

## Quadrilaterals – Properties

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When filling in the chart, you should ask:

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

Possible answers are: Yes (=Always, for all kites, squares...), No (=Never, for no kites, squares...), Sometimes (Yes for some, no for others).

### 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.