Proportional Graphs

Plot the points first, then ask the two questions: straight? through the origin? Say steeper.

Name _____ Date _____

Words we use

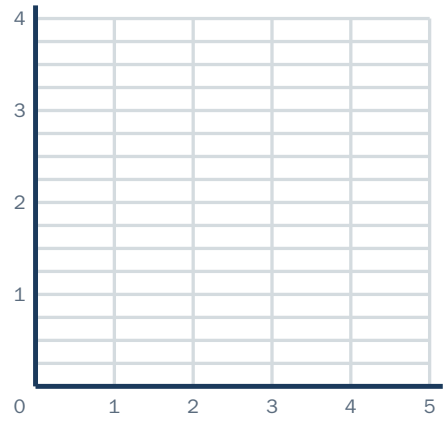
say the math word, then the plain English

WORD	PLAIN ENGLISH	WHAT YOU DO
Graph	A picture of the pairs as points.	Input across, output up. One point per row.
Origin	The point (0, 0), where both amounts are zero.	Check that the line goes through it: zero in, zero out.
Straight line through the origin	The picture of a proportional relationship.	Check both: straight, and through (0, 0).
Steeper	Rises faster, which means a bigger unit rate.	Compare lines on the same grid: the steeper one has the bigger unit rate.

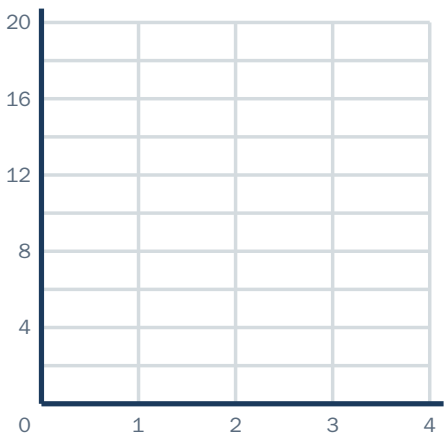
Part A Plot and test

Plot each table on its grid. Then write: straight or bending, through the origin or not, proportional or not.

Lemonade: (1, 0.75), (2, 1.50), (3, 2.25), (4, 3.00), cups across and dollars up



Bowling: (0, 3), (1, 8), (2, 13), (3, 18), games across and dollars up



Part B Why does it fail?

GRAPH	STRAIGHT?	THROUGH (0, 0)?	PROPORTIONAL?
A straight line that crosses the y-axis at 5			
The area of a square: (1, 1), (2, 4), (3, 9)			
Julia's walk: (1, 2), (2, 4), (3, 6)			
A taxi: (0, 3), (1, 5), (2, 7)			

Part C Steeper, and dots or a line

1. Mia earns $9 an hour and Jordan $8 an hour. Whose line is steeper? Why?

2. A proportional graph goes through (1, 6). Another goes through (1, 10). Which is steeper?

3. Minutes and gallons: line or dots? Number of dogs and pounds of food: line or dots?

Part D Exit ticket

1. A graph is a straight line that crosses the y-axis at 5. Is it proportional?

2. What two things must be true for a graph to be proportional?

3. Two proportional lines on one grid, one steeper. What does that tell you?

Answer key

Part A. Lemonade: straight, through the origin, proportional. Bowling: straight, misses the origin (starts at $3), not proportional.

Part B. Crosses at 5: straight, not through (0, 0), not proportional. Square: not straight, through (0, 0), not proportional. Julia: straight, through (0, 0), proportional. Taxi: straight, not through (0, 0), not proportional.

Part C. 1. Mia's, because her unit rate is bigger. 2. The one through (1, 10). 3. Line; dots.

Part D. 1. No, it misses the origin. 2. Straight, and through (0, 0). 3. The steeper line has the bigger unit rate.