Coordinate Geometry

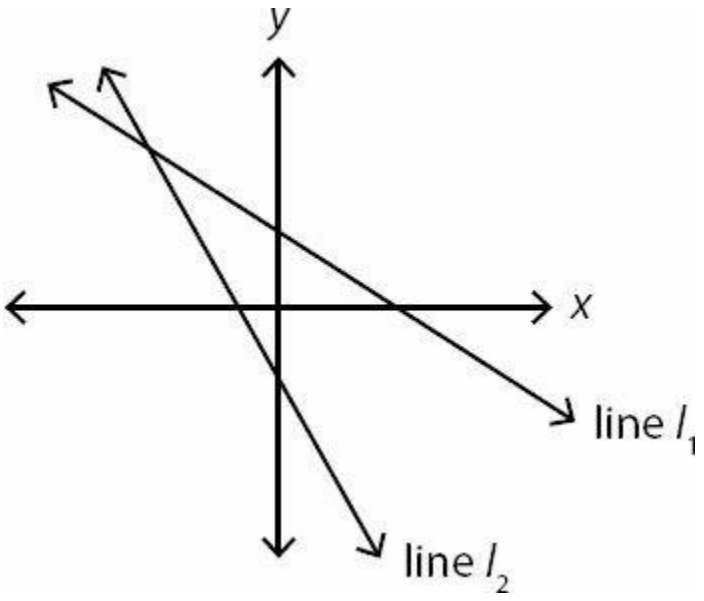
For questions in the Quantitative Comparison format ("Quantity A" and "Quantity B" given), the answer choices are always as follows:

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

For questions followed by a numeric entry box ☐, you are to enter your own answer in the box. For questions followed by fraction-style numeric entry boxes ☐/☐, you are to enter your answer in the form of a fraction. You are not required to reduce fractions. For example, if the answer is 1/4, you may enter 25/100 or any equivalent fraction.

All numbers used are real numbers. All figures are assumed to lie in a plane unless otherwise indicated. Geometric figures are not necessarily drawn to scale. You should assume, however, that lines that appear to be straight are actually straight, points on a line are in the order shown, and all geometric objects are in the relative positions shown. Coordinate systems, such as *xy*-planes and number lines, as well as graphical data presentations such as bar charts, circle graphs, and line graphs, *are* drawn to scale. A symbol that appears more than once in a question has the same meaning throughout the question.

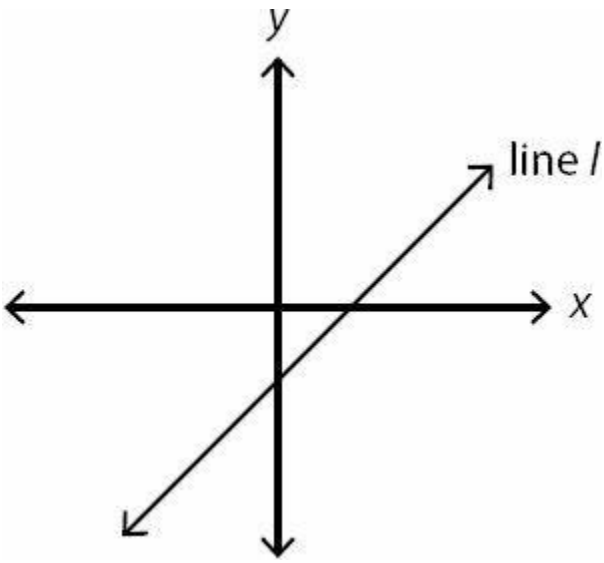
1.



Quantity A **Quantity B**

The slope of line l_1 The slope of line l_2

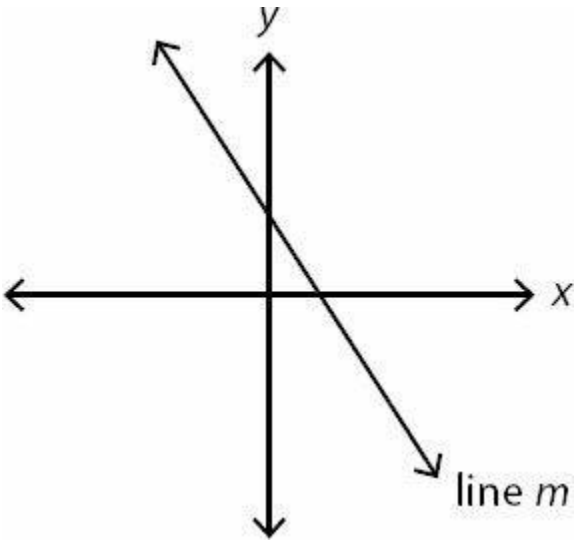
2.



Which of the following is most likely to be the equation of line *l*?

(A) $y = 4x + 4$
(B) $y = 4x - 4$
(C) $y = x - 6$
(D) $y = x + 1/2$
(E) $y = -x - 3$

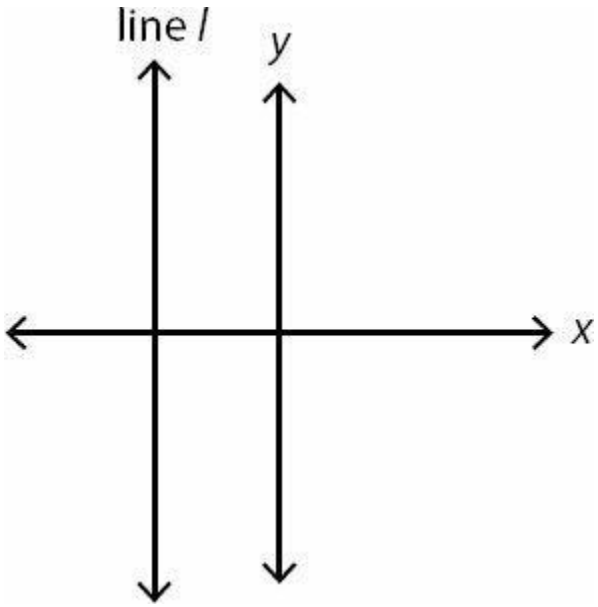
3.



Which of the following could be the equation of line *m*?

(A) $6y + 6x = 7$
(B) $3y = -4x - 3$
(C) $5y + 10 = -4x$
(D) $y = 2$
(E) $x = -2$

4.



If line *l* is parallel to the *y*-axis, what could be the equation of line *l*?

(A) $x = 2$
(B) $x = -2$
(C) $y = 2$
(D) $y = -2$
(E) $y = -2x$

5. What is the equation of the line that passes through (-1, -3) and has a slope of -2?

(A) $y = -2x - 1$
(B) $y = -2x - 2$
(C) $y = -2x - 5$
(D) $y = -4x - 2$
(E) $y = -5x + 2$

6. What is the slope of a line that passes through the points (-4, 5) and (1, 2)?

(A) $-\frac{3}{5}$
(B) -1
(C) $-\frac{5}{3}$
(D) $-\frac{7}{3}$
(E) -3

7. Which of the following could be the slope of a line that passes through the point (-2, -3) and crosses the *y*-axis above the origin?

Indicate all such values.

- ☐ $-\frac{2}{3}$
- ☐ $\frac{3}{7}$
- ☐ $\frac{3}{2}$
- ☐ $\frac{5}{3}$
- ☐ $\frac{9}{4}$
- ☐ 4

8. If a line has slope -2 and passes through the points (4, 9) and (6, y), what is the value of y?

9. What is the distance between the points (-1, -1) and (5, 6)?

(A) 6
(B) 7
(C) $\sqrt{79}$
(D) $\sqrt{85}$
(E) 11

10. If the longest distance between any two of the points (-1, -2), (6, -2), and (7, 10) is $p\sqrt{13}$, what is the value of p?

11.

A line has the equation $2y - 4x - 8 = 0$.

Quantity A	**Quantity B**
The slope of the line	4

12. Which of the following points lies on the line $y = 2x - 8$?

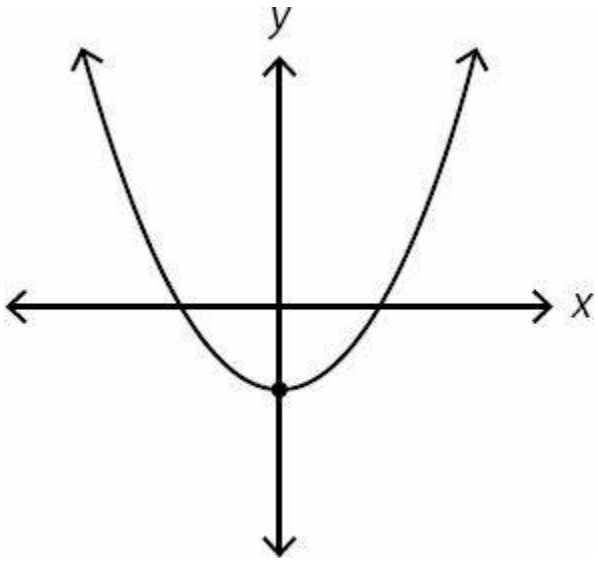
Indicate all such values.

- ☐ (3, -2)
- ☐ (-8, 0)
- ☐ (1/2, -7)

13. Which of the following points does NOT lie on the curve $y = x^2 - 3$?

(A) (3, 6)
(B) (-3, 6)
(C) (0, -3)
(D) (-3, 0)
(E) (0.5, -2.75)

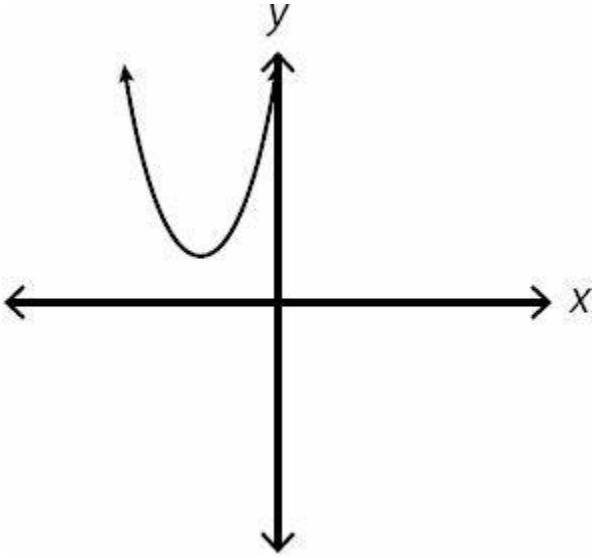
14.



Which of the following could be the equation of the figure above?

(A) $y = x - 2$
(B) $y = x^2 - x$
(C) $y = x^2 - 2$
(D) $y^2 = x^2$
(E) $y = x^3 - 2$

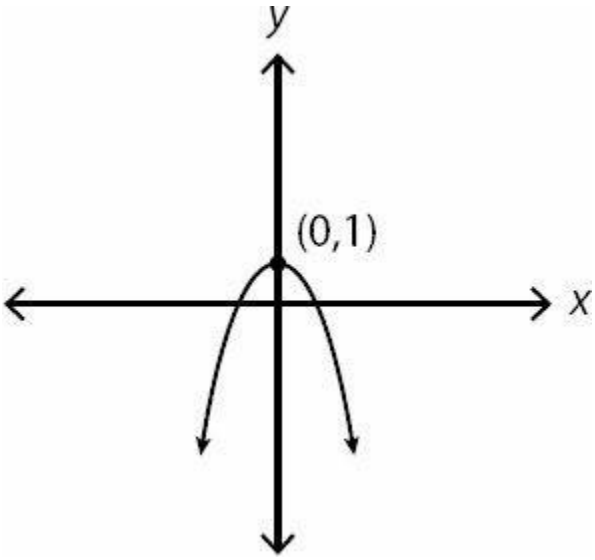
15.



Which of the following could be the equation of the parabola pictured above?

(A) $y = x^2 + 3$
(B) $y = (x - 3)^2 + 3$
(C) $y = (x + 3)^2 - 3$
(D) $y = (x - 3)^2 - 3$
(E) $y = (x + 3)^2 + 3$

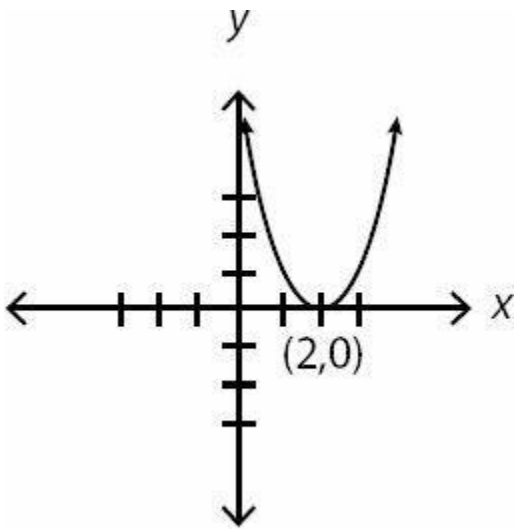
16.



Which of the following could be the equation of the parabola pictured above?

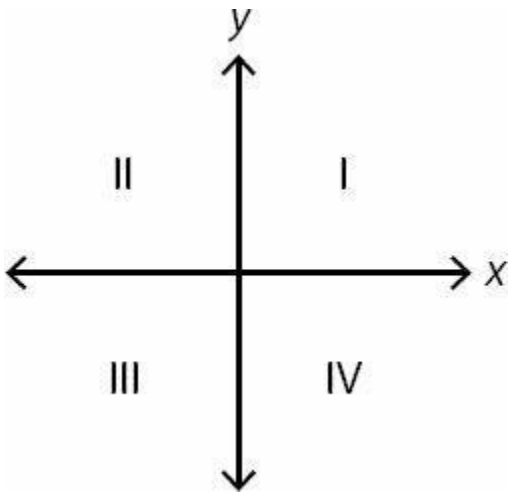
(A) $y = -x - 1$
(B) $y = x^2 + 1$
(C) $y = -x^2 - 1$
(D) $y = -x^2 + 1$
(E) $y = -(x - 1)^2$

17.



If the equation of the parabola pictured above is $y = (x - h)^2 + k$ and $(-3, n)$ is a point on the parabola, what is the value of n?

18.



Which quadrant, if any, contains no point (x, y) that satisfies the inequality $y \geq (x - 3)^2 - 1$?

(A) I
(B) II
(C) III
(D) IV
(E) All quadrants contain at least one point that satisfies the given inequality.

19.

In the coordinate plane, line p has an equation of $3y - 9x = 9$.

Quantity A **Quantity B**

The slope of line p	The x-intercept of line p

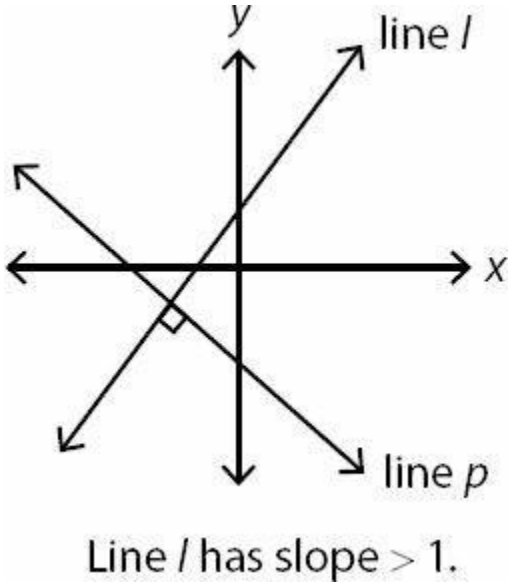
20. In the xy coordinate plane, lines l_1 and l_2 intersect at (2, 4). If the equation of l_1 is $y = px + 16$ and the equation of l_2 is $y = mx + p$, where m and p are constants, what is the value of m?

21. If (3, 5) and (4, 9) are points on line L, which of the following is also a point on that line?

Indicate <u>all</u> such values.

- ☐ (2, 1)
- ☐ (5, 12)
- ☐ (6, 17)

22.



Line l has slope > 1.

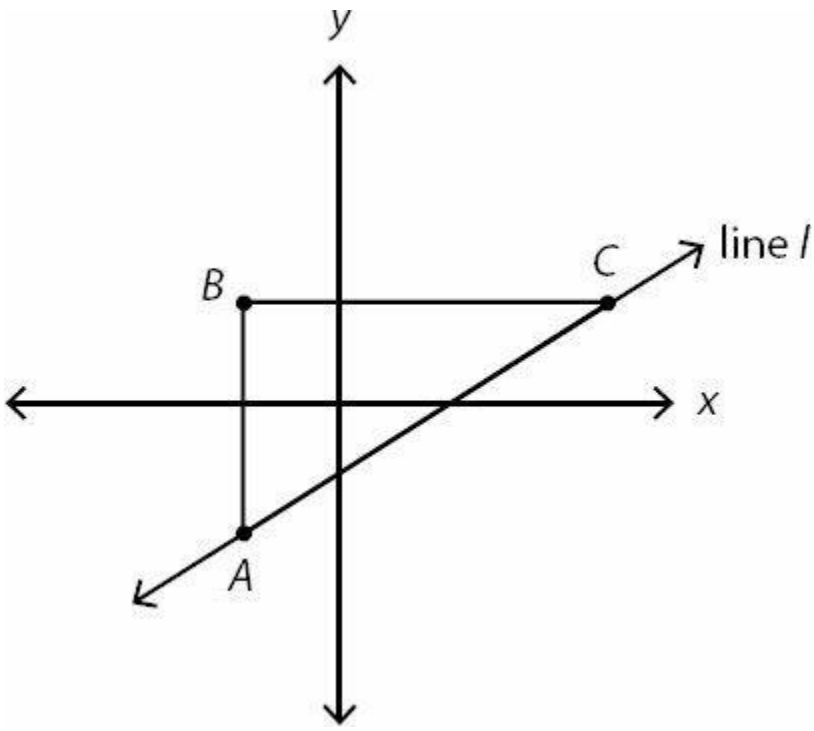
Quantity A	**Quantity B**
Slope of line p	-1

23.

Lines l_1 and l_2 are parallel and have slopes that sum to less than 1.

Quantity A	**Quantity B**
The slope of a line perpendicular to lines l_1 and l_2	$-\frac{1}{2}$

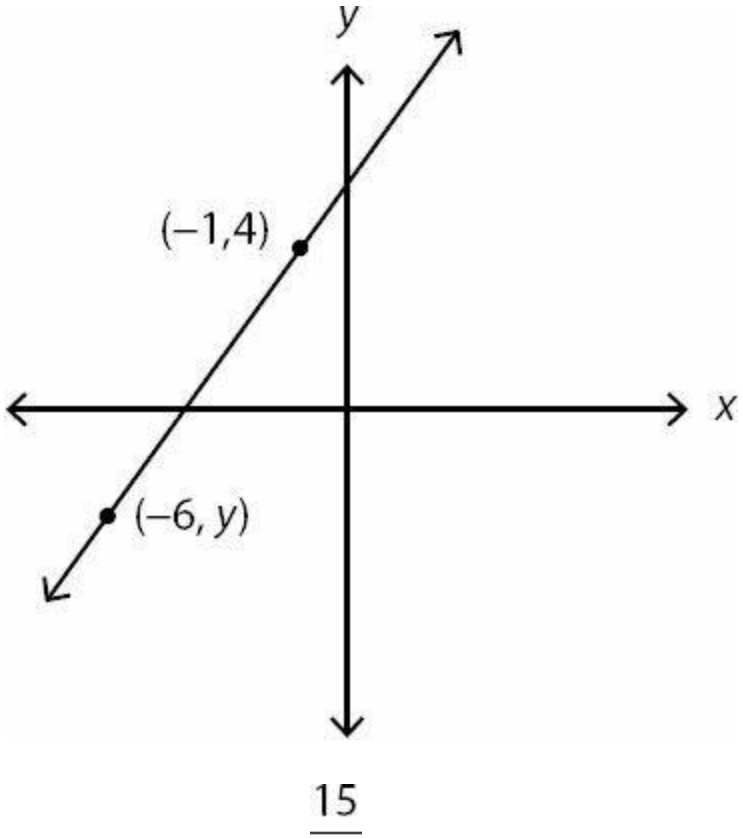
24.



If the slope of line l is 1/3 and the length of line segment BC is 4, how long is line segment AB?

(A) 3/4
(B) 4/3
(C) 3
(D) 4
(E) 12

25.



If the slope of the line is $\frac{15}{14}$, what is the value of y?

(A) $\frac{2}{7}$

(B) $\frac{7}{2}$

(C) $-\frac{7}{2}$

(D) $-\frac{14}{19}$

(E) $-\frac{19}{14}$