Geometry A
Section 8.6 Homework

Name : _____
Date : _____ Period : _____

Decide whether the statement is *always*, *sometimes*, or *never* true.

1. Diagonals of a trapezoid are congruent. _____
2. Opposite sides of a rectangle are congruent. _____
3. A square is a rectangle. _____
4. A square is not a rhombus. _____
5. All angles of a parallelogram are congruent. _____
6. Opposite angles of an isosceles trapezoid are congruent. _____
7. The diagonals of a parallelogram are perpendicular. _____

Draw the sides or diagonals of *ABCD* as described. What special type of quadrilateral is *ABCD*?

8. $\overline{AC} \cong \overline{BD}$, $\overline{AC}$ and $\overline{BD}$ bisect one another, but $\overline{AC}$ is not perpendicular to $\overline{BD}$

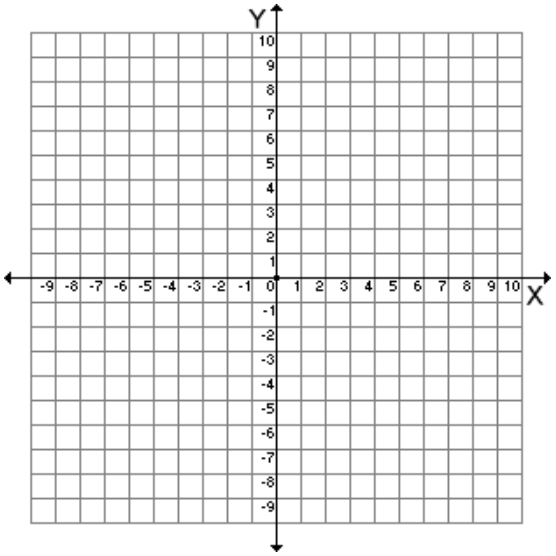
9. $\overline{AB} \cong \overline{BC}$ and $\overline{CD} \cong \overline{DA}$, but $\overline{BC}$ is not congruent to $\overline{CD}$

10. $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \cong \overline{DA}$

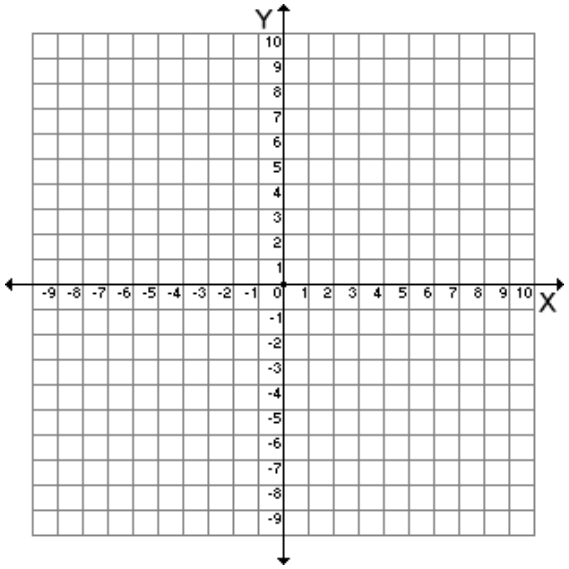
11. $\overline{AC} \perp \overline{BD}$, $\overline{AC}$ and $\overline{BD}$ bisect one another, but $\overline{AC}$ is not congruent to $\overline{BD}$

12. $\overline{AC} \perp \overline{BD}$, $\overline{AC}$ and $\overline{BD}$ bisect one another, but $\overline{AC} \cong \overline{BD}$.

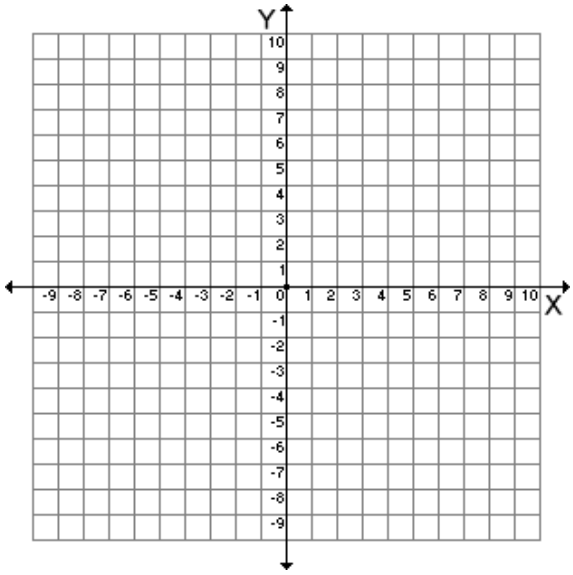
13. Quadrilateral ABCD has vertices A(2, 3), B(10, 3), C(10, -1), and D(2, -1). Prove quadrilateral ABCD is a rectangle.



14. Quadrilateral QRST has vertices Q(6, 7), R(11, 7), S(8, 3), T(3, 3). Prove quadrilateral QRST is a rhombus.



15. The coordinates of the vertices of quadrilateral ABCD are A(4,1), B(1,5), C(-3,2) and D(0,-2). Prove the quadrilateral is a square.



Answer Key:

1. Sometimes – when it is isosceles
2. Always – has all the properties of a parallelogram
3. Always – a square has all the properties of a rectangle
4. Never – a square has all the properties of a rhombus
5. Sometimes – when it is a rectangle or square
6. Never – base angles are congruent; not opposite angles
7. Sometimes – when it is a rhombus or a square
8. Rectangle
9. Kite
10. Isosceles Trapezoid
11. Rhombus
12. Square