SAMPLE ITEMS

1. **Which information is needed to show that a parallelogram is a rectangle?**

   A. The diagonals bisect each other.
   B. The diagonals are congruent.
   C. The diagonals are congruent and perpendicular.
   D. The diagonals bisect each other and are perpendicular.

Correct Answer: B

2. **Which point is on a circle with a center of (3, –9) and a radius of 5?**

   A. (–6, 5)
   B. (–1, 6)
   C. (1, 6)
   D. (6, –5)

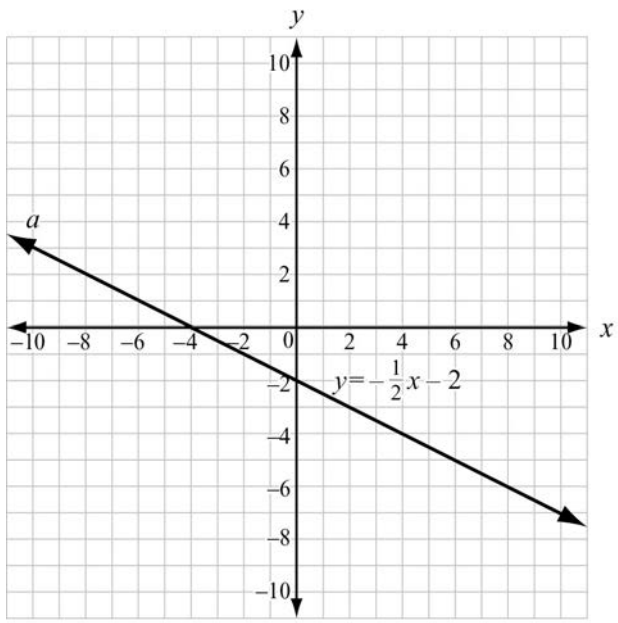
Correct Answer: D

3. **Given the points *P*(2, –1) and *Q*(–9, –6), what are the coordinates of the point on directed line segment $\overline{PQ}$ that partitions $\overline{PQ}$ in the ratio $\frac{3}{2}$?**

   A. $\left(-\frac{23}{5}, -4\right)$
   B. $\left(-\frac{12}{5}, -3\right)$
   C. $\left(\frac{5}{3}, \frac{8}{3}\right)$
   D. $\left(-\frac{5}{3}, -\frac{8}{3}\right)$

Correct Answer: A

4. An equation of line *a* is $y = -\frac{1}{2}x - 2$.



Which is an equation of the line that is perpendicular to line *a* and passes through the point (–4, 0)?

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

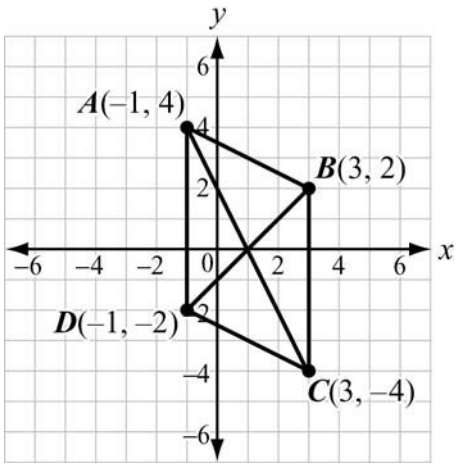
B. $y = -\frac{1}{2}x + 8$

C. $y = 2x - 2$

D. $y = 2x + 8$

Correct Answer: D

5. Parallelogram *ABCD* has vertices as shown.



Which equation would be used in proving that the diagonals of parallelogram *ABCD* bisect each other?

A. $\sqrt{(3-1)^2+(2-0)^2}=\sqrt{(1-3)^2+(0+4)^2}$

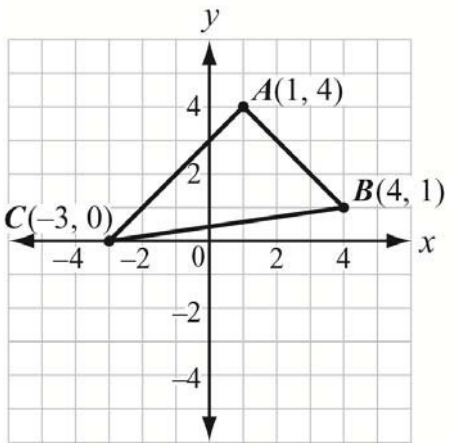
B. $\sqrt{(3+1)^2+(2+0)^2}=\sqrt{(1+3)^2+(0-4)^2}$

C. $\sqrt{(-1-1)^2+(4-0)^2}=\sqrt{(1-3)^2+(0+4)^2}$

D. $\sqrt{(-1+1)^2+(4+0)^2}=\sqrt{(1+3)^2+(0-4)^2}$

Correct Answer: C

6. Triangle *ABC* has vertices as shown.



What is the area of the triangle?

A. $\sqrt{72}$ square units
B. 12 square units
C. $\sqrt{288}$ square units
D. 24 square units

Correct Answer: B