Equivalent fractions on a number line

Notes and guidance

In Year 3, children used number lines to find equivalent fractions within 1 and this knowledge is now extended to numbers beyond 1

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 using more abstract methods of multiplicative reasoning. Drawing bars of unequal length or lining them up incorrectly are common mistakes with this method, so it is vital to highlight that integer values should always be in line with each other. Children look at multiple number lines, double number lines and splitting up existing number lines into smaller parts. They may explore equivalence of both mixed numbers and improper fractions.

Things to look out for

- If number lines are not drawn to the same length or lined up correctly, then equivalent fractions will not be easy to see.
- Children may need support drawing and labelling number lines accurately.
- Children may use incorrect "rules" for finding equivalent fractions that can lead to incorrect equivalences such as $2\frac{1}{3} = 4\frac{2}{6}$

Key questions

- What are equivalent fractions?
- What unit fraction is the number line counting in?
- How do you know that _____ is equivalent to _____?
- Why do the integers have to be in line with each other?
- How do you know that $2\frac{1}{3}$ cannot be equivalent to $4\frac{2}{6}$?
- What is _____ as a mixed number/improper fraction?

Possible sentence stems

- There are _____ equal intervals between consecutive integers, so the number line is counting in _____s.
- I know that _____ is equivalent to _____ because …
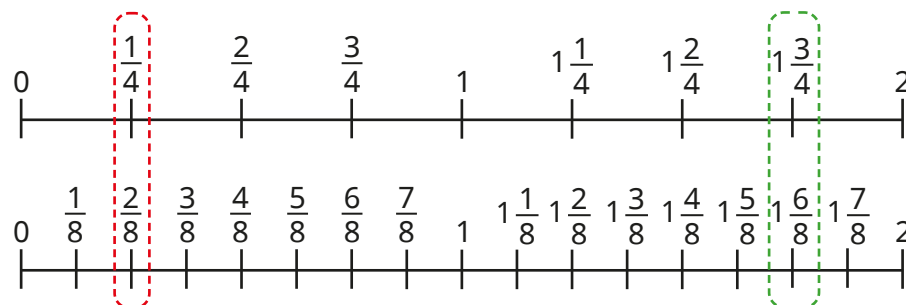- To split the number line into _____, I need to split each interval into _____ equal sections.

National Curriculum links

- Recognise and show, using diagrams, families of common equivalent fractions

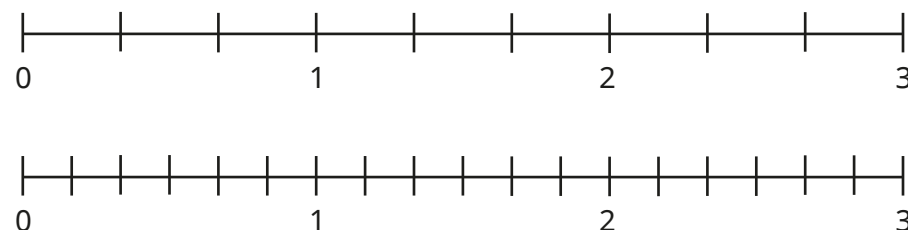# Equivalent fractions on a number line

Key learning

- The number lines show two pairs of equivalent fractions.

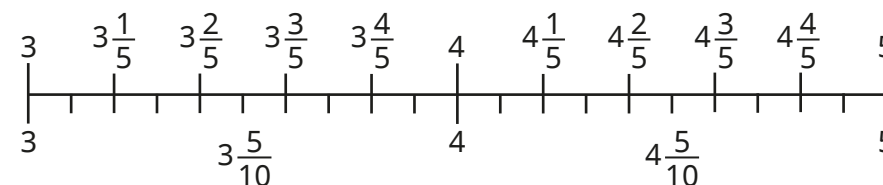Use the number lines to find two other pairs of equivalent fractions.

- Label the number lines.

Use the number lines to complete the equivalent fractions.

▸ $\dfrac{\square}{3} = \dfrac{2}{6}$ ▸ $1\dfrac{1}{3} = \underline{\quad} \dfrac{\square}{6}$ ▸ $1\dfrac{4}{6} = \underline{\quad} \dfrac{\square}{\square}$
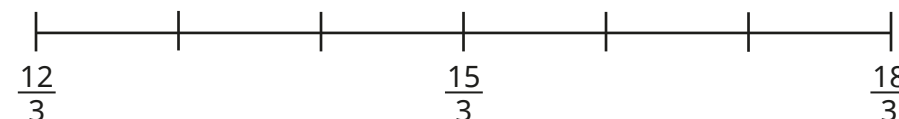
- Use the double number line to complete the equivalent fractions.

▸ $3\dfrac{4}{5} = \underline{\quad\quad}$ ▸ $4\dfrac{4}{10} = \underline{\quad\quad}$ ▸ $5\dfrac{1}{5} = \underline{\quad\quad}$

Write the equivalent mixed numbers as improper fractions.

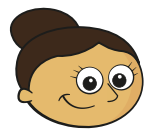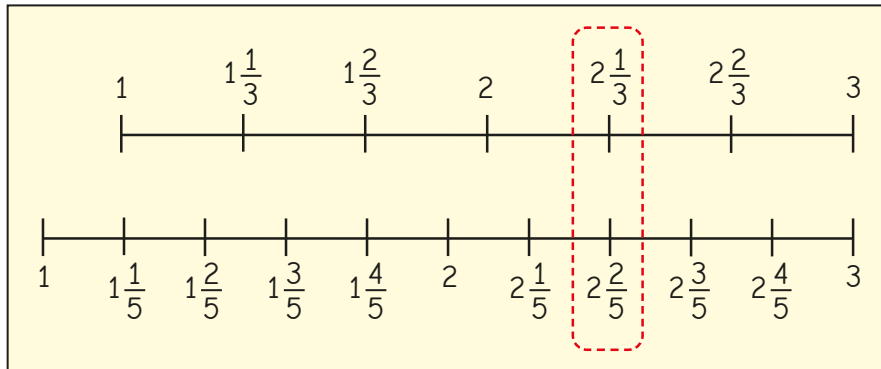- Split each section of the number line into 4 equal parts.

Use the number line to find two pairs of equivalent improper fractions.

Write each pair of improper fractions as mixed numbers.

Equivalent fractions on a number line

Reasoning and problem solving

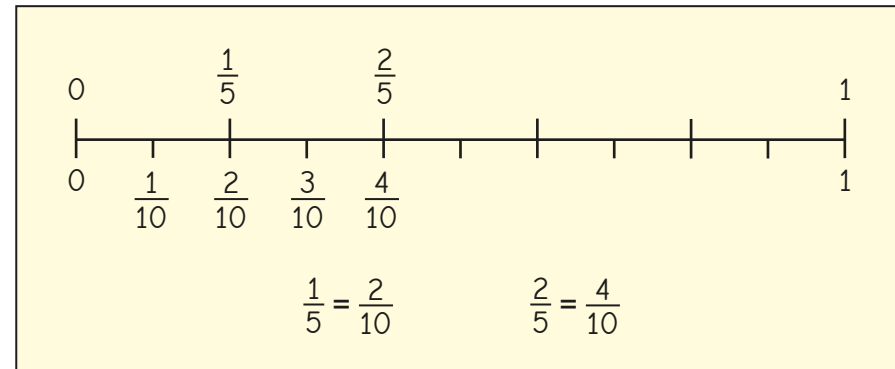Dora is drawing number lines to find equivalent fractions.

$2\frac{1}{3}$ is equivalent to $2\frac{2}{5}$

Do you agree with Dora?

Explain your answer.

No

$\frac{1}{5} = \frac{2}{10}$ $\frac{2}{5} = \frac{4}{10}$

I think that $1\frac{2}{5}$ is equivalent to $2\frac{4}{10}$ because I can just double everything.

Do you agree with Dexter?

Explain your answer.

No