

Key Vocabulary:

multiple, product, odd, even, lots of, multiply, divide, commutative, fact families, multiplication, division, inverse, share, equal, partition, commutativity, arrays

The 3, 6 and 9 times-tables

The 3, 6 and 9 times-tables are all linked. The multiples of the 6 times-table are double the multiples of the 3 times-table.

3x1	3x2	3x3	3x4	3x5	3x6	3x7
3	6	9	12	15	18	21
$\times 2 \downarrow$	$\times 2 \downarrow$	$\times 2 \downarrow$	$\times 2 \downarrow$	$\times 2 \downarrow$	$\times 2 \downarrow$	$\times 2 \downarrow$
6	12	18	24	30	36	42
6x1	6x2	6x3	6x4	6x5	6x6	6x7

The multiples of the 9 times-tables are three times the multiples of the 3 times-tables.

3x1	3x2	3x3	3x4	3x5	3x6	3x7
3	6	9	12	15	18	21
$\times 3 \downarrow$	$\times 3 \downarrow$	$\times 3 \downarrow$	$\times 3 \downarrow$	$\times 3 \downarrow$	$\times 3 \downarrow$	$\times 3 \downarrow$
9	18	27	36	45	54	63
9x1	9x2	9x3	9x4	9x5	9x6	9x7

All multiples of 9 are multiples of 3, but not all multiples of 9 are multiples of 6.

To work out if a number is a multiple of 3, you can add the digits together. If the sum of the digits equals a multiple of 3, then the number is also in the 3 times-table.

For example:

93: $9 + 3 = 12$ $1 + 2 = 3$. 3 is in the 3 times-table, so 93 is too.

You can do the same with the 9 times-table.

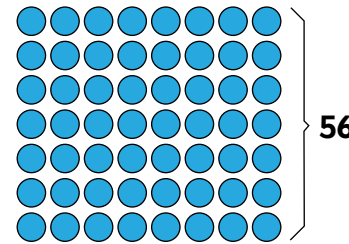
36: $3 + 6 = 9$. 9 is in the 9 times-table, so 36 is too.

Multiplication and Division facts

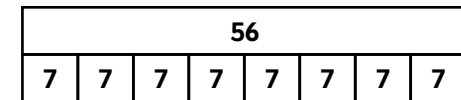
You can work out unknown multiplication and division facts by using known facts about times-tables.

The 7 times-table

For example, to work out 8×7 ,
You could draw an array:



You could use
a bar model:



You could also partition the
calculation into know facts
to make it easier to work out:
For example:

$$8 \times 7 = 56$$

$$5 \times 7 = 35$$

$$3 \times 7 = 21$$

$$35 + 21 = 56$$

Or:

$$8 \times 7 = 56$$

$$7 \times 7 = 49$$

$$49 + 7 = 56$$

The 11 and 12 times-tables

You can use the same strategies
for the 11 and 12 times-tables.
For example:

$$12 \times 11 = 132$$

$$10 \times 11 = 110$$

$$2 \times 11 = 22$$

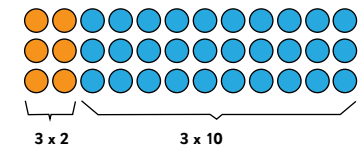
$$110 + 22 = 132$$

Or:

$$3 \times 12 = 36$$

$$3 \times 10 = 30$$

$$3 \times 2 = 6$$



The 11 times-table

For multiplications up
to 11×9 , the digits are
repeated, for example:

$$3 \times 11 = 33$$

$$4 \times 11 = 44$$

$$7 \times 11 = 77$$

The 12 times-table

The 12 times-table is linked to the 3 and 6 times-tables.

The multiples of the 12 times-table is
double the multiples of the 6 times-table
and 4 times the multiples of the 3 times-table.

Multiply by 1 and 0

It's important to remember that when you multiply by 0, the answer will **always** be 0.
For example: I have no apples, so I cannot add any more to either plate so the answer is 0.



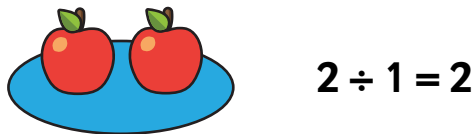
But, if I have 1 apple and I add another apple, I have 2 lots of 1 apple, so I have 2 apples.



Divide a number by 1 and itself

When you divide a number by 1, the number remains the same.

For example: If I have 2 apples and I share them among 1 plate. There will always be 2 apples on the plate.



But, if I have 2 apples and I share them between 2 plates. There will be 1 apple on each plate.

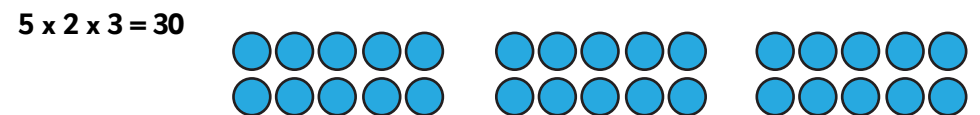
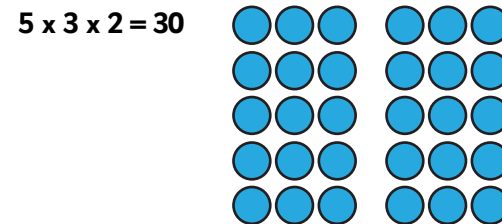
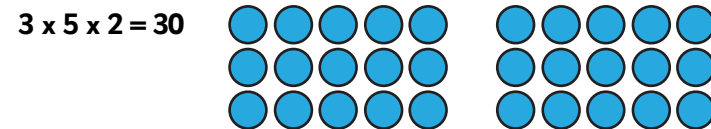
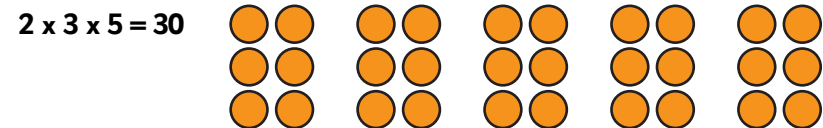


We cannot divide by 0. If I have 2 apples and I try to share them among no plates, I simply cannot share them out.

Subtraction

Multiplication is commutative. This means it does not matter in which order you multiply numbers, the answer will always be the same.

For example:



This is very helpful when it comes to multiplying 3 or more numbers because you can rearrange the calculations to make them easier to work out.

For example: $4 \times 9 \times 3$

Instead of trying to work out 4×9 first, you can rearrange the calculation to work out a calculation you feel more confident with. This also lets you use strategies like partitioning should you need to.

Such as:

$$4 \times 3 = 12 \quad 12 \times 9 = 10 \times 9 + 2 \times 9 \quad 90 + 18 = 108$$