Fractions, Decimals and Percentages

Fractions 2

Go deeper investigations

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What fraction of our group…?

Objectives

- Know and use the notation for halves and quarters of sets.
- Understand that fractions join to make wholes.
- Know $\frac{1}{2}$ is the same as $\frac{2}{4}$.

Introduction

Explain to the children that they are going to find out some information about each other and record this information using fractions. Choose four children to come to the front. Describe something that applies to two of the children and ask for the related fraction. For example, if two of the group are girls ask what fraction of the group that is. Agree that the fraction could be written as $\frac{1}{2}$ or $\frac{2}{4}$. Next describe something that applies to three children in the group, for example, three might be wearing jumpers, and discuss the fraction three-quarters in the same way. Discuss the different ways that all four children could be described, for example, four-quarters or one whole.

Put the rest of the children into groups of four and ask them to complete the worksheet together.

The maths

This lesson provides opportunities for the children to record the fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{4}{4}$. If necessary, discuss what fraction the children should write if no child has ticked a box for a statement. For example, if no child in a group likes football show that the fraction $\frac{0}{4}$ is equal to zero.

Encourage the children also to tell you the opposite fractions to those they have written on the worksheet. If one-quarter of their group likes purple, for example, then the children should also be able to tell you that three-quarters of the group do not like purple. Below are examples of questions you could ask the class.

Ask:

- *What fraction of Alfie's group are boys? So what fraction are girls?*
- *Half of Sana's group have two brothers. How could we write this using quarters?*
- *Can you think of a different way to write the fraction two-quarters?*
- *Poppy has written $\frac{4}{4}$. What does this fraction mean?*

Solutions

Answers will vary according to the children in each group, but the fractions should all be $\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$ or $\frac{1}{2}$, $\frac{3}{4}$ or $\frac{4}{4}$.

Support

Some children may find it helpful to have a number line marked in quarters. They can count along the line and mark the number of children who have ticked each statement. Remind them that each child in a group of four represents one-quarter, so two children represent two-quarters or one-half, three children represent three-quarters and four children represent four-quarters or one whole.

Extension

Ask two groups to join together and challenge the children to write new fractions for the eight of them. For example, if two of the eight are boys, then $\frac{1}{4}$ are boys. Note that this arrangement may create situations where, for example, seven out of eight children like football. In this instance the children will need to be shown that this can be written as the fraction $\frac{7}{8}$.

What fraction of our group...?

Get into a group of four. Write your names on the lines below.

Read each statement.

Tick or cross to show if the statement is true or false for each of you. ✓ ✗

	_____	_____	_____	_____
I am aged 7.	☐	☐	☐	☐
I am a boy.	☐	☐	☐	☐
I like the colour purple.	☐	☐	☐	☐
I have two brothers.	☐	☐	☐	☐
I have a dog.	☐	☐	☐	☐
I like football.	☐	☐	☐	☐

Now write fractions to make each statement true.

☐/☐ of our group are aged 7.

☐/☐ of our group are boys.

☐/☐ of our group like purple.

☐/☐ of our group have two brothers.

☐/☐ of our group have a dog.

☐/☐ of our group like football.

Beautiful badges

Objectives

- Understand the word 'third' and use the notation $\frac{1}{3}$.
- Find $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{1}{3}$ of shapes and sets.
- Find $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{1}{3}$ of numbers.
- Know $\frac{1}{2}$ is the same as $\frac{2}{4}$.

Introduction

Explain to the children that they will be designing badges by colouring whole squares in different colours to match given fractions. Give the children the worksheet and ask them to colour each badge as described. Work through the first example on the sheet with the children, reminding them to think about the total number of squares in each badge. For example, one-quarter of a badge with 8 squares is a different number of squares than one-quarter of a badge with 12 squares.

The maths

The children will be finding one-quarter, one-half or two-quarters, and three-quarters of sets of squares on badges with 8, 12 or 16 squares, and one-third of sets of squares on badges with 6, 9 or 12 squares. Remind them that $\frac{1}{2}$ and $\frac{2}{4}$ represent the same proportion.

Ask:

- *What is the total number of squares in this badge?*
- *What fraction of this badge is red/blue/yellow/green/white?*
- *How could you write $\frac{1}{2}$ as a different fraction?*
- *What is one-half/one-quarter/three-quarters/one-third of 12 squares?*

Solutions

Solutions will vary but the number of squares coloured on each badge should be:

a)	2 red, 6 blue	3 red, 9 blue	3 red, 9 blue	4 red, 12 blue
b)	2 green, 2 yellow, 4 red	3 green, 3 yellow, 6 red	3 green, 3 yellow, 6 red	4 green, 4 yellow, 8 red
c)	2 red, 2 green, 2 blue	3 red, 3 green, 3 blue	4 red, 4 green, 4 blue	4 red, 4 green, 4 blue
d)	4 red, 6 yellow, 2 white	4 red, 6 yellow, 2 white	4 red, 6 yellow, 2 white	

Support

Encourage the children to work out how many squares in each badge should be in each colour before beginning to colour them in. When looking at the rectangular badges in **a)**, tell the children to colour one row or column red – whichever there are four of. Help them to realise that they have coloured one-quarter of the whole shape.

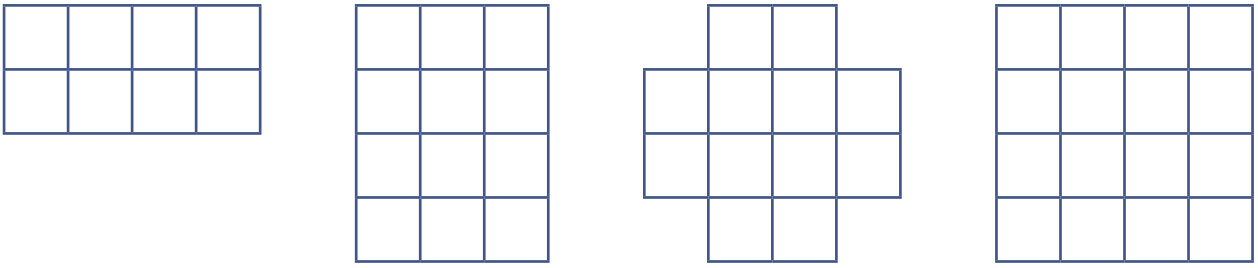
Extension

Encourage the children to colour half squares to make their designs more interesting. For example, if asked to colour one-third of 9 squares blue, they could colour 6 half squares rather than 3 whole squares. You could also ask the children to work out what proportion of each of the last three badges is white. Discuss how this proportion, 2 out of 12 squares in each case, could be written as a fraction ($\frac{2}{12}$).

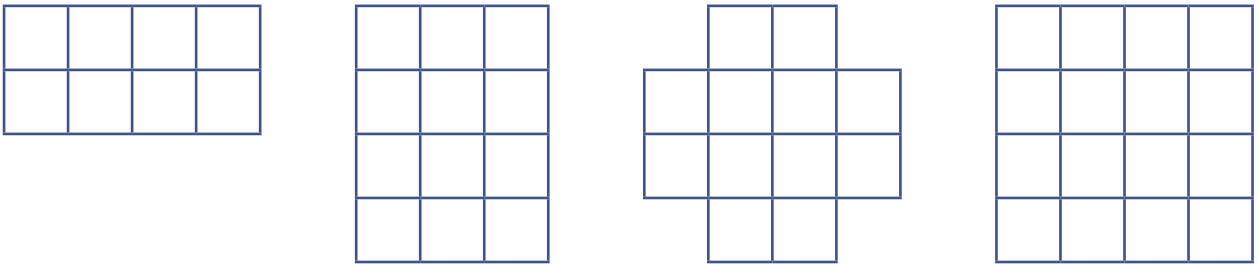
Beautiful badges

Colour each of these badges to match the fractions.

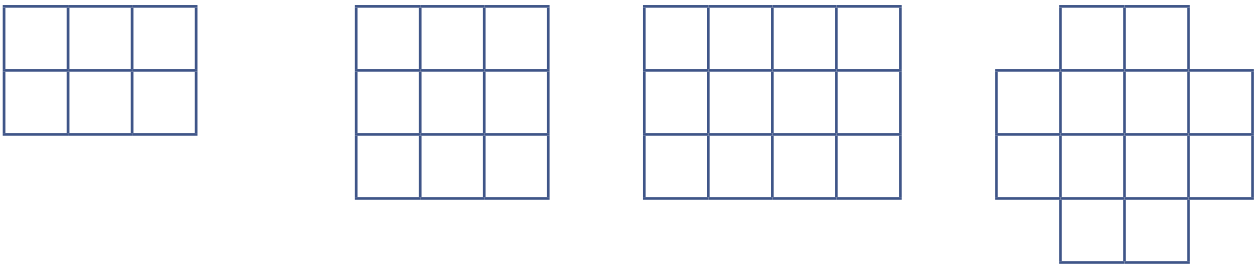
a) $\frac{1}{4}$ red and $\frac{3}{4}$ blue



b) $\frac{1}{4}$ green, $\frac{1}{4}$ yellow and $\frac{2}{4}$ red



c) $\frac{1}{3}$ red, $\frac{1}{3}$ green and $\frac{1}{3}$ blue



d) $\frac{1}{3}$ red, $\frac{1}{2}$ yellow and leave the rest white