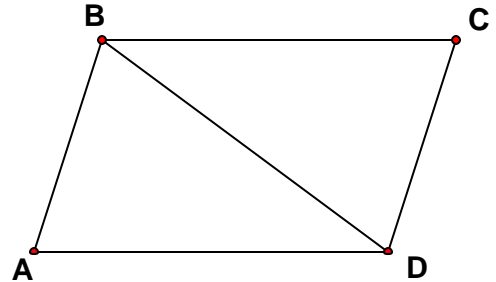# Chapter 4 - Applications

Problem 1   Given: $\overline{AB} \cong \overline{CD}$
(#12 – page 211) $\angle ABD \cong \angle CDB$
                     Prove: ABCD parallelogram

Problem 2   ABCD is a parallelogram and AC is a diagonal. Let P and Q two points on AC with

(4.1 – #29)   A – P – Q – C such that $\overline{AP} \cong \overline{CQ}$. Show that PBQD is a parallelogram.

Problem 3   Property
                     If a quadrilateral has all sides congruent, then it is a rhombus.

Problem 4   Property
                     If the diagonals bisects the angles of a quadrilateral, then the quadrilateral is a rhombus.

Problem 5   First, find the hypothesis (given) and conclusion(to prove) of each statement.
                     Then, decide whether the statement is true or false.

                     a) Any square is a parallelogram.
                     b) Any square is a rectangle.
                     c) Any rectangle is a rhombus.
                     d) Any rhombus is a parallelogram.
                     e) Any rhombus is a rectangle.
                     f) Any rectangle is a parallelogram.
                     g) Any rectangle is a square.
                     h) Any square is a rhombus.
                     i) Any rhombus is a square.
                     j) Diagonals of a parallelogram are congruent.
                     k) Diagonals of a rectangle are perpendicular.
                     l) Diagonals of a square are perpendicular.
                     m) Diagonals of a rectangle bisect the angles of the rectangle.