1. Classify each statement below as always, sometimes, or never true:

   (a) A square is a parallelogram.

   (b) A rhombus is a trapezoid.

   (c) A rhombus is a square.

   (d) A square is a rhombus.

   (e) A rectangle is a rhombus.

   (f) A kite is a square.

2. For each statement below, list all types of quadrilaterals (or state "none") for which that statement is true.

   (a) All 4 angles are always congruent.

   (b) The opposite sides are always parallel to each other.

   (c) The interior angle total is always 360°.

   (d) You can draw one with exactly 3 right angles.

   (e) You can draw one with exactly one right angle.

   (f) You can draw one with all angles acute.

   (g) At least one pair of adjacent sides are congruent.

   (h) You can draw one with one pair of acute interior angles and one pair of obtuse ones.

   (i) You can draw one with exactly two congruent sides.

   (j) The diagonals are never congruent.

1. (a) Always true

   (b) Never true

   (c) Sometimes true

   (d) Always true

   (e) Sometimes true

   (f) Sometimes true

2. (a) All 4 angles are congruent.
   Answer: *rectangles (by definition), squares (by inheritance)*

   (b) The opposite sides are always parallel to each other.
   Answer: *parallelograms (almost by definition), then rectangles, rhombuses, and squares (all by inheritance)*

   (c) The interior angle total is 360°.
   Answer: *any convex quadrilateral, including trapezoids, parallelograms, rectangles, kites, rhombuses, squares*

   (d) You can draw one with exactly 3 right angles.
   Answer: *none – If the total is 360° and three of the angles add up to 270°, the fourth angle is a right angle.*

   (e) You can draw one with exactly one right angle.
   Answer: *kite – Put the right angle at the "top," then make the bottom "half" very long and narrow.*

   (f) You can draw one with all angles acute.
   Answer: *none – The angles must total 360°, so they can't all four be smaller than 90°.*

   (g) At least one pair of adjacent sides are congruent.
   Answer: *kites, rhombuses (by inheritance), squares (by inheritance)*

   (h) You can draw one with one pair of acute interior angles and one pair of obtuse ones.
   Answer: *trapezoids, kites, parallelograms, rhombuses (by inheritance)*

   (i) You can draw one with exactly two congruent sides.
   Answer: *trapezoid*

   (j) The diagonals are never congruent.
   Answer: *none - you can make examples of each kind where the diagonals ARE congruent.*