

USEFUL MATHS TIPS AND TRICKS

Multiply Up to 20X20 In Your Head

In just FIVE minutes you should learn to quickly multiply up to 20x20 in your head. With this trick, you will be able to multiply any two numbers from 11 to 19 in your head quickly, without the use of a calculator.

I will assume that you know your multiplication table reasonably well up to 10x10.

Try this:

- Take 15 x 13 for an example.
- Always place the larger number of the two on top in your mind.
- Then draw the shape of Africa mentally so it covers the 15 and the 3 from the 13 below. Those covered numbers are all you need.
- First add $15 + 3 = 18$
- Add a zero behind it (multiply by 10) to get 180.
- Multiply the covered lower 3 x the single digit above it the "5" ($3 \times 5 = 15$)
- Add $180 + 15 = 195$.

That is It! wasn't that easy? Practice it on paper first!

The 11 Rule

You likely all know the 10 rule (to multiply by 10, just add a 0 behind the number) but do you know the 11 rule? It is as easy! You should be able to do this one in you head for any two digit number. Practice it on paper first!

To multiply any two digit number by 11:

- For this example we will use 54.
- Separate the two digits in you mind (5__4).
- Notice the hole between them!
- Add the 5 and the 4 together ($5+4=9$)
- Put the resulting 9 in the hole 594. That's it! $11 \times 54=594$

The only thing tricky to remember is that if the result of the addition is greater than 9, you only put the "ones" digit in the hole and carry the "tens" digit from the addition. For example $11 \times 57 \dots 5_7 \dots 5+7=12 \dots$ put the 2 in the hole and add the 1 from the 12 to the 5 in to get 6 for a result of 627 $\dots 11 \times 57 = 627$

Practice it on paper first!

Finger Math: 9X Rule

To multiply by 9, try this:

(1) Spread your two hands out and place them on a desk or table in front of you.

(2) To multiply by 3, fold down the 3rd finger from the left. To multiply by 4, it would be the 4th finger and so on.

(3) the answer is 27 ... READ it from the two fingers on the left of the folded down finger and the 7 fingers on the right of it.

This works for anything up to 9×10 !

Square a 2 Digit Number Ending in 5

For this example we will use 25;

- Take the "tens" part of the number (the 2 and add 1)=3
- Multiply the original "tens" part of the number by the new number (2×3)
- Take the result ($2 \times 3 = 6$) and put 25 behind it. Result the answer 625.

Try a few more;

75 squared = $7 \times 8 = 56$... put 25 behind it is 5625.

55 squared = $5 \times 6 = 30$... put 25 behind it ... is 3025. Another easy one! Practice it on paper first!

Square 2 Digit Number: UP-DOWN Method

Square a 2 Digit Number, for this take 37 for example:

- Look for the nearest 10 boundary
- In this case up 3 from 37 to 40.
- Since you went UP 3 to 40 go DOWN 3 from 37 to 34.
- Now mentally multiply 34×40
- You can do it as, $34 \times 10 = 340$;
- Double it mentally to 680
- Double it again mentally to 1360
- This 1360 is the FIRST interim answer.
- 37 is "3" away from the 10 boundary 40.
- Square this "3" distance from 10 boundary.
- $3 \times 3 = 9$, this is the SECOND interim answer.
- Add the two interim answers to get the final answer.
- Answer: $1360 + 9 = 1369$.

With practice this can easily be done in your head.