

Multiplication Knowledge Organiser

Maths

Mathematical Symbols

*

multiply, times by, groups of, lots of

=

is equal to

Multiplying by 10

When you multiply by 10, the number becomes 10 times bigger.

$$253 \times 10 = 2530$$

We move the digit one place to the left.
2 hundred $\times 10 = 2$ thousand

Th	H	T	O
2	5	3	
2	5	3	0

We place a 0 into the ones column because we now have no ones.

Multiplying by 100 and 1000

$$75 \times 100 = 7500$$

When multiplying by 100, digits move two places to the left.

Th	H	T	O
		7	5
7	5	0	0

$$2.1 \times 1000 = 2100$$

When multiplying by 1000, digits move three places to the left.

Th	H	T	O	.	t
			2	.	1
2	1	0	0	.	

Multiplying by 0

When you multiply a number by 0, the answer is always 0.

$$5 \times 0 = 0$$

$$5 \text{ groups of } 0 = 0$$

Multiplying by 1

When you multiply by 1, the answer remains the same.

$$5 \times 1 = 5$$

$$5 \text{ groups of } 1 = 5$$

Doubling

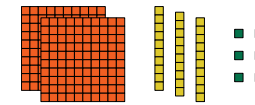
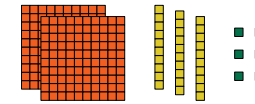
Doubling is the same as multiplying by 2 or adding the same number twice.

double 236

$$236 \times 2$$

$$236 + 236$$

Use apparatus



$$400 + 60 + 12 = 472$$

Bar model

236	236
472	

Partition it

double 236 = 472

$$\text{double } 200 = 400$$

$$\text{double } 30 = 60$$

$$\text{double } 6 = 12$$

Factors

Factors are the numbers multiplied together to get a given number.

Factors of 12

$$3 \times 4 = 12$$

$$2 \times 6 = 12$$

$$1 \times 12 = 12$$

1, 2, 3, 4, 6 and 12 are all factors of 12.

Factors of 36

$$1 \times 36 = 36$$

$$2 \times 18 = 36$$

$$3 \times 12 = 36$$

$$4 \times 9 = 36$$

$$6 \times 6 = 36$$

1, 2, 3, 4, 6, 9, 12, 18 and 36 are all factors of 36.

3 and 12 are a factor pair of 36. This means that 3 and 12 multiply together to make 36.

All whole numbers have 1 and themselves as a factor.

All numbers have different amounts of factors, they don't all have the same amount.

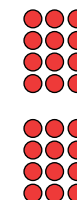
Multiplying together three numbers

When multiplying three numbers, multiply the first two numbers. Then, multiply the answer by the third number.

$$3 \times 4 \times 2 = 24$$

$$3 \times 4 = 12$$

$$12 \times 2 = 24$$



$$3 \times 4 = 12$$

$$12 \times 2 = 24$$

$$3 \times 4 = 12$$

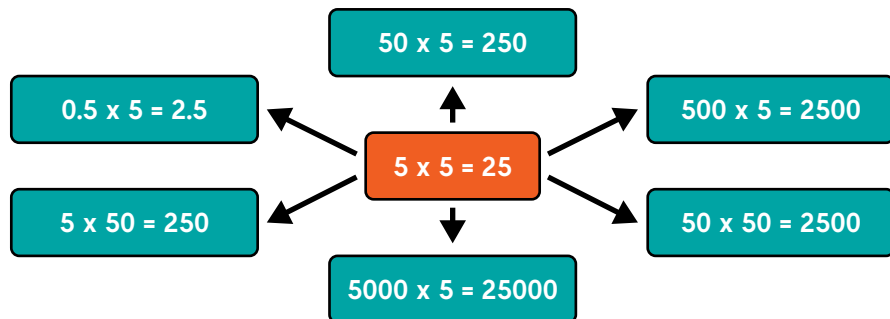
It doesn't matter which order you multiply the three numbers, you will always get the same answer.



Mental Methods

Can I work it out in my head, with apparatus or with jottings?

Related facts



Partition it

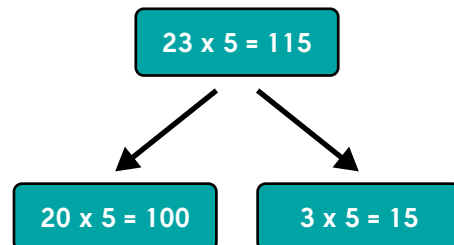
$$264 \times 3 = 792$$

$$200 \times 3 = 600$$

$$60 \times 3 = 180$$

$$4 \times 3 = 12$$

Part-Whole Model



Use apparatus

$$264 \times 3 = 792$$

x	200	60	4
3			

Written Methods

Do I need to use a formal written method?

Long Multiplication Method

Remember

Always start in the right column when you are solving written problems.

H	T	O
	3	4
		5
	2	0
1	5	0
1	7	0

4 x 5

We multiply the ones column first.

4 x 5

30 x 5

Then we multiply the tens column.

30 x 5

Finally we add the two numbers together.

Short Multiplication Method

We multiply the ones column first.

$$4 \times 5 = 20$$

20 is 2 tens and 0 ones.

We put the 0 in the ones column.

We carry the 2 over to the tens column.

Next we multiply 3 tens by 5 which is 15 tens. Now we add on the extra 2 tens so we have 17 tens altogether.

H	T	O
	3	4
		5
	2	0
1	7	0

