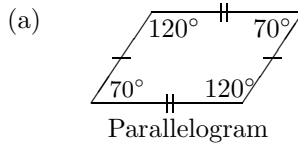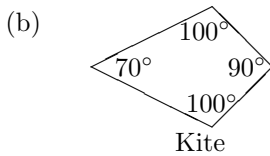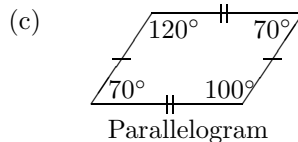# Problems: Quadrilateral Properties – Version D

Name:_____

1. Diagrams of quadrilaterals are given below. Decide if the information given is possible or not. If it is possible write *OK*. If there is something wrong, the write *not OK* and explain what is the matter.

    (a)

    Parallelogram

    OK or not:
    Explain if not OK:

    (b)

    Kite

    OK or not:
    Explain if not OK:

    (c)

    Parallelogram

    OK or not:
    Explain if not OK:

2. Consider this geoboard quadrilateral.
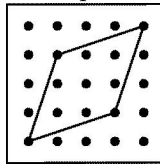
    Write T or F before each of the following statements to indicate true or false for the above quadrilateral.

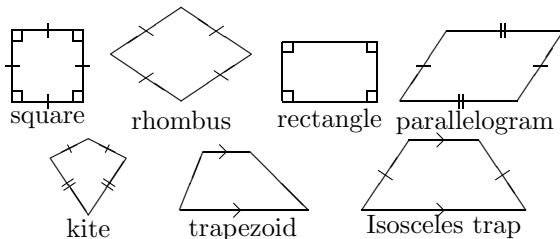   The diagonals are perpendicular.
    The diagonals bisect each other.
    The diagonals are perpendicular bisectors of each other.
    One diagonal is a perpendicular bisector of the other.
    One diagonal bisects the other.

3. The seven types of quadrilaterals we have been working with are drawn here.

    square   rhombus   rectangle   parallelogram

    kite   trapezoid   Isosceles trap

    For each of the following descriptions, write down <u>all</u> of the names of the quadrilaterals which satisfy the description. *Note: Multiple answers are possible.*

    (a) A quadrilateral which has only one pair of parallel sides and a line of symmetry.

    (b) A quadrilateral which has one or more pairs of equal adjacent sides.

    (c) A quadrilateral with four right angles.

    (d) A quadrilateral in which the diagonals are perpendicular bisectors of each other.

4. **Possible?** For each of the following statements, decide if it is possible or not.
    • If it is possible, write POSSIBLE <u>and</u> draw a picture.
    • If it is not possible, write NOT <u>and</u> give a reason.

    (a) **Possible?** A parallelogram which has one angle with measure 110° and another with measure 80°.

    (b) **Possible?** A quadrilateral in which all four sides are the same length (equilateral) but which is not a square.

    (c) **Possible?** A quadrilateral which is both a kite and a parallelogram?

5. One way to define a rectangle is as follows:

    A plane four-sided figure with all angles right angles.

    Of the kinds of quadrilateral we have been looking at (squares, rectangles, rhombuses, kites, parallelograms, trapezoids and isosceles trapezoids) which ones also satisfy this definition (these are called *special cases* of a rectangle).

    Special cases of rectangles:

6. Draw and clearly mark an example where this is
    TRUE: *One diagonal is a bisector of the other,*
    but this is
    NOT TRUE: *One diagonal is a perpendicular bisector of the other.*