Can you conclude that the parallelogram is a rhombus, a rectangle, or a square? Explain.

1. To start, identify the congruent figures marked in the diagram.
   - The diagonals bisect each other.
   - The diagonals intersect at right angles.

2. 

3. 

4. A parallelogram has two pairs of adjacent sides that are congruent.

5. A parallelogram’s diagonals form eight congruent angles at the vertices.

Algebra For what value of x is the figure the given special parallelogram?

6. rectangle  
   To start, write an equation for the congruent segments.
   \[ ? = ? \]

7. rhombus

8. square

9. rectangle

10. rectangle
Algebra For what value of $x$ is the figure the given special parallelogram?

11. rhombus

12. rhombus

13. rectangle

14. rhombus

15. rectangle

16. rhombus

17. Reasoning Your friend draws a parallelogram with diagonals the length of $x$ and $y$. Which special type of parallelograms could your friend draw if $x = y$? Which special type of parallelogram could your friend draw if $x \neq y$?

18. Error Analysis A classmate draws the figure at the right and says that it is a square because its diagonals are both perpendicular and congruent. What is your classmate’s error?

19. Students are planning a courtyard garden. They want the garden to be a square. How can the students use ropes to check that the garden is square? Justify your answer and name any theorems you used.
Can you conclude that the parallelogram is a rhombus, a rectangle, or a square? Explain.

1. To start, identify the congruent figures marked in the diagram.
   The diagonals bisect each other.
   The diagonals intersect at right angles.
   **Rhombus; the diagonals are perpendicular.**

2. **Neither; the figure could be a □ that is neither a rectangle nor a rhombus**

3. **Rhombus; the diagonals are perpendicular.**

4. A parallelogram has two pairs of adjacent sides that are congruent. **rhombus**

5. A parallelogram’s diagonals form eight congruent angles at the vertices. **square**

**Algebra** For what value of x is the figure the given special parallelogram?

6. rectangle **12**
   To start, write an equation for the congruent segments.
   \[ ? = ? \]
   \[ 5x - 15; 3x + 9 \]

7. rhombus **19.25**

8. square **6**

9. rectangle **5**

10. rectangle **24**
Algebra For what value of $x$ is the figure the given special parallelogram?

11. rhombus 18

12. rhombus 14

13. rectangle 20

14. rhombus 12

15. rectangle 7

16. rhombus 15

17. Reasoning Your friend draws a parallelogram with diagonals the length of $x$ and $y$. Which special type of parallelograms could your friend draw if $x = y$? Which special type of parallelogram could your friend draw if $x \neq y$?
   - If $x = y$, the figure is definitely a rectangle and possibly a square.
   - If $x \neq y$, the figure could only be a rhombus.

18. Error Analysis A classmate draws the figure at the right and says that it is a square because its diagonals are both perpendicular and congruent. What is your classmate’s error? The lines drawn are not diagonals so they cannot be used to prove the figure is a square.

19. Students are planning a courtyard garden. They want the garden to be a square. How can the students use ropes to check that the garden is square? Justify your answer and name any theorems you used.
   - The ropes should be the same length because the diagonals of rectangles are congruent (Theorem 6-18). They should join the ropes at their midpoints because diagonals of parallelograms bisect each other (Theorem 6-11). They need to pull the ropes so they are perpendicular because diagonals of rhombuses are perpendicular (Theorem 6-16). The ends of the ropes will mark the vertices of a square.