Chapter 13

Indicate the best answer by writing the appropriate letter.

1. Given $P(-2, 0)$ and $Q(2, 5)$, find $\overrightarrow{PQ}$.
   a. $(0, 2.5)$ **b.** $(0, 5)$ **c.** $(-4, -5)$ **d.** $(4, 5)$

2. Refer to Exercise 1. Find $|\overrightarrow{PQ}|$.
   a. 5 **b.** 3 **c.** $\sqrt{29}$ **d.** $\sqrt{41}$

3. A line with slope $\frac{2}{5}$ passes through point $(1, 4)$. What is an equation of the line?
   a. $y - 4 = \frac{2}{5}(x - 1)$ **b.** $y - 4 = \frac{5}{2}(x - 1)$
   c. $y + 4 = \frac{2}{5}(x + 1)$ **d.** $y - 1 = \frac{5}{2}(x - 4)$

4. The midpoint of $\overline{AB}$ is $(3, 4)$. If the coordinates of B are $(6, 6)$, what are the coordinates of A?
   a. $(9, 10)$ **b.** $(4.5, 5)$ **c.** $(0, 2)$ **d.** $(9, 10)$

5. What is an equation of the line through $(-4, 7)$ and perpendicular to $y = \frac{2}{3}x + 5$?
   a. $y = \frac{3}{4}x + 10$ **b.** $y = -\frac{3}{2}x - 5$ **c.** $y = -\frac{7}{4}x$ **d.** $y = -\frac{3}{2}x + 1$

6. What is an equation of the circle with center $(3, 0)$ and radius 8?
   a. $x^2 + y^2 = 64$ **b.** $(x - 3)^2 + y^2 = 64$
   c. $(x + 3)^2 + y^2 = 8$ **d.** $(x - 3)^2 + y^2 = 8$

7. Find an equation of the line through points $(-3, 5)$ and $(2, 8)$.
   a. $5x + 3y = 16$ **b.** $3x - 5y = -34$
   c. $5x - 3y = -30$ **d.** $5x + 3y = 0$

8. Three consecutive vertices of a parallelogram are $(j, 5)$, $(0, 0)$, and $(7, 0)$. Which is the fourth vertex?
   a. $(7, 5)$ **b.** $(5, 7)$ **c.** $(j + 7, 5)$ **d.** $(j + 5, 7)$

9. Points $(2, 2)$ and $(8, v)$ lie on a line with slope $\frac{1}{2}$. What is the value of v?
   a. -10 **b.** -1 **c.** 5 **d.** 14

10. What is the *best* term for a triangle with vertices $(1, -3)$, $(6, 2)$, and $(0, 4)$?
    a. isosceles triangle **b.** equilateral triangle
    c. right triangle **d.** none of these

11. Which point is the intersection of lines $3x + 2y = 17$ and $x - 4y = 1$?
    a. $(1, 5)$ **b.** $(5, 1)$ **c.** $(-1, 5)$ **d.** $\left(\frac{33}{5}, \frac{7}{5}\right)$

12. $\triangle ABC$ is equilateral with vertices $A(r, 0)$ and $B(-r, 0)$. Which of the following could be the coordinates of point C?
    a. $(r\sqrt{3}, 0)$ **b.** $(0, r\sqrt{3})$ **c.** $(0, r)$ **d.** $(0, 2r)$