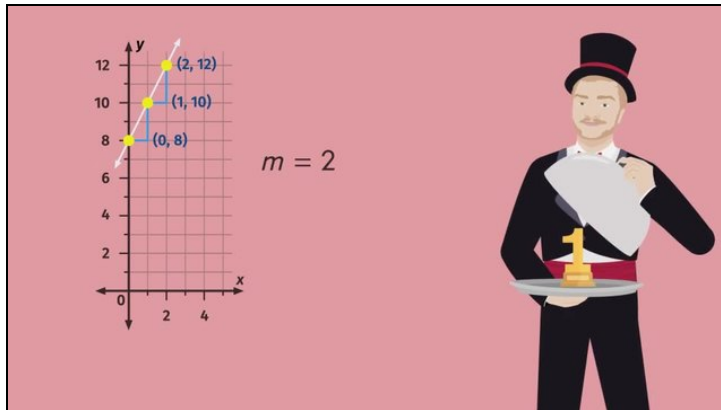


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# One Point, One Slope, One Line



- 1 **Determining which points lie on which lines.**
- 2 Find the equation for the corresponding line given a point and a slope.
- 3 Given a point and a slope, graph the resulting line.
- 4 Write the equation of the resulting line given a point and a slope.
- 5 Determine a line from a given point and slope.
- 6 Prove that given a slope and point, there's only one line with that slope passing through that point.
- + with many hints, answer keys, and solution approaches for all tasks



The complete package, **including all tasks, hints, solutions, and solution approaches**, is available to all subscribers of [sofatutor.com](https://www.sofatutor.com)

## Determining which points lie on which lines.

Find and match the points that are on the graph of each equation.

$$y = 2x - 7$$

**A****1**

$$(0, -14)$$

$$y = 7x$$

**B****2**

$$(7, 0)$$

$$y = -\frac{1}{7}x + 7$$

**C****3**

$$(0, 0)$$

$$y = -\frac{1}{7}x + 1$$

**D****4**

$$(0, -7)$$

$$y = 7x - 14$$

**E****5**

$$(0, 7)$$

## Our hints for the tasks



### Determining which points lie on which lines.

#### 1. Hint

Given the equation  $y = mx + b$ :

- The slope is  $m$ .
  - The  $y$ -intercept is  $b$ .
  - The point  $(0, b)$  is on the graph of the line.
- 

#### 2. Hint

Given the line  $y = -\frac{1}{6}x + 10$ :

- The  $y$ -intercept is 10.
  - The point  $(0, 10)$  is on the line.
  - The slope is  $-\frac{1}{6}$ .
  - The rise is  $-1$  and the run is 6.
  - From the point  $(0, 10)$ , we can run 6 and "rise"  $-1$ .
  - This gives us the point  $(6, 9)$ , which is also on the line.
- 

#### 3. Hint

Suppose we are given the line  $y = \frac{1}{3}x + 11$  and a point  $(3, 12)$  which we **don't know** is on the line or not.

We can substitute the point in for  $x$  and  $y$  in the equation. If the result is true, the point **is** on the line.

$$12 = \frac{1}{3}(3) + 11$$

$$12 = 1 + 11$$

$$12 = 12$$

That's true, so the point  $(3, 12)$  is on the graph of the line  $y = \frac{1}{3}x + 11$ .

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## Solutions and solution approaches for the tasks

1  
from 6**Determining which points lie on which lines.****Answer key:** A—4 // B—3 // C—5 // D—2 // E—1

$y = mx + b$	slope	y-int.	points
$y = 2x - 7$	$2 = \frac{2}{1}$	-7	(0, -7)
$y = 7x$	$7 = \frac{7}{1}$	0	(0, 0)
$y = \frac{1}{7}x + 7$	$\frac{1}{7}$	7	(0, 7)
$y = -\frac{1}{7}x + 1$	$-\frac{1}{7}$	1	(0, 1) (7, 0)
$y = 7x - 14$	$7 = \frac{7}{1}$	-14	(0, -14)