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?

	⊖ Kite	O Parallelogram	⊖ Square	
	○ Trapezoid	○ Rectangle		
	○ Isosceles Trapezoid	○ Rhombus		
2.	Which of the following quadrilat	terals have two pairs of <i>opposite s</i>	<i>ides</i> that are congruent?	
	⊖ Kite	O Parallelogram	○ Square	
	⊖ Trapezoid	○ Rectangle		
	○ Isosceles Trapezoid	○ Rhombus		
3.	3. Which of the following quadrilaterals have at least one pair of <i>opposite sides</i> that are parallel? Choose all that apply.			
	⊖ Kite	O Parallelogram	○ Square	
	○ Trapezoid	○ Rectangle		
	○ Isosceles Trapezoid	○ Rhombus		
4.	Which of the following quadrilat that apply.	terals have two pairs of <i>opposite s</i>	<i>ides</i> that are parallel? Choose all	
	⊖ Kite	O Parallelogram	⊖ Square	
	⊖ Trapezoid	○ Rectangle		
	○ Isosceles Trapezoid	○ Rhombus		
5.	Which of the following quadrilat one another?	terals have two pairs of <i>consecuti</i>	ve sides that are perpendicular to	
	⊖ Kite	O Parallelogram	○ Square	
	() Trapezoid	○ Rectangle		

○ Isosceles Trapezoid ○ Rhombus

Proi	perties	of	Ang	les:
		U	B	

6.	Which of the following quadrilaterals have at least one pair of <i>opposite angles</i> that are congruent?					
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
7.	Which of the following quadrilat	erals have two pairs of <i>opposite a</i>	ngles that are congruent?			
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
8.	Which of the following quadrilat Choose all that apply.	ich of the following quadrilaterals have two pairs of <i>consecutive angles</i> that are congruent? bose all that apply.				
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
		Properties of Diagonals:				
9.	Which of the following quadrilat	erals have at least one <i>diagonal</i> th	nat bisects the other diagonal?			
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
10. Which of the following quadrilaterals have <i>diagonals</i> that bisect each other (diagonals share the same midpoint).						
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
11.	11. Which of the following quadrilaterals have <i>diagonals</i> that are congruent?					
	⊖ Kite	O Parallelogram	⊖ Square			
	⊖ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
12.	12. Which of the following quadrilaterals have <i>diagonals</i> that are perpendicular to one another?					
	⊖ Kite	O Parallelogram	⊖ Square			
	⊖ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				

Identifying Quadrilaterals Based on Properties:

13. A quadrilatera	l has two pairs of	of opposite sides t	hat are congruer	nt and two	pairs of op	pposite an	gles that
are congruent.	What quadrilat	eral(s) is it? Choo	se all that apply.				

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	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				
14	. A quadrilateral has diagonals tha apply.	t are congruent in length. What q	uadrilateral(s) is it? Choose all that			
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	O Rhombus				
15	15. A quadrilateral has diagonals that are congruent in length and perpendicular to one another. What quadrilateral(s) is it? Choose all that apply.					
	⊖ Kite	O Parallelogram	⊖ Square			
	○ Trapezoid	○ Rectangle				
	○ Isosceles Trapezoid	○ Rhombus				

16. A quadrilateral has four congruent sides. What quadrilateral(s) is it? Choose all that apply.

⊖ Kite	○ Parallelogram	○ Square			
○ Trapezoid	○ Rectangle				
○ Isosceles Trapezoid	O Rhombus				
17. Which quadrilaterals are parallelograms? Choose all that apply.					
⊖ Kite	O Parallelogram	⊖ Square			
○ Trapezoid	○ Rectangle				
○ Isosceles Trapezoid	O Rhombus				