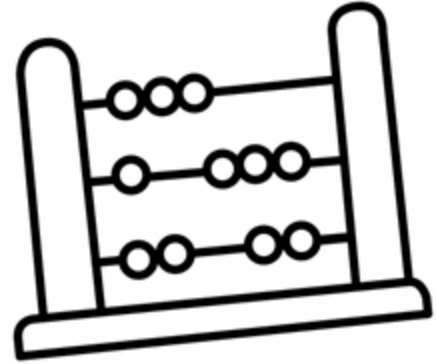


Solve a range of problems, including finding change



Maths

Unit: Money: Apply efficient strategies when calculating with money

Outcome

I can apply tools and strategies to solve problems involving money, including finding change.



Keywords

represent / representation

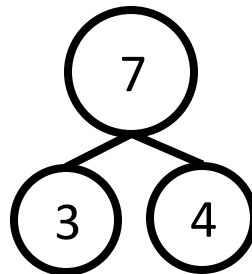
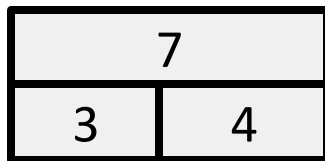
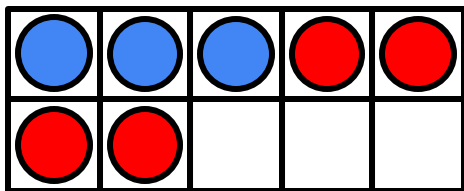


Keywords

A **representation** is a way of showing a mathematical idea. Concrete objects, pictures and symbols can all be used to **represent** mathematics.

For example, these are all **representations** of $3 + 4 = 7$

$$3 + 4 = 7$$



Lesson outline

Solve a range of problems, including finding change



Reasoning about worded problems



Solving more complex problems



In this lesson you will meet:

Jun



Izzy



Worded problems are a way of **representing** maths.



When a problem has several different units, it helps to convert them into the same units.

£0.50

Izzy goes to a funfair. She has £10 to spend. She spends £2.30 on a drink. She pays 50 p to play hook-a-duck. She pays 30 p for a lucky dip. She wins £1.50 on a game. How much money does she have now?

£0.30



Changing these so they are the same unit helps when you calculate.

Izzy goes to a funfair. She has £10 to spend. She spends £2.30 on a drink. She pays 50 p to play hook-a-duck. She pays 30 p for a lucky dip. She wins £1.50 on a game. How much money does she have now?

230 p

1000 p

150 p



Look at the worded problem. Rewrite all the values so they are in the same unit.

£0.80

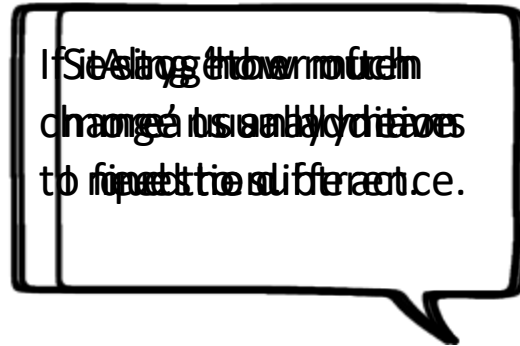
Jun has £4.70 left of his pocket money. He spends £2.90 on a magazine. He spends 80 p on a packet of sweets. As he walks home, he finds a 50 pence piece. How much money does he have now?

£0.50



When you solve problems with money, you need to decide what operation to use. Sometimes there will be more than one step with different operations.

The language in a worded problem can help us decide on the operation.



The problem is about how much money Izzy and Aisha have collected for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?

Izzy and Aisha are collecting money for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?



The problem tells how much Aisha has collected but you know the difference. You need to add the two amounts.

Izzy and Aisha are collecting money for the same charity. Aisha collected £17.50 more than Izzy. Izzy collected £67.90. How much has Aisha collected?



What is the equation? What word might mislead us?

Jun bought some treats at the shop and paid with cash. He spent £3.47 and got £1.53 change. How much money did he pay for his treats with?

The word change could make us think this worded problem requires subtraction.

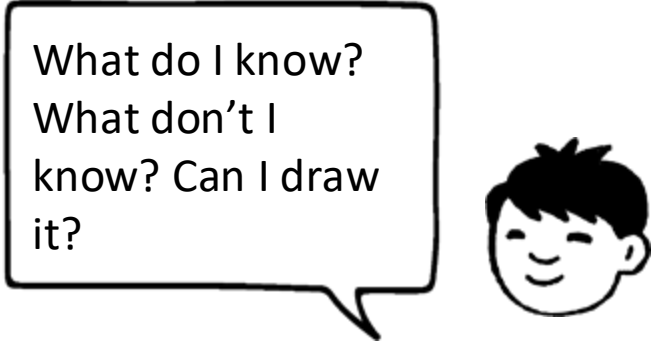
We could calculate $£3.47 + £1.53 =$



When you solve problems with money, you need to decide what operation to use.

You can think about what is known and what is unknown.

Bar models can be used to **represent** a worded problem.



What do I know?
What don't I
know? Can I draw
it?



You know that the sum of what is known is £145.65, what is unknown.

You know that one part is £70.90, which Aisha collected.

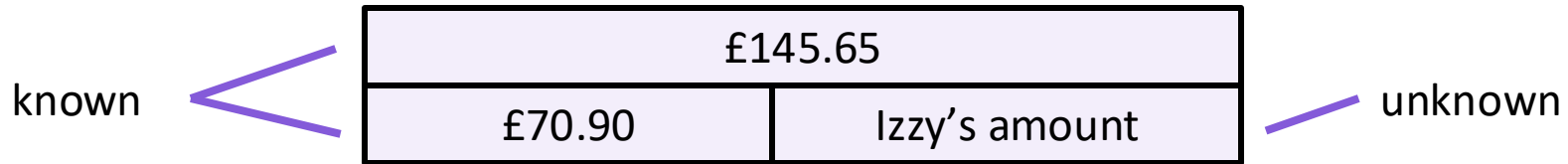
Izzy and Aisha are collecting money for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?

You do not know the other part, which is how much Izzy collected.



Bar models can be used to **represent** a worded problem.

Izzy and Aisha are collecting money for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?



Tell your partner what is known and unknown in this worded problem.

Jun bought some treats at the shop and paid with cash. He spent £3.47 and got £1.53 change. How much money did he pay for his treats with?

We know one part is £3.47 which is how much Jun spent.

We know another part is £1.53 which is Jun's change.

We don't know the whole or what Jun had to begin with.



Draw a bar model to **represent** this worded problem.

Jun bought some treats at the shop and paid with cash. He spent £3.47 and got £1.53 change. How much money did he pay for his treats with?

Money Jun started with	
£3.47 spent	£1.53 change



Use an efficient strategy to solve each problem. You may want to **represent** each using a bar model to help you choose the right calculation.

- 1) Izzy goes to a funfair. She has £10 to spend. She spends £2.30 on a drink. She pays 50 p to play hook-a-duck. She pays 30 p for a lucky dip. She wins £1.50 on a game. How much money does she have now?
- 2) Izzy and Aisha are collecting money for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?



- 3) Izzy and Aisha are collecting money for the same charity. Aisha collected £17.50 more than Izzy. Izzy collected £67.90. How much has Aisha collected?
- 4) Jun has £23.75 on Wednesday. On Thursday, Jun buys lunch which costs £4.55 and spends £1.99 on some football stickers. On Friday, he finds £1 in his pocket and 50 p under his bed. How much money does he have by Friday?
- 5) Aisha has £37.50. Jun has £7.05 more than Aisha. Izzy has £12.80 less than Jun. How much money does Izzy have?



- 1) Izzy goes to a funfair. She has £10 to spend. She spends £2.30 on a drink. She pays 50 p to play hook-a-duck. She pays 30 p for a lucky dip. She wins £1.50 on a game. How much money does she have now?

$$£10.00 - £2.30 - £0.50 - £0.30 + £1.50 = £8.40$$

- 1) Izzy and Aisha are collecting money for the same charity. They have collected £145.65 altogether. Aisha collected £70.90. How much has Izzy collected?

$$£145.65 - £70.90 = £74.75$$



- 3) Izzy and Aisha are collecting money for the same charity. Aisha collected £17.50 more than Izzy. Izzy collected £67.90. How much has Aisha collected?

$$£67.90 + £17.50 = £85.40$$

- 3) Jun has £23.75 on Wednesday. On Thursday, Jun buys lunch which costs £4.55 and spends £1.99 on some football stickers. On Friday, he finds £1 in his pocket and 50 p under his bed. How much money does he have by Friday?

$$£23.75 - £4.55 - £1.99 + £1.00 + £0.50$$

$$£23.75 - £6.54 + £1.50 = £18.71$$



- 5) Aisha has £37.50. Jun has £7.05 more than Aisha. Izzy has £12.80 less than Jun.
How much money does Izzy have?

$$£37.50 + £7.05 = £44.55 \quad \text{Jun has £44.55}$$

$$£44.55 - £12.80 = £31.75 \quad \text{Izzy has £31.75}$$



Lesson outline

Solve a range of problems, including finding change



Reasoning about worded problems



Solving more complex problems



Money can be **represented** in different ways.

Sometimes we use numerals like £3.46

Sometimes we use coins.



Different coins can be used to **represent** the same sum of money.



Solving more complex problems



Write or draw exactly five coins you could use to make £4.53



$$£2 + £2 + 50 \text{ p} + 2 \text{ p} + 1 \text{ p} = £4.53$$



Solving more complex problems

Write or draw exactly eight coins you could use to make £4.53



$$\begin{aligned} &\text{£1} + \text{£1} + \text{£1} + \text{£1} + 50 \text{ p} + 1 \text{ p} + 1 \text{ p} \\ &+ 1 \text{ p} = \text{£4.53} \end{aligned}$$

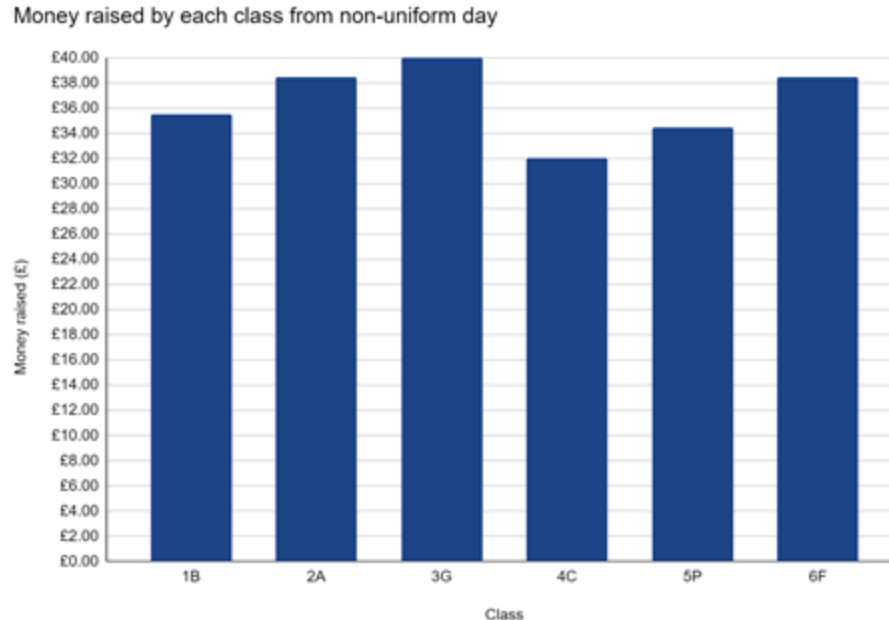


$$\begin{aligned} &\text{£2} + \text{£1} + 50 \text{ p} + 50 \text{ p} + 50 \text{ p} + 1 \text{ p} + \\ &1 \text{ p} + 1 \text{ p} = \text{£4.53} \end{aligned}$$



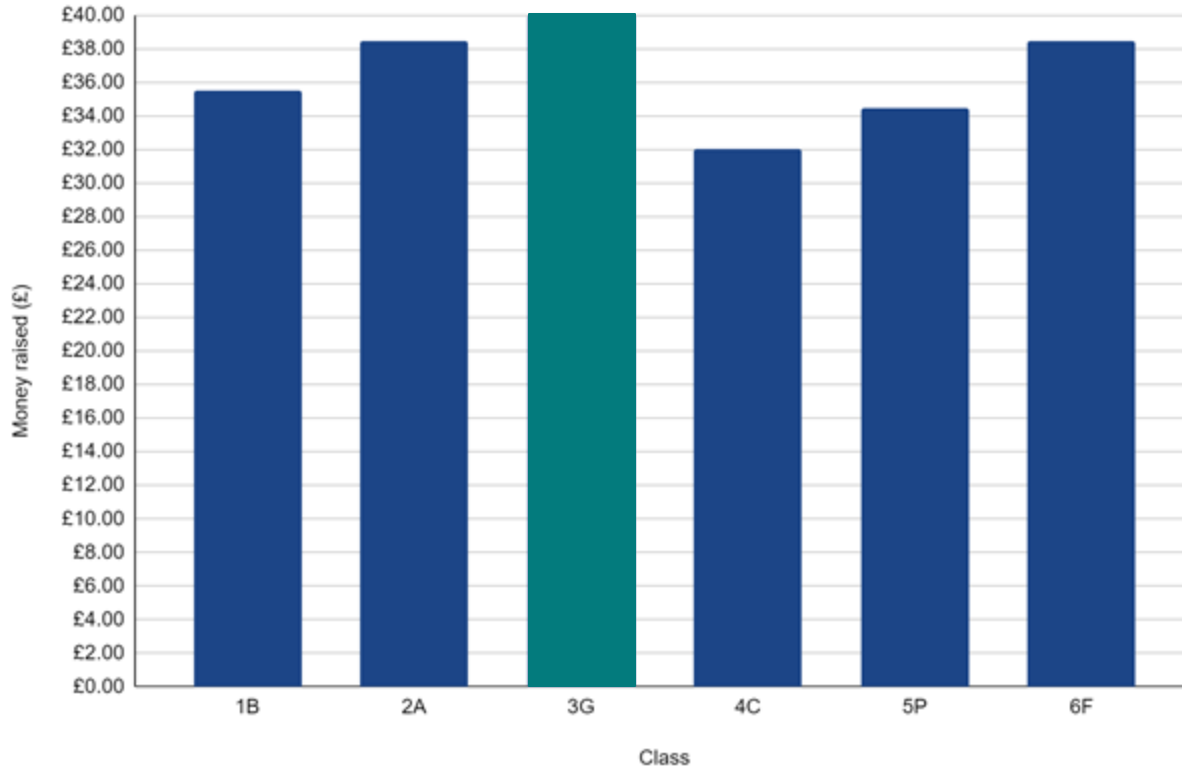
Money can be **represented** in different ways.

Sometimes money is **represented** in a bar graph.



Solving more complex problems

Money raised by each class from non-uniform day



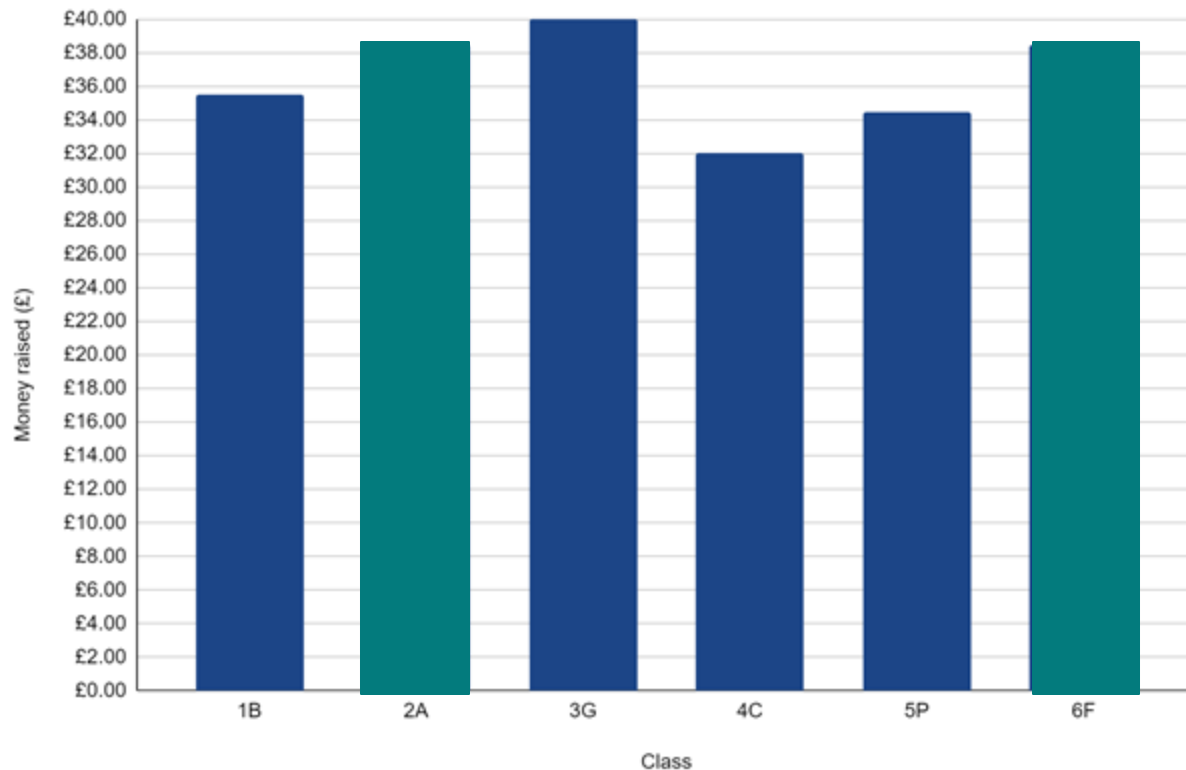
Which class raised the most money from the non-uniform day?

The bar that **represents** class 3G is tallest. This means the most money.



Solving more complex problems

Money raised by each class from non-uniform day



Which classes raised the same amount of money?

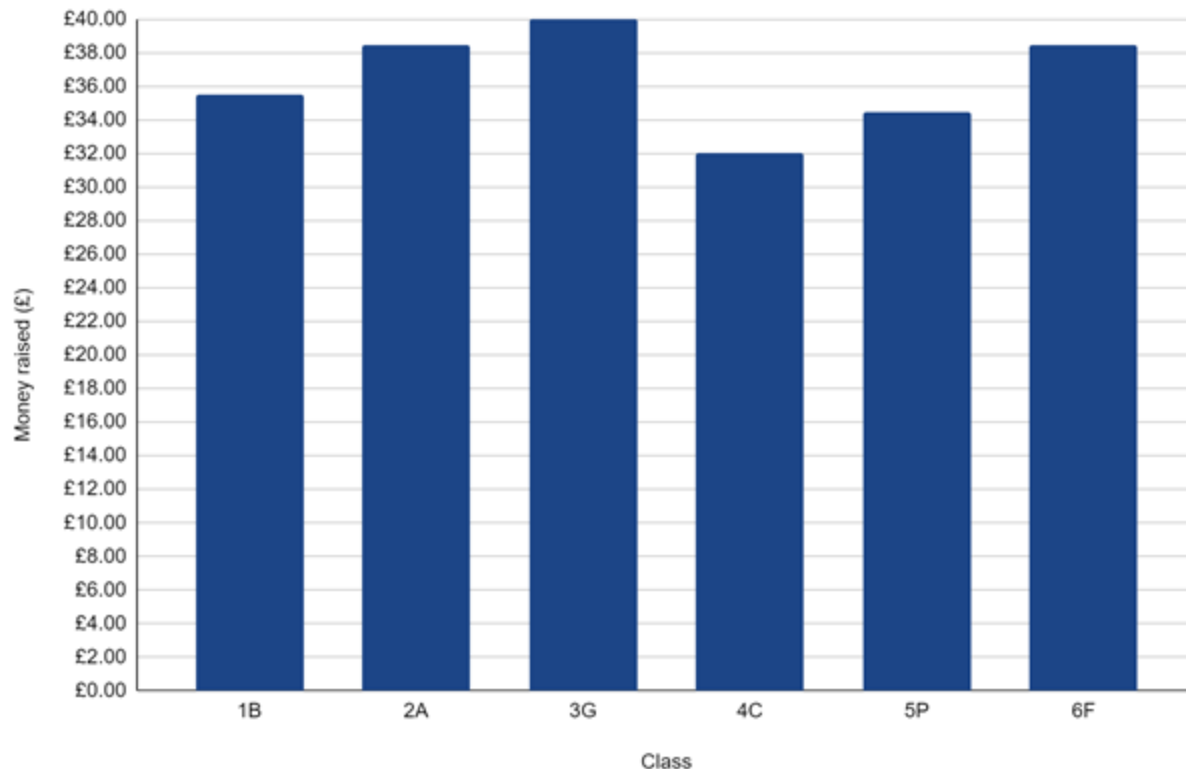
2A and 6F have bars of the same height. They have the same value.



Solving more complex problems



Money raised by each class from non-uniform day



Which class raised the least amount of money?
How do you know?

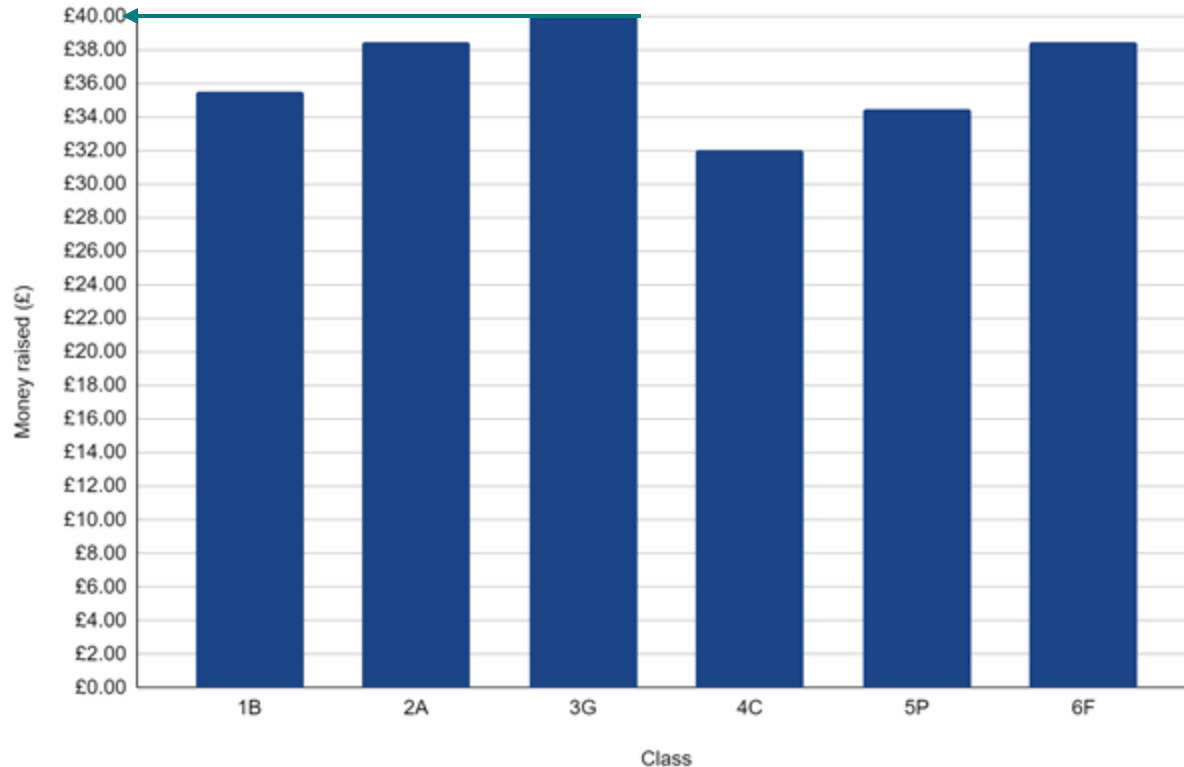
4C raised least. The bar representing 4C is the shortest.



Solving more complex problems



Money raised by each class from non-uniform day



How much money did 3G raise?

3G raised £40.00



- 1) Izzy spends some money. She paid with a £5 note and received four different coins as her change.

How much could she have paid and how much change could she have had?

What could her change be? What could it not be?



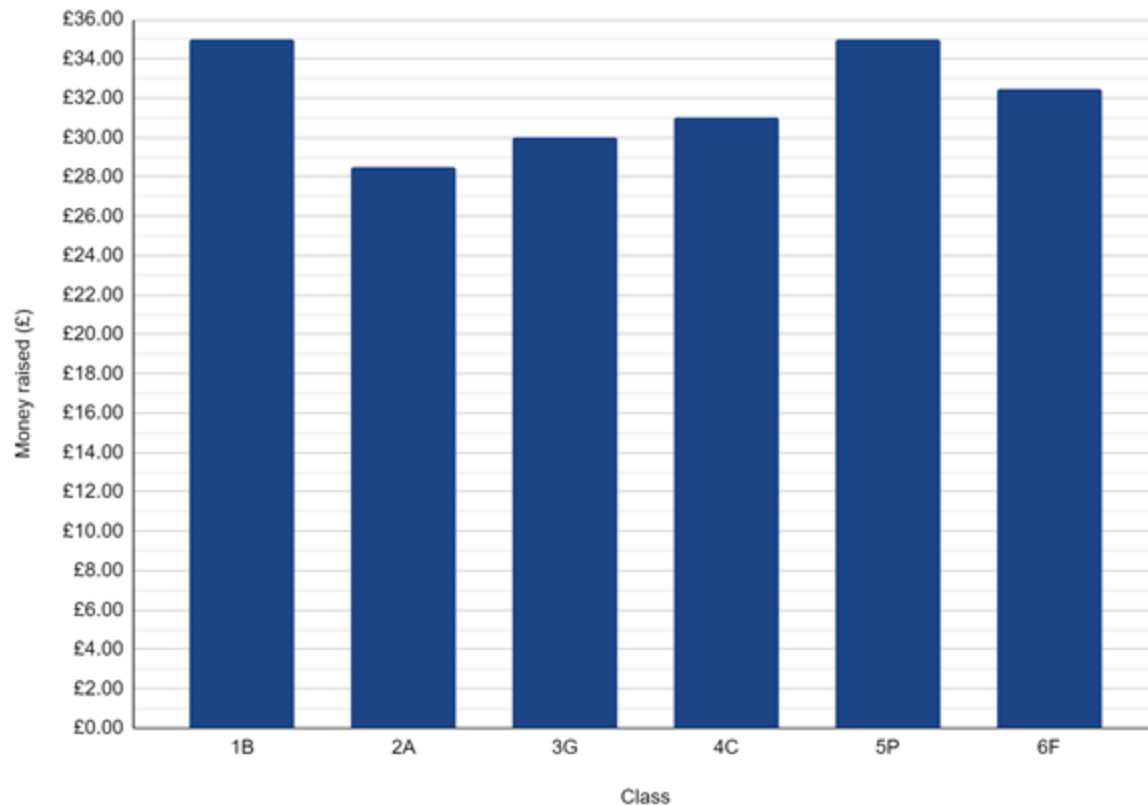
- 2) Use the graph to answer the questions.
- a) Order the amounts raised by each class in descending order.

 - a) How much more did Class 1B raise compared to Class 2A?

 - a) Class 4C were aiming to raise £40. How much more would they need to meet their target?



Money raised by each class from non-uniform day



Izzy spends some money. She paid with a £5 note and received four different coins as her change.

How much could she have paid and how much change could she have had?

You may have said:

Izzy received 1 p, 2 p, 5 p and 10 p in her change. This is 18 p. She spent £4.82

Izzy received 2 p, 5 p, 10 p and 20 p in her change. This is 37 p. She spent £4.63



2) Use the graph to answer the questions.

a) Order the amounts raised by each class in descending order.

£35.00 £32.50 £31.00 £30.00 £28.50

a) How much more did Class 1B raise compared to Class 2A?

£6.50 is the difference between £35.00 and £28.50

a) Class 4C were aiming to raise £40. How much more would they need to meet their target?

£9.00



Summary

Solve a range of problems, including finding change

When solving problems involving money, it can help to make all the values the same unit.

Strategies can be used to solve problems including thinking about what is known and unknown and **representing** a problem with a bar model can help you see the operation and steps.

Money can be **represented** in different ways including with coins and in graphs, but problems can be solved in the same way.



© Oak National Academy 2023.

Produced in partnership with Mathematics in Education and Industry.

Licensed on the [Open Government Licence v3.0](#), except where otherwise stated. See [Oak terms and conditions](#).

OGL

