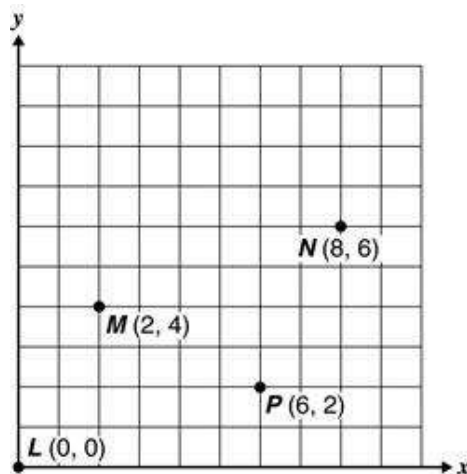


TEST NAME: **Geometry**
TEST ID: **2658453**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____
 Class: _____
 Date: _____

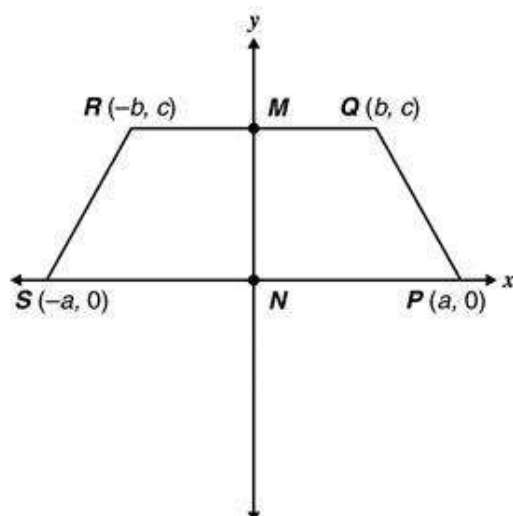
1. The locations of the vertices of quadrilateral $LMNP$ are shown on the grid below.



Quadrilateral $STUV$ is congruent to $LMNP$. What are the lengths of the diagonals of $STUV$?

- A. $SU = 2\sqrt{10}$ and $TV = 2\sqrt{5}$
 B. $SU = 2\sqrt{5}$ and $TV = 2\sqrt{10}$
 C. $SU = 2\sqrt{5}$ and $TV = 10$
 D. $SU = 10$ and $TV = 2\sqrt{5}$
2. Quadrilateral $PQRS$ has vertices at $P(-5, 1)$, $Q(-2, 4)$, $R(-1, 0)$, and $S(-4, -3)$. Quadrilateral $KLMN$ has vertices $K(a, b)$ and $L(c, d)$. Which equation must be true to prove $KLMN \cong PQRS$?
- A. $\frac{4-1}{-2-(-5)} = \frac{d-b}{c-a}$
 B. $\frac{4-0}{-2-(-1)} = \frac{d-b}{c-a}$
 C. $\sqrt{(4+1)^2 + (-2-5)^2} = \sqrt{(c+a)^2 + (d+b)^2}$
 D. $\sqrt{(0-4)^2 + (-1+2)^2} = \sqrt{(d-b)^2 + (c-a)^2}$
3. The vertices of a quadrilateral are $M(-1, 1)$, $N(1, -2)$, $O(5, 0)$, and $P(3, 3)$. Which statement describes Quadrilateral $MNOP$?
- A. Quadrilateral $MNOP$ is a rectangle.
 B. Quadrilateral $MNOP$ is a trapezoid.
 C. Quadrilateral $MNOP$ is a rhombus but not a square.
 D. Quadrilateral $MNOP$ is a parallelogram but not a rectangle.

4. The diagram below shows congruent trapezoids $MRSN$ and $MQPN$.



Which equations can be used to prove the corresponding diagonals are congruent?

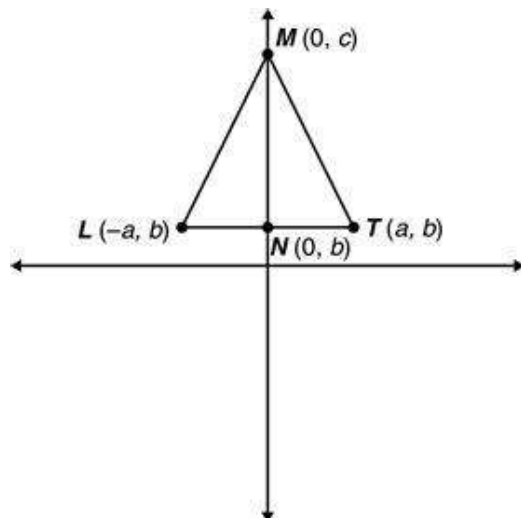
- A. $\frac{0-c}{0+b} = \frac{0-c}{0-b}$ and $\frac{c-0}{0+a} = \frac{c-0}{0-a}$
- B. $\frac{c-c}{0+b} = \frac{c-c}{0-b}$ and $\frac{c-0}{-b+a} = \frac{c-0}{b-a}$
- C. $\sqrt{(0+b)^2 + (c-c)^2} = \sqrt{(0-b)^2 + (c-c)^2}$
 $\sqrt{(0+a)^2 + (0-0)^2} = \sqrt{(0-a)^2 + (0-0)^2}$
- D. $\sqrt{(0+b)^2 + (0-c)^2} = \sqrt{(0-b)^2 + (0-c)^2}$
 $\sqrt{(0+a)^2 + (c-0)^2} = \sqrt{(0-a)^2 + (c-0)^2}$

5. The coordinates of the vertices of rectangle $PQRS$ are shown below. Which of the following points is NOT on rectangle $PQRS$?

$P : (-2, -2)$
 $Q : (-2, 3)$
 $R : (5, 3)$
 $S : (5, -2)$

- A. $(-2, 5)$
 B. $(3, -2)$
 C. $(3, 3)$
 D. $(5, 0)$

6. A student is using coordinate geometry to prove $\triangle LMN \cong \triangle TMN$, as shown on the grid below.



Which equation should be used to prove $\overline{LM} \cong \overline{MT}$?

- A. $\sqrt{(-a-a)^2 + (b-b)^2} = \sqrt{(a+a)^2 + (b-b)^2}$
- B. $\sqrt{(0+a)^2 + (c-b)^2} = \sqrt{(a-0)^2 + (b-c)^2}$
- C. $\frac{b-c}{-a-0} = \frac{b-b}{a+a}$
- D. $\frac{c-b}{0-a} = \frac{c-b}{0+a}$
7. A diameter of Circle P has endpoints $(6, 0)$ and $(-6, 0)$. Which point also lies on Circle P ?
- A. $(-5, 3)$
- B. $(-3\sqrt{2}, -6\sqrt{2})$
- C. $(-2\sqrt{2}, 2\sqrt{7})$
- D. $(3, 3)$
8. If the graphs of the linear equations shown are perpendicular, what is the value of k ?

$$y = 7x + 4$$

$$3y = kx - 6$$

- A. $-\frac{3}{7}$
- B. $-\frac{1}{7}$
- C. $\frac{1}{7}$
- D. $\frac{3}{7}$

9. The graph of which of the following equations is parallel to the graph of $9x + y = 2$?

A. $y = -9x + \frac{1}{2}$

B. $y = -\frac{1}{9}x + \frac{1}{2}$

C. $y = \frac{1}{9}x + 2$

D. $y = 9x + 2$

10. What equation below has a linear graph that is parallel to the graph of $y = 2$ on the Cartesian coordinate system?

A. $x = 2$

B. $y = 7$

C. $y = -2x$

D. $y = 2x$

11. What is the slope of a line parallel to the graph of $4x - 5y = 14$?

A. $\frac{5}{4}$

B. $\frac{4}{5}$

C. $-\frac{4}{5}$

D. $-\frac{5}{4}$

12. Which equation represents the line that passes through the point $(3, -1)$ and is perpendicular to the graph of $x + 4y = 10$?

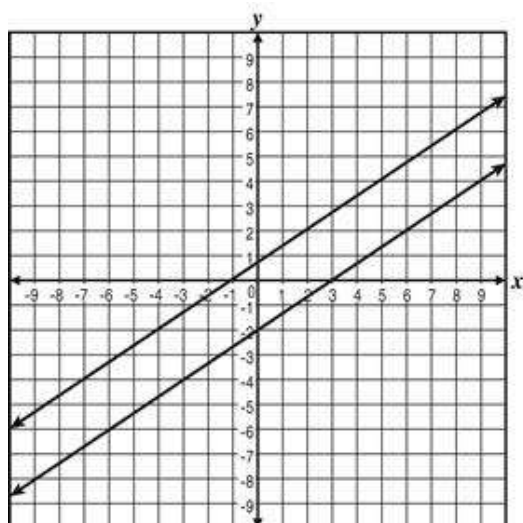
A. $x - 4y = 7$

B. $x + 4y = -1$

C. $4x + y = 11$

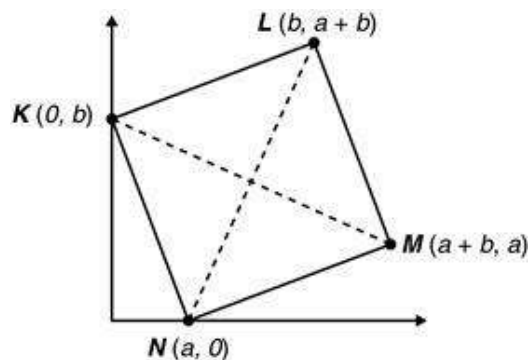
D. $4x - y = 13$

13. What do the two lines in the graph below have in common?



- A. slope
- B. x -intercept
- C. y -intercept
- D. equation of the lines

14. Square $KLMN$ with its vertices is shown below.



Which equation can be used to justify the diagonals $\overline{LN}$ and $\overline{KM}$ are perpendicular?

- A. $\left(\frac{a+b}{b-a}\right)\left(\frac{a-b}{a+b}\right) = 1$
- B. $\left(\frac{a+b}{b-a}\right)\left(\frac{b-a}{a+b}\right) = 1$
- C. $\left(\frac{a+b}{b-a}\right)\left(\frac{a-b}{a+b}\right) = -1$
- D. $\left(\frac{a+b}{b-a}\right)\left(\frac{b-a}{a+b}\right) = -1$

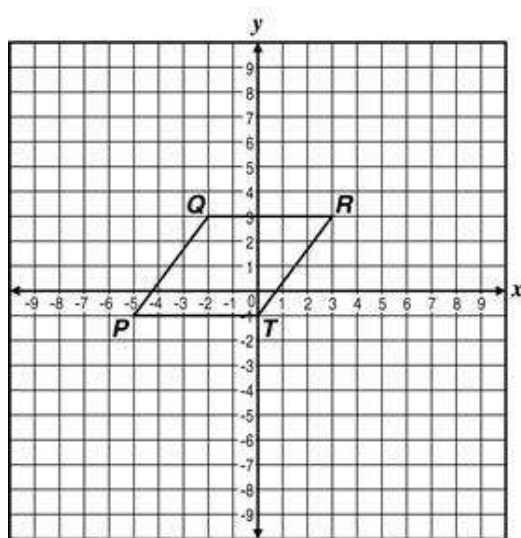
15. The graph of which of the following equations is parallel to the graph of $3x + y = 5$?

- A. $y = -3x - 5$
- B. $y = -\frac{1}{3}x - 5$
- C. $y = \frac{1}{3}x + 5$
- D. $y = 3x + 5$

16. Which linear equation represents a line parallel to the graph of $y = \frac{7x}{4}$?

- A. $y = \frac{7}{4}x + 5$
- B. $y = -\frac{4}{7}x - 5$
- C. $y = -\frac{7}{4}x$
- D. $y = \frac{4}{7}x + 1$

17. Quadrilateral $PQRT$ is defined by the points $P(-5, -1)$, $Q(-2, 3)$, $R(3, 3)$, and $T(0, -1)$.



Which conclusion can be proven valid using the equation $\left(\frac{-1-3}{0+2}\right)\left(\frac{3+1}{3+5}\right) = -1$?

- A. The diagonals are congruent.
- B. The diagonals bisect each other.
- C. The diagonals are perpendicular.
- D. The diagonals bisect opposite angles.

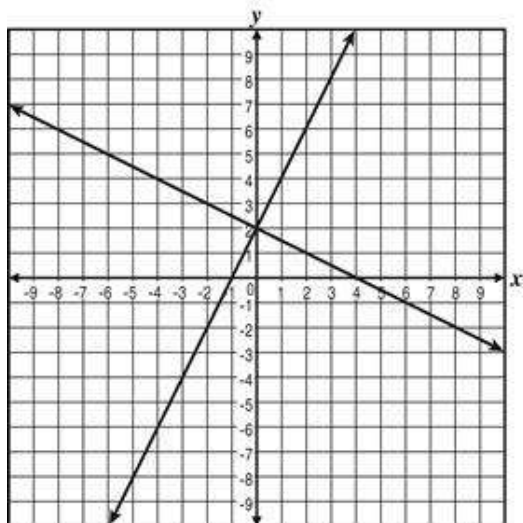
18. What is the slope of a line that is perpendicular to the graph of $y = 7x + 1$?

- A. 7
- B. $\frac{1}{7}$
- C. $-\frac{1}{7}$
- D. -7

19. Which equation has a graph that is parallel to the graph of $y = \frac{1}{3}x - 2$?

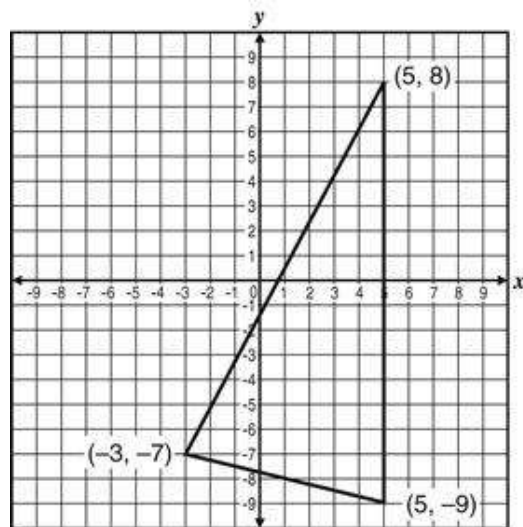
- A. $y = -3x - 4$
- B. $y = -\frac{1}{3}x + 2$
- C. $y = \frac{1}{3}x + 4$
- D. $y = 3x - 2$

20. The slopes of the lines in the graph below can BEST be described by which term or phrase?



- A. equal
- B. opposites
- C. reciprocals
- D. opposite reciprocals

21. An isosceles triangle is shown on the grid below.

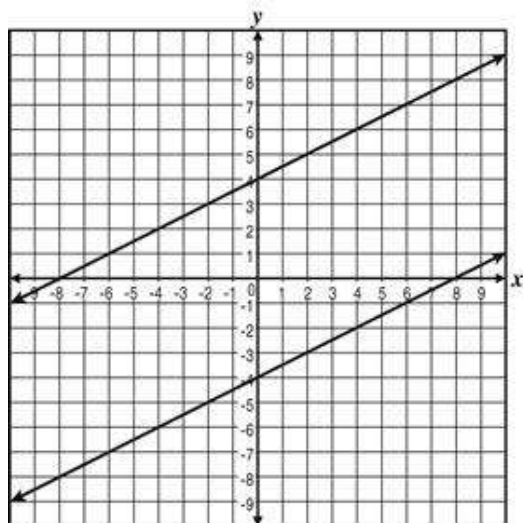


Two congruent right triangles are formed by the intersection of Line t (not shown) and the isosceles triangle. What is the slope of Line t ?

- A. -8
 - B. -4
 - C. 4
 - D. 8
22. Which equation represents the line that passes through the point $(-2, 5)$ and is perpendicular to the graph of $x - 6y = 4$?

- A. $6x + y = -7$
- B. $6x - y = -17$
- C. $x + 6y = 28$
- D. $x - 6y = -32$

23. The slopes of the lines in this graph can BEST be described by which term or phrase?



- A. equal
- B. opposites
- C. reciprocals
- D. opposite reciprocals

24. What is the slope of a line that is parallel to the graph of $4x + 1y = 3$?

- A. -4
- B. $-\frac{1}{4}$
- C. $\frac{1}{4}$
- D. 4

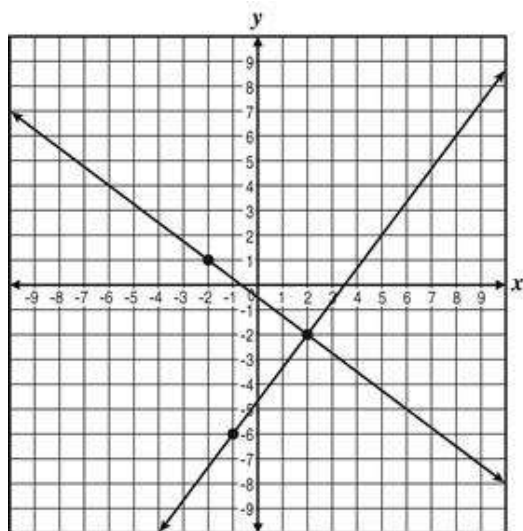
25. The coordinates of Point J are $(1, 6)$, the coordinates of Point U are $(8, 10)$, and the coordinates of Point P are $(-6, -3)$. What coordinates of Point M would make $JUMP$ a parallelogram?

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

26. What is the slope of a line that is perpendicular to the graph of $y = 5x + 5$?

- A. -5
- B. $-\frac{1}{5}$
- C. $\frac{1}{5}$
- D. 5

27. On the lines graphed below, points are identified at $(-2, 1)$, $(2, -2)$, and $(-1, -6)$.



Which phrase describes the lines on the graph?

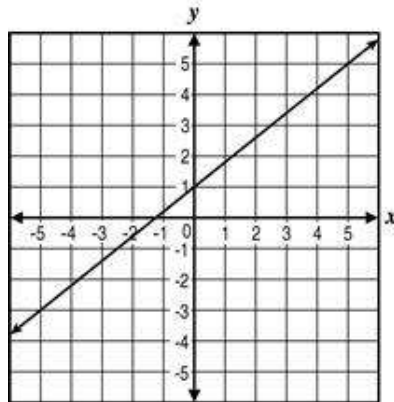
- A. intersecting, but not perpendicular
- B. perpendicular to each other
- C. parallel and not coplanar
- D. parallel but coplanar

28. If the coefficient of x is changed to $-\frac{1}{3}$ in the equation $y = 3x - 2$, which statement BEST describes how the graph of the equation will be affected?

- A. The graph of the new line will shift 3 units below the graph of the original line.
- B. The graph of the new line will shift 1 unit below the graph of the original line.
- C. The graph of the new line will be perpendicular to the graph of the original line.
- D. The graph of the new line will be parallel to the graph of the original line.

29. The graph of which equation is perpendicular to the graph of $5x - 3y = 12$?
- A. $y = -\frac{5}{3}x - 6$
 - B. $y = -\frac{3}{5}x + 10$
 - C. $y = \frac{3}{5}x + 8$
 - D. $y = \frac{5}{3}x + 4$
30. Line k has an undefined slope and passes through the point $(11, 14)$. Line m passes through the point $(-17, -25)$ and is parallel to Line k . Which equation can be represented by Line m ?
- A. $y = -25$
 - B. $x = -17$
 - C. $x = 11$
 - D. $y = 14$
31. The graph of which of the following equations is parallel to the graph of $y = -\frac{1}{5}x - \frac{1}{3}$?
- A. $y = -\frac{1}{3}x - \frac{1}{5}$
 - B. $y = -\frac{1}{5}x + \frac{1}{3}$
 - C. $y = \frac{1}{5}x - \frac{1}{3}$
 - D. $y = \frac{1}{3}x + \frac{1}{5}$

32. Which table of ordered pairs BEST represents a line that is parallel to the line shown in the graph?



- A.

x	y
-5	6
5	-2
- B.

x	y
-4	1
4	-9
- C.

x	y
-4	0
4	10
- D.

x	y
-5	-5
10	7

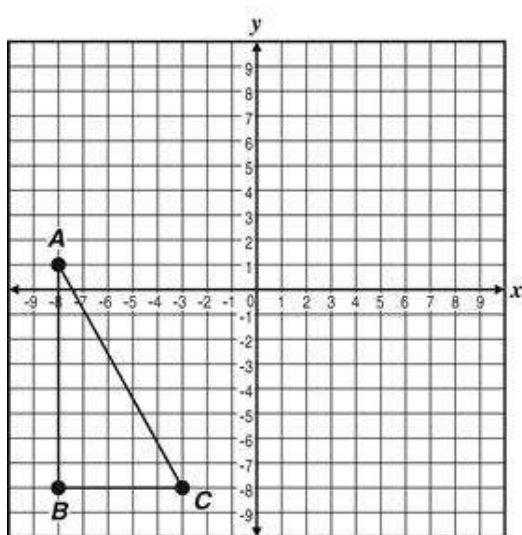
33. What is the equation of the line passing through $(-5, -3)$ and perpendicular to the line representing the equation $y = -\frac{5}{7}x + 2$?

- A. $y = \frac{7}{5}x + 4$
- B. $y = \frac{5}{7}x + \frac{4}{7}$
- C. $y = -\frac{5}{7}x - \frac{46}{7}$
- D. $y = -\frac{7}{5}x - 10$

34. Which equation represents a line parallel to the graph of $y = \frac{1}{4}x + \frac{1}{8}$?

- A. $y = -\frac{1}{4}x + \frac{1}{8}$
- B. $y = -\frac{1}{8}x - \frac{1}{4}$
- C. $y = \frac{1}{8}x + \frac{1}{4}$
- D. $y = \frac{1}{4}x - \frac{1}{8}$

35. Point A $(-8, 1)$, Point B $(-8, -8)$, and Point C $(-3, -8)$ are the vertices of $\triangle ABC$.



What is the equation of the line that is perpendicular to $\overline{AC}$ and passes through Point B ?

- A. $y = -\frac{9}{5}x - \frac{32}{9}$
- B. $y = -\frac{9}{5}x + \frac{32}{9}$
- C. $y = \frac{5}{9}x - \frac{32}{9}$
- D. $y = \frac{5}{9}x + \frac{32}{9}$

36. The center of a circle is located at $(0, 4)$. The endpoint, X , of one of the circle's radii is $(-4, -5)$. Segment XY is a diameter of the circle. Where is point Y located?

- A. $(13, 4)$
- B. $(5, 4)$
- C. $(4, 5)$
- D. $(4, 13)$

37. Four friends plotted the locations of their houses on a coordinate plane.

- Sarah's house is located at $(7, -2)$.
- Mandy's house is located at $(3, 5)$.
- Cameron's house is exactly halfway between Sarah's house and Mandy's house.
- Kayla's house is exactly halfway between Cameron's house and Mandy's house.

What are the coordinates of Kayla's house?

- A. $(2, -72)$
- B. $(4, 134)$
- C. $(5, 32)$
- D. $(6, -14)$

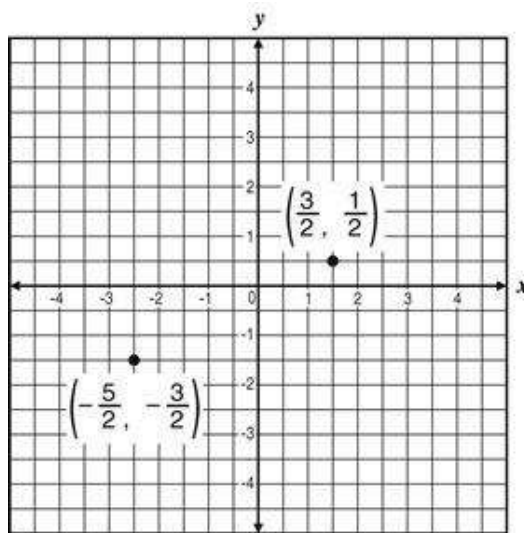
38. Point M is on $\overline{PQ}$, $\overline{PM}$ has a length of 7 units, and Point N is the midpoint of $\overline{MQ}$.



If the length of $\overline{NQ}$ is 4 units, how long is $\overline{PQ}$?

- A. 3 units
- B. 11 units
- C. 15 units
- D. 18 units

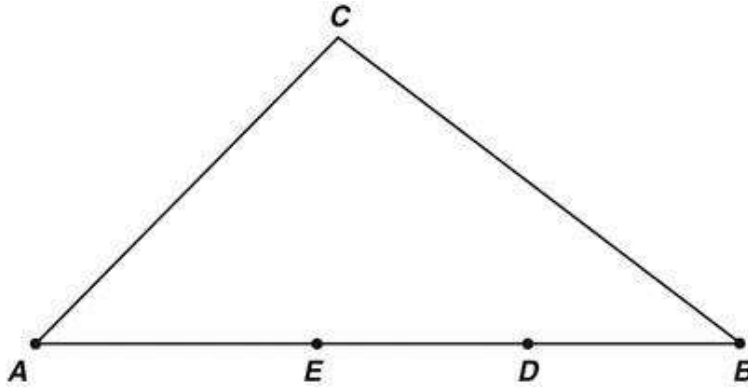
39. What is the midpoint of the two points below?



- A. $(-2, 1)$
- B. $(-1, -1)$
- C. $(-\frac{1}{2}, -\frac{1}{2})$
- D. $(0, 0)$
40. Given points $P(1, -2)$ and $Q(5, 9)$ on directed line segment PQ , what is the x-coordinate of point B that partitions $\overline{PQ}$ with the ratio 3:7?
- A. 2.2
- B. 2.7
- C. 3.8
- D. 6.2
41. A straight road is to be built between the two cities. There will be a rest stop placed halfway between the cities. When placed on a coordinate grid, the rest stop is located at $(3, 8)$. Which points could represent the location of the 2 cities?
- A. $(17, 14)$ and $(14, 6)$
- B. $(1, 5)$ and $(5, 13)$
- C. $(-5, -4)$ and $(11, 20)$
- D. $(-6, -8)$ and $(-3, 0)$

42. Which coordinate represents the midpoint between $(-6, -k)$ and $(2, k)$?
- A. $(-2, 0)$
 - B. $(-4, 0)$
 - C. $(-4, -k)$
 - D. $(-8, -2k)$
43. The endpoints of a line segment are located at $(15\pi, -16\pi)$ and $(-18\pi, -16\pi)$. What are the coordinates of the midpoint of the line segment?
- A. $(-\frac{3\pi}{2}, -16\pi)$
 - B. $(-\frac{\pi}{2}, -17\pi)$
 - C. $(17\pi, 0)$
 - D. $(-3\pi, 0)$
44. The endpoints of a line segment are located at $(4, -2)$ and $(h, 10)$. The midpoint of the line segment is located at (f, g) . What are the coordinates of (f, g) ?
- A. $(\frac{4+h}{2}, 4)$
 - B. $(\frac{4-h}{2}, 4)$
 - C. $(\frac{4+h}{2}, 6)$
 - D. $(\frac{4-h}{2}, 6)$
45. A coordinate grid has these four points marked: $(6, 6)$, $(-10, 6)$, $(-10, -4)$, and $(6, -4)$. Which point on a coordinate grid is at the center of these four points?
- A. $(1, -2)$
 - B. $(-2, 1)$
 - C. $(2, -1)$
 - D. $(2, 1)$

46. In triangle ABC , $\overline{AE}$ is 4 cm, $\overline{BD}$ is 3 cm, and D is the midpoint of $\overline{EB}$.



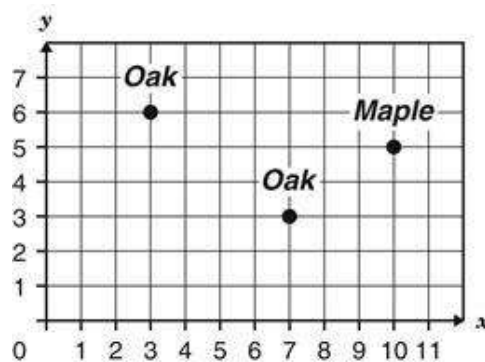
How long is $\overline{AB}$?

- A. 3 cm
B. 4 cm
C. 7 cm
D. 10 cm
47. A circle has a diameter that extends from $(-5, 7)$ to $(6, -3)$. What are the coordinates of the center of the circle?
- A. $(-\frac{11}{2}, 5)$
B. $(-4, \frac{13}{2})$
C. $(\frac{1}{2}, 2)$
D. $(1, 4)$
48. Ben, Mark, and John live near each other. When placed on a coordinate grid, Ben's house is located at $(1, 7)$ and Mark's house is located at $(2, 8)$. Mark lives exactly halfway between Ben and John. What are the coordinates for John's house?
- A. $(0.5, 7.5)$
B. $(2, 14)$
C. $(4, 16)$
D. $(3, 9)$

49. The points S , T , U , V , and W lie alphabetically on the same line. Each point is equidistant from the next. If point S is at $(-8, -8)$ and point W is at $(8, 4)$, what are the coordinates for point T ?
- A. $(-8, -5)$
 - B. $(-4, -5)$
 - C. $(-4, -3)$
 - D. $(0, 1)$
50. Line segment LM has a midpoint at $(-6, 2)$. Point M is located at $(12, -6)$. What are the coordinates of point L ?
- A. $(-24, 10)$
 - B. $(0, -2)$
 - C. $(3, -2)$
 - D. $(30, -14)$
51. One endpoint of a line segment lies in Quadrant II, while the other endpoint lies in Quadrant III. Which statement is always true about the segment's midpoint?
- A. The x -coordinate is positive.
 - B. The x -coordinate is negative.
 - C. The y -coordinate is positive.
 - D. The y -coordinate is negative.
52. The endpoints of a line segment are located at $(-3, -4)$ and $(-15, -20)$. What are the coordinates of the midpoint of the line segment?
- A. $(-10.5, -14)$
 - B. $(-9, -12)$
 - C. $(-7.5, -10)$
 - D. $(-6, -8)$

53. Point B divides the line segment with end points $A(4, 3)$ and $C(7, 12)$ such that $AB:BC = 2:1$. What are the coordinates of point B ?
- A. $(5, 6)$
 - B. $(6, 5)$
 - C. $(6, 9)$
 - D. $(9, 6)$

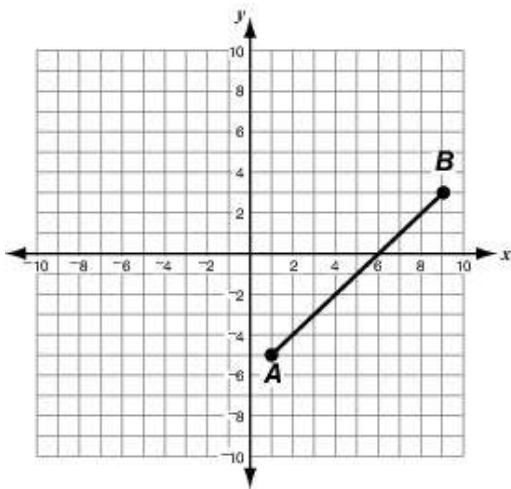
54. Suki used a coordinate grid to show where the trees were in her backyard.



She wants to put a birdbath exactly halfway between the two oak trees. What are the coordinates of the place where the birdbath should be located?

- A. $(4, 5)$
 - B. $(4.5, 5)$
 - C. $(5, 4)$
 - D. $(5, 4.5)$
55. A city map is placed on a coordinate grid. Jane's house is located at $(9, -1)$ and Bob's house at $(3, -7)$. Melvin's house is halfway between Jane's house and Bob's house. What are the coordinates of Melvin's house?
- A. $(3, 3)$
 - B. $(4, -2)$
 - C. $(6, -4)$
 - D. $(15, 5)$

56. A parallelogram has vertices $(5, 0)$, $(3, -3)$, $(-4, -3)$, and $(-2, 0)$. The diagonals of the parallelogram intersect at their midpoints. What are the coordinates of the intersection of the diagonals?
- A. $(-0.5, -3)$
B. $(0.5, -1.5)$
C. $(1.5, 0)$
D. $(4, -1.5)$
57. Look at the line segment shown on the coordinate plane below.



What is the location of a point C on the line segment that is three times farther from A than from B?

- A. $(3, -3)$
B. $(4, -2)$
C. $(6, 0)$
D. $(7, 1)$

58. A line segment has the endpoints at $(-6, -19)$ and $(-2, -3)$. What is the midpoint of the line segment?
- A. $(-8, -22)$
 - B. $(-6, -11)$
 - C. $(-4, -11)$
 - D. $(-2, -8)$
59. Three friends map their houses on a coordinate grid. Alex's house is located at point $(7, 18)$. Jimmy's house is at point $(-9, 7)$. Jimmy's house is located halfway between Alex's house and Kara's house. Which ordered pair represents Kara's house?
- A. $(-25, -4)$
 - B. $(-1, 12.5)$
 - C. $(-2, 25)$
 - D. $(-24, -4)$
60. The midpoint of a line segment is $(-1, 4)$. The endpoints of the line segment are $(3, y)$ and $(-5, 10)$. What is the value of y ?
- A. -7
 - B. -2
 - C. 2
 - D. 7