Quadrilaterals – Properties

When filling in the chart, you should ask:

*Does this property hold **for all** [kites, squares, (fill in your category)]?*

For example, the question "Are all sides of parallelogram congruent?" will be answered NO, because it is not true for all parallelograms (although there may be some special cases for which it might be true).

SIDES:

- Parallel: Are some pair of sides parallel?
- Congruent: Are some sides congruent to other? (If so, are all sides congruent or are there some pairs of congruent sides, ... ? etc.)

ANGLES:

- Congruent: Are some angles congruent to each other? (If so, are all angles congruent or are there pairs of congruent angles? etc.)
- Relationship: Are there are pairs of angles that are supplementary or complementary? Is there another interesting relationship other than congruence.

DIAGONALS

- Congruent: Are the diagonals congruent?
- Bisecting. Do the diagonals bisect each other? Or perhaps one diagonal bisect the other but not the other way around?
- Perpendicular: Are the diagonals perpendicular to each other?
- Partition: Diagonals of a quadrilateral divide the quadrilateral into 4 non-overlapping triangles. Are some of these triangles congruent/similar/isosceles/equilateral triangles? Do some of them have the same area?

AREA

- Is there a simple formula for the area of the quadrilateral? If you find one, express it as a function of lengths of sides or diagonals. Try to explain why your formula works.