CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

Lesson plan

Solving equations

1. Lesson objectives

- Understand the steps needed to solve an equation
- Solve one-step and multi-step equations
- Use visual representations to provide insight into solving equations

2. GCSE curriculum

Solving equations and inequalities

A17 solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation)

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	To introduce the concept of ‘balance’ in an equation	10	Introduce the use of balance scales to represent balancing of equations.	Slides 2–4
Discuss 1	To use the concept of ‘balance’ to work out the value of an unknown	10	Discuss the approaches that were used by Ruby and Dev. Ask learners to decide which approach is correct and invite them to explain why.	Slides 5–7
Explore 1	To use algebra tiles to help learners solve one-step equations	15	Use a series of ‘think-pair-share’ mini-activities to guide learners to use algebra tiles in solving equations. Use slides 12 and 13 to provide learners with independent practice and check their understanding.	Slides 8–13 Algebra tiles Mini whiteboards
Explore 2	To use algebra tiles to help learners solve multi-step equations	10	Use a series of ‘think-pair-share’ mini-activities to guide learners to use algebra tiles in solving equations. Learners should have moved away from balance scales and are using only algebra tiles.	Slide 14–19 Algebra tiles

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Discuss 2	To get learners to address a misconception	5	Discuss the approaches that were used by Ruby and Dev. Ask learners to decide which approach is correct and invite them to explain why.	Slide 20
Explore 3	To deepen learners' understanding of how to solve one-step and multi-step equations	10	Ask learners to work in pairs to solve and categorise equations according to the number of steps required to solve the equation. As an extension, ask learners to create their own equations.	Slides 21–26 'Solving equations' handout
Explore 4	To check learners' understanding and consolidate their learning through confrontation and discussion of common misconceptions	10	Learners evaluate a selection of worked examples. Explain to learners that each of the examples have one mistake in them. Ask learners to provide a correct alternative and give advice on avoiding such mistakes.	Slides 27–32 'Spot the mistake' handout

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Practice questions	Learners apply their knowledge to exam questions	10	Ask learners to work independently to answer exam questions. After they have completed the task, ask learners to discuss their methods and thinking.	Slides 33–35 ‘Exam practice’ handout
Review	To summarise learning and review the process of solving an equation	10	Summarise the different strategies and representation explored during the lesson, emphasising the balancing/equal sign concept. Reflect on the process steps involved in solving equation.	Slide 36