

An Introduction to Bar Modelling in Addition and Subtraction



What Is Bar Modelling?

Bar modelling is where pictures or 'bars' are used to represent calculations and word problems.

Why Use Bar Modelling?

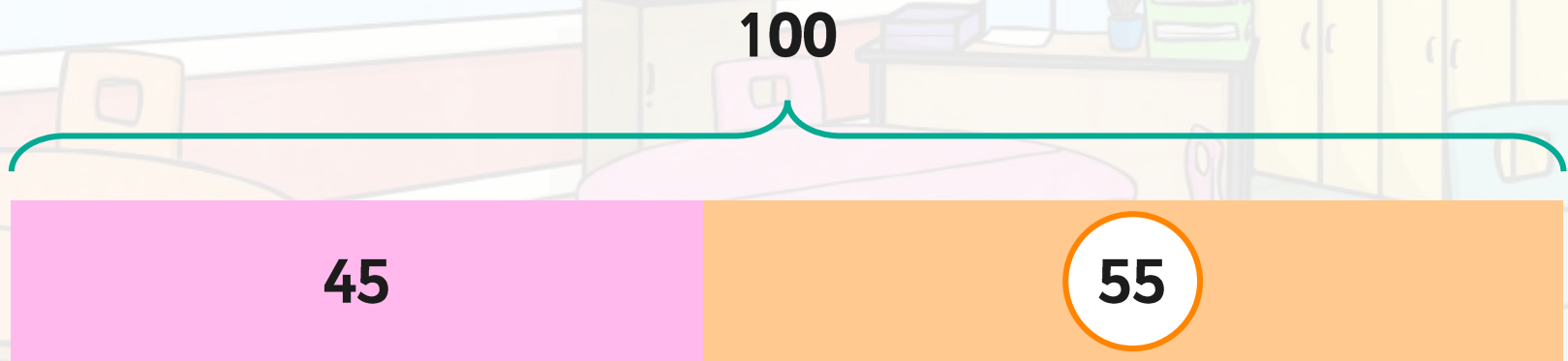
Sometimes calculations and word problems are difficult to visualise in your head. Bar models help you to *see* the maths more clearly.

Once you become confident in using bar models, you can use them to help your learning in many different areas of maths.

So where and how can bar models help you with addition and subtraction problems?

Bar Modelling

Look at this simple bar model.
What addition and subtraction calculations could it represent?



$$45 + ? = 100$$
$$100 - 45 = ?$$

$$45 + 55 = 100$$
$$100 - 45 = 55$$

So what number is missing from the bar model? How do you know?

Bar Modelling

In this type of inverse calculation there are always three **unknown** numbers.

whole



part

part

To solve the problem, you just need to know **two** of the **unknown** numbers.

Bar Modelling

whole

part

part

$$\text{part} + \text{part} = \text{whole}$$

$$\text{whole} - \text{part} = \text{part}$$

$$\text{whole} - \text{part} = \text{part}$$

Now it's your turn...



Could you tell me an addition or subtraction calculation to go with this bar model?

100

21

79

$$\begin{aligned} ? + 79 &= 100 \\ 100 - 79 &= ? \end{aligned}$$

$$\begin{aligned} 21 + 79 &= 100 \\ 100 - 79 &= 21 \end{aligned}$$

Now it's your turn...



Could you work with more complex numbers?

267

191

76

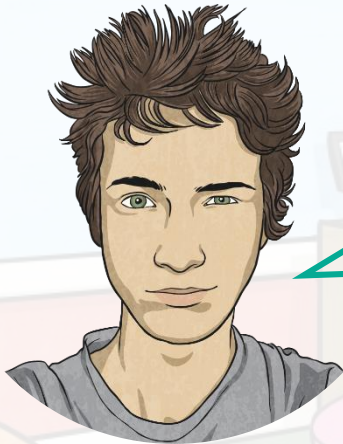
$$191 + ? = 267$$

$$267 - 191 = ?$$

$$191 + 76 = 100$$

$$267 - 191 = 76$$

Now it's your turn...



What about this bar model? What kind of calculation do you need to perform here?

523

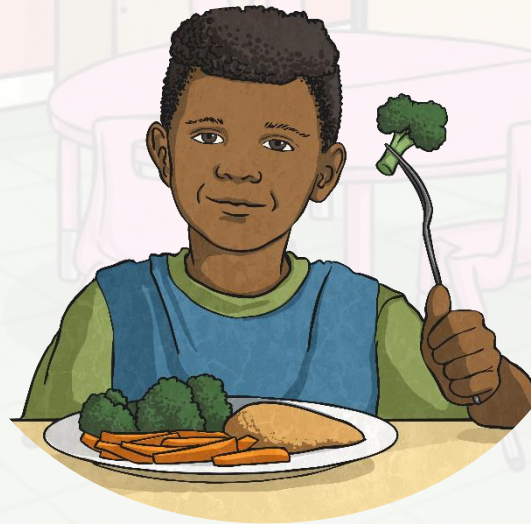
126

397

$$126 + 397 = ?$$
$$126 + 397 = \mathbf{523}$$

Using Bar Models to Solve Word Problems

Sunnymore Primary School has 284 pupils.
218 of the children have a school lunch and the rest bring a packed lunch.
How many children bring a packed lunch?



Can you think how a bar model could look for this problem?

Using Bar Models to Solve Word Problems

Sunnymore Primary School has 284 pupils.
218 of the children have a school lunch and the rest bring a packed lunch.
How many children bring a packed lunch?

284 pupils



school lunches

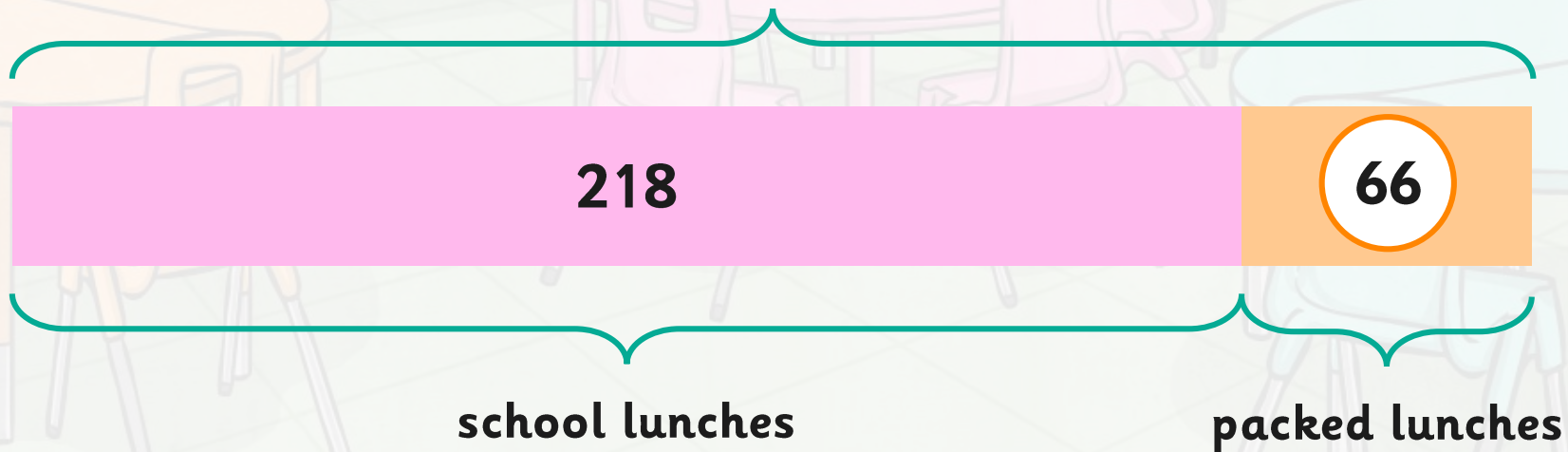
packed lunches

Using Bar Models to Solve Word Problems

So how many children bring a packed lunch?

$$284 - 218 = 66$$

284 pupils



Using Bar Models to Solve Word Problems

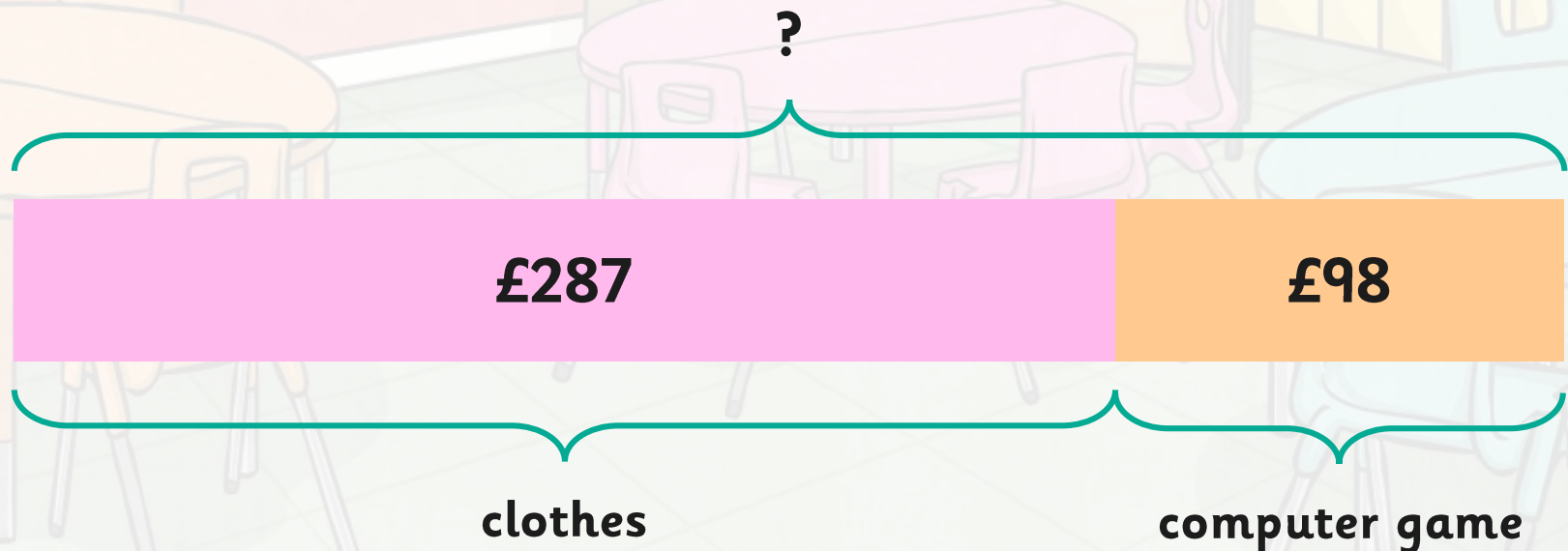
Grace went on a shopping spree with her birthday money. She spent £287 on clothes and £98 on some new computer game. How much did she spend in total?



Can you think how a bar model could look for this problem?

Using Bar Models to Solve Word Problems

Grace went on a shopping spree with her birthday money. She spent £287 on clothes and £98 on some new computer game. How much did she spend in total?



Using Bar Models to Solve Word Problems

So how much did Grace spend in total?

$$£287 + £98 = £385$$

£385

£287

£98

clothes

computer game

Using Bar Models to Solve Word Problems

A lorry driver was on a 436 mile journey.
He stopped after 278 miles for a break.
How many miles does he have left to travel?



Can you think how a bar model could look for this problem?

Using Bar Models to Solve Word Problems

A lorry driver was on a 436 mile journey.
He stopped after 278 miles for a break.
How many miles does he have left to travel?

436 mile journey



distance travelled

**distance left
to travel**

Using Bar Models to Solve Word Problems

So how far does the driver have left to travel?

$$436 - 278 = 158$$

436 mile journey



278 miles

158 miles

distance travelled

distance left
to travel

Things to Remember

Remember when drawing your own bars:

Draw a rectangle for your 'bar' on your whiteboard, sheet or book.

Label the parts of your bar.

Decide whether you need to do an addition or a subtraction calculation.

whole



part

part



twinkl

$$\begin{array}{r} 345 \\ \times 75 \\ \hline 4567 \\ +104 \\ \hline \end{array}$$