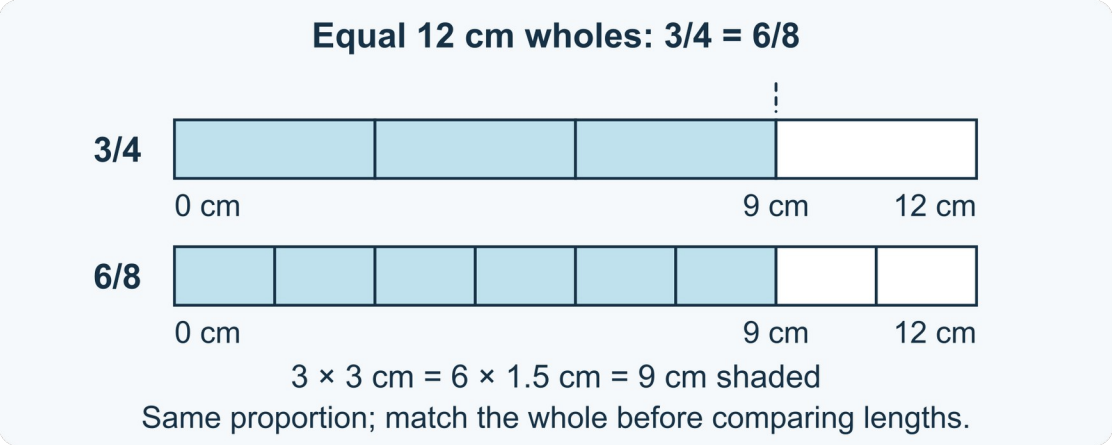
Show one fraction two ways

What must stay the same for two fraction pictures to be equivalent?

Shade equivalent fractions on equal-length strips and explain the difference between an equal proportion and an equal physical amount.

Make | 15–25 minutes, or one strip comparison | Paper and a pencil or pen, Optional ruler; use the labelled supplied strips if measuring is inconvenient

Start here Draw two equally long strips and label each whole as 12 cm. Divide strip A into four equal parts and strip B into eight equal parts.



One 12 cm whole: 3/4 = 6/8

1 Choose one whole

Keep the whole lengths identical for this direct length comparison. The parts inside each strip must be equal to one another; quarters and eighths do not have the same part length.

2 Shade the same proportion

Shade three parts of A and six parts of B. A quarter of 12 cm is 3 cm, so three quarters cover 9 cm. An eighth is 1.5 cm, so six eighths also cover 9 cm.

3 Explain the equivalence

Write 3/4 = 6/8. Multiplying both numerator and denominator by 2 gives the same proportion. The numerator counts shaded parts; the denominator counts equal parts in one whole.

4 Check what the picture proves

Compare the shaded endpoints, or use the labels to explain their match. If a new whole were only 8 cm long, three quarters would cover 6 cm: still the fraction 3/4, but a different length.

Original strip model of equivalent fractions

The supplied strips are a constructed model. Both represent a whole length of 12 cm; they are not measurements from a real object.

• A: 12 ÷ 4 = 3 cm per quarter; 3 × 3 = 9 cm shaded.

• B: 12 ÷ 8 = 1.5 cm per eighth; 6 × 1.5 = 9 cm shaded.

• Both shade 9/12 of the same whole, which is 3/4 = 6/8.

What this example can show Equivalent fractions name the same proportion even when used with different-sized wholes. Equal shaded lengths are evidence only when the whole lengths are comparable; unequal parts would make these particular fraction labels unreliable.

A different way

Point to the supplied shaded endpoints, dictate a label or use a folded-paper sketch without measuring. A spoken explanation is enough.

If you want to go further

Use the same 12 cm whole to show 1/3 = 2/6. Calculate the shaded length as 4 cm in both cases, then explain why unequal whole lengths would change the amount.

Something to notice

Have I kept the proportion separate from the size of the whole?

Read or explore more

Horizon topic Fractions Equivalence

https://launchhorizonhq.com/learn/fractions-equivalence/

Horizon topic Ratios Proportion

https://launchhorizonhq.com/learn/ratios-proportion/

Horizon topic Area Perimeter

https://launchhorizonhq.com/learn/area-perimeter/

NRICH, University of Cambridge Fractional Wall

https://nrich.maths.org/problems/fractional-wall

The Open University, OpenLearn Teaching mathematics: The fraction wall

https://www.open.edu/openlearn/mod/oucontent/view.php?id=82589&section=1.1.1