CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

Lesson plan

Work with equivalent fractions, decimals and percentages

Level 1

1. Lesson objectives

- Convert between a decimal and fraction and percentage where the denominator is a factor of 10 or 100
- Understand and use equivalences between common fractions, decimals and percentages (FDP)
- Order FDP amounts by understanding place value

2. Functional Skills Level 1 curriculum

Using numbers and the number system
8 Read, write, order and compare common fractions and mixed numbers
10 Read, write, order and compare decimals up to three decimal places
13 Read, write, order and compare percentages in whole numbers
16 Recognise and calculate equivalences between common fractions, percentages and decimals

3. Lesson plan

This is an overview of the lesson. More notes can be found in the notes in the lesson slides.

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Introduction	Introduction to fraction, decimal and percentage equivalence	5	Lead a discussion on how to identify what is wrong with Yaima's statement. How do the learners know it is wrong? How can they prove it?	Slide 2 Mini whiteboards
Model	Introduce the 100-grid representation for percentages, fractions and decimals	10	Introduce the 100-grid, where 50% is modelled as five-tenths i.e. five lines of 10 small squares. Ask learners to link fractions out of 100 to percentages, and explore other equivalent fractions and decimals, before asking for other multiples of tenths, e.g. 30%. What would that look like? Slide 4 shows tenths and hundredths. Ask learners to think about the value of 12 hundredths or one tenth and two hundredths, and its equivalent decimal and percentage, i.e. 0.12 and 12%. Slide 5 then looks at 5%. How is that written as a decimal? If 50% is 0.5, what is 5%? Ask learners to complete the 'true or false' task on Slides 6 and 8 as a think-pair-share activity, then discuss with the class.	Slides 3–9 Mini whiteboards

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Discuss	Introduce misconceptions of place value and decimals	5	Introduce the misconceptions of place value. What difference do tenths, hundredths, etc make? For Slide 11 and 12, ask learners to write the values of the grids on a mini whiteboard to share. Slide 13 extends the discussion about place value and the link to fraction. You could give the learners an example, if required.	Slides 10–13 Mini whiteboards
Activity 1	Understand place value in relation to decimals, and then fractions and percentages	10	Slides 14 and 15 allow learners to understand place value through procedural variation. Slides 16 and 17 bring together the lesson to this point to see place value in the context of fractions, decimals and percentages and to highlight a common misconception.	Slides 14–17 Handout 1 Handout 2
Explore 1	Collaborative exploration to develop thinking and reasoning skills for fractions, decimals and percentages	15	This task checks learners' understanding of fractions, decimals and percentages, especially where they are not able to recall the exact values. Learners will have the opportunity to use their reasoning and thinking skills. Learners work in pairs and are given 48 Tarsia cards to create 12 squares with 4 equivalent values. This activity is an important building block for the constructionof knowledge for fractions, percentages, decimals and allows learners to practise problem solving and calculation skills that they will need for the non-calculator paper.	Slide 18 Handout 3 Tarsia activity

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Discuss 2	Exploration of problem-solving approaches to find/match equivalent fractions, decimals and percentages	5	Tutor shows the completed Tarsia and asks groups for feedback. How did the learners do them? Which ones were challenging?	Slide 19
Explore 2	Collaborative exploration to develop the use of bar models by matching bar models to the appropriate question	15	The tutor introduces exact fractions, decimals and percentages in the representation of a bar model. Learners are asked to use the values in the bubble and additional values of their choice, to draw bar models with values which add to 1. In pairs or groups learners draw bar models to add to 1. The focus of this task is sketching bar models (not accurate) to represent their calculations.	Slides 20–21 Flip chart paper Marker pens
Discuss	The discussion aims to deepen learners' understanding of using bar models.	10	Tutor asks for feedback using the diagrams to explore learners' thinking and reasoning. Look for any misconceptions particularly 1/5, 1/8 and 1/20 equivalence. Emphasise place value when drawing the bar models.	Slide 22

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Practice question	Learners check and consolidate their understanding by answering exam questions	10	Give learners time to work independently on the questions. Depending on the time and the ability of the learners in the group, you may choose only one of the three questions for the class. After learners have had enough time to attempt the questions, ask them whether they have used a different approach, to that used prior to the lesson. How has their thinking changed? What have they learned? When might they use this approach again in the future?	Slides 23–25 Exam questions handout
Review	Summarise learning	5	Summarise the learning. • Clarify the concept of equivalence for fractions, decimals and percentages. • Capture the ways of thinking for problem-solving. Draw on the examples from the earlier slides on the main whiteboard. Would they use bar models in the future? It is important to make sense and capture learners' ways of thinking – not to prescribe a best method. The lesson should have helped learners understand why bar models can be helpful in these types of question. The purpose of this lesson was to give them new ways of thinking so that they can answer harder problem-solving questions under the pressure of an exam.	Slide 26