Classify the relationship between each pair of angles as alternate interior, alternate exterior, corresponding, or consecutive interior angles.

1. \( \angle 6 \) and \( \angle 3 \)
   \textit{ANSWER:} alternate exterior

2. \( \angle 4 \) and \( \angle 7 \)
   \textit{ANSWER:} consecutive interior

3. \( \angle 5 \) and \( \angle 4 \)
   \textit{ANSWER:} alternate interior

Determine the slope of the line that contains the given points.

4. \( G(8, 1), H(8, -6) \)
   \textit{ANSWER:} undefined

5. \( A(0, 6), B(4, 0) \)
   \textit{ANSWER:} \(-\frac{3}{2}\)

6. \( E(6, 3), F(-6, 3) \)
   \textit{ANSWER:} 0

7. \( E(5, 4), F(8, 1) \)
   \textit{ANSWER:} \(-1\)
In the figure, \( m \angle 8 = 96 \) and \( m \angle 12 = 42 \). Find the measure of each angle. Tell which postulate(s) or theorem(s) you used.

8. \( \angle 9 \)

**ANSWER:**
84; Consecutive Interior Angles Thm.

9. \( \angle 11 \)

**ANSWER:**
138; Supplementary Angles Thm.

10. \( \angle 6 \)

**ANSWER:**
42; Alternate Interior Angles Thm.

11. Find the value of the variable in the figure below.

**ANSWER:**
128
12. **FITNESS** You would like to join a fitness center. Fit-N-Trim charges $80 per month. Fit-For-Life charges a one-time membership fee of $75 and $55 per month.

   a. Write and graph two equations in slope-intercept form to represent the cost \( y \) to attend each fitness center for \( x \) months.

   b. Are the lines you graphed in part a parallel? Explain why or why not.

   c. Which fitness center offers the better rate? Explain.

   **ANSWER:**

   a. Fit-N-Trim: \( y = 80x \),
   
   Fit-For-Life: \( y = 55x + 75 \)

   b. No; the lines intersect because the slopes of the two lines, 80 and 55, are not equal.

   c. From the graph, it appears that if you attend the center for less than 3 month, Fit-N-Trim offers the lower rate. If you intend to attend for more than 3 months, Fit-For-Life offers the better rate.

**Write an equation in slope-intercept form for each line described.**

13. passes through \((-8, 1)\), perpendicular to \( y = 2x - 17 \)

   **ANSWER:**

   \[ y = -\frac{1}{2}x - 3 \]

14. passes through \((0, 7)\), parallel to \( y = 4x - 19 \)

   **ANSWER:**

   \[ y = 4x + 7 \]

15. passes through \((-12, 3)\), perpendicular to \( y = -\frac{2}{3}x - 11 \)

   **ANSWER:**

   \[ y = \frac{3}{2}x + 21 \]
Practice Test - Chapter 3

Find the distance between each pair of parallel lines with the given equations.

16. \(y = x - 11\)  
   \(y = x - 7\)  
   \(\text{ANSWER:}\)  
   \(\sqrt{8} \approx 2.8\)

17. \(y = -2x + 1\)  
   \(y = -2x + 16\)  
   \(\text{ANSWER:}\)  
   \(\sqrt{45} \approx 6.7\)

18. **MULTIPLE CHOICE** Which segment is skew to \(\overline{CD}\)?

   ![Diagram](image)

   A \(\overline{ZY}\)  
   B \(\overline{AB}\)  
   C \(\overline{DE}\)  
   D \(\overline{VZ}\)  
   \(\text{ANSWER:}\)  
   D

19. Find \(x\) so that \(a \parallel b\). Identify the postulate or theorem you used.

   ![Diagram](image)

   \(\text{ANSWER:}\)  
   \(14; \text{ converse of Cons. Int. } \angle\text{s Thm.}\)

**COORDINATE GEOMETRY** Find the distance from \(P\) to \(\ell\).

20. Line \(\ell\) contains points \((-4, 2)\) and \((3, -5)\). Point \(P\) has coordinates \((1, 2)\).

   \(\text{ANSWER:}\)  
   \(\frac{5\sqrt{2}}{2} \approx 3.5\)

21. Line \(\ell\) contains points \((6, 5)\) and \((2, 3)\). Point \(P\) has coordinates \((2, 6)\).

   \(\text{ANSWER:}\)  
   \(\frac{6\sqrt{5}}{5}\) or about 2.7
Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

22. \( \angle 4 \equiv \angle 10 \)

**ANSWER:**
\( j \parallel k; \) Corresponding Angles Converse Post.

23. \( \angle 9 \equiv \angle 6 \)

**ANSWER:**
No lines can be proven \( \parallel \).

24. \( \angle 7 \equiv \angle 11 \)

**ANSWER:**
\( p \parallel q; \) Alternate Exterior Angles Converse Thm.

25.** JOBS** Hailey works at a gift shop after school. She is paid $10 per hour plus a 15% commission on merchandise she sells. Write an equation that represents her earnings in a week if she sold $550 worth of merchandise.

**ANSWER:**
\[ y = 10x + 82.5, \text{ where } x = \text{number of hours worked} \]