

Equivalent fractions on a number line

Notes and guidance

In this small step, children explore finding equivalent fractions by comparing multiple number lines and using double number lines.

The focus of this step is on using number lines to find equivalent fractions by looking at fractions that are in line with each other (equal in value), rather than more abstract methods using multiplicative reasoning. A common mistake with this method is drawing bars of unequal length. To avoid this potential error, it can be useful to reinforce one of the key learning points from previous steps: when the numerator and denominator are equal, the fraction can also be shown as 1. Therefore, when drawing multiple number lines to find equivalent fractions, the start and end points (0 and 1) must always be in line with each other.

Children also compare multiple number lines to find families of equivalent fractions, looking for patterns and relationships.

Things to look out for

- If number lines are not drawn so that they are equal in length, then equivalent fractions will not be easy to see.
- Children may need support drawing and labelling number lines accurately.

Key questions

- What other word does “equivalent” remind you of?
- What are equivalent fractions?
- What are the start and end numbers of each number line?
- Which fractions are in line with _____?
- How do you know _____ is equivalent to _____?
- When drawing number lines to show equivalent fractions, why is it important that your number lines are equal in length?
- What do you notice about the numerators and denominators of the fractions that are equivalent to $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$...?

Possible sentence stems

- The number lines start at _____ and end at _____
- I know _____ is equivalent to _____ because ...

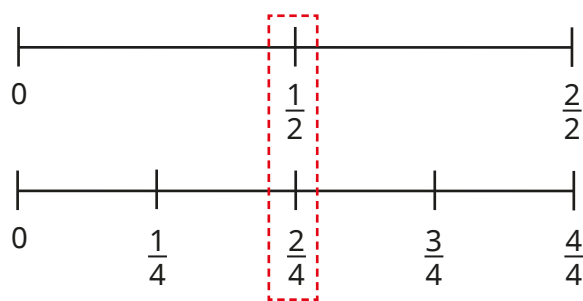
National Curriculum links

- Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- Recognise and show, using diagrams, equivalent fractions with small denominators

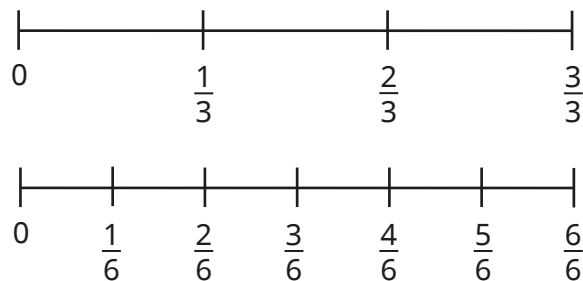
Equivalent fractions on a number line

Key learning

- The number lines show that $\frac{1}{2}$ and $\frac{2}{4}$ are equivalent fractions.



Use these number lines to find a pair of equivalent fractions.

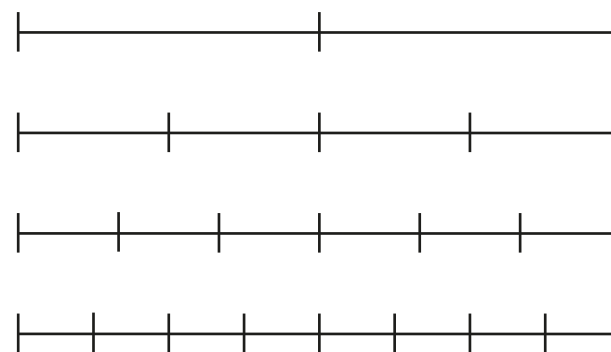


Have you got the same pair of fractions as your partner?

- Draw number lines to complete the equivalent fractions.

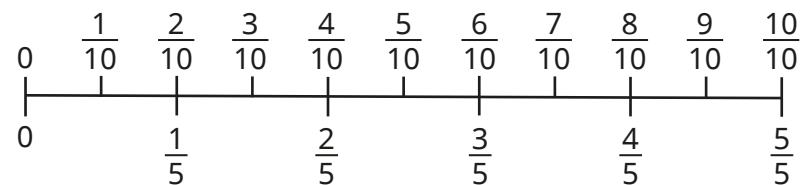
$$\begin{array}{ccccccc} \triangleright & \frac{\square}{4} = \frac{2}{8} & \triangleright & \frac{2}{4} = \frac{\square}{8} & \triangleright & \frac{\square}{\square} = \frac{6}{8} & \triangleright & \frac{4}{4} = \frac{\square}{\square} = 1 \end{array}$$

- Label the number lines with the correct fractions.



What equivalent fractions can you find?

- Use the double number line to complete the equivalent fractions.

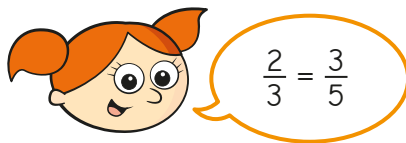
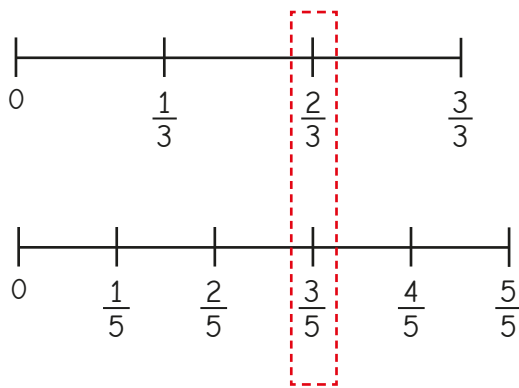


$$\begin{array}{lll} \triangleright \frac{3}{5} = \frac{\square}{10} & \triangleright \frac{\square}{5} = \frac{4}{10} & \triangleright \frac{1}{5} = \frac{\square}{\square} \\ \triangleright \frac{8}{\square} = \frac{4}{\square} & \triangleright \frac{\square}{5} = \frac{\square}{10} = 1 & \end{array}$$

Equivalent fractions on a number line

Reasoning and problem solving

Alex is drawing number lines to find equivalent fractions.

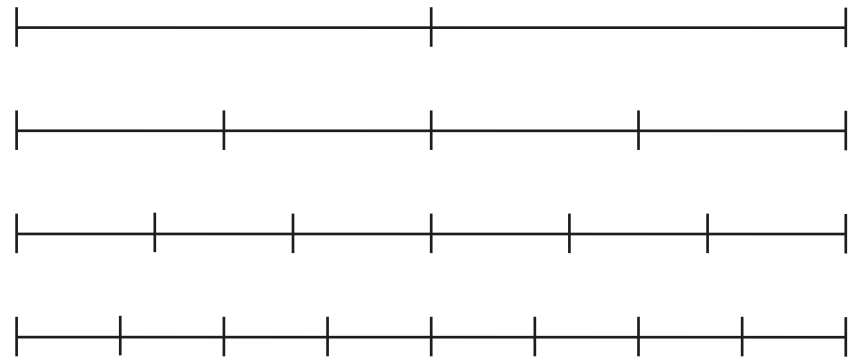


Do you agree with Alex?

Explain your reasons.

No

Use the number lines to complete the equivalent fractions.



$$\frac{1}{2} = \frac{\square}{4} = \frac{\square}{6} = \frac{\square}{8}$$

What do you notice?

Draw a number line or other diagram to help you complete the equivalent fraction.

$$\frac{1}{2} = \frac{\square}{10}$$

2, 3, 4 | 5