Find the distance between each pair of points. Leave answers in simplified radical form when needed.

1. $\mathbf{A}(2,8), B(16,8)$
2. $\mathrm{M}(-5,-4), \mathrm{N}(-1,-4)$
3. $\mathrm{C}(6,4), \mathrm{D}(-5,-1)$
4. $G(0,-2), H(-5,-1)$
5. $\mathbf{A}(5,9), B(-7,-7)$
6. $\mathrm{X}(-5,6), \mathrm{Y}(8,-4)$
7. What is the slope of the line that is parallel to a line that has a slope of $\frac{\mathbf{1}}{\mathbf{3}}$ ?
8. What is the slope of the line perpendicular to a line that has a slope of $-\frac{\mathbf{2}}{\mathbf{3}}$ ?
9. Find the slope of each line. Are the lines parallel?
a. Slope of line $1=$ $\qquad$
b. Slope of line $2=$ $\qquad$
c. Parallel?

Yes or No

10. Find the slope of each line. Are the lines perpendicular?
a. Slope of line $1=$ $\qquad$
b. Slope of line $2=$ $\qquad$
c. Perpendicular?

Yes or No


Write an equation of the line.
11. parallel to $y=-2 x+13$ with a $y$-intercept of 8
12. perpendicular to $y=\frac{1}{5} x+6$ with a $y$-intercept of -9

Line $\boldsymbol{j}$ is parallel to the line with the given equation and line $\boldsymbol{j}$ passes through $P$. Write the equation of line $j$.
13.

$$
y=3 x+22, \quad \mathrm{P}(-4,1)
$$

Line $\boldsymbol{k}$ is perpendicular to the line with the given equation and line $\boldsymbol{k}$ passes through $\boldsymbol{P}$. Write the equation of line $\boldsymbol{k}$.
14. $y=-8 x+11, \mathrm{P}(0,-5)$
15. Write the equation of the line that passes through $(\mathbf{1},-\mathbf{1})$ and is perpendicular to the line $y=-\frac{\mathbf{1}}{\mathbf{2}} x+\mathbf{6}$
16. Write the equation of the line that passes through $(4,-1)$ and is parallel to the line $y=-\frac{3}{4} x-6$.
17. Write an equation of the line that passes through $(\mathbf{4}, \mathbf{6})$ and is perpendicular to the line that passes through $(\mathbf{6},-6)$ and $(\mathbf{1 0},-4)$.
18. Write an equation of the line that passes through $(-\mathbf{3}, 8)$ and is perpendicular to the line that passes through $(-2,10)$ and $(7,-1)$.
19. Find the perimeter of the triangle with vertices $(-5,-2),(1,4),(5,0)$.
20. Find the perimeter and area of the rectangle with vertices $\mathbf{A}(-4,-4), \mathbf{B}(\mathbf{0}, \mathbf{2}), \mathbf{C}(\mathbf{9},-4), \mathbf{D}(\mathbf{5},-\mathbf{1 0})$.
21. Find the perimeter and area for the triangle given by $A(-3,-2), B(7,2), C(-5,3)$.

22. Find the perimeter and area for the triangle given by $A(-3,4), B(-2,1), C(2,4)$.

23. Given this circle with an origin of the center and the radius 5 , show whether each point is on the circle. (Show work using Pythagorean Theorem.)
A. $(3,4)$
B. $(\sqrt{4}, \sqrt{20})$

24. Given this circle with an origin at $(2,-1)$ and radius 5 , show whether each point is on the circle. (Show work using Pythagorean Theorem.)
C. $(5,3)$
D. $(3,-1)$


