LESSON MAKER PRO

Slope Trail

Graph proportional lines from y = mx.

GRADE 7 · 7.PFA.1.d

7.PFA.1.d "Graph a line representing a proportional relationship between two quantities given the equation of the line in the form y = mx, where m represents the slope as rate of change. Slope may include positive or negative values."

NAME _____ DATE _____

THE BIG IDEA

A proportional relationship has the form y = mx, so its graph always passes through (0,0). The slope m tells how y changes when x increases, and a negative slope goes down as you move right.

WORKED EXAMPLE

Graph y = 7/6x.

1. Start at the origin, (0,0).
2. The slope 7/6 means move right 6 and up 7.
3. Plot (6,7) and (-6,-7).
4. Draw a straight line through the points.

Answer: A line through (0,0), (6,7), and (-6,-7).

PRACTICE 6 problems

1 Graph y = -2x. Write the slope and plot two points besides the origin.

ANSWER _____

2 Graph y = 3/2x. Write the slope and plot two points besides the origin.

ANSWER _____

3 Graph y = x/3. Write the slope and plot two points besides the origin.

ANSWER _____

4 Graph y = -x/2. Write the slope and plot two points besides the origin.

ANSWER _____

5 Graph y = 5x. Write the slope and plot two points besides the origin.

ANSWER _____

6 Graph y = -3x. Write the slope and plot two points besides the origin.

ANSWER _____

APPLY IT Show your work

1 In an online game, you earn 3 tokens for each level you complete. Let x be the number of levels and y be the number of tokens. Write an equation for y in terms of x. Then graph the relationship using the origin and two other points.

WORK SPACE

ANSWER _____

2 While you play a game, your device battery has a net change of -2 percentage points each hour. Let x be hours played and y be the net battery change. Write an equation for y in terms of x. Then graph the relationship using the origin and two other points.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A proportional line passes through (0,0) and (3,-5). Write its equation. Then give two more points on the line and explain why (-3,5) is also on the line.

_____

_____

ANSWER KEY

Slope Trail

GRADE 7 · 7.PFA.1.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Graph y = -2x. Write the slope and plot two points besides the origin.	**m = -2; points may include (1,-2) and (-1,2).**
2	Graph y = 3/2x. Write the slope and plot two points besides the origin.	**m = 3/2; points may include (2,3) and (-2,-3).**
3	Graph y = x/3. Write the slope and plot two points besides the origin.	**m = 1/3; points may include (3,1) and (-3,-1).**
4	Graph y = -x/2. Write the slope and plot two points besides the origin.	**m = -1/2; points may include (2,-1) and (-2,1).**
5	Graph y = 5x. Write the slope and plot two points besides the origin.	**m = 5; points may include (1,5) and (-1,-5).**
6	Graph y = -3x. Write the slope and plot two points besides the origin.	**m = -3; points may include (1,-3) and (-1,3).**

PART 2 · APPLY IT

1. **y = 3x; points may include (0,0), (1,3), and (2,6).** The rate is 3 tokens per level, so the slope is 3. Multiply each number of levels by 3 to find the number of tokens.
2. **y = -2x; points may include (0,0), (1,-2), and (2,-4).** The battery change is negative 2 percentage points per hour, so the slope is -2. Multiply the hours by -2 to find the net change.

CHALLENGE

y = -5/3x. Two more points are (-3,5) and (6,-10). The point (-3,5) is on the line because (-5/3)(-3) = 5.

Accept any correct line through the origin with points that satisfy the equation. Equivalent slope forms, such as x/3 and 1/3x, are acceptable.