Percentages, fractions and decimals

National Curriculum attainment targets

- Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal
- Make connections between percentages, fractions and decimals*
- Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 and 25

* Notes and guidance (non-statutory)

Lesson objective

- Know percentage and decimal equivalents of fractions

Previous related lesson

Unit 8, Week 2, Lesson 3

Prerequisites for learning

Pupils need to:

- understand fractions
- understand decimals to two places
- begin to understand percentages

Vocabulary

per cent, fraction, decimal, equivalent, hundredths

Future related lessons

Unit 11, Week 2, Lesson 2; Unit 11 Week 2 Lesson 3; Unit 11 Week 2 Lesson 4

Success criteria

Pupils can:

- read the percentage
- work out the equivalent fraction(s)
- work out the equivalent decimal

Getting Started

- Choose an activity from Number – Percentages (including fractions and decimals)

Teach

Collins Connect
Year 5, Unit 11, Week 2

Resources

mini whiteboard, pen and eraser (per child)

- Ask: **What percentage means the whole thing? What percentage is equal to one half/quarter/tenth?** Expect class responses and remind the class of the equivalences if they are not sure.
- Display the Number square tool, selecting the colour square and hiding the numbers.. Click one of the squares so it changes colour. Ask: **Here is the percentage grid, what fraction is each 1 per cent equal to?** Establish that it is $\frac{1}{100}$.
- Ask: **What decimal is 1 per cent equal to? Ask pairs for answers.**
- Write on the board: 1% = $\frac{1}{100}$ = 0·01. Say: **Decimals to two places are hundredths. As percentages are out of 100, they go together.**
- Say: **Hundredths can be recorded as percentages, fractions or decimals. There are equivalences for every percentage. Today we will just learn some of them.**
- Click the grid so the top row is yellow. Ask: **What per cent, fractions and decimal describe this section of the grid?** Ask a pair to explain their answer.
- Write on the board: 10% = $\frac{10}{100}$ = $\frac{1}{10}$ = 0·10. Say: **There are two fractions for some percentages. They can always be described as hundredths but sometimes there are other equivalent fractions.**
- Click the grid so three rows are yellow. Ask: **What per cent, fractions and decimal are equal to three tenths?** Ask a pair to explain their answer. Write on the board: 30% = $\frac{30}{100}$ = $\frac{3}{10}$ = 0·30.
- Say: **For tenths we can also record the decimal to one place.** Write = 0·3 on the board.
- Ask: **What per cent, fractions and decimal are equal to seven tenths? Four tenths?** Record the equivalences on the board.
- Click a quarter of the grid so it changes colour. Ask: **What fraction has the grid been divided into?** Establish the grid has been divided into one quarter and three quarters.

- Ask: **What per cent, fractions and decimal are equal to one quarter?** Ask a pair to explain.
- Say: **25% is equal to one quarter as 100 divided by 4 is 25.** Write on the board: $25\% = \frac{1}{4} = \frac{25}{100} = 0{\cdot}25$.
- Ask: **What per cent is equal to three quarters?** Ask pairs for answers. Write on the board: $75\% = \frac{3}{4} = \frac{75}{100} = 0{\cdot}75$.
- Click two rows on the grid so one fifth is yellow. Ask: **This could be described as two tenths but it is equivalent to another fraction, what fraction is that?** Establish that the fraction is one fifth.
- Ask: **What per cent, fractions and decimal are equal to one fifth?** Ask a pair to share their answer. Write on the board: $20\% = \frac{1}{5} = \frac{20}{100} = 0{\cdot}20 = 0{\cdot}2$.
- Ask: **What per cent, fractions and decimal are equal to two fifths?** Ask for answers and record the equivalences on the board.
- Ask: **What per cent is equal to four fifths?** Record the answers on the board.
- Say: **All the percentage, fraction and decimal equivalents we have learned today are important ones to remember.**

Individualised Learning

Refer to Activity 1 from the Learning activities on page 430.

Pupil Book 5C: – Page 60: Percentages, fractions and decimals
Resources: Resource 54: Trios

Progress Guide 5: – Extension, Year 5, Unit 11, Week 2, Lesson 1: Percentage mix up

Plenary

- Ask: **What is the decimal equivalent of 37%?** Ask some pairs to share their ideas. Establish that it is 0·37.
- Say: **As percentages and decimals to two places are both hundredths they will both contain the same number of hundredths.**
- Ask: **What is equivalent to 28%, 79%, 99%?** Expect whole-class answers.
- Say: **In your pairs, one of you will be percentages and the other one is decimals. The person who is percentages should say different percentages and the decimal partner should reply with the equivalent decimal.**
- After a few minutes, change over the roles.

Overcoming Barriers

- Children need an understanding of percentages, fractions, and decimals and how and why they connect before the connections will make sense. Provide them with visual models to reinforce this understanding.