Interpret Points on Proportional Graphs Using Unit-Rate Reasoning

Original tasks 1, 2, 3 / complete keys

Task 1

A graph shows cost in dollars on the y-axis and weight in pounds on the x-axis. A marked point is (4, 10). Find the unit rate and explain what the point means.

Answer: Unit rate = 10 ÷ 4 = 2.5 dollars per pound. The point (4, 10) means 4 pounds cost 10 dollars, and each pound costs 2.5 dollars.

Reason: The ratio y/x gives the unit rate. Since 10 ÷ 4 = 2.5, one pound costs 2.5 dollars. The point states that 4 pounds correspond to 10 dollars.

Check: Multiply the unit rate by x: 2.5 × 4 = 10, which matches the y-coordinate.

Task 2

A graph shows water in liters on the y-axis and time in minutes on the x-axis. A marked point is (5, 15). Find the unit rate and explain what the point means.

Answer: Unit rate = 15 ÷ 5 = 3 liters per minute. The point (5, 15) means that in 5 minutes, 15 liters of water flow, at a rate of 3 liters per minute.

Reason: Dividing y by x gives 15 ÷ 5 = 3. The point relates 5 minutes to 15 liters, and the unit rate confirms 3 liters each minute.

Check: Check that 3 × 5 = 15, matching the y-coordinate.

Task 3

A graph shows pages read on the y-axis and hours on the x-axis. A marked point is (2, 50). Find the unit rate and explain what the point means.

Answer: Unit rate = 50 ÷ 2 = 25 pages per hour. The point (2, 50) means that in 2 hours, 50 pages are read, at a rate of 25 pages per hour.

Reason: The ratio 50 ÷ 2 = 25 gives pages per hour. The point shows 2 hours correspond to 50 pages.

Check: Multiply 25 by 2 to get 50, which equals the y-coordinate.

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Original tasks 4 / complete keys

Task 4

A graph shows earnings in dollars on the y-axis and hours worked on the x-axis. A marked point is (3, 36). Find the unit rate and explain what the point means.

Answer: Unit rate = 36 ÷ 3 = 12 dollars per hour. The point (3, 36) means that working 3 hours earns 36 dollars, at a rate of 12 dollars per hour.

Reason: Dividing 36 by 3 gives 12, the earnings per hour. The point connects 3 hours to 36 dollars.

Check: Check that 12 × 3 = 36, matching the y-coordinate.

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Source rubric / reflection

- [ ] Correctly identifies the axes and units from the graph labels.
- [ ] Computes the unit rate as y ÷ x using a marked point with x not zero.
- [ ] Explains the point in context with both quantities and units.
- [ ] Checks the point using the unit rate, showing y = (unit rate) × x.
- [ ] Uses a neat sketch with labeled axes and equal intervals; accepts valid alternative handwriting styles and scales.

Reflection: What did you check, what did you change, and what will you try next?