kilometres to miles are.

The formula to convert kilometres to miles is number of (kilometres / 8) X 5

So lets try 80 kilometres into miles

80/8 = 10

multiplied by 5 is 50 miles!

Another example

40 kilometres

40 / 8 = 5

5 X 5= 25 miles

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