

Mathematics

Fractions:

Understanding equivalence.

Be prepared!

Equipment Check

For this lesson you will need:

- A pencil
- A piece of paper or exercise book



Pause the video now and get your equipment ready.

Lesson Agenda

In today's lesson we are going to:

Understand and describe equivalence.

- Identifying equivalent fractions pictorially
- Identifying equivalent relationships between numerical representations
- Reasoning about equivalence
- Simplifying fractions
- Independent Task - practise what we have learnt
- Quiz - test what you have learnt in today's lesson

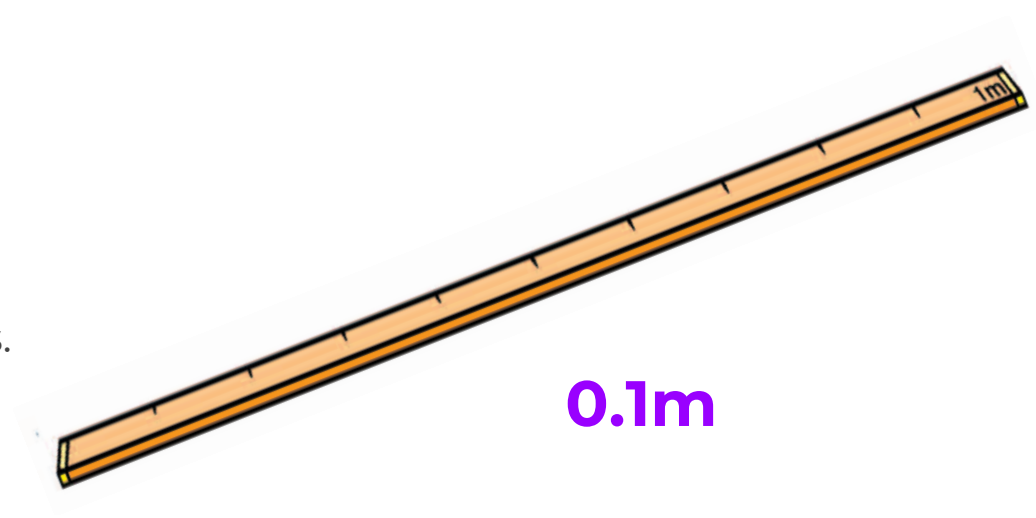
Do Now

Look at these three measurements.

What do you notice?

What is the same and what is different?

Pause the video and make some notes.



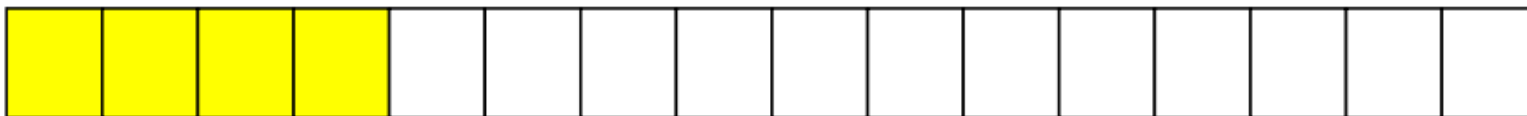
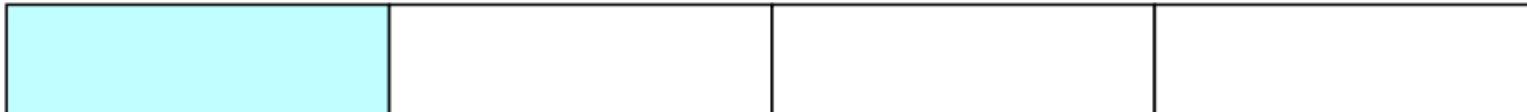
0.1m

10cm

Equivalent means equal in value.

100mm

What fraction of each rectangle has been shaded?

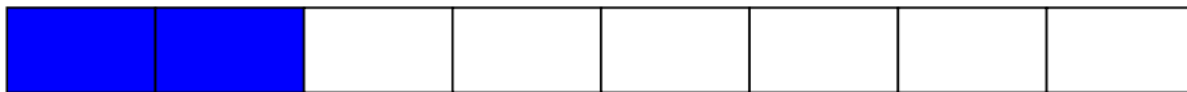


Are they equivalent?

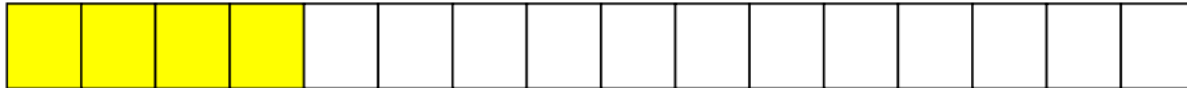
$$\frac{1}{4}$$



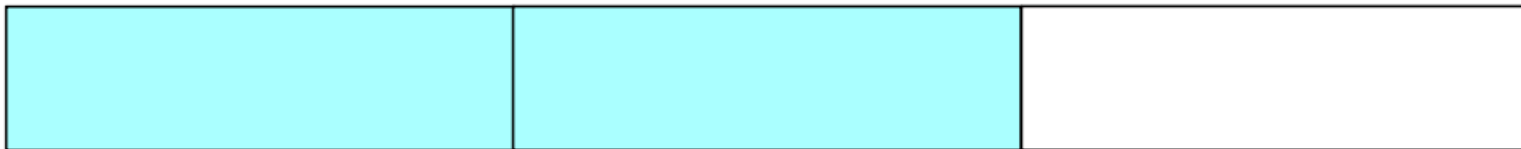
$$\frac{2}{8}$$



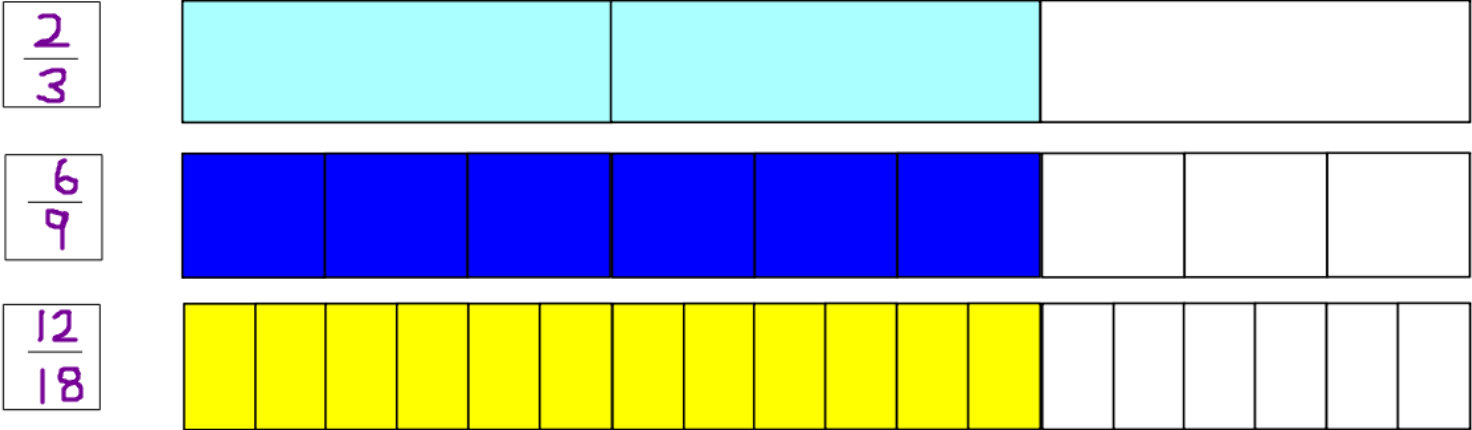
$$\frac{4}{16}$$



Your turn: pause the video and work out what fraction of each rectangle has been shaded. Are the fractions equivalent? How do you know?



This is how you should have described those relationships...



Reasoning about equivalence

Are these fractions equivalent? How can I prove it?

$$\frac{3}{4} \quad \frac{11}{16}$$

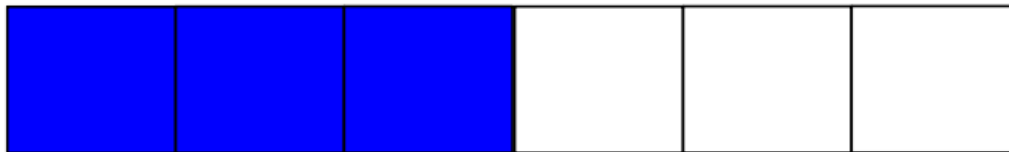
Your turn: pause the video and prove whether these fractions equivalent or not? Remember to use two approaches to prove your answer.

$$\frac{3}{6} \quad \frac{8}{12}$$

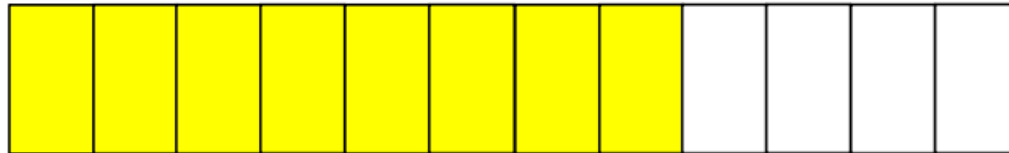
This is how the relationship should have been reasoned..

$$\frac{3}{6} \quad \frac{8}{12}$$

$$\frac{3}{6}$$

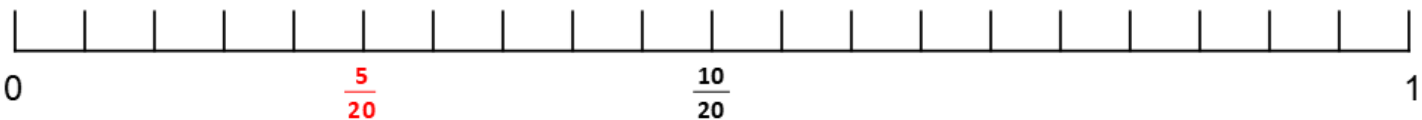
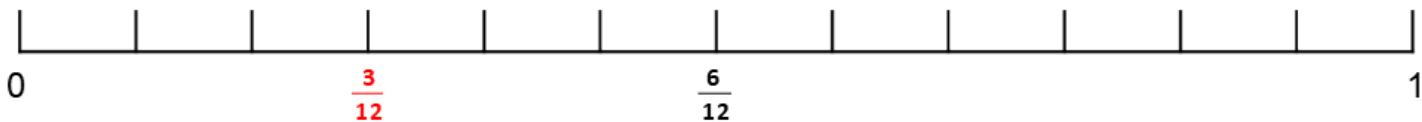
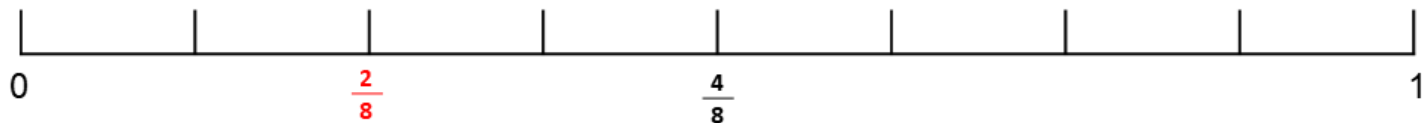


$$\frac{8}{12}$$

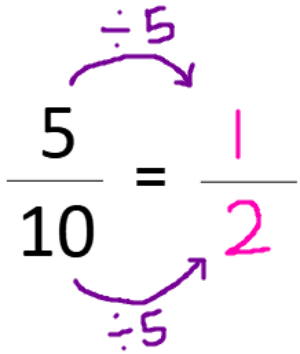


Deepening our understanding.

What can these number line representations tell us about the fractions $\frac{2}{8}$, $\frac{3}{12}$ and $\frac{5}{10}$?



Your turn: simplify each fraction so that they are in their simplest form. One has been done for you.

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


$$\frac{6}{8} = \underline{\hspace{1cm}}$$

$$\frac{10}{12} = \underline{\hspace{1cm}}$$

$$\frac{6}{9} = \underline{\hspace{1cm}}$$

Solutions

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

A diagram showing the simplification of the fraction $\frac{5}{10}$ to $\frac{1}{2}$. A purple arrow points from 5 to 1 with the label $\div 5$ above it. Another purple arrow points from 10 to 2 with the label $\div 5$ below it.

$$\frac{6}{8} = \frac{3}{4}$$

A diagram showing the simplification of the fraction $\frac{6}{8}$ to $\frac{3}{4}$. A purple arrow points from 6 to 3 with the label $\div 2$ above it. Another purple arrow points from 8 to 4 with the label $\div 2$ below it.

$$\frac{10}{12} = \frac{5}{6}$$

A diagram showing the simplification of the fraction $\frac{10}{12}$ to $\frac{5}{6}$. A purple arrow points from 10 to 5 with the label $\div 2$ above it. Another purple arrow points from 12 to 6 with the label $\div 2$ below it.

$$\frac{6}{9} = \frac{2}{3}$$

A diagram showing the simplification of the fraction $\frac{6}{9}$ to $\frac{2}{3}$. A purple arrow points from 6 to 2 with the label $\div 3$ above it. Another purple arrow points from 9 to 3 with the label $\div 3$ below it.

Independent Task

Independent Task: answers

Question 1

Simplify the fraction and find an equivalent to complete the missing fractions.

$$\frac{\square}{\square} = \frac{6}{9} = \frac{\square}{\square}$$

$$\frac{\square}{\square} = \frac{16}{48} = \frac{\square}{\square}$$

Independent Task: answers

Question 2

$18/27$ is equivalent to $2/3$. Explain how you know.

Independent Task: answers

Question 3

Elizabeth knows that one equivalent fraction of $\frac{33}{55}$ has a numerator of 3.

What is the fraction?

Independent Task: answers

Question 4

Youcef wants to share his cake equally.

He gives $\frac{1}{6}$ to Sarah and $\frac{4}{18}$ to Metila.

Did he share equally? How do you know?

Independent Task: answers

Question 5

How many different ways can you correctly complete these two fractions so that they are equivalent?

$$\frac{\square}{24} = \frac{3}{\square}$$