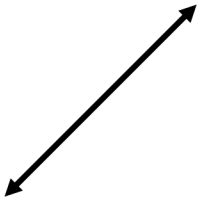
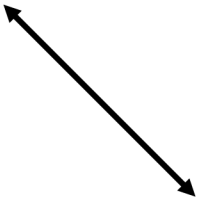
Slope Reference Sheet

Slope

the rate of change of any two points on a line (measure of how steep a line is)
the variable "m" is used to label slope

Positive	Negative	Zero	Undefined
			
the line increases from left to right	the line decreases from left to right	the line is horizontal	the line is vertical

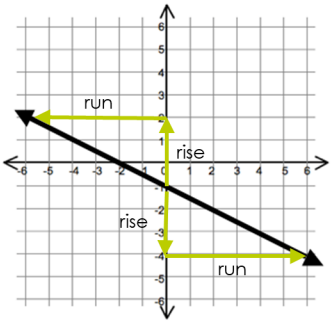
Slope from a Graph

Steps

1. Mark 2 points on the line that cross on a whole number coordinate on the grid.
2. Find the slope using: $m = \frac{\text{rise}}{\text{run}}$

Rise = vertical change (up or down) + ↑ ↓ -

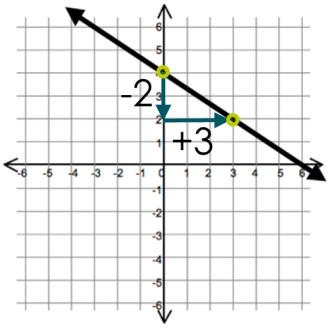
Run = horizontal change (right or left) → + ← -



Examples:

$m = \frac{\text{rise}}{\text{run}}$ ↓ →

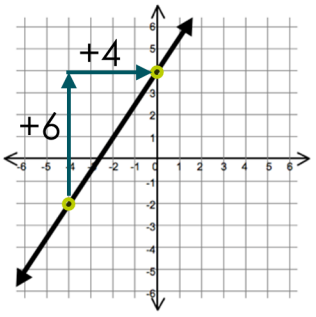
$m = \frac{-2}{3}$



$m = \frac{\text{rise}}{\text{run}}$ ↑ →

$m = \frac{6}{4}$ reduce

$m = \frac{3}{2}$



Slope from a Table

Steps

1. Identify the pattern in the table for both the x and y variable.
2. Use the pattern in the table write the slope: $m = \frac{\text{change in y}}{\text{change in x}}$

Example

1. change in y: -4
   change in x: +2
2. Slope: $m = \frac{-4}{2}$ reduce

$m = -2$

		+2	+2	+2
x	8	6	4	2
y	6	2	-2	-6
		-4	-4	-4

Slope from Two Points

Steps

❶ Label the coordinates as (x_1, y_1) and (x_2, y_2).

❷ Substitute the coordinates into the slope formula:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

❸ Evaluate and simplify.

Example

❶ $(3, -4)$ and $(-5, 8)$
$x_1 \ y_1 \qquad x_2 \ y_2$

❷ $m = \frac{8 - (-4)}{-5 - 3}$

❸ $m = \frac{12}{-8}$

$m = \frac{-3}{2}$ reduce

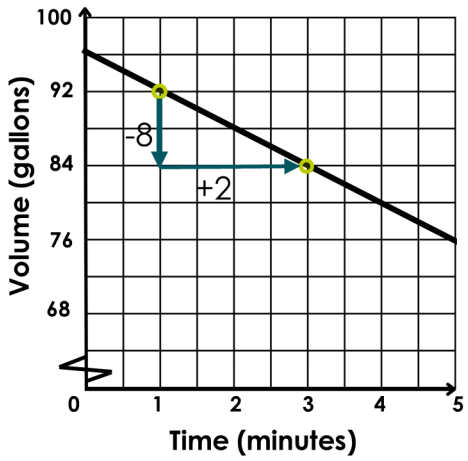
Interpreting Slope from a Graph

Steps

❶ Find the slope of the line using the graph (make sure to pay close attention to the scale on each axis).

❷ Write the slope including units.

❸ Reduce the slope if needed and use the units attached to each value of the slope to write a "for every" or "per" statement.



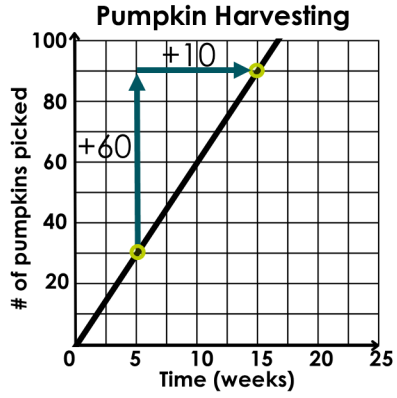
❶ $m = \frac{-8}{2}$ → reduce → $m = \frac{-4}{1}$

❷ $m = \frac{-4 \text{ gallons}}{1 \text{ minute}}$ — units on y-axis; units on x-axis

❸ The pool is draining water at a rate of 4 gallons **per** minute.

OR

For every minute the pool is draining, the water level decreases by 4 gallons.



❶ $m = \frac{+60}{+10}$ → reduce → $m = \frac{6}{1}$

❷ $m = \frac{6 \text{ pumpkins picked}}{1 \text{ week(s)}}$ — units on y-axis; units on x-axis

❸ There are 6 pumpkins picked **per** week.

OR

For every week of harvesting, 6 pumpkins are picked.

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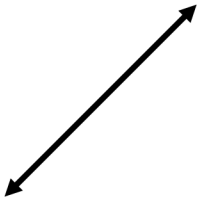	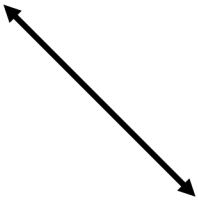		
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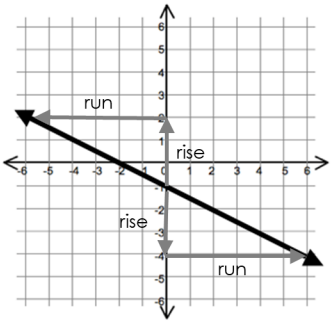

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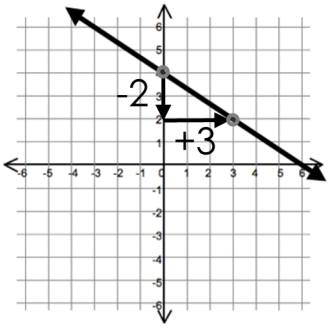

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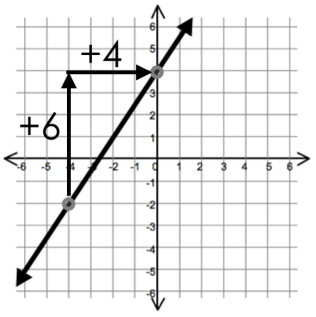

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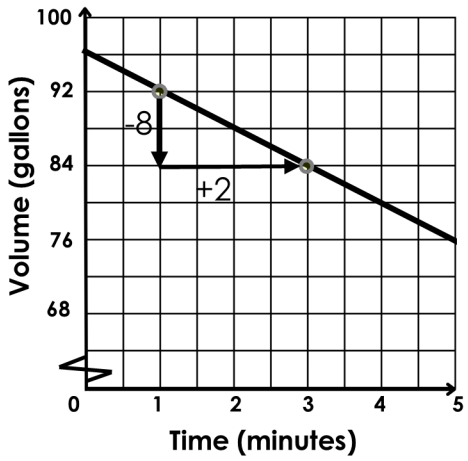

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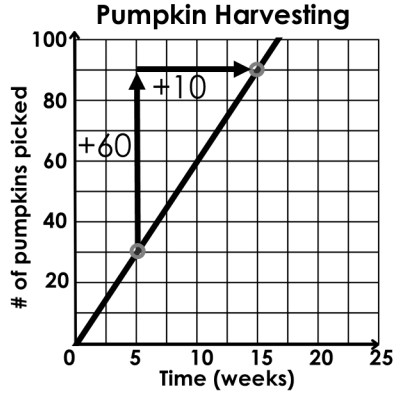

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