Slope Line Moves

Graph proportional lines from y = mx.

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 _____

Start at Zero

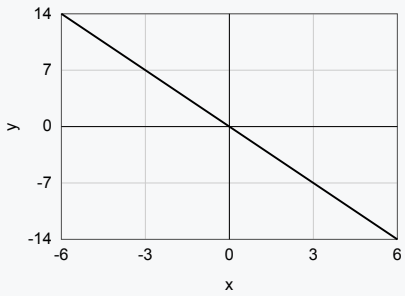
A graph of y = mx always passes through (0,0). The slope m tells the change in y for each increase of 1 in x. A negative slope moves down as x moves right.

Worked example

This graph represents y = (-7/3)x. Use rise and run to check its points (0,0), (3,-7) and (6,-14).

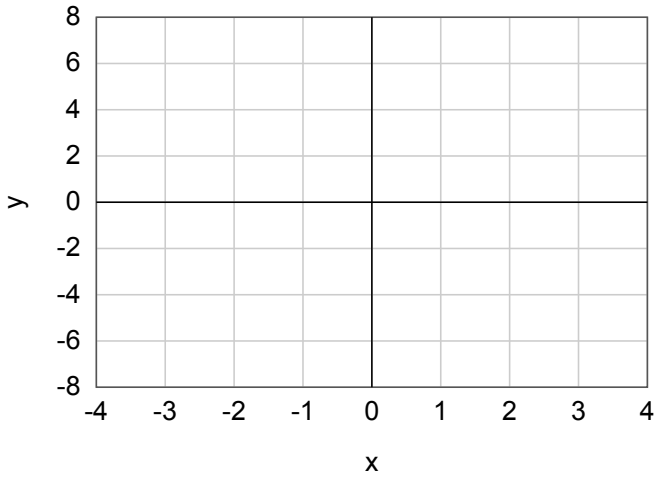
1. Plot (0,0).
2. Move right 3 and down 7 to plot (3,-7).
3. Move right 3 and down 7 again to plot (6,-14).
4. Draw a straight line through the points.

Line through (0,0), (3,-7), and (6,-14).



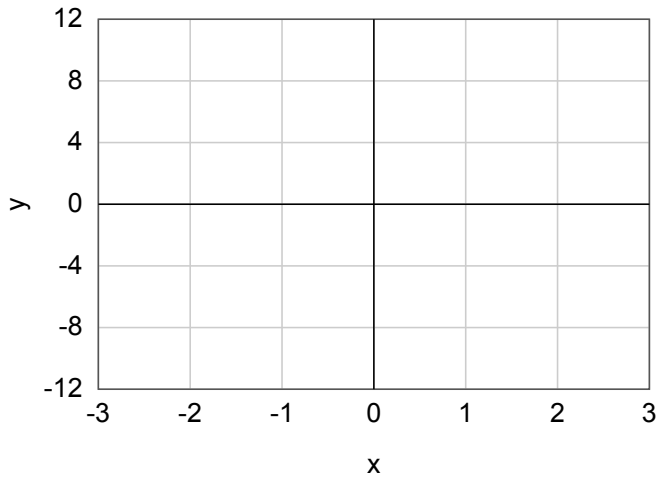
1. Practice

Graph y = 2x. Label at least two points and draw the full line through the origin; add arrowheads to show it continues.



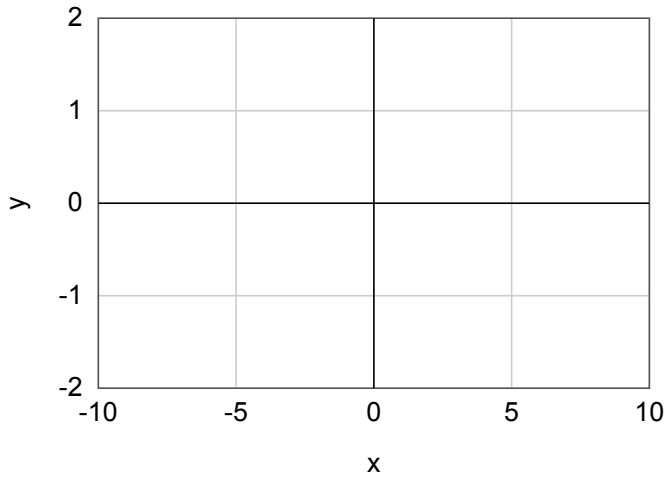
2. Practice

Graph y = -4x. Label at least two points and draw the full line through the origin; add arrowheads to show it continues.



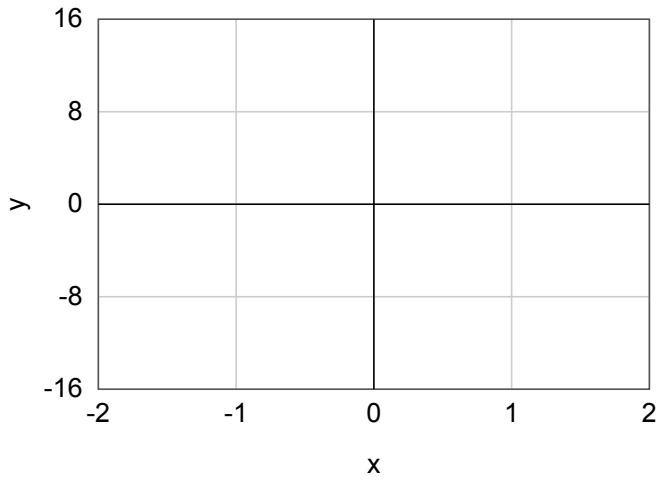
3. Practice

Graph y = (1/5)x. Label at least two points and draw the full line through the origin; add arrowheads to show it continues.



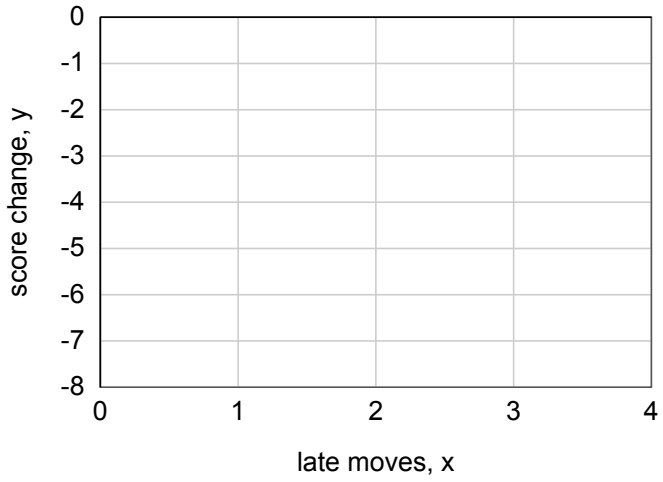
4. Practice

Graph y = -8x. Label at least two points and draw the full line through the origin; add arrowheads to show it continues.



5. Apply

In an arcade game, each late move changes your score by -2 points. Let x be late moves and y be total score change. Graph the relationship on the grid. Only whole late-move counts are valid; leave the points separate.



6. Apply

A gaming club gives 5 bonus points for each completed quest. Let x be quests and y be bonus points. Write an equation and name three points to graph.

7. Challenge

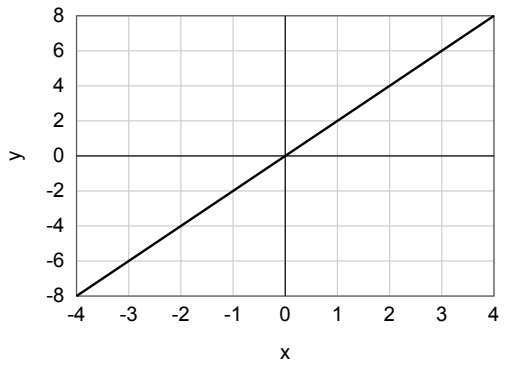
A proportional line passes through (8,-12). Find its equation. Explain why the line also passes through (0,0).

What to accept

Require actual graphs for Practice 1–4 and the arcade application. Abstract lines continue beyond the window; student arrowheads show continuation. Whole late moves are separate points. Accept equivalent correct points and equations.

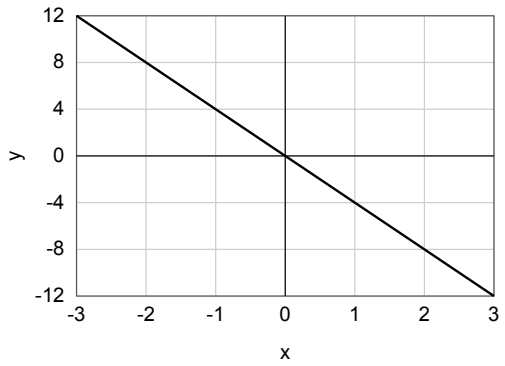
1. Practice

Line y = 2x through (0,0); correct slope and two labeled points. Line continues beyond displayed window.



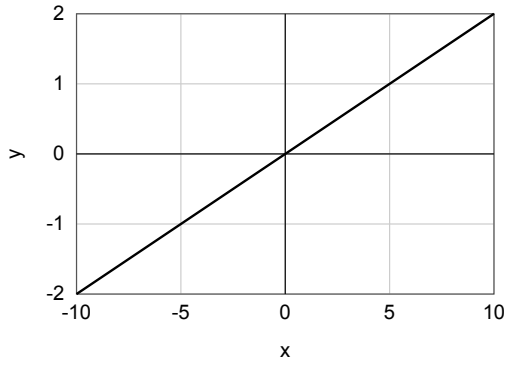
2. Practice

Line y = -4x through (0,0); correct slope and two labeled points. Line continues beyond displayed window.



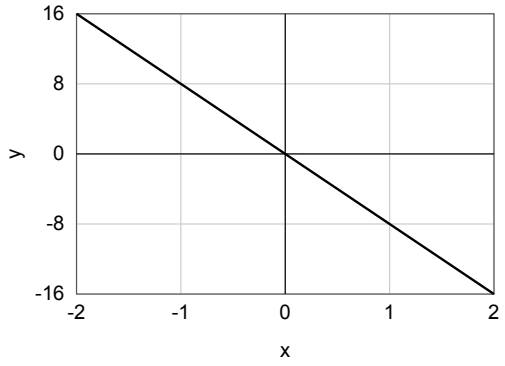
3. Practice

Line y = 0.2x through (0,0); correct slope and two labeled points. Line continues beyond displayed window.



4. Practice

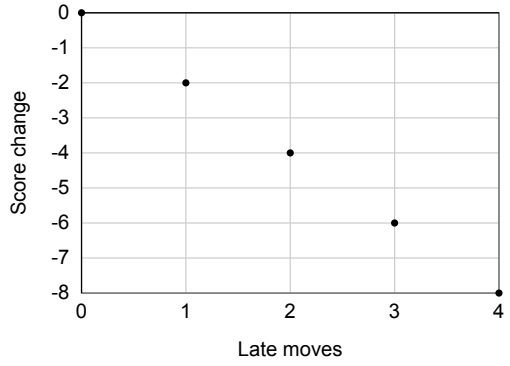
Line y = -8x through (0,0); correct slope and two labeled points. Line continues beyond displayed window.



5. Apply

y=-2x; separate points (0,0), (1,-2), (2,-4), (3,-6), (4,-8).

The discrete count determines the valid inputs.



6. Apply

y = 5x; (0,0), (1,5), and (2,10)

Each quest adds 5 points, so the slope is 5. A proportional relationship begins at (0,0).

7. Challenge

y = -3/2x. The slope is -12/8 = -3/2, and every equation of the form y = mx has y = 0 when x = 0.