Geometry
Quiz 5

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

A triangle ABC is *isosceles* if two sides are congruent, say $\overline{AB} \cong \overline{AC}$. The remaining side is the *base*, and the angles $\angle ABC$ and $\angle ACB$ are the *base angles*.

(1) Use a congruence axiom to show that if triangle ABC is isosceles, with $\overline{AB} \cong \overline{AC}$, then the base angles are congruent: $\angle ABC \cong \angle ACB$.

Triangle BAC is congruent to triangle CAB by SAS, so corresponding angles $\angle ABC$ and $\angle ACB$ are congruent.

(2) Suppose that triangle ABC is isosceles with $\overline{AB} \cong \overline{AC}$. Let D be a "midpoint" of the base, that is $B * D * C$ holds and $\overline{DB} \cong \overline{DC}$. Explain why $\angle ADB$ is a right angle.

By Problem (1), $\angle ABC \cong \angle ACB$, so by SAS the triangle ABD is congruent to triangle ACD. Corresponding angles $\angle ADB$ and $\angle ADC$ must be congruent. These are supplementary, so they must be right angles.