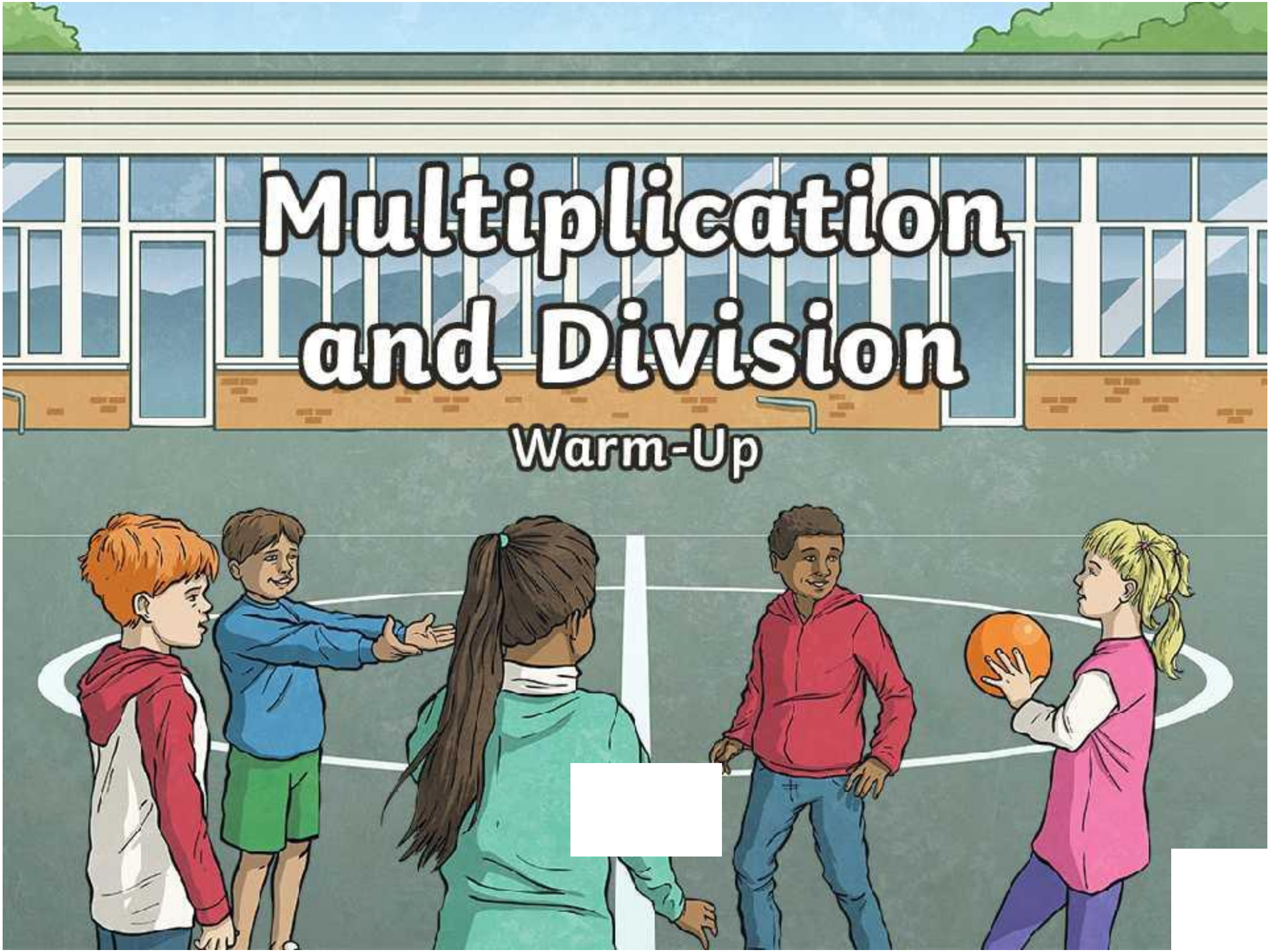
Multiplication and Division

Warm-Up



Identifying Multiples

Explain the following:

How do you know a number is a multiple of two?

It ends in 0, 2, 4, 6 or 8.

How do you know a number is a multiple of three?

The digital root is 3, 6 or 9.

(Add up the digits of the answer until you get a single digit, e.g. 369 = 3 + 6 + 9 = 18 1 + 8 = 9, so 369 is a multiple of 3.)

How do you know a number is a multiple of four?

The last digit or the last two digits are in the four times table, e.g. 116 – 16 is in the four times table, so it is a multiple of four.

How do you know a number is a multiple of five?

It ends in 5 or 0.

Identifying Multiples

Explain the following:

How do you know a number is a multiple of six?

The digital root is 3, 6 or 9, e.g. 366 = 3 + 6 + 6 = 15 1 + 5 = 6, so 366 is a multiple of six.

How do you know a number is a multiple of nine?

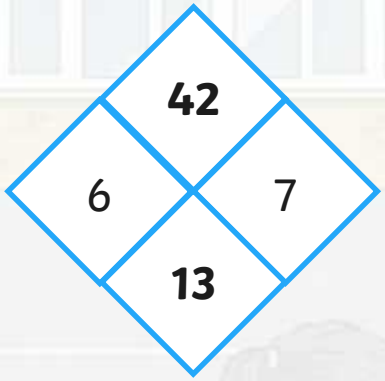
The digital root is 9, e.g. 369 = 3 + 6 + 9 = 18 1 + 8 = 9, so 369 is a multiple of nine.

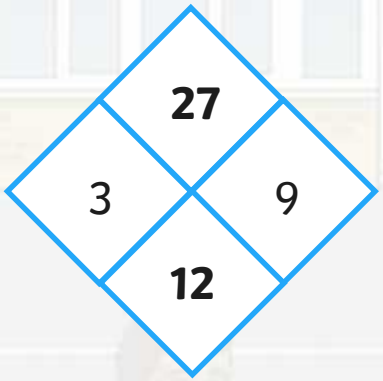
How do you know a number is a multiple of 10?

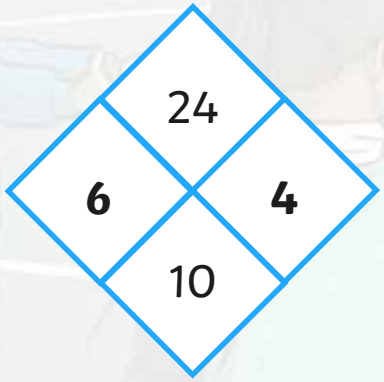
It ends in 0.

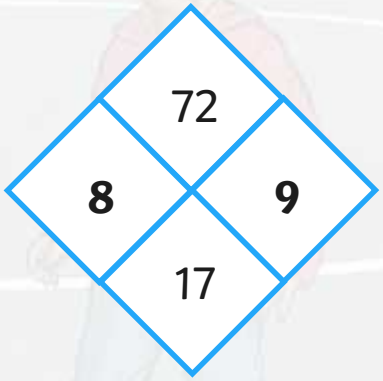
Diamond Puzzles

Can you solve these diamond puzzles? The top number is the product of the middle numbers. The bottom number is the sum of the middle numbers.









Finding Factors

List all the factors of the following numbers:

12

1, 12
2, 6
3, 4

15

1, 15
3, 5

36

6
1, 36
2, 18
3, 12
4, 9

Click on the circles to reveal the answers.

Problem Solving

Tyler is making up stationery sets. He has bought 32 pens. How different ways can he make up a stationery set so each one has the same amount of pens?

e.g. he could put 1 pen into 32 different sets, all 32 pens in one set etc.

1 bag with 32 pens

2 bags with 16 pens

4 bags with 8 pens

32 bags with 1 pen

16 bags with 2 pens

8 bags with 4 pens.

Click to reveal the answers

Problem Solving

Farmer Joe has 48 cows. He has to put them in different fields in equal groups. How many different ways can he group the cows?

1 field with 48 cows,

2 fields with 24 cows,

3 fields with 16 cows,

4 fields with 12 cows,

6 fields with 8 cows,

8 fields with 6 cows,

12 fields with 4 cows,

16 fields with 3 cows,

24 fields with 2 cows,

48 fields with 1 cow.

Click for the answers.

Finding Common Factors

Find all the common factors of 12 and 18.

1 and 12 **2** and **6**

12

3 and 4

1 and 18 **2** and 9

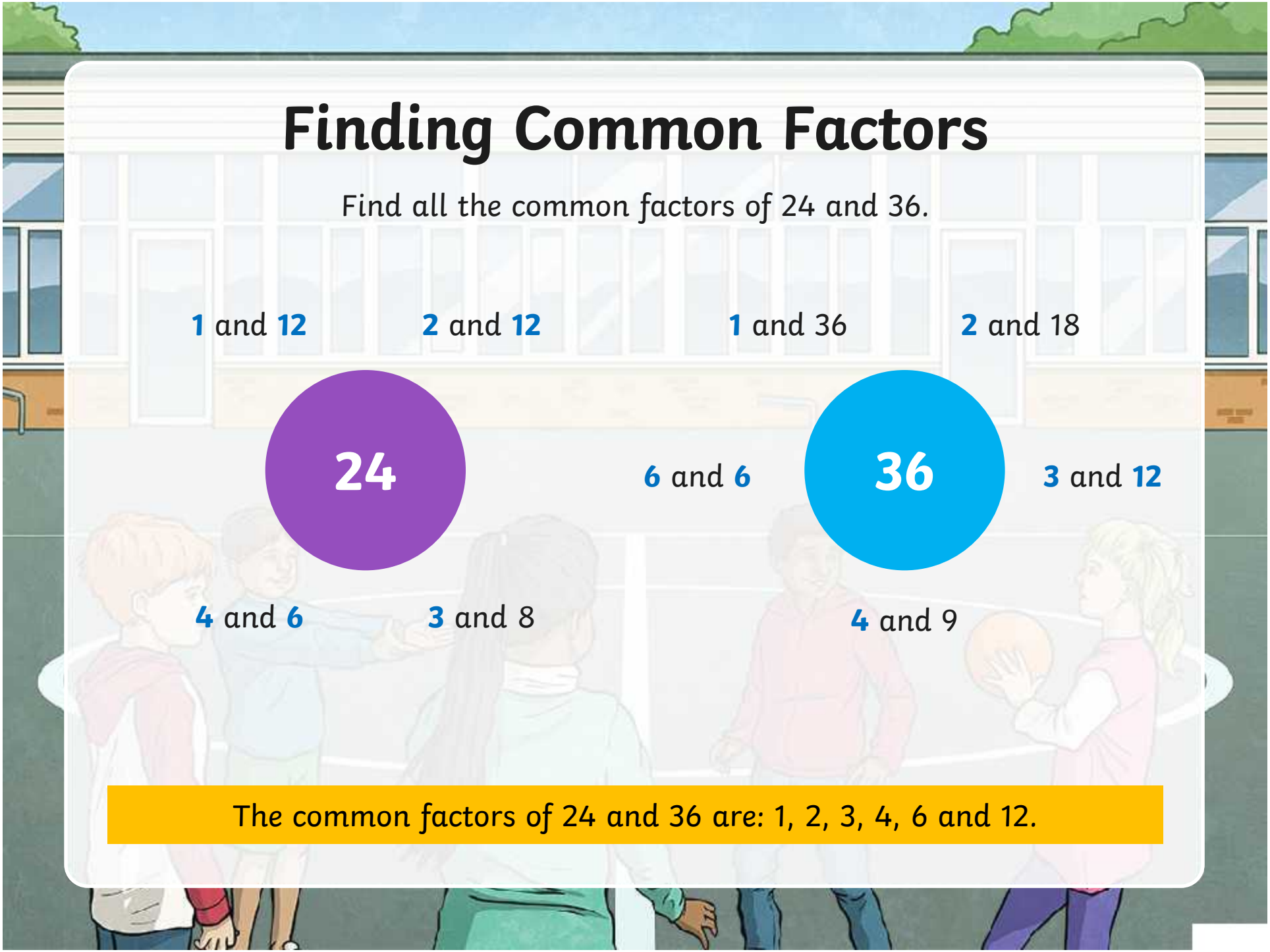
18

3 and **6**

the common factors of 12 and 18 are: 1, 2, 3 and 6.

Finding Common Factors

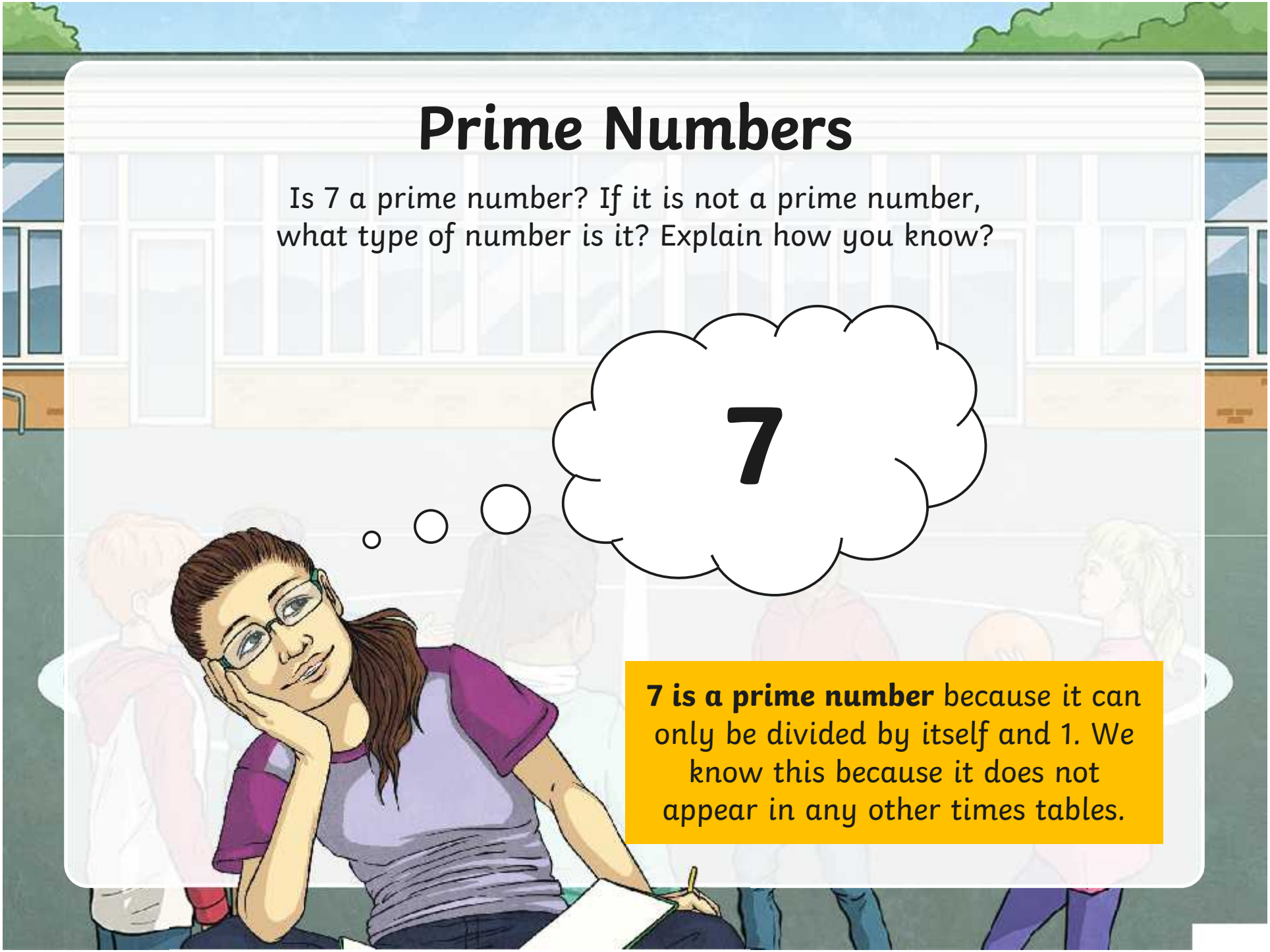
Find all the common factors of 24 and 36.



The common factors of 24 and 36 are: 1, 2, 3, 4, 6 and 12.

Prime Numbers

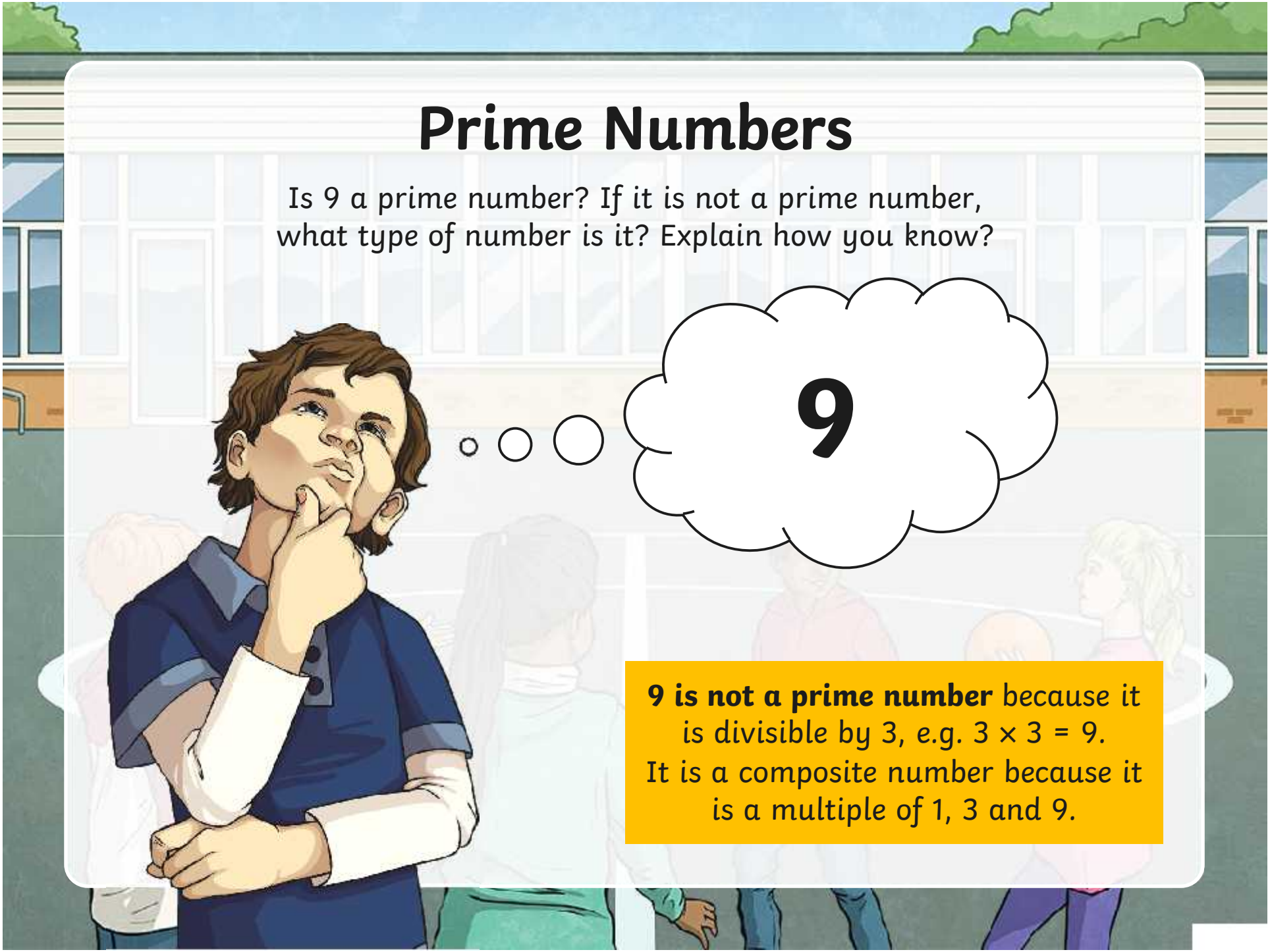
Is 7 a prime number? If it is not a prime number, what type of number is it? Explain how you know?



7 is a prime number because it can only be divided by itself and 1. We know this because it does not appear in any other times tables.

Prime Numbers

Is 9 a prime number? If it is not a prime number, what type of number is it? Explain how you know?



9 is not a prime number because it is divisible by 3, e.g. 3 × 3 = 9.
It is a composite number because it is a multiple of 1, 3 and 9.

Prime Numbers

Write down the first seven prime numbers.

2, 3, 5, 7, 11, 13, 17

Write down all the prime numbers between 30 and 50.

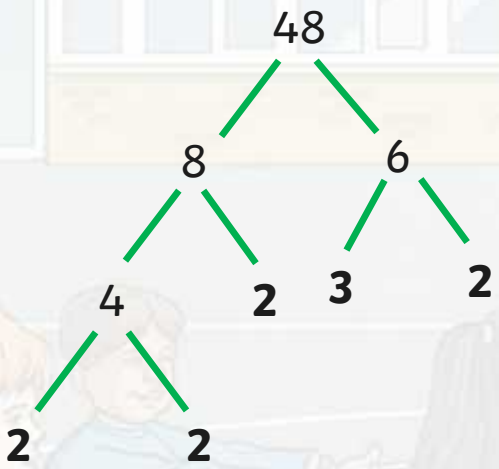
31, 37, 41, 43, 47

Why isn't 51 a prime number?

Because it is divisible by 3. $17 \times 3 = 51$.

Prime Factors

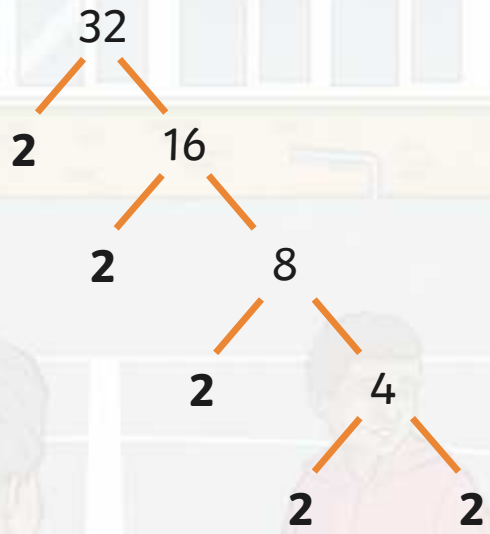
Find all the prime factors of 48 by making a factor tree.
Explain how they are prime factors of 48.



2 and **3** are the only prime factors of 48. $2 \times 2 \times 2 \times 2 \times 3 = 48$.

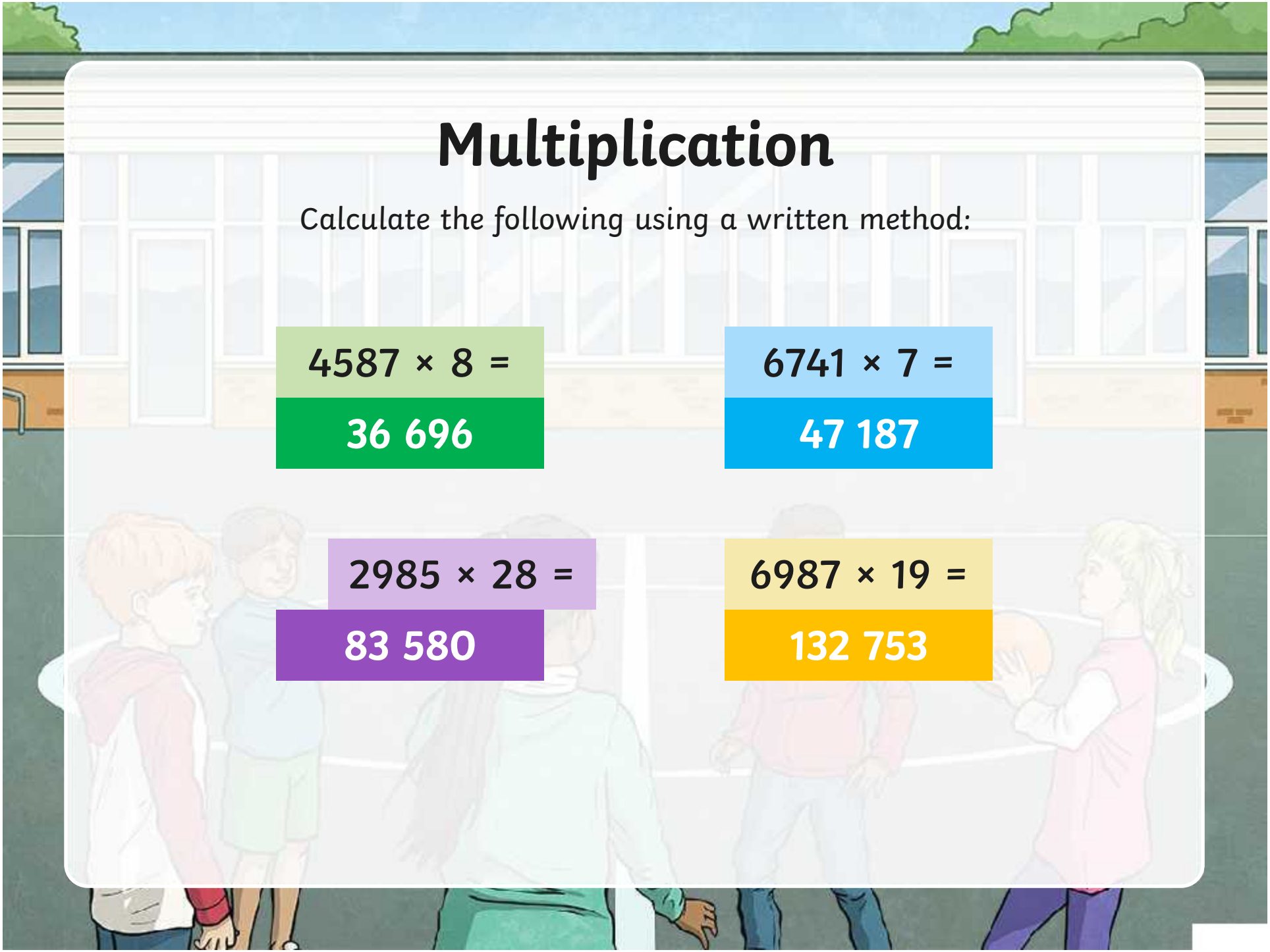
Prime Factors

Find all the prime factors of 32 by making a factor tree.
Explain how they are prime factors of 32.



2 is the only prime factor of 32. 2 × 2 × 2 × 2 × 2= 32.

This is not the only factor tree. Has anybody got a different factor tree?



Multiplication

Calculate the following using a written method:

4587 × 8 =

36 696

6741 × 7 =

47 187

2985 × 28 =

83 580

6987 × 19 =

132 753

Word Problems

Calculate the following using a written method:

1. Zoe saves £245 every month. How much will she have saved after eight months?

245 × 8 = **£1960**

2. A factory sends 3256 boxes of chocolates to a supermarket every week. How many boxes do they send in six weeks?

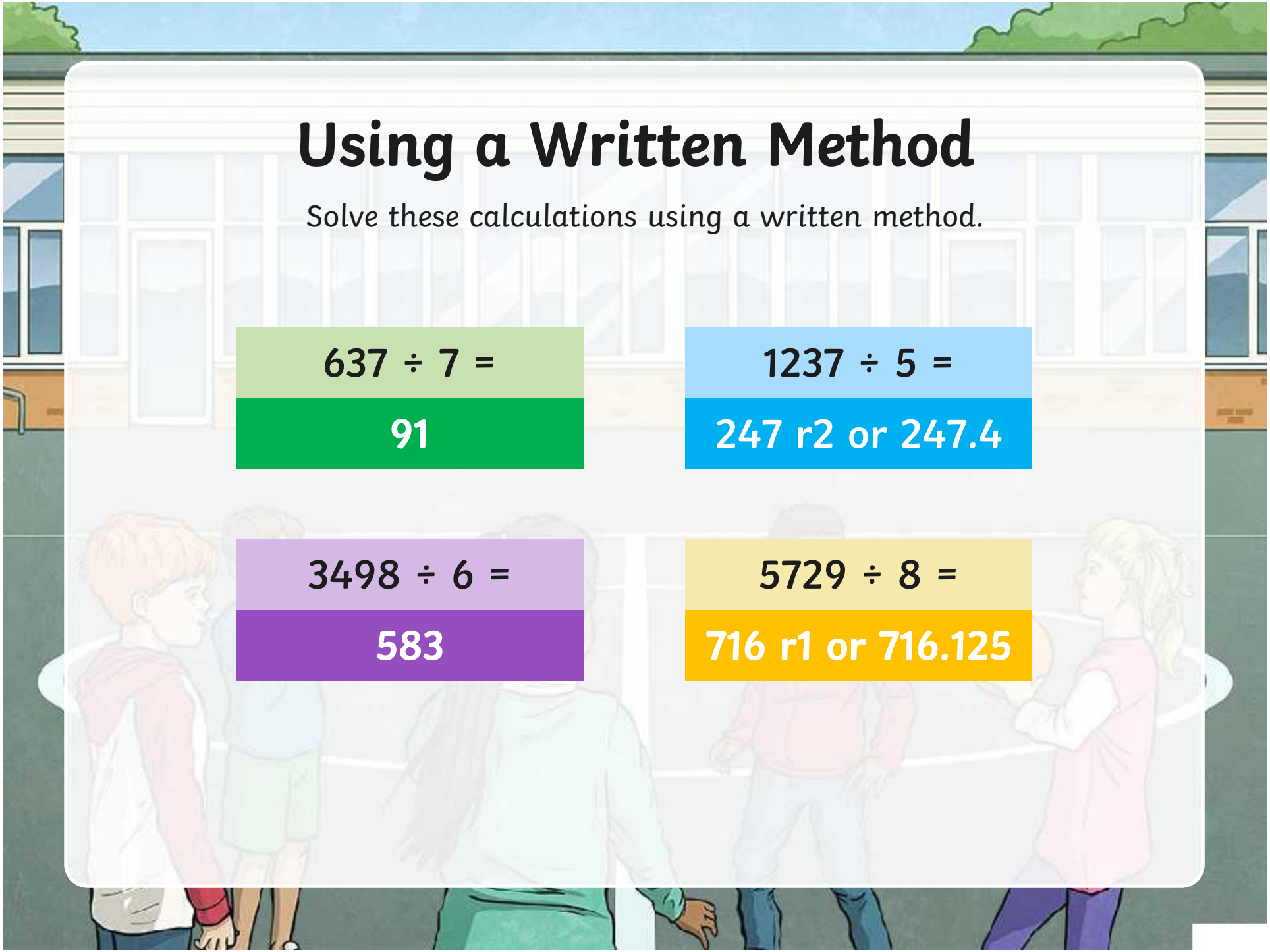
3256 × 6 = **19 536**

Word Problems

Solve this problem in your head and write down the answer.

Four friends go out or a meal which costs £178.88. They need to split the cost equally between them. How much does each person pay?

£178.88 ÷ 4 = **£44.72**



Using a Written Method

Solve these calculations using a written method.

637 ÷ 7 =

91

1237 ÷ 5 =

247 r2 or 247.4

3498 ÷ 6 =

583

5729 ÷ 8 =

716 r1 or 716.125

Division Problems

A baker makes 387 cupcakes. They are sold in packs of six. How many full packs can be made?

64 packs are made.

How many more cupcakes does she need to bake to make another full packet?

There are three left over, so **she needs to bake three more** cupcakes to produce another full packet.

Division Word Problems

Calculate this problem using a written method.

126 children are going on a school trip. They are being split in to groups of eight. How many groups will there be?

126 ÷ 8 = **15 r6**

There will **be 16 groups** with one group having six children.

Division Word Problems

Calculate this problem using a written method.

A mini bus can hold nine people. There are 105 people going on the trip. How many buses are needed?

105 ÷ 9 = **11 r6**

They will need **12 buses needed**, with one bus containing only six people.

Multiplying and Dividing by 10, 100, 1000

Fill in the missing gaps in the table.

	× 1000	÷ 100	× 100
4.3	4300	**0.043**	430
26.1	**26 100**	0.261	**2610**
129.43	**129 430**	1.2943	**12 943**
82.109	82109	**0.82109**	8210.9
46.213	**46 213**	**0.46213**	4621.3

Click on the yellow rectangles to reveal the answer.

Word Problems

Sarah has 0.9l of orange juice. She shares it equally between 10 cups. How much orange juice will be in each cup?

0.9 ÷ 10 = **0.09l**

Could you make up a word problem for this calculation?

0.6 ÷ 10 =

Word Problems

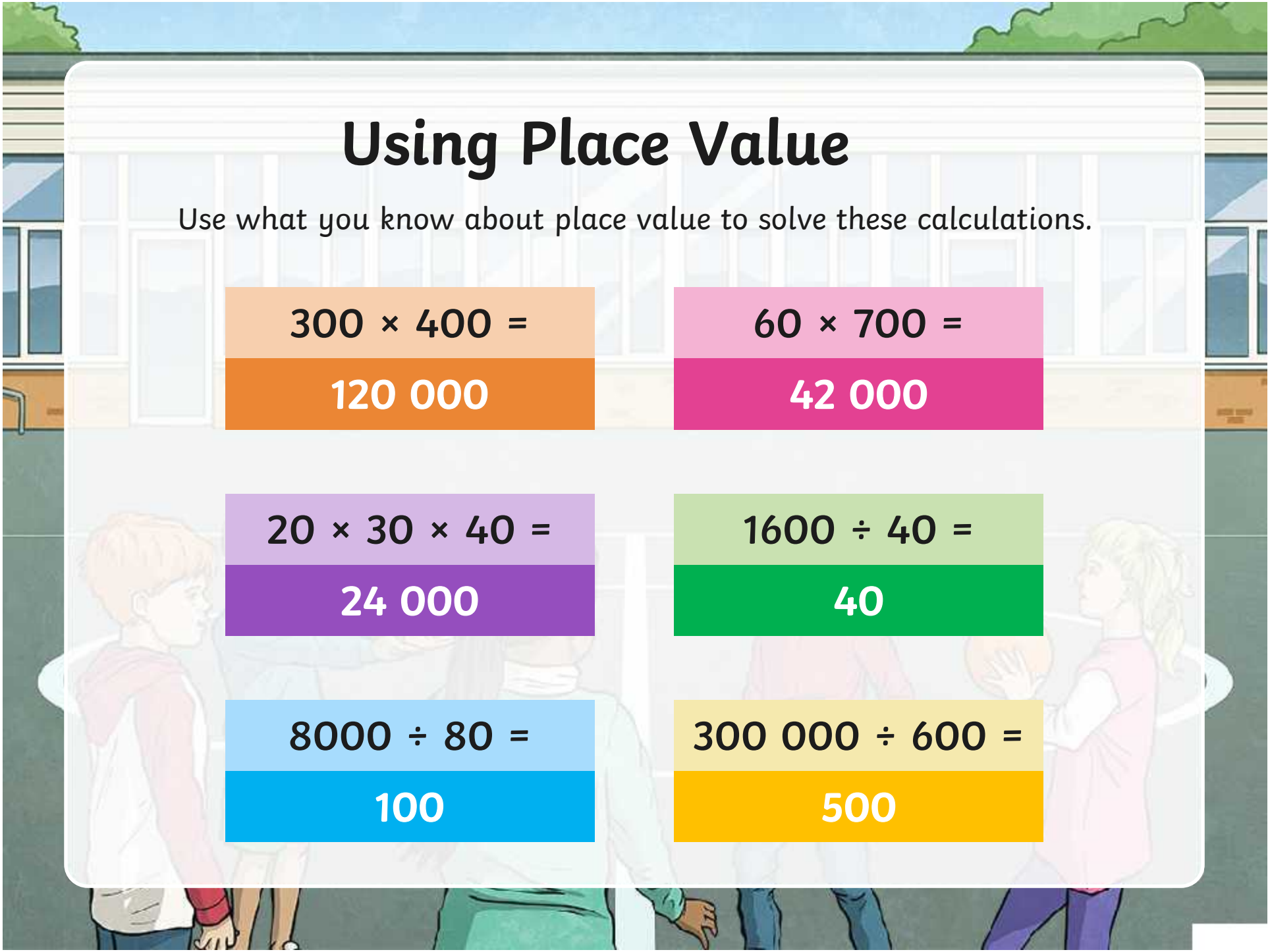
At a factory they can make 436.75 cards in one hour.

How many can they make in 100 hours?

436.75 × 100 = **43 675**

How many can they make in 1000 hours?

436.75 × 1000 = **436 750**



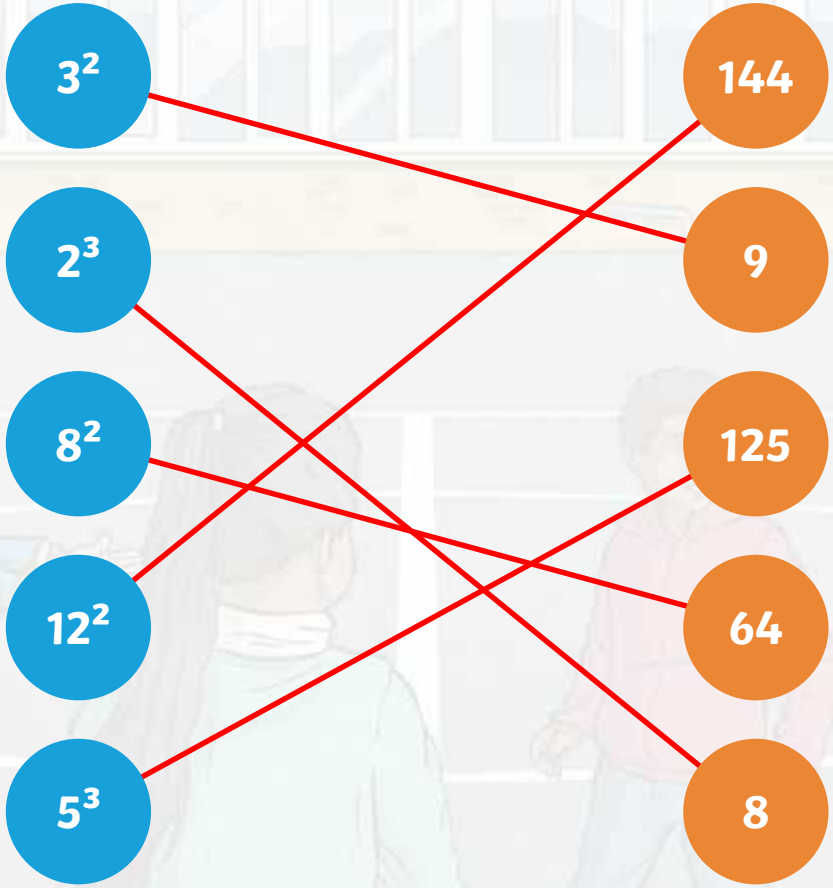
Using Place Value

Use what you know about place value to solve these calculations.

300 × 400 =	60 × 700 =
120 000	42 000
20 × 30 × 40 =	1600 ÷ 40 =
24 000	40
8000 ÷ 80 =	300 000 ÷ 600 =
100	500

Cube and Square Numbers

Match up these cube and square numbers to the correct answers.



Number Sequences

Complete these sequences and explain the rule:

1 4 9 16 **25** **36** **49** **64** **81**

square numbers

1 8 27 64 **125** **216** **343**

cube numbers

1 3 6 10 **15** **21** **28** **36**

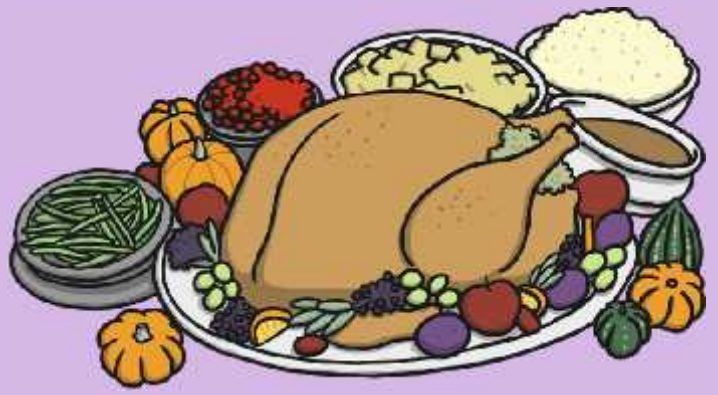
triangular numbers

Mental Problem Solving

A group of six friends met in a cafe. They each had a cup of coffee. One coffee costs £2.50. How much did six coffees cost altogether?

£2.50 × 6 = **£15**

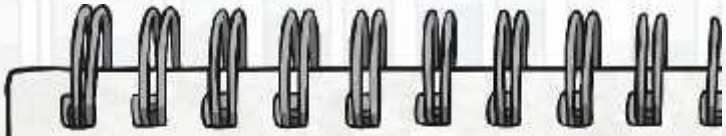
They ordered food which cost £192.66 altogether. They split it equally between them. How much did they each pay?



£192.66 ÷ 6 = **£32.11**

Recipes

Zara has a recipe for muffins which makes 12 muffins:



120g butter
120g sugar
110g flour
2 tbsp baking powder
$\frac{1}{2}$ tsp salt
2 eggs
1 tsp strawberry flavouring

She is having a cake sale and wants to make 72 muffins. How much of each ingredient will she need?

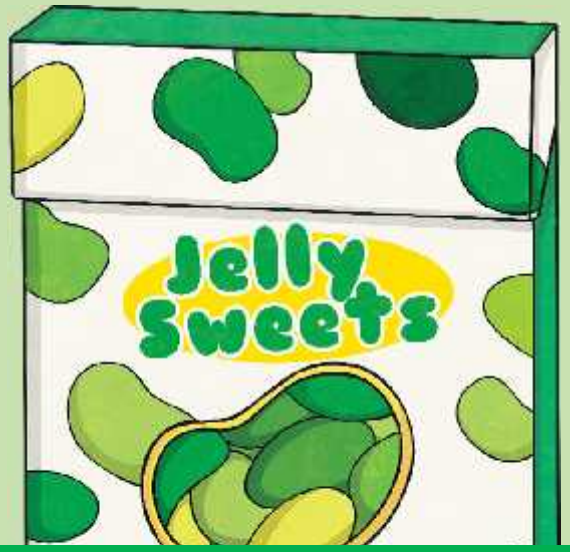
720g butter, 720g sugar, 660g flour, 12 tbsp baking powder, 3 tsp salt, 12 eggs, 6 tsp strawberry flavouring.

Paulo has the same recipe. He wants to make four muffins. How much butter will he need to use?

120 ÷ 3 = 40g butter

Word Problems

A company makes jelly sweets. They have made 2986 strawberry flavour, 3612 orange flavour and 2246 lime flavour. They are mixed up and split in to packs of 22 sweets. How many packs can be made up?



2986 + 3612 + 2246 = 8844

8844 ÷ 22 = **402 packs**