Multiplying Doubles and Digits

Learning Objective:

To use known and derived facts to multiply two numbers, or three numbers together.

Next

$2 \times 12 \times 5$

Multiplication may be done in any order.

We can play around with the numbers in this calculation to make it easier to solve mentally.

Can you find a way of making this calculation easier?

$$2 \times 12 \times 5$$

$$= 12 \times 10$$

We could multiply the 2 and the 5 first.

Multiples of 2 or 10 are probably the easiest multiples to calculate mentally, so it’s helpful to change calculations in this way where possible.

20 × 18

Can you find a way of making this calculation easier?

$$20 \times 18$$

$$= 18 \times 10 \times 2$$

We know that 20 is equal to 10×2, therefore: 20×18 = 18×10×2.

Did you mentally calculate the answer in this way?

You could even change it again, multiplying 18 and 2 together first!

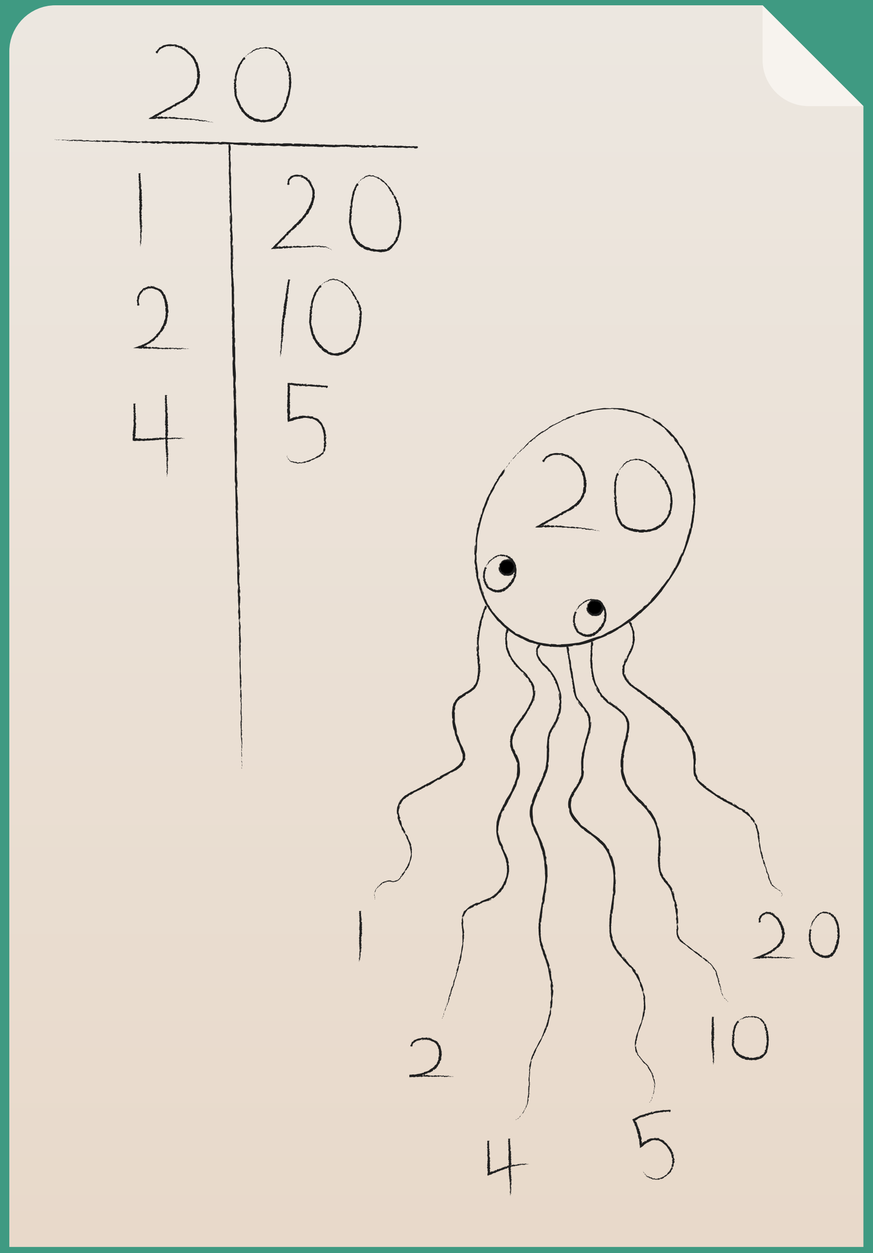
$$36 \times 10 = 360$$

20×18 ▶ $18 \times 10 \times 2$ ▶ 36×10

To play around with calculations in this way, we draw upon our knowledge of factor pairs.

We know that 2 and 10 are factors of 20. Are there any other factors of 20?

Factors are pairs of numbers which, when multiplied, total another number. Here's two ways we found all of the factor pairs of 20:



You could draw a factor table or a Factorpus to help find factor pairs!

Start by finding the lowest number which can be multiplied to make 20.

2 × 10 = 20, so 2 and 10 are the first factor pair.

Three cannot be multiplied by another whole number to make twenty, so it is not a factor of twenty.

4 × 5 = 20, so 4 and 5 are the next factor pair.

We can see that there are no more unique multiples of 20 after that, so we've found all the factor pairs!

Can you find all the factors of 24?

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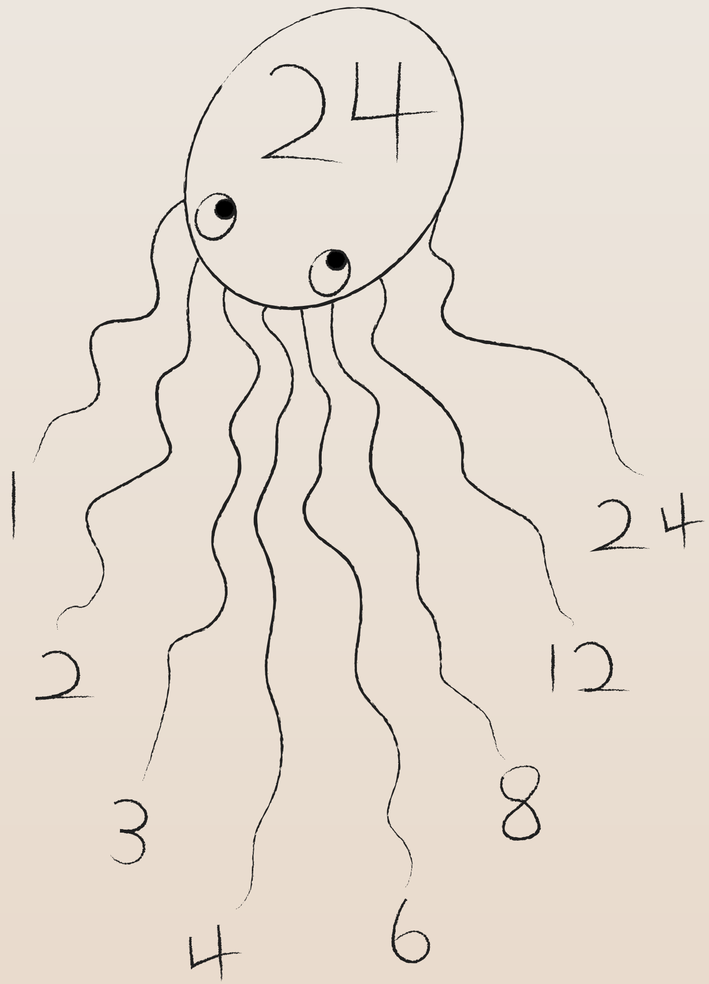
Next



Did you find them all? 24 has 4 pairs of factors.

Can you use your knowledge of the factors of 24 to make this calculation easier:

6 × 24

24	
1	24
2	12
3	8
4	6

Did you think of these alternative calculations?

Which one is easiest for you to calculate mentally?

6×24

$6 \times 2 \times 12$

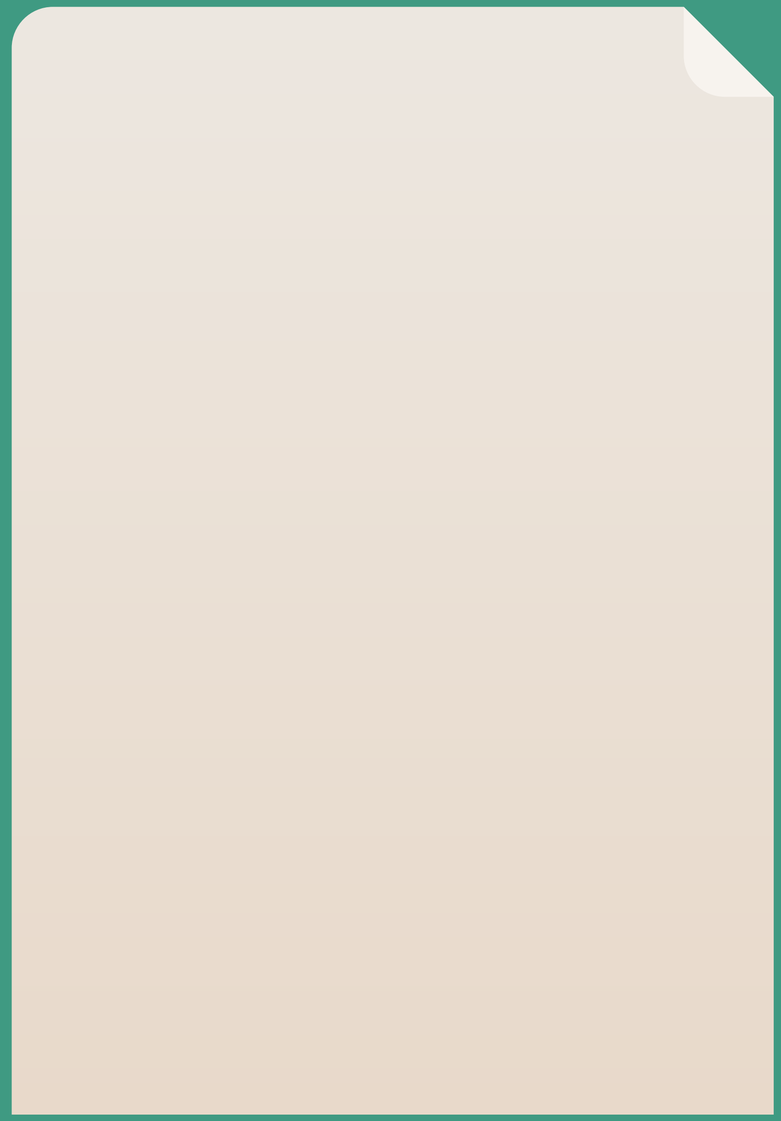
$6 \times 3 \times 8$

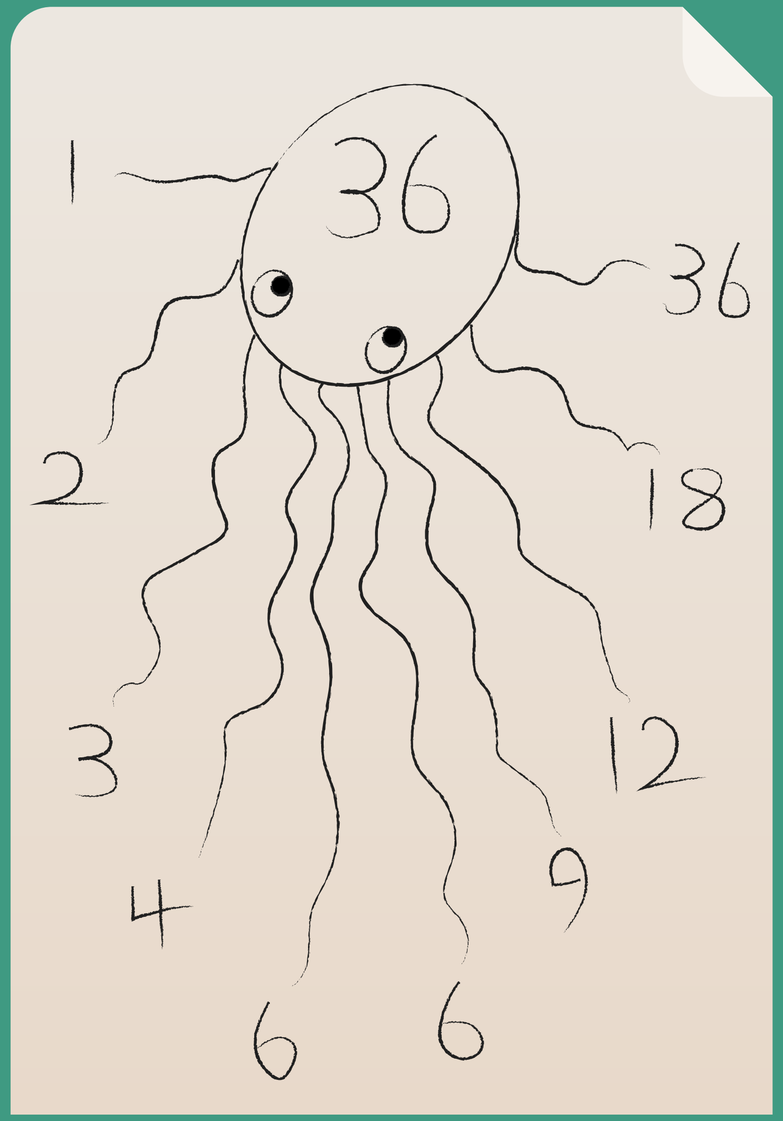
$6 \times 4 \times 6$

Mentally calculate:

4 × 36

Use your times tables knowledge, or quickly draw a factor table or a Factorpus to help make it easier.





4 × 36 = 144

4 × 2 × 18

4 × 3 × 12

4 × 4 × 9

4 × 6 × 6

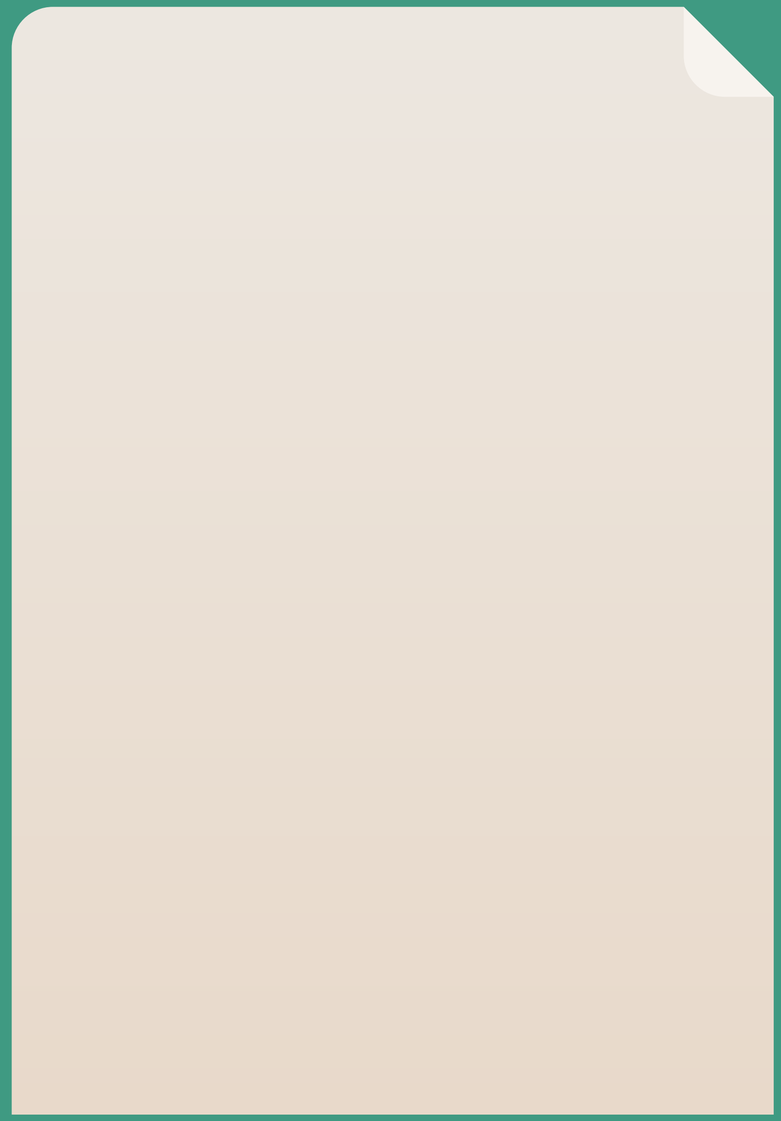
Did you get it right?

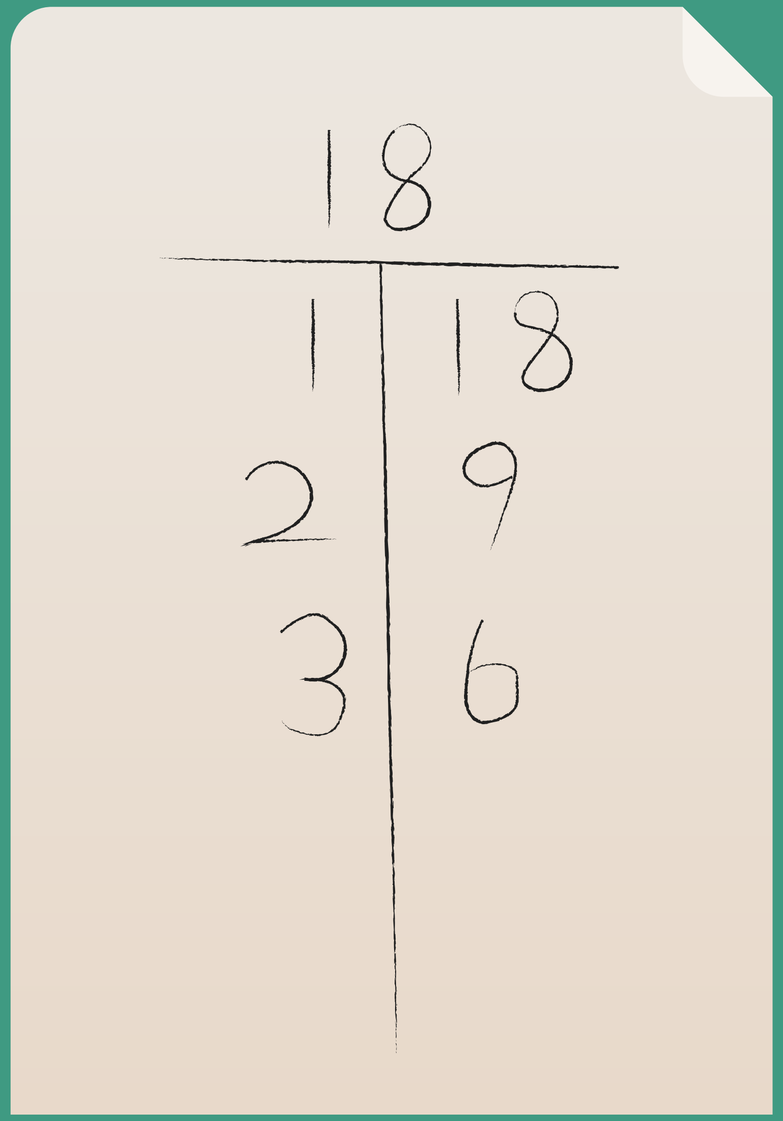
Let’s look at another one…

Mentally calculate:

8 × 18

Use your times tables knowledge, or quickly draw a factor table or a Factorpus to help make it easier.





8 × 18 = 144

8 × 2 × 9
8 × 3 × 6

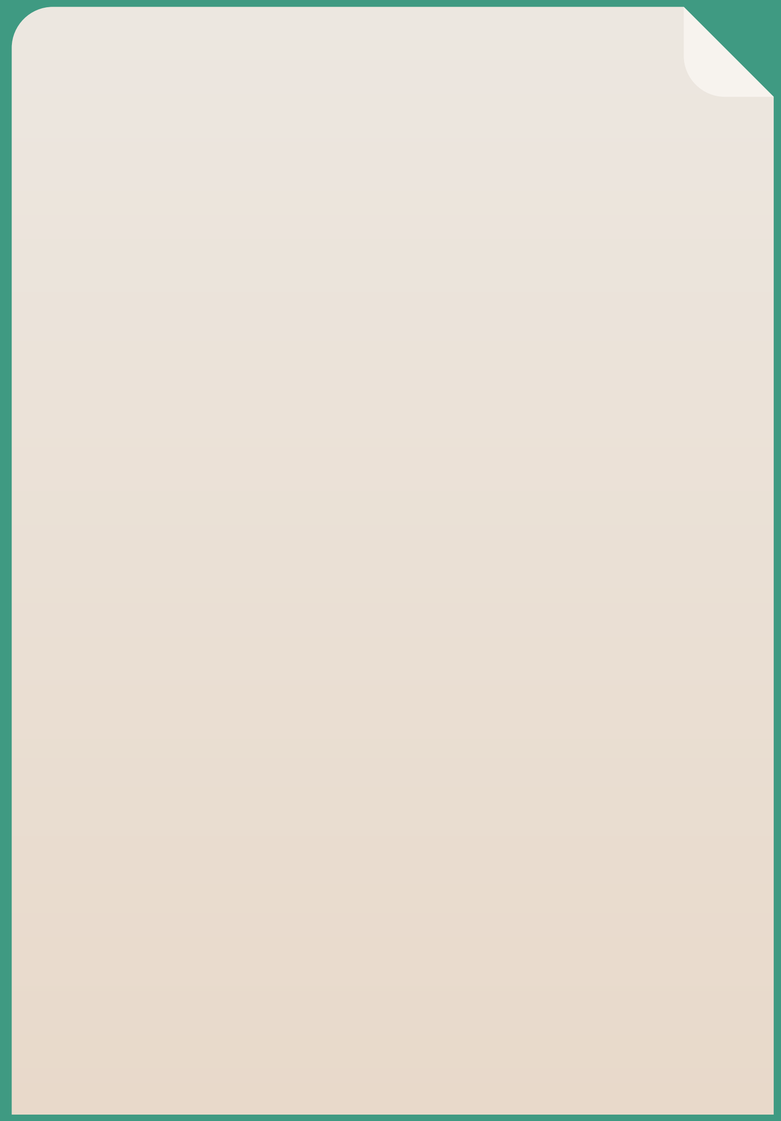
Did you get it right?

Let’s look at another one…

Mentally calculate:

15 × 30

Use your times tables knowledge, or quickly draw a factor table or a Factorpus to help make it easier.



15 × 30 = 450

15 × 3 × 10

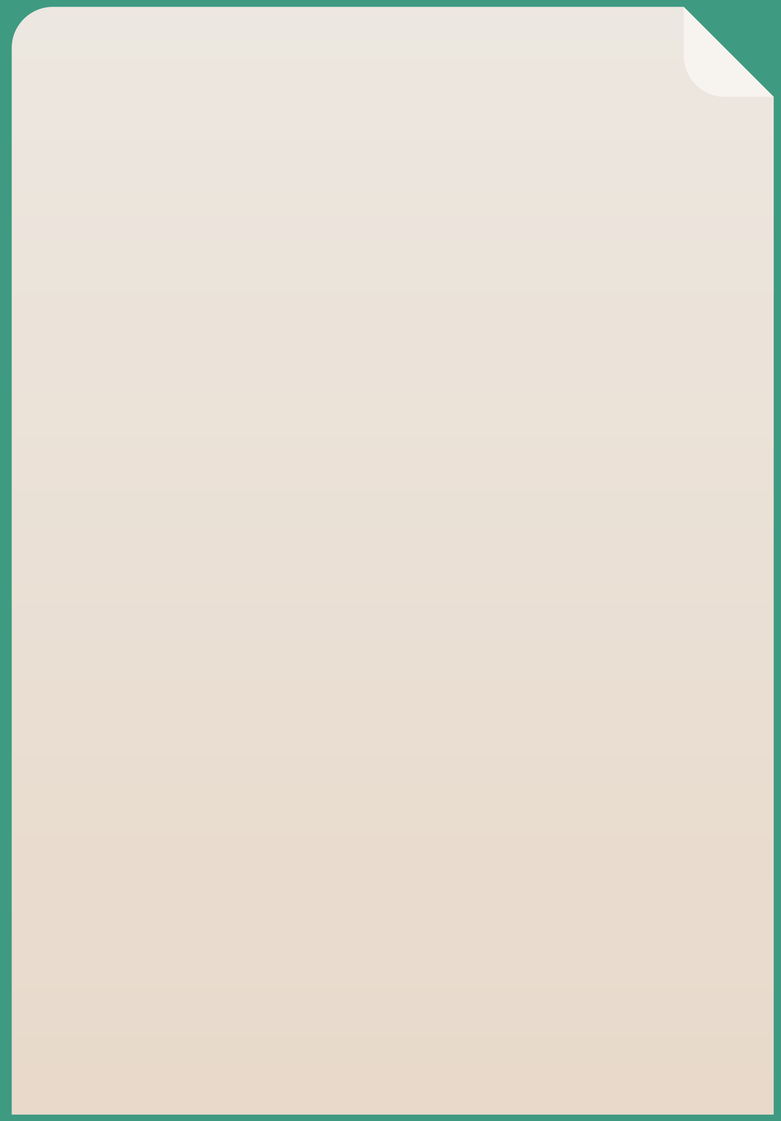
That
was tricky! Remember
to look out for multiples of ten;
it’s easy to change them!

Let’s look at one more…

Mentally calculate:

30 × 50

Use your times tables knowledge, or quickly draw a factor table or a Factorpus to help make it easier.



30 × 50 = 1,500

3 × 10 × 5 × 10

Did you get it right? Did you spot that both parts of the original calculation were multiples of ten?
Well done, everyone!

$2 \times 2 \times 3 = 12$

Including the example shown, how many different ways can you find of multiplying two or more numbers together, totalling 12?

Plenary

1 × 12
2 × 2 × 3
2 × 6
3 × 4

Four different ways.

Did you work it out? How?

Depending on whether or not you count multiplying the same numbers in different orders, there's two possible answers!

1 × 12
12 × 1
2 × 2 × 3
2 × 3 × 2
3 × 2 × 2
2 × 6
6 × 2
3 × 4
4 × 3

Nine different ways.

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