

Graph Point Stories

Read each coordinate as a sentence about the situation.

GRADE 7 • 7.PAR.4.5

7.PAR.4.5 "Use context to explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate."

NAME _____

DATE _____

POINTS TELL A STORY

In a proportional relationship, a point (x, y) tells what y amount matches x amount. The point $(0, 0)$ means zero of the x quantity gives zero of the y quantity, and the point $(1, r)$ shows the unit rate, r y -units for each 1 x -unit.

WORKED EXAMPLE

A snack stand sells pretzels for \$4 each. On its graph, x is pretzels and y is total cost in dollars. What does $(3, 12)$ mean?

1. Read $x = 3$: 3 pretzels are bought.
2. Read $y = 12$: the total cost is \$12.
3. Check: $3 \times \$4 = \12 .

Answer: $(3, 12)$ means 3 pretzels cost \$12.

PRACTICE 6 problems

- 1** A graph shows x packs of trading cards and y total cards. The point $(5, 10)$ is on the graph. What does this point mean?

ANSWER _____

- 2** A graph relates x cans collected in a drive to y dollars donated. A sponsor gives \$6 for each can. What does the point $(0, 0)$ mean?

ANSWER _____

- 3** A graph relates x minutes of guitar practice to y practice points. The point $(1, 7)$ is on the graph. What is the unit rate, and what does the point mean?

ANSWER _____

- 4** A graph relates x wristbands sold to y total dollars earned. The point $(8, 40)$ is on the graph. What does the point mean? What is the unit rate?

ANSWER _____

- 5** A graph relates x songs downloaded to y megabytes used. The point $(1, 9)$ is on the graph. Explain what this point tells you.

ANSWER _____

- 6** A graph relates x poster kits to y ounces of coating used. The point $(1, 5/2)$ is on the graph. Explain what this point tells you.

ANSWER _____

APPLY IT Show your work

- 1** In a mobile game, x is the number of avatar items bought and y is the number of coins spent. The graph has points $(0, 0)$, $(1, 2)$, and $(9, 18)$. Explain what each point means in this situation.

WORK SPACE

ANSWER _____

- 2** A student bikes at a constant speed. On a graph, x is time in hours and y is distance in miles. The graph includes $(0, 0)$ and $(2, 28)$. Explain what $(0, 0)$ means. Then find the point $(1, r)$ and explain what it means.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A game testing club earns a proportional number of points. On its graph, x is levels tested and y is points earned. The graph includes $(6, 42)$. Find the coordinates of the origin and the unit-rate point. Then explain what $(0, 0)$, $(1, 7)$, and $(6, 42)$ each mean.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A graph shows x packs of trading cards and y total cards. The point $(5, 10)$ is on the graph. What does this point mean?	$(5, 10)$ means 5 packs contain 10 trading cards.
2	A graph relates x cans collected in a drive to y dollars donated. A sponsor gives \$6 for each can. What does the point $(0, 0)$ mean?	$(0, 0)$ means that collecting 0 cans earns \$0 in donations.
3	A graph relates x minutes of guitar practice to y practice points. The point $(1, 7)$ is on the graph. What is the unit rate, and what does the point mean?	The unit rate is 7 practice points per minute. $(1, 7)$ means 1 minute of practice earns 7 points.
4	A graph relates x wristbands sold to y total dollars earned. The point $(8, 40)$ is on the graph. What does the point mean? What is the unit rate?	$(8, 40)$ means 8 wristbands earn \$40. The unit rate is \$5 per wristband.
5	A graph relates x songs downloaded to y megabytes used. The point $(1, 9)$ is on the graph. Explain what this point tells you.	$(1, 9)$ means 1 song download uses 9 megabytes. The unit rate is 9 megabytes per song.
6	A graph relates x poster kits to y ounces of coating used. The point $(1, 5/2)$ is on the graph. Explain what this point tells you.	$(1, 5/2)$ means 1 poster kit uses $5/2$ ounces of coating. The unit rate is $5/2$ ounces per kit.

PART 2 • APPLY IT

- $(0, 0)$ means buying 0 avatar items costs 0 coins. $(1, 2)$ means 1 avatar item costs 2 coins. $(9, 18)$ means 9 avatar items cost 18 coins.** Read the first coordinate as the number of items and the second coordinate as coins spent. The point $(1, 2)$ shows the unit rate is 2 coins per item.
- $(0, 0)$ means 0 hours of biking gives 0 miles traveled. The point $(1, 14)$ means the student bikes 14 miles in 1 hour.** Divide 28 miles by 2 hours to find $r = 14$ miles per hour. Use $x = 1$ with that unit rate.

CHALLENGE

The origin is $(0, 0)$, and the unit-rate point is $(1, 7)$. $(0, 0)$ means testing 0 levels earns 0 points. $(1, 7)$ means testing 1 level earns 7 points. $(6, 42)$ means testing 6 levels earns 42 points.

Accept equivalent wording that correctly names both quantities and their units. For the unit-rate point, accept $5/2$ ounces per kit or $2\frac{1}{2}$ ounces per kit.