

## Exploring Properties of Quadrilaterals

Use the following applet in GeoGebra to answer the questions below.

- **Congruent sides** are sides that are equal in measure (same length.)
- **Congruent angles** are angles that are equal in measure (same number of degrees)
- A **bisector** is a line, ray, or line segment that divides another line, line segment or angle into two equal parts.
- A **perpendicular bisector** is a line, ray, or line segment that divides another line segment into two parts and intersects that line segment at a right angle (90 degrees)

**Properties of Side Lengths:**

1. Which of the following quadrilaterals have at least one pair of *opposite sides* that are congruent?  

<input type="radio"/> Kite	<input type="radio"/> Parallelogram	<input type="radio"/> Square
<input type="radio"/> Trapezoid	<input type="radio"/> Rectangle	
<input type="radio"/> Isosceles Trapezoid	<input type="radio"/> Rhombus	
2. Which of the following quadrilaterals have two pairs of *opposite sides* that are congruent?  

<input type="radio"/> Kite	<input type="radio"/> Parallelogram	<input type="radio"/> Square
<input type="radio"/> Trapezoid	<input type="radio"/> Rectangle	
<input type="radio"/> Isosceles Trapezoid	<input type="radio"/> Rhombus	
3. Which of the following quadrilaterals have at least one pair of *opposite sides* that are parallel? Choose all that apply.  

<input type="radio"/> Kite	<input type="radio"/> Parallelogram	<input type="radio"/> Square
<input type="radio"/> Trapezoid	<input type="radio"/> Rectangle	
<input type="radio"/> Isosceles Trapezoid	<input type="radio"/> Rhombus	
4. Which of the following quadrilaterals have two pairs of *opposite sides* that are parallel? Choose all that apply.  

<input type="radio"/> Kite	<input type="radio"/> Parallelogram	<input type="radio"/> Square
<input type="radio"/> Trapezoid	<input type="radio"/> Rectangle	
<input type="radio"/> Isosceles Trapezoid	<input type="radio"/> Rhombus	
5. Which of the following quadrilaterals have two pairs of *consecutive sides* that are perpendicular to one another?  

<input type="radio"/> Kite	<input type="radio"/> Parallelogram	<input type="radio"/> Square
<input type="radio"/> Trapezoid	<input type="radio"/> Rectangle	
<input type="radio"/> Isosceles Trapezoid	<input type="radio"/> Rhombus	

**Properties of Angles:**

6. Which of the following quadrilaterals have at least one pair of *opposite angles* that are congruent?

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

7. Which of the following quadrilaterals have two pairs of *opposite angles* that are congruent?

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

8. Which of the following quadrilaterals have two pairs of *consecutive angles* that are congruent?  
Choose all that apply.

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

**Properties of Diagonals:**

9. Which of the following quadrilaterals have at least one *diagonal* that bisects the other diagonal?

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

10. Which of the following quadrilaterals have *diagonals* that bisect each other (diagonals share the same midpoint).

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

11. Which of the following quadrilaterals have *diagonals* that are congruent?

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

12. Which of the following quadrilaterals have *diagonals* that are perpendicular to one another?

- |   |                                     |                              |
|---|-------------------------------------|------------------------------|
| <input type="radio"/> Kite                | <input type="radio"/> Parallelogram | <input type="radio"/> Square |
| <input type="radio"/> Trapezoid           | <input type="radio"/> Rectangle     |                              |
| <input type="radio"/> Isosceles Trapezoid | <input type="radio"/> Rhombus       |                              |

