Lesson plan

Best buys

1. Lesson objectives

- Investigate pricing structures for items that come in different sizes to determine what is the best buy.
- Solve simple best buy problems using efficient methods and ratio tables.

This lesson has been designed for students to practice number skills without a calculator.

2. GCSE curriculum

R1 change freely between related standard units (e.g. time, length, area, volume/capacity, mass).

R10 solve problems involving direct and inverse proportion, including graphical and algebraic representations.

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 using ratio tables to find out what else they know	5	What else can you find? 'I eat one packet of crisps per day at college and each one costs £0.90' The tutor asks, 'What else can you find?' Allow learners time in pairs to think about what else they can find. Gather their responses to lead to discussion on how much they spend on crisps and the costs of this over time: one week, one month etc.	Slide 2 Introduction Best Buys Handout 1
Explore 1	To introduce the use of ratio tables to explore best buys	10	In pairs or small groups, learners investigate the pricing structure of packs of the same size and brand of yoghurts. Learners explore whether the pricing structure is proportional and which is the best buy. This activity is an important building block for the construction and use of ratio tables.	Slide 3 Explore 1 Which is better value for money? Handout 2

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Discuss 1	Exploration of problem-solving approaches using ratio tables	5	Groups feedback how they calculated the best buy. The tutor can model using the arrays and then ratio tables with learners' methods. Some may have used a multiplicative method; others may have used the unitary method. An important discussion will be the around which method they found the most efficient even if it was not the one they initially used.	Slides 4 and 5
Explore 2	Exploration of best buy with real world constraints	10	Moving out of a simple comparison and introducing a more complex context requiring a higher degree of problem solving. In pairs or small groups, learners investigate buying 45 chocolate bars but they are unable to buy exactly 45. Learners explore based on price which packs proportionally are the best buy. While learners are working, pay particular attention to any thinking that will be helpful to share in the discussion that follows.	Slide 6 Explore 2 Chocolate Bars Handout 3
Discuss 2	Exploration of problem-solving approaches using ratio tables	10	Groups feed back to the class and the tutor models their answers. Tutor can model using the ratio table with learners' methods but slides are also provided. The cost of an item should be proportional to the quantity bought, and it will be in this case as the 4 pack is 31.25p and the large pack is 30p but often with this type of offer there is waste to consider. Look for learners bringing the real-world context of waste into their discussion.	Slide 7

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Explore 3	This task is a multi-step problem solving of finding different best buys when having friends around for snacks and drink	25	In pairs or small groups, learners explore a situation where products come in different sizes and investigate the cheapest cost for buying all the ingredients. Are costs proportional to size? Which is the best buy? Are the prices fair? Why or why not? What other factors might you consider? For example, waste? airmiles? If the prices were unfair, how would you change the prices to be fair?	Slides 8 and 9 Party Snacks Handout 4
Discuss 3	Exploration of problem-solving approaches using ratio tables	10	Using the ratio tables, explore learners' thinking and reasoning. Learners to use the ratio tables to explain their thinking. Discuss the strategies that learners developed for completing the task. Discuss the other points that may influence their decision.	Slides 10–12
Consolidate	Practice Questions – consolidation of learning	10	GCSE exam questions have been selected for learners to attempt at the end of the lesson that link directly to the objectives explored. The tutor can differentiate where required. Once all groups have attempted the questions, draw them together to summarise the learning. - Clarify the concept of these kinds of proportional reasoning problems - Capture the ways of thinking for each of the problems of various pairs (you may use the ratio tables in the ppt presentation or draw one on the main whiteboard) - It is important to make sense and capture learners' ways of thinking – not to prescribe a best method.	Slides 13–16 Practice questions Handout 5

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Activity	Purpose of this activity	Time (min)	Guidance	Materials
Review	To summarise learning, to capture ways of thinking and to clarify the concept of proportional reasoning and best buys	5	Ask learners whether they have used a different approach to that used before the lesson when solving direct proportion problems. How has their thinking changed? What have they learned about multiplicative structure? Discuss where else this approach could work. Where have learners used it before? Where would they use it in future?	Slides 16–18