Find the measures of the numbered angles in each isosceles trapezoid.

1. To start, identify which angles are congruent to and supplementary to the known angle.
   \[ \angle 6 \text{ is congruent to the } 58^\circ \text{ angle.} \]
   \[ \angle \text{ and } \angle \text{ are supplementary to the } 58^\circ \text{ angle.} \]

2. \[ GH \text{ in each trapezoid.} \]

4. Algebra Find the value of the variable in each isosceles trapezoid.

7. \[ AC = x + 5 \]
   \[ BD = 2x - 2 \]

8. Algebra Find the lengths of the segments with variable expressions.

12. \[ AC \text{ and } BD \text{ are } 16 \text{ in.} \]
    List three possible pairs of lengths for the bases of the trapezoid.

13. Open-Ended The midsegment of a trapezoid is 16 in. List three possible pairs of lengths for the bases of the trapezoid.
Find the measures of the numbered angles in each kite.

14. To start, since the diagonals of a kite are perpendicular and the angle measures of a triangle add up to 180, write an equation with \( m \angle 1 \).
   \[ m \angle 1 + \square + \square = 180 \]

15.

16.

17.

18.

Algebra Find the value(s) of the variable(s) in each kite.

19.

20.

21.

Determine whether each statement is true or false. Justify your response.

22. All kites are quadrilaterals.

23. A kite is a parallelogram.

24. A kite can have congruent diagonals.

25. Both diagonals of a kite bisect angles at the vertices.
Find the measures of the numbered angles in each isosceles trapezoid.

1. \(58^\circ\)
   1. \(58; 122; 122\)

   To start, identify which angles are congruent to and supplementary to the known angle.

   \(\angle 1\) is congruent to the \(58^\circ\) angle.

   \(\angle 2\) and \(\angle 3\) are supplementary to the \(58^\circ\) angle.

2. \(109; 71; 71\)

Find \(GH\) in each trapezoid.

4. \(\) \(C\) \(10\) \(D\) \(12\)
   \(G\) \(2x\)
   \(F\) \(3x - 4\)
   \(E\)

5. \(\) \(C\) \(10\) \(D\) \(13\)
   \(G\) \(4x + 1\)
   \(F\) \(6x - 2\)
   \(E\)

6. \(\) \(C\) \(2x - 1\) \(D\) \(21\)
   \(G\)
   \(F\) \(25\)
   \(E\)

**Algebra** Find the value of the variable in each isosceles trapezoid.

7. \(\) \(117^\circ\)
   \(3n\)

8. \(48^\circ\) \((5n + 3)^\circ\)

9. \(AC = x + 5\)
   \(BD = 2x - 2\)

**Algebra** Find the lengths of the segments with variable expressions.

10. \(x - 6\)
    \(x\)
    \(2x - 9\)
    \(9; 15; 21\)

11. \(x\)
    \(2x + 1\)
    \(4x - 2\)
    \(4; 9; 14\)

12. \(x\)
    \(2x - 12\)
    \(12; 20; 28\)

13. **Open-Ended** The midsegment of a trapezoid is 16 in. List three possible pairs of lengths for the bases of the trapezoid.

   *Answers may vary. Accept any pair of lengths that have a sum of 32.*
Find the measures of the numbered angles in each kite.

14. \[72; 72\]  
To start, since the diagonals of a kite are perpendicular and the angle measures of a triangle add up to 180, write an equation with \(m\angle 1\).
\[m\angle 1 + 90 + 18 = 180\]

15. \[110; 42\]
16. \[42; 90; 48\]
17. \[70; 54; 72; 40\]
18. \[90; 35; 35; 28; 62\]

Algebra Find the value(s) of the variable(s) in each kite.

19. \((3x + 6)^\circ\)
20. \((3x - 5)^\circ\)
21. \(38^\circ\)

Determine whether each statement is true or false. Justify your response.

22. All kites are quadrilaterals. True; all kites have four sides.

23. A kite is a parallelogram. False; the opposite sides of a kite are not \(\parallel\).

24. A kite can have congruent diagonals. True; a kite may have congruent diagonals as long as only one diagonal is bisected.

25. Both diagonals of a kite bisect angles at the vertices.
False; one diagonal bisects angles at the vertices but the other diagonal does not.