

Virginia Community Supplies Project: Unit Rates and Proportional Relationships

- VALYXIS | Jonathan Dallas | Printable student worksheet and teacher key. Fictional classroom scenario
- quantities are invented and are not local price data.

Learning goal: Find a unit rate, represent a proportional relationship with an equation, and explain the meaning of the constant of proportionality.

Student: _____ Date: _____ Class: _____

Student worksheet

Fictional Richmond community project: 3 packs of supplies cost $9.

1. Find the unit price. Show the division and include the units.

Work / explanation: _____

_____

2. Write a cost equation. Define each variable.

Work / explanation: _____

_____

3. Calculate the price of 8 packs. Show your substitution or other method.

Work / explanation: _____

_____

4. Explain why your equation is proportional. Describe the unit rate and the cost of zero packs.

Work / explanation: _____

_____

Teacher key and explanations

1. Unit price: $9 divided by 3 packs = $3 per pack.

2. Cost equation: C = 3p, where C is the total cost in dollars and p is the number of packs. The coefficient 3 is the unit price in dollars per pack.

3. Eight packs: C = 3 x 8 = $24.

4. Proportional relationship: C/p = 3 for every positive number of packs, so the unit rate is constant. When p = 0, C = 0. The graph of C = 3p is a straight line through the origin.

Teacher note: A zero starting cost alone does not prove proportionality. Look for the constant unit rate and the equation C = kp. These are invented classroom quantities, not local price data.

How to use the I / P / N ratings

Use these ratings to describe an observed skill, not a percentage score or a placement decision.

I - Independent

The learner demonstrates the skill accurately and explains their thinking without hints or prompts. Follow documented accommodations; accommodations alone do not change an I rating to P.

P - With prompting

The learner demonstrates the skill after a hint, guiding question, example, or visual model. Record the support that helped.

N - Not yet

The learner does not yet demonstrate the skill, even with support. Identify one focused next step and revisit the skill after instruction.

Not observed: Leave the rating blank if you have not observed the skill. Do not assign N solely because a question was skipped.

Record the date and concrete evidence, such as a work sample or student explanation. These letters describe current evidence and may change as the learner progresses.

Observe, respond, and extend

Evidence to record: Accuracy, use of units, variable definitions, and explanation of the constant rate. Rate observed skills separately using I / P / N.

If support is needed: Build a table for 0, 1, 2, 5, and 8 packs. Ask the learner to explain what changes and what stays the same.

Extension: Add a fixed $2 delivery fee. Write C = 3p + 2 and explain why the new relationship is not proportional.

Continue learning:
https://learnvalyxis.com/resources/secondary-math-readiness-diagnostic and
https://learnvalyxis.com/blog