Student: Cole Lamers **Date:** 06/16/19	**Instructor:** Kelly Galarneau **Course:** CA&T Internet (70263) Galarneau	**Assignment:** 2.1 Coordinate Plane, Distance and Midpoint Formul

1. Complete the following statement.

   A point with a negative first coordinate and a positive second coordinate lies in the _____ quadrant.

   A point with a negative first coordinate and a positive second coordinate lies in the second quadrant.

2. Decide whether the following statement is true or false.

   The point $(7, -4)$ is four units to the right and two units below the point $(3,2)$.

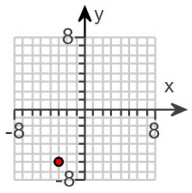
   Choose the correct answer below.

   - ○ True
   - ✔ False

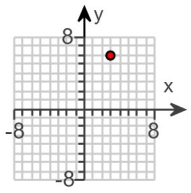
3. Plot (3,6), (0,3), and $(-2,-5)$ in the xy-plane. Tell in which quadrant or on what coordinate axis each point lies.

(a) Choose the graph that correctly plots the point (3,6).

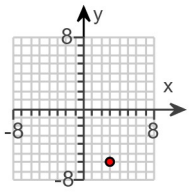
A.



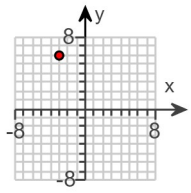
B.



C.



D.

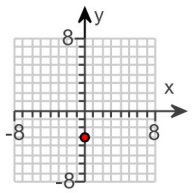


In which quadrant does the point (3,6) lie?

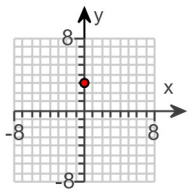
- quadrant III
- quadrant I
- quadrant II
- quadrant IV

(b) Choose the graph that correctly plots the point (0,3).

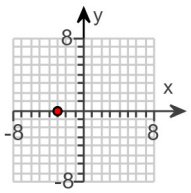
A.



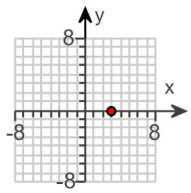
B.



C.



D.

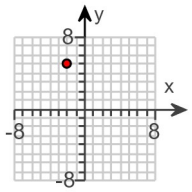


On which coordinate axis does the point (0,3) lie?

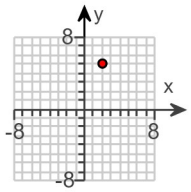
- y-axis
- x-axis

(c) Choose the graph that correctly plots the point $(-2,-5)$.

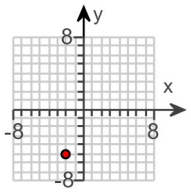
A.



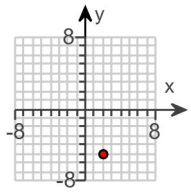
B.



C.



D.



In which quadrant does the point $(-2,-5)$ lie?

- quadrant II
- quadrant III
- quadrant IV
- quadrant I

4. Plot the points (6,0), (6, − 7), (6,9), (6,4), and (6, − 2). Describe the set of all points of the form (6,y), where y is a real number.

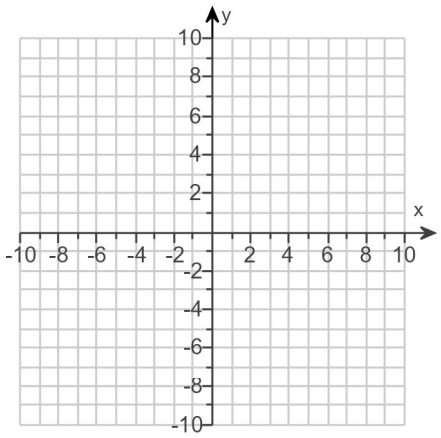
Plot the point (6,0).

Plot the point (6, − 7).

Plot the point (6,9).

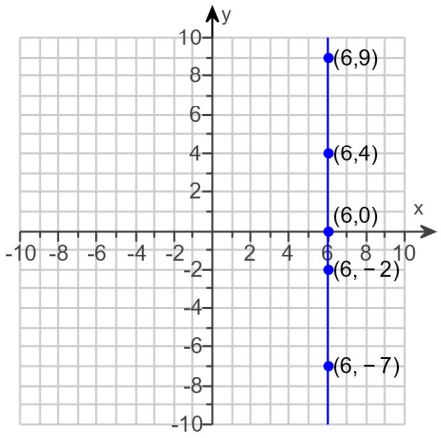
Plot the point (6,4).

Plot the point (6, − 2).



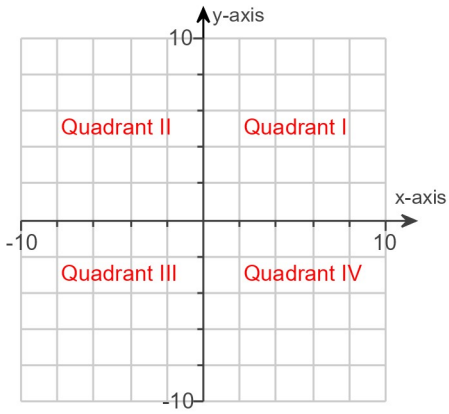
Describe the set of all points of the form (6,y), where y is a real number.

- **A.** The points are on a horizontal line 6 units below the x-axis.
- **B.** The points are on a vertical line 6 units to the left of the y-axis.
- **C.** The points are on a horizontal line 6 units above the x-axis.
- ✔ **D.** The points are on a vertical line 6 units to the right of the y-axis.



5. In which quadrants is the second coordinate negative?

The second coordinate is always negative in quadrants III, IV .
(Type I, II, III, or IV. Use a comma to separate answers as needed.)



6. Find (a) the distance between P and Q and (b) the coordinates of the midpoint of the line segment PQ.

P(0,3), Q(0, 9)

(a) The distance between P and Q is 6 . (Simplify your answer.)

(b) The coordinates of the midpoint of the line segment PQ are (0,6) .
(Type an ordered pair. Use integers or a decimals for any numbers in the expression.)

7. Find the distance between the two points and the midpoint of the line segment joining them.

$(0, -3)$ and $(-1, -2)$

The distance is $\sqrt{2}$.
(Simplify your answer. Type an exact answer, using radicals as needed.)

The midpoint is $\left(-\frac{1}{2}, -\frac{5}{2}\right)$.
(Type an ordered pair. Simplify your answer.)

8. For the points $P\left(\sqrt{3}, 7\right)$ and $Q\left(\sqrt{3}, 8\right)$, find **(a)** the distance between P and Q and **(b)** the coordinates of the midpoint of the segment PQ.

(a) The distance between P and Q is, d(P,Q) = 1.
(Simplify your answer. Type an exact answer, using radicals as needed.)

(b) The midpoint of the segment PQ is $\left(\sqrt{3}, \frac{15}{2}\right)$.
(Simplify your answer. Type an ordered pair. Type an exact answer for each coordinate, using radicals as needed.)

9. Determine whether the given points are collinear. Points are collinear if they can be labeled P, Q, and R so that d(P,Q) + d(Q,R) = d(P,R).

$(9, -2)$, $(-1, 4)$, $(4, 1)$

Choose the correct answer below.

- **A.** Yes because d(P,Q) + d(Q,R) = d(P,R), where P = (4,1), Q = (−1,4), and R = (9, −2).
- **B.** No because the sum of two smaller distances is less than the larger distance.
- **C.** Yes because d(P,Q) + d(Q,R) = d(P,R), where P = (9, −2), Q = (4,1), and R = (−1,4). ✓
- **D.** No because the sum of two smaller distances is greater than the larger distance.

10. Determine whether the three points are collinear.

$(0, -5)$, $(-3, -14)$, $(2, 1)$

Are the three points collinear?

- ✓ Yes
- No

11. Find the coordinates of the points that divide the line segment joining the points P = (0,0) and Q = (4,8) into four equal parts.

The points $(2,4), (1,2), (3,6)$ divide the line segment PQ into four equal parts.
(Type an ordered pair. Use a comma to separate answers as needed.)

12. Identify the triangle PQR as isosceles (two sides of equal length), equilateral (three sides of equal length), or a scalene triangle (three sides of different lengths).

P(− 4,6), Q(0,5), and R(− 3,2)

Choose the correct answer below.

- **A.** The triangle PQR is a scalene triangle because all sides are of different lengths.
- **B.** The triangle PQR is an isosceles triangle because QR = PR.
- **C.** The triangle PQR is an isosceles triangle because PQ = PR.
- **D.** The triangle PQR is an equilateral triangle because all sides have the same length.
- **E.** The triangle PQR is an isosceles triangle because PQ = QR.

13. Find x such that the point (x,6) is 13 units from (− 6, − 6).

x = − 1, − 11

(Type an integer. Use a comma to separate answers as needed.)