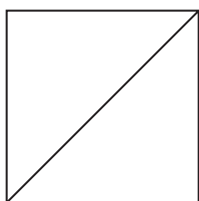


**4-4 Word Problem Practice****Proving Congruence—SSS, SAS**

1. **STICKS** Tyson had three sticks of lengths 24 inches, 28 inches, and 30 inches. Is it possible to make two noncongruent triangles using the same three sticks? Explain.

2. **BAKERY** Sonia made a sheet of baklava. She has markings on her pan so that she can cut them into large squares. After she cuts the pastry in squares, she cuts them diagonally to form two congruent triangles. Which postulate could you use to prove the two triangles congruent?



3. **CAKE** Carl had a piece of cake in the shape of an isosceles triangle with angles  $26^\circ$ ,  $77^\circ$ , and  $77^\circ$ . He wanted to divide it into two equal parts, so he cut it through the middle of the  $26^\circ$  angle to the midpoint of the opposite side. He says that because he is dividing it at the midpoint of a side, the two pieces are congruent. Is this enough information? Explain.

4. **TILES** Tammy installs bathroom tiles. Her current job requires tiles that are equilateral triangles and all the tiles have to be congruent to each other. She has a big sack of tiles all in the shape of equilateral triangles. Although she knows that all the tiles are equilateral, she is not sure they are all the same size. What must she measure on each tile to be sure they are congruent? Explain.

**INVESTIGATION For Exercises 5 and 6, use the following information.**

An investigator at a crime scene found a triangular piece of torn fabric. The investigator remembered that one of the suspects had a triangular hole in their coat. Perhaps it was a match. Unfortunately, to avoid tampering with evidence, the investigator did not want to touch the fabric and could not fit it to the coat directly.

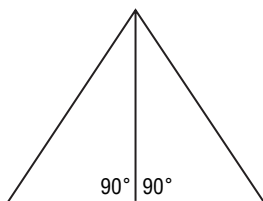
5. If the investigator measures all three side lengths of the fabric and the hole, can the investigator make a conclusion about whether or not the hole could have been filled by the fabric?
6. If the investigator measures two sides of the fabric and the included angle and then measures two sides of the hole and the included angle can he determine if it is a match? Explain.

**4-5 Word Problem Practice****Proving Congruence—ASA, AAS**

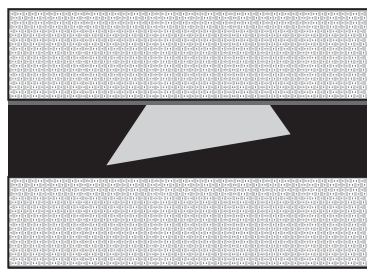
**1. DOOR STOPS** Two door stops have cross-sections that are right triangles. They both have a  $20^\circ$  angle and the length of the side between the  $90^\circ$  and  $20^\circ$  angles are equal. Are the cross-sections congruent? Explain.

**2. MAPPING** Two people decide to take a walk. One person is in Bombay and the other is in Milwaukee. They start by walking straight for 1 kilometer. Then they both turn right at an angle of  $110^\circ$ , and continue to walk straight again. After a while, they both turn right again, but this time at an angle of  $120^\circ$ . They each walk straight for a while in this new direction until they end up where they started. Each person walked in a triangular path at their location. Are these two triangles congruent? Explain.

**3. CONSTRUCTION** The rooftop of Angelo's house creates an equilateral triangle with the attic floor. Angelo wants to divide his attic into 2 equal parts. He thinks he should divide it by placing a wall from the center of the roof to the floor at a  $90^\circ$  angle. If Angelo does this, then each section will share a side and have corresponding  $90^\circ$  angles. What else must be explained to prove that the two triangular sections are congruent?



**3. LOGIC** When Carolyn finished her musical triangle class, her teacher gave each student in the class a certificate in the shape of a golden triangle. Each student received a different shaped triangle. Carolyn lost her triangle on her way home. Later she saw part of a golden triangle under a grate.



Is enough of the triangle visible to allow Carolyn determine that the triangle is indeed hers? Explain.

**PARK MAINTENANCE** For Exercises 5 and 6, use the following information.

Park officials need a triangular tarp to cover a field shaped like an equilateral triangle 200 feet on a side.

**5.** Suppose you know that a triangular tarp has two  $60^\circ$  angles and one side of length 200 feet. Will this tarp cover the field? Explain.

**6.** Suppose you know that a triangular tarp has three  $60^\circ$  angles. Will this tarp necessarily cover the field? Explain.