THIRD SPACE LEARNING

Maths Intervention Pack

Fractions
Using diagrams to show equivalent fractions

Year 3

How to use the resources

1. Cover Slide
   Use this slide to activate prior knowledge needed for lesson. Pupils should be encouraged to initially attempt the question presented independently.

2. Let's Learn
   Use this slide to introduce the concept. Tutors should work with the pupil to explore the concept together, usually using diagrams to support understanding.

3. Follow Me/ Your Turn
   The tutor should work through the follow me slide, modelling the process and explaining their thinking out loud.
   Pupils should use the your turn slide as an opportunity to solve a very similar question to the follow me question. They should apply the method modelled by the tutor in the follow me slide. Pupils should be encouraged to explain their thinking out loud.

4. You Do
   Pupils should work through a range of questions that build in complexity. Tutors can offer support but pupils should initially be encouraged to attempt these questions independently.

5. Go Further
   Use this slide to allow pupils to apply their understanding to a more challenging question in an unfamiliar context.

6. Support
   The support slide is used to support pupils during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

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Tutor / Teacher / TA notes

Key mathematical ideas:

- To find fractions that are equivalent to $\frac{1}{2}$
- Use bar models to help find equivalent fractions
- Solving a real-life problem involving the equivalence of fractions
- To begin to recognise how to find equivalent fractions without diagrams

Terminology:

- Equal: Exactly the same amount or value
- Equivalent fractions: Fractions with the same value as another.
- Value: How much something is worth
- Numerator: The top number in a fraction. Shows how many parts we have.
- Denominator: The bottom number in a fraction. Shows how many equal parts the item is divided into.
- Bar model: A way to pictorially represent a problem using proportionally sized bars.

Common misconceptions:

- Pupils thinking that fractions are not equivalent because they do not 'look' the same.

Slide 1: Cover Slide

If stuck

What do you notice about each shape? (They have 2 parts)

Answers

All the shapes are divided into 2 equal parts.
They all show $\frac{1}{2}$
All the shapes are different.

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Slide 2: Let's Learn

If stuck

Draw attention to the blue rectangle and the green rectangle that is highlighting both $\frac{1}{2}$ and $\frac{2}{4}$.

Draw a vertical line down the centre of the wall so pupils can see what other fractions are equivalent.

Refer to the support slide that explores equivalence using shapes.

Questions

What do you notice about the numerator and denominator in each fraction you have shown in your answers? (The numerator is half the denominator.)

What do you notice about all the denominators in your answers? (They are all multiples of 2 - the original denominator of the fraction we are finding equivalent fractions for.)

Answers

$\frac{3}{6}$ $\frac{4}{8}$ $\frac{5}{10}$ $\frac{6}{12}$

Slide 3: Follow Me

Modelling Prompts

Explain that we divide the bar into 5 equal parts (fifths) because the denominator is 5.

To find an equivalent fraction, the new denominator needs to be a multiple of 5.

Circle $\frac{1}{5}$ on the bar model and point out that this is the same as $\frac{2}{10}$.

Answers

b)

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

d) 2

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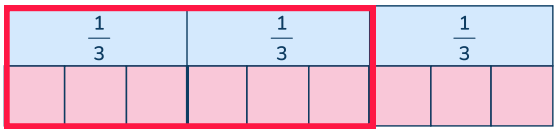
Slide 3: Your Turn

Questions

How else could the 2nd bar have been divided? (into sixths, twelfths - any multiple of 3)

Answers

a) ninths

b) 

c) ninths

d) $\frac{6}{9}$

Slide 4: You Do

If stuck

Encourage pupils to annotate the bar models.

Questions

Can you begin to notice any patterns to help you see how to work out equivalent fractions? (the numerator and denominator are multiplied by the same amount. Pupils don't have to come up with this but it could be pointed out to them.)

Answers

a) 3

b) $\frac{2}{8}$

c) $\frac{4}{12}$

d) $\frac{6}{10}$

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Slide 5: Go Further

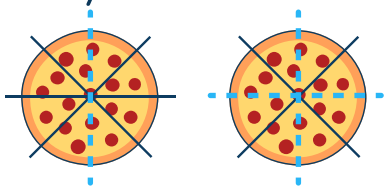
If stuck

Refer to the support slide that explores equivalence using shapes.

Questions

How many pieces is the pizza divided into? (8)

Can you annotate the diagram to show a half? What about quarters?



Answers

$\frac{4}{8}$ or $\frac{2}{4}$

Slide 6: Support

Support throughout to help pupils see the equivalence of fractions.

Questions

What do you notice that is the same about all these fractions? (They all show $\frac{1}{4}$, they all have the same whole - the square.)

How are the diagrams different? (The whole is divided up in different ways.)

How could you prove that the pink shaded part in b) is the same as the pink squares in the other 2 diagrams? (Imagine cutting the pink triangle in half and rotating it round and it would give a small square like the others.)

Answers

a) $\frac{1}{4}$

b) $\frac{1}{4}$

c) $\frac{2}{8} = \frac{1}{4}$

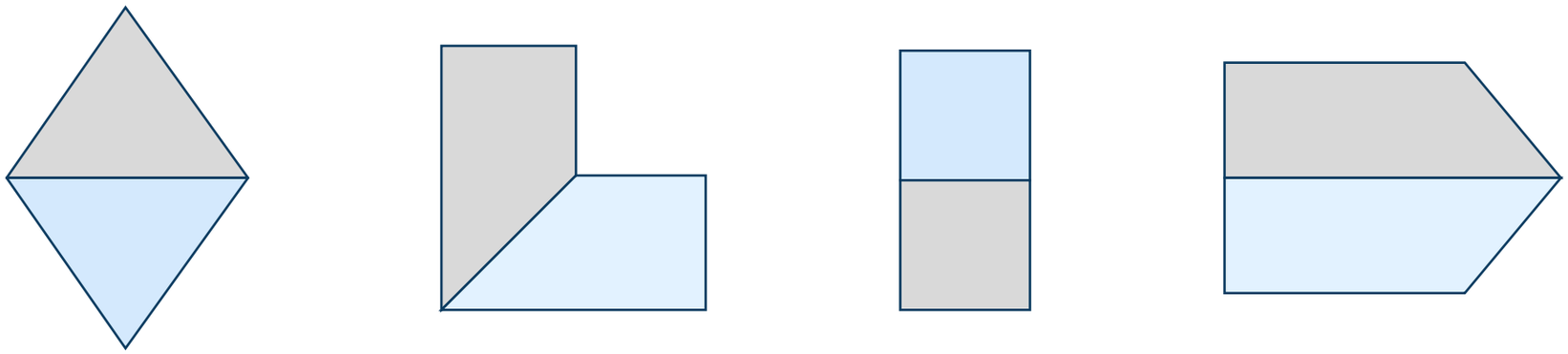
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Today you will learn about

Using diagrams to show equivalent fractions

Warm up question

What is the same and different about these fractions?

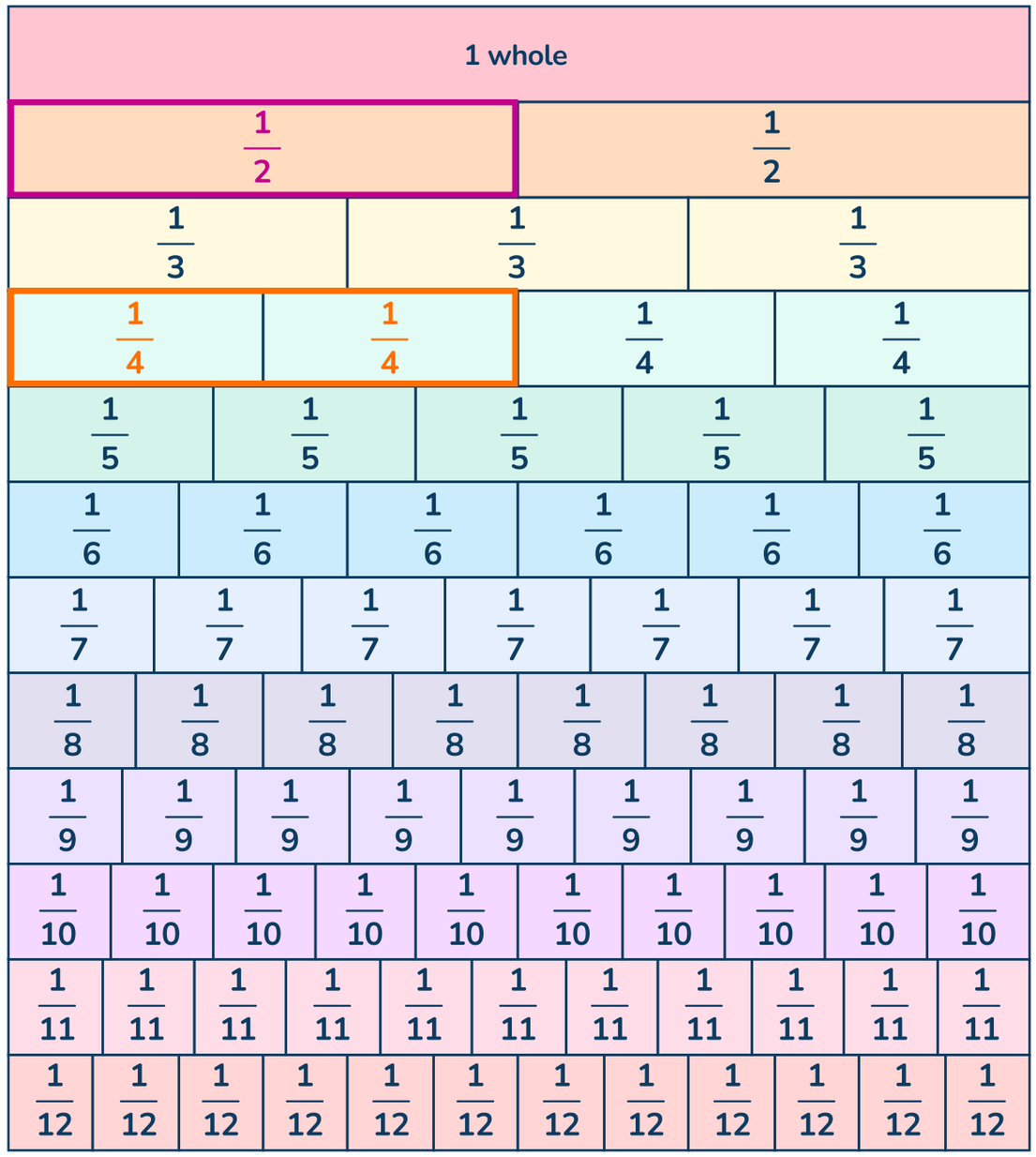


Let's learn

Equivalent fractions are two (or more) fractions that have the **same value** or are **equal**.

Here is a fraction wall.
We can use fraction walls to find equivalent fractions.

$\frac{1}{2}$ and $\frac{2}{4}$ are exactly the same size on the fraction wall.



This means $\frac{1}{2}$ and $\frac{2}{4}$ are **equivalent fractions.**

a Use the fraction wall to list 4 other fractions that are equivalent to $\frac{1}{2}$

$\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

Follow me

We can use bar models to find equivalent fractions.

Let's look at finding a fraction that is equivalent to $\frac{1}{5}$

a We can use two bars of **equal length.**
Divide one into fifths and one into tenths.

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

b Circle $\frac{1}{5}$ of the bar model.

c Look to see how many tenths are equivalent to $\frac{1}{5}$

d $\frac{\square}{10}$ is equivalent to $\frac{1}{5}$

What do you notice about the denominators?

Your turn

Find a fraction that is equivalent to $\frac{2}{3}$

a Below are two bars of **equal length.**
One is divided into thirds and one is divided into .....

$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$		

b Circle $\frac{2}{3}$ of the bar model.

c How many ..... are equivalent to $\frac{2}{3}$?

d $\frac{\square}{\square}$ is equivalent to $\frac{2}{3}$

You do

Find the equivalent fractions by using the bar models.

a $\frac{1}{2} = \frac{\square}{6}$

$\frac{1}{2}$			$\frac{1}{2}$		
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

b $\frac{1}{4} = \frac{\square}{\square}$

$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

c $\frac{2}{6} = \frac{\square}{\square}$

$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$

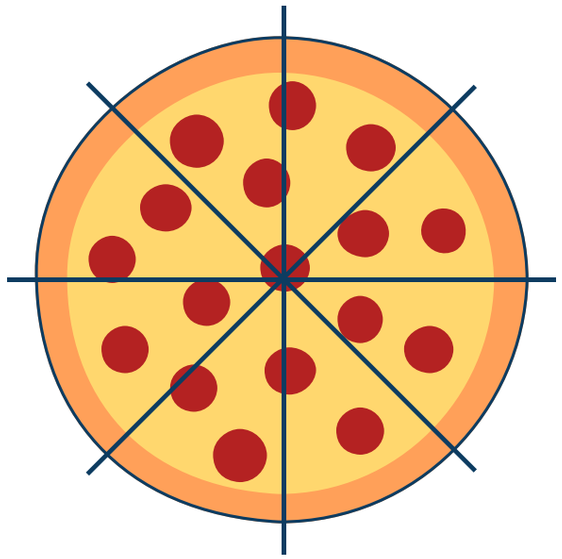
d $\frac{3}{5} = \frac{\square}{\square}$

$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	

Go further

Priya is sharing this pizza with her brother.
They both have half of the pizza.
What equivalent fraction of this pizza will they each eat?

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

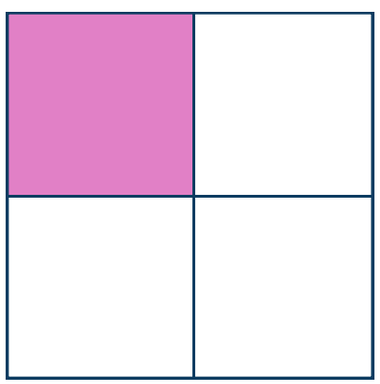


Support

Equal parts don’t always look equal at first.

1 Complete the fractions below.

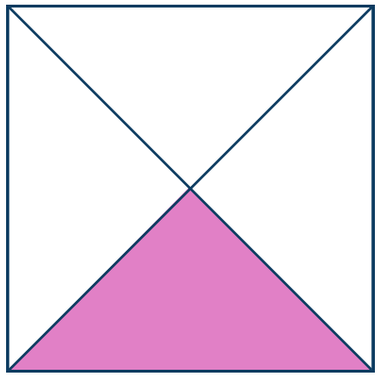
a



$\frac{\square}{\square}$

This square has been divided into 4 equal parts.
One out of four parts are coloured.

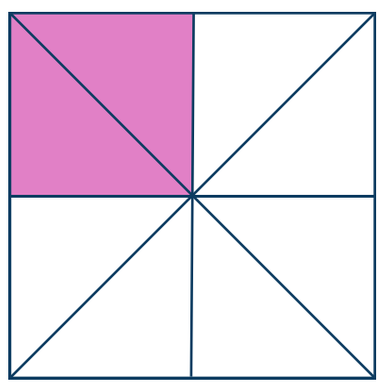
b



$\frac{\square}{\square}$

This square has also been divided into 4 equal parts.
One out of four parts are coloured.

c



$\frac{\square}{\square} = \frac{\square}{\square}$

This square has been divided into 8 equal parts.
Two out of eight parts are coloured.

The area coloured is the same in all the squares. This means that the fractions are equal or equivalent fractions.

Do you have a group of pupils who need a boost in maths this term?

Each pupil could receive a personalised lesson every week from our specialist 1-to-1 maths tutors.

- Raise attainment
- Plug any gaps or misconceptions
- Boost confidence

Speak to us

thirdspacelearning.com

0203 771 0095

hello@thirdspacelearning.com

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