1.6 Practice – Describe Angle Pair Relationships Practice

\[ \angle 1 \text{ and } \angle 2 \text{ are complementary angles and } \angle 2 \text{ and } \angle 3 \text{ are supplementary angles. Given the measure of } \angle 1, \text{ find } m\angle 2 \text{ and } m\angle 3. \]

1. \( m\angle 1 = 43^\circ \)
   \[ m\angle 2 = 90 - 43 = 47^\circ \]
   \[ m\angle 3 = 180 - 47 = 133^\circ \]

Find \( m\angle ABC \text{ and } m\angle CBD. \)

3. \( (5x - 4)^\circ \) \( (11x - 2)^\circ \)
   \[ 11x - 2 + 5x - 4 = 90 \]
   \[ 16x = 96 \]
   \[ x = 6 \]
   \[ m\angle ABC = 64^\circ \]
   \[ m\angle CBD = 26^\circ \]

4. \( 97^\circ \) \( (8x + 9)^\circ \)
   \( 6^\circ + 17^\circ \)
   \[ 8x + 9 + 6x + 17 = 180 \]
   \[ 14x + 26 = 180 \]
   \[ 14x = 154 \]
   \[ x = 11 \]
   \[ m\angle CBD = 26^\circ \]

5. \( 112.5^\circ \) \( (14x - 6.5)^\circ \)
   \( 7x + 8^\circ \)
   \[ 14x - 6.5 + 7x + 8 = 180 \]
   \[ 21x + 1.5 = 180 \]
   \[ 21x = 178.5 \]
   \[ x = 8.5 \]

Tell whether the angles in the diagram are vertical angles, a linear pair, or neither.

6. \( \angle 1 \text{ and } \angle 2 \)
   \[ \text{Linear Pair} \]
8. \( \angle 2 \text{ and } \angle 4 \)
   \[ \text{neither} \]
10. \( \angle 6 \text{ and } \angle 8 \)
   \[ \text{vertical} \]
12. \( \angle 7 \text{ and } \angle 10 \)
   \[ \text{neither} \]
7. \( \angle 1 \text{ and } \angle 3 \)
   \[ \text{Vertical} \]
9. \( \angle 4 \text{ and } \angle 5 \)
   \[ \text{neither} \]
11. \( \angle 8 \text{ and } \angle 9 \)
   \[ \text{Linear pair} \]
13. \( \angle 10 \text{ and } \angle 11 \)
   \[ \text{Linear pair} \]

14. The measure of one angle is 7 times the measure of its complement. Find the measure of each angle.

\[ x + 7x = 90 \]
\[ 8x = 90 \]
\[ x = 11.25^\circ \]
\[ 7(11.25^\circ) = 78.75^\circ \]
15. Two angles form a linear pair. The measure of one angle is 15 times the measure of the other angle. Find the measure of each angle.

\[ x + 15x = 180 \]
\[ x = 11.25 \ degrees \]
\[ 11.25(15) = 168.75^\circ \]

16. The measure of one angle is 47 degrees less than the measure of its supplement. Find the measure of each angle.

\[ x - 47 + x = 180 \]
\[ 2x = 227 \]
\[ x = 113.5^\circ \]
\[ x = 66.5^\circ \]

Find the values of \( x \) and \( y \).

17. \[ (7y + 5)^\circ \]
\[ (25x + 8)^\circ \]
\[ (9x + 2)^\circ \]
\[ (95)^\circ \]
\[ 2 + 2 = 47^\circ \]
\[ 25x + 8 + 9x + 2 = 180 \]
\[ 34x = 170 \]
\[ x = 5 \]

18. \[ (9y - 7)^\circ \]
\[ (5x + 14)^\circ \]
\[ (9x - 2)^\circ \]
\[ (6y + 44)^\circ \]
\[ 9y - 7 = 6y + 44 \]
\[ 3y = 51 \]
\[ y = 17 \]
\[ 4y = 64 \]
\[ x = 41 \]

\( \angle A \) and \( \angle B \) are complementary angles. Find the \( m\angle A \) and the \( m\angle B \).

19. \( m\angle A = (16x - 13)^\circ \)
\( m\angle B = (2x - 5)^\circ \)
\( 16x - 13 + 2x - 5 = 90 \]
\( 18x = 108 \]
\( x = 6 \)
\( m\angle A = 83^\circ \)
\( m\angle B = 7^\circ \)

\( \angle A \) and \( \angle B \) are supplementary angles. Find the \( m\angle A \) and the \( m\angle B \).

20. \( m\angle A = (-3x + 90)^\circ \)
\( m\angle B = (-5x + 150)^\circ \)
\( -3x + 90 + (-5x + 150) = 180 \]
\( -8x + 240 = 180 \]
\( -8x = -60 \]
\( x = 7.5 \)
\( m\angle A = 67.5^\circ \)
\( m\angle B = 112.5^\circ \)

Tell whether the angles are supplementary, complementary, or neither.

21. Supplementary
22. Supplementary
23. Complementary