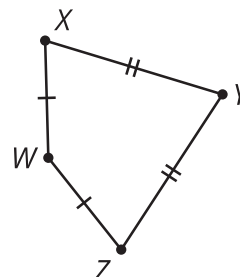# Lesson 9 Practice Problems

1. A kite is a quadrilateral which has 2 sides next to each other that are congruent and where the other 2 sides are also congruent. Given kite $WXYZ$, show that at least one of the diagonals of a kite decomposes the kite into 2 congruent triangles.

2. Mai has proven that triangle WYZ is congruent to triangle WYX using the Side-Side-Side Triangle Congruence Theorem. Why can she now conclude that diagonal WY bisects angles ZWX and ZYX?
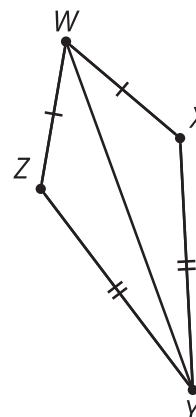
3. $WXYZ$ is a kite. Angle WXY has a measure of 133 degrees and angle ZWX has a measure of 60 degrees. Find the measure of angle ZYW.
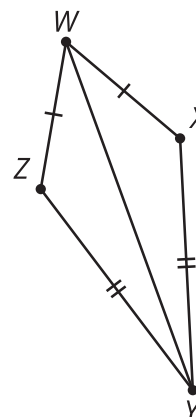
4. Each statement is always true. Select **all** statements for which the converse is also always true.

   A. Statement: If 2 angles form a straight angle, then they are supplementary. Converse: If 2 angles are supplementary, then they form a straight angle.

   B. Statement: In an isosceles triangle, the base angles are congruent. Converse: If the base angles of a triangle are congruent, then the triangle is isosceles.

   C. Statement: If a point is equidistant from the 2 endpoints of a segment, then it lies on the perpendicular bisector of the segment. Converse: If a point lies on the perpendicular bisector of a segment, then it is equidistant from the 2 endpoints of the segment.

   D. Statement: If 2 angles are vertical, then they are congruent. Converse: If 2 angles are congruent, then they are vertical.

   E. Statement: If 2 lines are perpendicular, then they intersect to form 4 right angles. Converse: If 2 lines intersect to form 4 right angles, then they are perpendicular.

(From Unit 2, Lesson 8.)

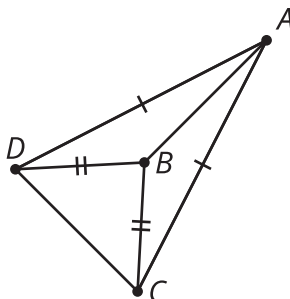5. Prove triangle ABD is congruent to triangle CDB.

$DC \parallel AB$
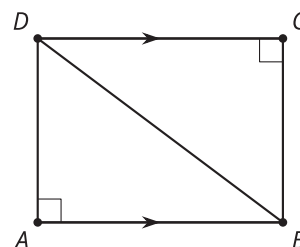
(From Unit 2, Lesson 7.)

6. Triangles ACD and BCD are isosceles. Angle DBC has a measure of 84 degrees and angle BDA has a measure of 24 degrees. Find the measure of angle BAC.

$\overline{AD} \cong \overline{AC}$ **and** $\overline{BD} \cong \overline{BC}$

(From Unit 2, Lesson 6.)

7. Reflect right triangle ABC across line AB. Classify triangle CAC' according to its side lengths. Explain how you know.

(From Unit 2, Lesson 1.)