Community Supplies Project

Student worksheet | Name: _____ Date: _____

A fictional international school is preparing supplies for a community event. Five identical packs cost 15 currency units (CU). Every pack has the same price, and there are no fixed fees or discounts. CU is a classroom label, not a real currency or an exchange rate.

1. Find the price of one pack. Include the unit in your answer.

Working / explanation: _____

_____

2. Let p be the number of packs and C the total cost in CU. Write an equation connecting C and p.

Working / explanation: _____

_____

3. Use your equation to calculate the cost of 8 packs. Show your substitution and calculation.

Working / explanation: _____

_____

4. Explain why the relationship is proportional. Describe the unit rate and what happens when p = 0.

Working / explanation: _____

_____

Reflection: My next step is _____

Teacher Key and Rating Guide

1. 15 ÷ 5 = 3 CU per pack. Dividing the total cost by the number of packs gives the unit price.

2. C = 3p, where C is the total cost in CU and p is the number of packs. For whole packs, p is a non-negative integer.

3. C = 3 × 8 = 24 CU. Eight packs cost 24 CU.

4. The unit rate stays at 3 CU per pack. For positive p, C/p = 3; when p = 0, C = 0. The equation has the form C = kp with constant k = 3.

Rating: I / P / N

I - Independent: Demonstrates the skill accurately without hints.

P - With prompting: Demonstrates the skill with a hint, guiding question, or model.

N - Not yet: Does not yet demonstrate the skill, even with support.

Leave unobserved skills blank. Rate each skill separately and record any support used. These observations guide instruction; they are not a standardised placement score.

Finds a unit rate

Rating: I / P / N _____ Date: _____ Evidence / prompts: _____

Writes a cost equation

Rating: I / P / N _____ Date: _____ Evidence / prompts: _____

Substitutes and calculates

Rating: I / P / N _____ Date: _____ Evidence / prompts: _____

Explains proportionality

Rating: I / P / N _____ Date: _____ Evidence / prompts: _____

Teaching and Local Adaptation

A free proportional-reasoning worksheet for secondary mathematics learners, approximately ages 11–14. Choose by prerequisite skills rather than grade labels, which vary between schools.

1. Prerequisites: divide whole numbers, interpret equal groups, and substitute a value into a simple equation. Allow approximately 20–30 minutes, adjusting for learner needs.

2. Language support: explain pack, total cost, per, unit rate, and proportional. Offer the sentence frame: Each pack costs ___ CU, so ___ packs cost ___ CU. Students may discuss in a familiar language before writing their explanation.

3. If unit price is unclear, draw five equal groups sharing 15 CU. If the equation is unclear, build a table for 0, 1, 5, and 8 packs. Record any prompts used.

4. Extension: add a fixed delivery fee of 2 CU. Write C = 3p + 2 and explain why this new relationship is not proportional: zero packs would still incur the fee.

5. Adaptation: replace CU with one local currency unit while keeping all quantities in that same currency; no currency conversion is required. The prices are invented classroom quantities, not local market data.

6. Use alongside your school’s curriculum and terminology. This shared mathematics task does not claim alignment, accreditation, or endorsement by any national curriculum, examination board, or international programme.

Suggested follow-up

Ask learners to calculate the cost of 6 packs and explain their reasoning. Answer: C = 3 × 6 = 18 CU. Compare the explanation with the original task and record the level of support needed.