Lesson 11: of the Diagonals of Quadrilaterals

Name_____

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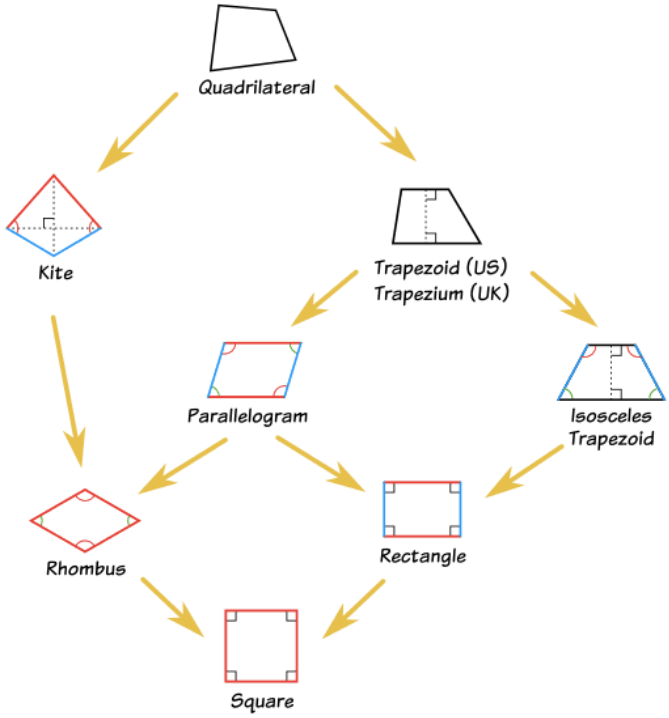
Diagonals of Quadrilaterals – Summary of Properties

Remember the Hierarchy of Quadrilaterals when thinking about their Properties



Kite:

- Diagonals are perpendicular
  AND
- **<u>at least one</u>** diagonal bisects the other diagonal

Isosceles Trapezoid

- Diagonals are congruent

Parallelogram

- Diagonals bisect each other

Rectangle

- All the properties of a Parallelogram and an Isosceles Trapezoid
  - Diagonals are congruent and bisect each other

Rhombus

- All the properties of a Parallelogram and a Kite
  - Diagonals are perpendicular bisectors

Square

- All the properties of a Rhombus and a Rectangle
  - Diagonals are congruent and are perpendicular bisectors

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Problem Set

COMPLETE ON SEPARATE SHEETS OF PAPER

Use the properties of the ***diagonals*** to prove the following figures are the figure stated.

1. Prove that the shape with vertices A(14, 11), B(24, 9), C(26,3) and D(16,5) is a parallelogram.

2. Prove that the shape with vertices N(-6, 4), P(-3, 1), Q(0, 2), R(-3, 5) is a parallelogram.

3. Prove that the shape with vertices A(1,4), B(3, 0), C(1, -4), and D(-1,0) is a rhombus.

4. Prove that the shape with vertices H(3, 2), A(6, 6) R(11, 6), and P(8, 2) is a rhombus.

5. Prove that the shape with vertices A(6, 4), B(12, 7), C(14, 3), and D(8, 0) is a rectangle.

6. Prove that the shape with vertices R(-2, -3), S(4, 0), T(3, 2), V(-3, -1), is a rectangle.

7. Prove that the shape with vertices A(8, 9), B(13, 10), C(14, 5) and D(9, 4) is a square.

8. Prove that the shape with vertices A(-3, -1), B(-6, -4), C(-5, -7), and D(0, -2) is an isosceles trapezoid.

9. Challenge: Prove that the shape with vertices Q(-5, 14), U(6, 27), A(4, 11) and B(-4, -3) is a kite.

10. What is the most descriptive name for the quadrilateral with vertices (3, 2), (8, 1), (7, 6), and (2, 7)?

11. What is the most descriptive name for the triangle with vertices (2, 1), (6, 4), and (14, -2)?