# *Verifying* **a point on a line** refers to the process of seeing if a line intersects a given point on a coordinate plane.

| **When given points and the y-intercept** | **When given an equation** |
|---|---|

**When given points and the y-intercept**

All straight lines on the x-y plane can be graphed using equations in slope-intercept form:

$$\text{SLOPE} = \frac{\text{rise}}{\text{run}} \implies \frac{y_2 - y_1}{x_2 - x_1}$$

**y = mx + b**

m = the "slope"
b = the "y-intercept"

Here is how you would use the slope equation to find the slope between the ordered pairs (–3, –2) and (1, 6):

$$\frac{y^2 - y^1}{x^2 - x^1} = \frac{6 - (-2)}{1 - (-3)} = \frac{6 + 2}{1 + 3} = \boxed{\frac{8}{4}}$$

**When given an equation**

**Which of the following points lies on the line $y = x^2$?**

A.  (1, 2)
B.  (-2, -4)
C.  (-3, 9)
D.  (5, 10)

**1** Plug answer choices A, B, C, and D into the equation given:

A.  (1, 2) ⟶ $2 = 1^2$ ⟶ 2 = 1?  **NO**
B.  (-2, -4) ⟶ $-4 = -2^2$ ⟶ -4 = 4?  **NO**
C.  (-3, 9) ⟶ $9 = -3^2$ ⟶ 9 = 9?  **YES**
D.  (5, 10) ⟶ $10 = 5^2$ ⟶ 10 = 25?  **NO**

**2** The correct answer is **C** because the point (-3, 9) is the only point that leads to a *valid* answer when you plug it into the equation.

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**1)** **What is the equation of the line with points (4, 0) and (1, 3) and y-intercept (0, 2)?**

A.  y = -x + 2

B.  y = x + 2

C.  $y = \frac{1}{2}x + 2$

D.  $y = -\frac{1}{3}x + 2$

**2)** **What is the equation of the line with points $(\frac{1}{2}, 2)$ and $(-1, -\frac{1}{2})$ and y-intercept (0, -3)?**

A.  $y = -\frac{5}{3}x + 3$

B.  $y = \frac{3}{5}x - 3$

C.  $y = \frac{5}{3}x - 3$

D.  y = 3x - 3

**3)** **What is the equation of the line with points (3, 1) and (7,9) and y-intercept (0, 4)**

A.  $y = \frac{1}{2}x + 4$

B.  y = -2x - 4

C.  y = -x + 4

D.  y = 2x + 4

**4)** **What is the equation of the line with points (5, 2) and (2, -5) and y intercept (0, -5)?**

A.  $y = -\frac{5}{2}x - 5$

B.  $y = \frac{7}{3}x - 5$

C.  $y = \frac{2}{5}x - 5$

D.  $y = -\frac{7}{3}x - 5$

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**5)** What is the equation of the line with points (3, -7) and (10, 21) and y-intercept (0, 3)?

A. $y = 2x + 3$
B. $y = 2x - 3$
C. $y = 4x + 3$
D. $y = -4x - 3$

**6)** Which of the following points lies on the line $y = 2x$?

A. (2, 2)

B. $(\frac{1}{4}, \frac{1}{8})$

C. (-2, 4)

D. $(-\frac{1}{2}, -1)$

**7)** Which of the following points lies on the line $y = x - 1$?

A. (-3, -4)

B. (3, -2)

C. $(\frac{2}{3}, \frac{1}{3})$

D. (-2, -1)

**8)** Which of the following points lies on the line $y = \frac{1}{4}x$?

A. (1, 4)
B. (-2, -8)
C. (-4, -1)
D. (8, -2)

**9)** Which of the following points lies on the line $y = 10x - 2$?

A. (-2, -18)
B. (-2, -22)
C. (2, 22)
D. (-2, 20)

**10)** Which of the following points lies on the line $y = 3x - 3$?

A. (0, 3)

B. $(\frac{1}{3}, -6)$

C. $(\frac{2}{3}, 1)$

D. $(\frac{1}{3}, -2)$

**11)** Which of the following points lies on the line $8y - 4x = 40$?

A. (6, 2)
B. (2, 8)
C. (2, 6)
D. (-8, -2)

# *Verifying a Point on a Line* (1A7.0)

**12)** Which of the following points lies on the line $4y + 2x = 2$?

A. (2, -3)
B. (-3, 2)
C. (2, 4)
D. (-4, -3)

**13)** Which of the following points lies on the line $7x - y = -2$?

A. (-1, -5)
B. (0, -2)
C. (1, 7)
D. (-1, -9)

**14)** Which of the following points lies on the line $3y - x = -2$?

A. (-2, 8)
B. (0, -2)
C. (-8, 2)
D. (-2, 3)

**15)** Which of the following points lies on the line $4y + 4x = 3$?

A. $(-\frac{3}{4}, 0)$
B. $(-\frac{1}{2}, 1)$
C. $(-\frac{1}{4}, 0)$
D. $(\frac{1}{4}, 1)$

**16)** Which of the following points lies on the line $4y - 4 = 3x$?

A. $(\frac{3}{4}, 1)$
B. $(\frac{3}{4}, 2)$
C. $(\frac{4}{3}, 0)$
D. $(\frac{4}{3}, 2)$