6-4 Practice
Properties of Rhombuses, Rectangles, and Squares

Decide whether the parallelogram is a rhombus, a rectangle, or a square. Explain.

Find the measures of the numbered angles in each rhombus.

5. What is the value of \( x \)?
   - \( x = 4 \)

6. What is the value of \( y \)?
   - \( y = 5 \)

7. What statement would be sufficient to prove that a quadrilateral is a rhombus?
   - The quadrilateral has four congruent sides.

8. \( EFGH \) is a kite. To prove that the diagonals of a kite are perpendicular, which pair of angles must you prove congruent using CPCTC?
   - \( \angle EHF \) and \( \angle EHI \)

9. \( \angle GFI \) and \( \angle GHI \)
   - \( \angle EFI \) and \( \angle HIG \)

10. Algebra \( HIJK \) is a rectangle. Find the value of \( x \) and the length of each diagonal:
    - \( HJ = x \) and \( JK = 2x - 7 \)
    - \( HJ = 3x + 5 \) and \( JK = 5x - 9 \)
    - \( HJ = 12 + 3x \) and \( IK = 3x + 22 \)

Short Response
7. Why is it that the statement "all rhombuses are squares" is false, but the statement "all squares are rhombuses" is true? Explain.
Find the measures of the numbered angles in each isosceles trapezoid.

1. \( \measuredangle 1 = 96^\circ \), \( \measuredangle 2 = 84^\circ \)
2. \( \measuredangle 1 = 101^\circ \), \( \measuredangle 2 = 79^\circ \)
3. \( \measuredangle 1 = 67^\circ \), \( \measuredangle 2 = 113^\circ \)
4. \( \measuredangle 1 = 125^\circ \), \( \measuredangle 2 = 125^\circ \), \( \measuredangle 3 = 55^\circ \)
5. \( \measuredangle 1 = 45^\circ \), \( \measuredangle 2 = 45^\circ \), \( \measuredangle 3 = 135^\circ \)
6. \( \measuredangle 1 = 85^\circ \), \( \measuredangle 2 = 95^\circ \), \( \measuredangle 3 = 95^\circ \)
7. \( \measuredangle 1 = 133^\circ \), \( \measuredangle 2 = 133^\circ \), \( \measuredangle 3 = 47^\circ \)

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

8. \( 3x - 3 = x + 5 \)
   \( 3x - 3 = x + 5 \)
   \( 2x = 8 \)
   \( x = 4 \)

9. \( 6x + 20 = 4x + 180 \)
   \( 6x + 20 = 4x + 180 \)
   \( 2x = 160 \)
   \( x = 80 \)

10. \( 7x = 2x + 5 \)
    \( 7x = 2x + 5 \)
    \( 5x = 5 \)
    \( x = 1 \)

Find \( XY \) in each trapezoid.

11. \( XY = \frac{5+2.5}{2} \)
    \( XY = 3.75 \)

12. \( XY = \frac{16+8}{2} \)
    \( XY = 12 \)

13. \( XY = \frac{15+6}{2} \)
    \( XY = 10.5 \)

Algebra
Find the lengths of the segments with variable expressions.

14. \( \frac{2x - 5.5}{2} = x + 0.75 \)
    \( \frac{3x + 0.5}{2} = x + 1.5 \)

15. \( \frac{2x - 4 + 3x + 2}{2} = 2x + 4 \)
    \( \frac{5x - 2}{2} = 4x + 8 \)
    \( x = 10 \)

16. \( \frac{8x + 3}{2} = 4x + 7.5 \)
    \( \frac{12x + 3}{2} = 8x + 15 \)
    \( 4x = 12 \)
    \( x = 3 \)
Multiple Choice

For Exercises 1–5, choose the correct letter.

1. In the isosceles trapezoid at the right, what is the measure of \( \angle L \)?

   \[ \text{A} \quad 24 \quad \text{B} \quad 66 \quad \text{C} \quad 114 \quad \text{D} \quad 132 \]

   \[ 180^\circ - 66^\circ = 114^\circ \]

   \[ \text{C} \]

2. What is true about the diagonals in an isosceles trapezoid?

   \[ \text{F} \quad \text{They are congruent.} \]

   \[ \text{G} \quad \text{They are perpendicular.} \]

   \[ \text{H} \quad \text{They are congruent and perpendicular.} \]

   \[ \text{I} \quad \text{The length of each diagonal is equal to half the sum of the bases.} \]

3. \( \overline{LM} \) is the midsegment of trapezoid \( RSXY \). What is \( LM \)?

   \[ \text{A} \quad 4.1 \quad \text{B} \quad 6 \quad \text{C} \quad 6.15 \quad \text{D} \quad 12.3 \]

4. For which value of \( x \) is \( ABCD \) a kite?

   \[ \text{F} \quad 23 \quad \text{H} \quad 73 \quad \text{G} \quad 33 \quad \text{I} \quad 83 \]

5. **Algebra** What is the value of \( x \) in kite \( ABCD \) at the right?

   \[ \text{A} \quad 2 \quad \text{B} \quad 4 \quad \text{C} \quad 8 \quad \text{D} \quad 16 \]

Short Response

6. A quadrilateral has diagonals that are congruent and bisect opposite pairs of angles. Could this quadrilateral be a kite? Explain.