Origin or Not?

Sort lines by whether they show a proportional relationship.

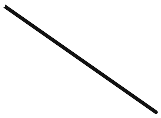
7.A.1.2 "Recognize that the graph of a proportional relationship is a line through the origin and the coordinate (1, r), where r is the slope and the unit rate (constant of proportionality, k)."

NAME _____ DATE _____

PROPORTIONAL

The line passes through (0,0). Its height at x = 1 is the slope, r, and the unit rate.

This line passes through (0,0) and (1,7), so its unit rate is 7.



NOT PROPORTIONAL

The line misses (0,0). The relationship does not have a constant unit rate.

This line crosses the left edge above (0,0), so it is not proportional.



1 SORT

8 items

For each figure, imagine a square grid with (0,0) at the lower left, (1,0) at the lower right, and (0,10) at the upper left, then circle YES or NO.

1.



Figure 1

YES NO

2.



Figure 2

YES NO

3.

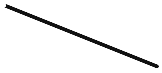


Figure 3

YES NO

4.

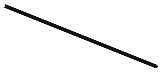


Figure 4

YES NO

5.

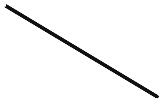


Figure 5

YES NO

6.

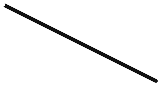


Figure 6

YES NO

7.

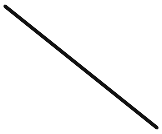


Figure 7

YES NO

8.

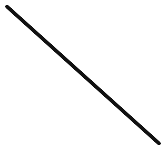


Figure 8

YES NO

2 PROVE IT

Explain your thinking

choose two figures from Part 1 and explain how you knew where each belongs

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

write one new line example for each category.

YES

NO

CHALLENGE

A line passes through (1,6) and (2,10): is it proportional, and how do its slope and its value at x = 1 prove your answer?

ANSWER KEY

Origin or Not?

GRADE 7 · 7.A.1.2

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (polygon)	**YES**	The line passes through (0,0) and (1,2), so the unit rate is 2.
2	Figure 2 (polygon)	**NO**	The line crosses the y-axis at 1, not 0.
3	Figure 3 (polygon)	**NO**	The line crosses the y-axis at 3, not 0.
4	Figure 4 (polygon)	**YES**	The line passes through (0,0) and (1,4), so the unit rate is 4.
5	Figure 5 (polygon)	**YES**	The line passes through (0,0) and (1,6), so the unit rate is 6.
6	Figure 6 (polygon)	**NO**	The line crosses the y-axis at 2, not 0.
7	Figure 7 (polygon)	**YES**	The line passes through (0,0) and (1,8), so the unit rate is 8.
8	Figure 8 (polygon)	**YES**	The line passes through (0,0) and (1,9), so the unit rate is 9.

PART 2 · PROVE IT

Task: choose two figures from Part 1 and explain how you knew where each belongs
Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **YES**: y = 3x passes through (0,0) and (1,3).
- **NO**: y = 2x + 3 passes through (0,3) and (1,5).

Challenge: No. The slope is 4, but the value at x = 1 is 6. The line crosses the y-axis at 2, so it misses (0,0).

Read each figure using the grid described in the directions. Each straight mark is represented by three points on the line.