Lesson - Fractions: halves and quarters

Year: Year 1

Hello, I am Otto! Have you ever shared a pizza or cut an apple in two? Then you already know about fractions! A fraction is a part of a whole. In Year 1 we learn about two fractions: halves and quarters.

Starter activity

Take a piece of paper. Fold it in half so the two parts match exactly. Open it up and colour one part. Now fold the paper in half and in half again. How many equal parts do you have? Colour one of them. What is different?

Whole and equal parts

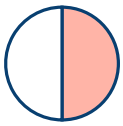
Definition: whole

A **whole** is the complete thing, with nothing missing. A whole pizza, a whole apple and a whole sheet of paper are all wholes.

Definition: equal parts

When we cut a whole into **equal parts**, every part is exactly the same size and shape. If the parts are not the same size, they are not equal, and we cannot call them halves or quarters.

This circle is cut into 2 parts that are the same size.



Watch out

Look carefully. A shape cut into two pieces is only cut into halves if the two pieces are the same size. A big piece and a small piece are not halves!

Halves

Definition: half

A **half** is one of two equal parts of a whole. We write a half as $\frac{1}{2}$. Two halves make one whole.



The rectangle is cut into 2 equal parts. One part is coloured. So $\frac{1}{2}$ of the rectangle is coloured.

Rule: half of a number

To find half of a group of objects, share them equally into 2 groups. Half of 8 is 4, because 4 + 4 = 8.

Example 1

Find half of 10 sweets.



Share the sweets into 2 equal groups of 5. Half of 10 is **5**.

Quarters

Definition: quarter

A **quarter** is one of four equal parts of a whole. We write a quarter as $\frac{1}{4}$. Four quarters make one whole.



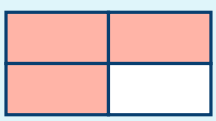
The circle is cut into 4 equal parts. One part is coloured. So $\frac{1}{4}$ of the circle is coloured.

Key fact

- 2 halves make 1 whole.
- 4 quarters make 1 whole.
- 2 quarters make 1 half: $\frac{2}{4} = \frac{1}{2}$.
- 3 quarters are $\frac{3}{4}$.

Example 2

How much of the rectangle is coloured?



The rectangle is cut into 4 equal parts. 3 parts are coloured. So $\frac{3}{4}$ (three quarters) is coloured.

Finding a quarter of a number

Method: finding a quarter

1. Share the objects equally into 4 groups.
2. Count how many are in one group.
3. That number is one quarter of the whole.

Example 3

Find a quarter of 12 stickers.



Share 12 into 4 equal groups. Each group has 3. A quarter of 12 is **3**. Check: 3 + 3 + 3 + 3 = 12.

Example 4

Find a quarter of 8.

Half of 8 is 4. A quarter is half of a half, so half of 4 is 2. A quarter of 8 is **2**.

Rule: a quarter is half of a half

Cut something in half and then cut each half in half again. You have four quarters. This is why you can find a quarter by halving twice.

Fractions in real life

Example 5

A pizza is cut into 4 equal slices. Mia eats 1 slice. What fraction of the pizza has Mia eaten? What fraction is left?



Mia has eaten $\frac{1}{4}$ (one quarter). 3 slices are left, so $\frac{3}{4}$ (three quarters) is left. Check: $\frac{1}{4}$ and $\frac{3}{4}$ make a whole.

Example 6

Tom has 6 toy cars. He gives half to his brother. How many cars does he give away?

Half of 6 is 3, because 3 + 3 = 6. He gives away **3** toy cars.

Example 7

Is this shape cut into halves? (One part is big and one part is small.)

No. The two parts are not the same size, so they are not equal, so they are not halves.

Did you know?

The word *quarter* comes from an old word that means "four". A quarter of an hour is 15 minutes. A quarter of a year is three months. A quarter of a pound of sweets is a small bag!

Otto's tip

Always check the parts are equal. Fold the paper or count the squares. If the parts match, you can name the fraction. Half means 2 equal parts and quarter means 4 equal parts!