

Fractions: Lesson 2

Finding Equivalent Fractions, part 2

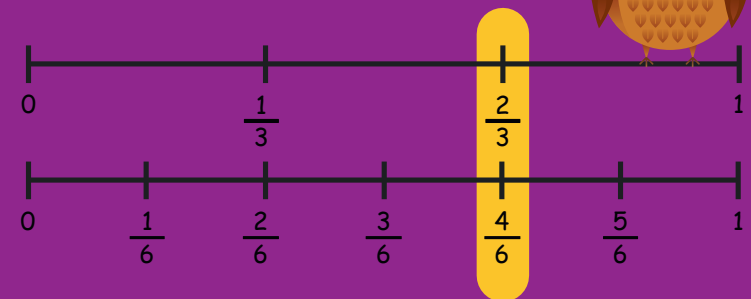
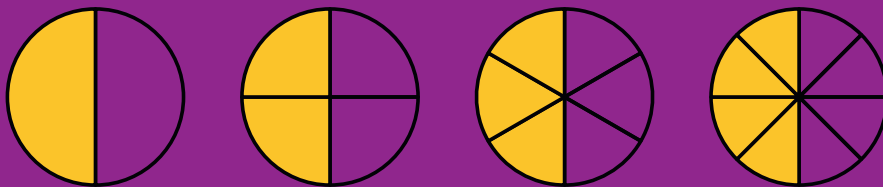
Maths KS2 Years 5 and 6

Equivalent
fractions

Dividing
bar

Scale
factor

Equal
parts



Maths Lesson 2: Fractions

Finding Equivalent Fractions

Maths

Key Stage 2 Years 5 and 6

Learning Objectives

- to understand that having the same value means that they sit at the same place on a number line
- to explore the multiplicative relationship between the numerators and the denominators of equivalent fractions

Curriculum Link

- to solve problems that involve fractions

Keywords from Lesson 1

Fraction. Equal parts. Denominator. Numerator.

Keywords for Lesson 2

Equivalent fractions. Dividing bar. Scale factor.

These can also be found in printable format at the end of this PDF.

Fraction

**Dividing
bar**

**Scale
factor**

Numerator



You will need the following resources for this lesson:

- White boards and pens.
- Ruler, scissors, pencil and a colouring pencil.
- Handout 1, or a sheet of A4 paper divided into fifths (for Activity 1).
- Handout 2, matching fraction family cards, one set per pair/small group, cut up as cards. The stem sentence either displayed on the interactive whiteboard or on card on the table for everyone to use (for Activities 2 and 4).
- Handout 3, tangram, one per pair (for Activity 3).
- Handout 3B, answers to the tangram (should you wish to use) (optional for Activity 3).
- Handout 4 and Handout 5, Guess my fraction card and question prompts (for Activity 4).

PowerPoint presentation

The accompanying PowerPoint has 16 slides with the following learning points:

- Slides 1 and 2 introduce the lesson, the learning aims and the key words.

The introduction considers how fractions having the same value means that they sit at the same place on a number line.

Start by referring back to the previous lesson.

- Slide 3 shows the 2 number lines with $\frac{1}{4}$ and $\frac{2}{8}$ highlighted. The stem sentence from yesterday's lesson is:

$\frac{1}{4} = \frac{2}{8}$ as they have the same value.

Now share the term equivalent fractions and explain that when 2 fractions have the same value they are called equivalent fractions.

Read out the stem sentence together.

$\frac{1}{4} = \frac{2}{8}$ are equivalent fractions as they have the same value.

- Slide 4 asks the children, in pairs, to find other pairs of equivalent fractions. Encourage them to use the stem sentence: **__ = __ are equivalent fractions as they have the same value.**

They should identify $\frac{2}{4}$ and $\frac{4}{8}$ and also $\frac{3}{4}$ and $\frac{6}{8}$.



Activity 1

- Slide 5 is animated to model this activity.

Either give each pair a copy of Handout 1, or a piece of A4 paper divided into fifths.

Ask the children to colour in one fifth of their paper.

Then ask them to fold their paper in half and draw the halfway line on their paper. Ask the children:

- How many parts are shaded now?
- How many parts are there in the whole?
- What fraction is shaded?

Emphasise that although we have divided the paper into tenths, we can still see that we have shaded one fifth.

Now read the stem sentence together: **$\frac{1}{5}$ and $\frac{2}{10}$ are equivalent fractions as they have the same value.**

Fold the paper in half again, draw the folding lines and ask:

- How many parts are shaded now?
- How many parts are there in the whole?
- What fraction is shaded?

Emphasise that although we have divided the paper into twentieths, we can still see that we have shaded one fifth and two tenths.

- Read the new stem sentence: **$\frac{1}{5}$ and $\frac{2}{10}$ and $\frac{4}{20}$ are equivalent fractions as they have the same value.**

Now ask the children, working in pairs, to find the equivalent fractions for $\frac{2}{5}$, $\frac{3}{5}$ and $\frac{4}{5}$ and to record their fractions on their whiteboards (or notebooks).

- Slide 6 reflects back to the original fractions for one fifth and two tenths and considers the multiplicative relationship between the numerators and the denominators of equivalent fractions.

As you show the representations one fifth and two tenths side by side ask:

How many parts would I have if I had folded my paper into thirds?



- Slide 7 is animated.

Ask the same questions as above:

- How many parts are shaded now?
- How many parts are there in the whole?
- What fraction is shaded?

Read out the stem sentence:

$\frac{1}{5}$ and $\frac{2}{10}$ and $\frac{3}{15}$ and $\frac{4}{20}$ are equivalent fractions as they have the same value.

- Slide 8 unpicks this further. Ask the questions on the slide.
 - What do you notice about the numerators? *Answer: Going up by one, one is added each time.*
 - What do you notice about the denominators? *Answer: Five is being added each time.*
 - Can you find another equivalent fraction?

Now encourage the children to look at the individual fractions to see if they can spot a pattern within the fractions.

They should be noticing the denominator is 5 times greater than the numerator.

- Slide 9 exemplifies this. Read out the stem sentence together:

The numerator and the denominator have been scaled by a factor of five.

Activity 2

- Slide 10 introduces Activity 2. This uses Handout 2 and is a card matching game. Give each pair/small group a set of the cards and ask them to match the cards into equivalent 'families'. When they have found a matching set they need to re-read the stem sentences and identify the scale factor:

_____ **are equivalent fractions as they have the same value.**

The numerator and the denominator have been scaled by a factor of ____

Timing: Allow approximately 5-10 minutes for this game.

Activity 3

- Slide 11 introduces a simplified version of Activity 3. Ask the question on the slide and encourage the children to reason how they are able to work out the fractional size of each part. There are reasoning sentence starter bubbles on the slide to encourage the children with their reasoning.



Activity 3

- Slide 12 is a tangram (see Handout 3). Ask the children to work with their partner to figure out the fractional size of each of the tangram pieces.
- Slide 13 is hidden but provides the answer to the tangram puzzle. The answers are also supplied on Handout 3B.

Timing: Allow approximately 10 minutes for this activity.

Plenary and Activity 4

- The plenary activity starts on **Slide 14**. Use the fraction cards (Handouts 2 and 4) and the reasoning stem questions (Handout 5) that can be adapted to suit the fraction being chosen.
- Slide 14 is animated for the first version of this game. Choose eight children to come out to the front of the classroom and to hold the fraction cards. These fractions could be written on whiteboards.

For the first version of this game the fraction to be guessed is $\frac{3}{8}$.

This game can be replayed with different fractions selected either as a whole class activity or a group activity.

- Slide 15 is a review slide for you to annotate on your interactive whiteboard or to collect what children reflect they have been learning about.

The coloured underlined ideas are the key ideas from this lesson. They indicate opportunities for pupil talk indicated throughout the PowerPoint.

Handout 1

--	--	--	--	--



Handout 2



$\frac{1}{2}$	$\frac{2}{4}$	$\frac{3}{6}$	$\frac{4}{8}$	$\frac{5}{10}$
$\frac{1}{3}$	$\frac{2}{6}$	$\frac{3}{9}$	$\frac{4}{12}$	$\frac{5}{15}$
$\frac{1}{4}$	$\frac{2}{8}$	$\frac{3}{12}$	$\frac{4}{16}$	$\frac{5}{20}$
$\frac{1}{5}$	$\frac{2}{10}$	$\frac{3}{15}$	$\frac{4}{20}$	$\frac{5}{25}$
$\frac{1}{6}$	$\frac{2}{12}$	$\frac{3}{18}$	$\frac{4}{24}$	$\frac{5}{30}$
$\frac{1}{10}$	$\frac{2}{20}$	$\frac{3}{30}$	$\frac{4}{40}$	$\frac{5}{50}$

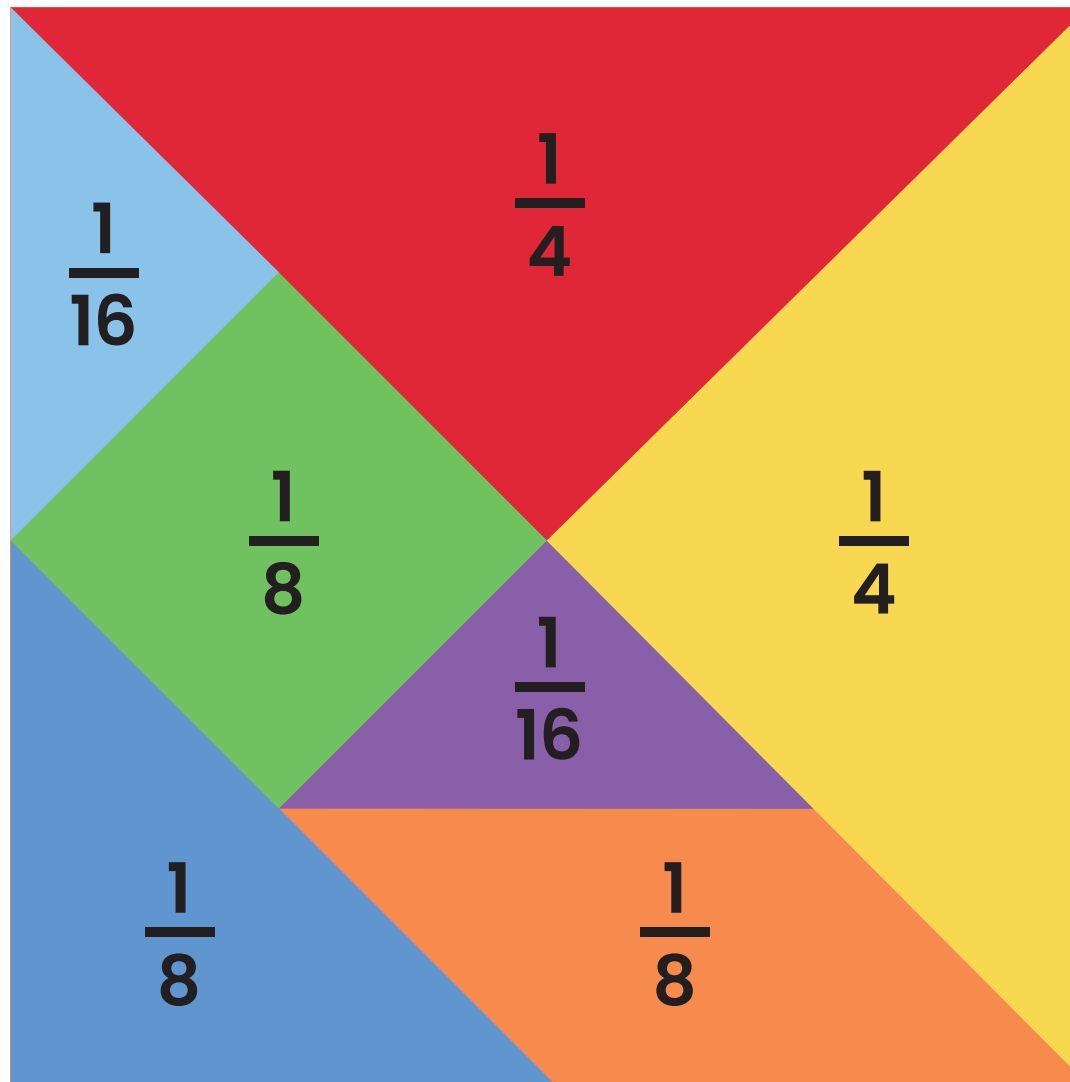


Handout 3



Handout 3B

Answers to the tangram to accompany the hidden slide 13, should you wish to display it.



Handout 4



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

$$\frac{3}{4}$$

$$\frac{3}{8}$$

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

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

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

$$\frac{2}{4}$$

$$\frac{6}{8}$$



Handout 5

Is the denominator
greater than ____?

Is the fraction
equivalent to ____?

Is the fraction a unit
/ non-unit fraction?

Is the numerator
less than ____?

Is the numerator an
odd / even number?

Is the fraction
equivalent to ____?

Guess my fraction question ideas



Fractions: Keywords Flashcards



Fraction

**Equal
parts**

**Equivalent
fractions**

**Dividing
bar**

Denominator

Numerator

**Scale
factor**



Equivalent fractions



Dividing bar



Scale factor

