Lesson 1 Overview

Multiplicative reasoning

Activity	Time (min)	Description/Prompt	Materials
Introduction	10	Introduce the context of hotel stays and tell students that the charge for a two-night stay is £50 irrespective of how long the stay is. Ask students to solve a proportion problem based on this, first working alone and then in pairs. Identify students' different approaches and what this tells you about their existing knowledge. It is important to value and make sense of students' different ways of thinking.	Mini whiteboards Slide 2
Discuss 1	15	Discuss the different approaches that could be used to find the cost of an 11-night stay, illustrating these on a double number line. Mathematical representations such as double number lines allow students to develop their understanding of mathematical structure. Start by discussing the methods that were used by the students, then move on to discuss the alternative approaches given on Slide 4.	Slides 3–11
Explore 1	15	Ask students to work in pairs to work out the cost of different lengths of stay in two currencies (Euros and South African Rand) and complete the table on the handout. The questions in this task have been carefully sequenced to guide students to complete the table in a way that explores relationships in a sequential way.	'Cost of stay' handout Calculators Slide 12
Discuss 2	10	Once students have completed the task, discuss their work. Focus the discussion on the approaches and relationships used to answer the questions, rather than on whether the questions have been answered correctly. Ask students with different approaches to share their thinking and give value to their strategies.	Slide 13

Explore 2	10	Introduce a new currency (East Caribbean Dollars) and ask students to answer questions on its relationship to Euros, before making links back to the context of cost of hotel stays. It is likely that students will use a variety of approaches and it is important not to promote a particular method. Revisiting the context of hotel stays with this additional currency aims to support students in deepening their understanding of mathematical structure.	Mini whiteboards Slides 14–16
Explore 3	10	Ask students to work on a proportion problem using the new context of a train journey. Take note of the different approaches that students use. Students may draw their own double number line. If not, use the double number line to illustrate and explain student thinking.	Mini whiteboards Slide 17
Review	10	Bring the lesson to a close by summarising the different relationships explored during the lesson, emphasising the multiplier in proportional relationships. Explain that the multiplier in a proportional relationship provides all the information needed to calculate all other values.	Slide 18
Practice question	10	Ask students to answer an exam question and after a few minutes discuss their thinking. Students who have previously used an additive approach when solving proportion problems may recognise that it is not the most efficient approach. Ask students to explain how their thinking has changed and what they have learned about multiplicative structure.	Slide 19