2.02

On Your Own

7. Define the following words or symbols.

a. congruent **b.** $\cong$ **c.** $\perp$

8. **Standardized Test Prep** Anna has a simple rule for deciding which symbol to use.

Objects are congruent. Measurements of objects are equal.

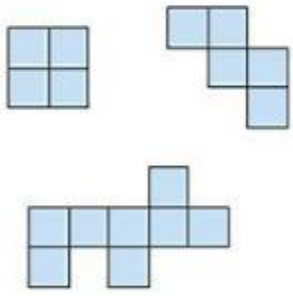
Which of the following statements is NOT written correctly according to Anna's rule?

A. $\overline{DF} \cong \overline{RT}$ **B.** $m\angle CSD \cong m\angle BSL$

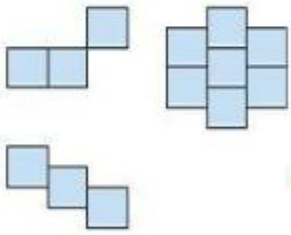
C. $\angle ADF \cong \angle WZM$ **D.** $AC = FH$

9. Are all equilateral triangles congruent? Explain.

Polyominoes are shapes that are made of squares. The sides of polyominoes meet edge to edge with no gaps or overlaps. The three shapes on the left are polyominoes. The three shapes on the right are not polyominoes, because the squares do not meet edge to edge.



polyominoes



not polyominoes

Congruent polyominoes that have different orientations are not different polyominoes.

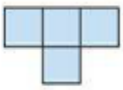
Homework Investigation 2A **Name:**

10. **Dominoes:** How many different polyominoes can you make with two squares?

11. **Trominoes:** How many different polyominoes can you make with three squares?

12. **Tetrominoes:** How many different polyominoes can you make with four squares?

13. Combine the T tetromino (polyomino with 4 squares) at the right with another tetromino to make an eight-square polyomino. How many tetromino shapes can you combine with the T tetromino to get this shape?



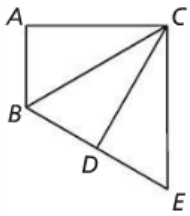
2.03

On Your Own

8. You can compare figures in many different ways. Congruence is a *shape* comparison. Area is a *quantitative* comparison. Use what you know about area to answer the following questions.
   a. If two polygons are congruent, must they have the same area? Explain.
   b. If two polygons have the same area, must they be congruent? Explain.

Similarity is another shape comparison. Perimeter is another quantitative comparison.

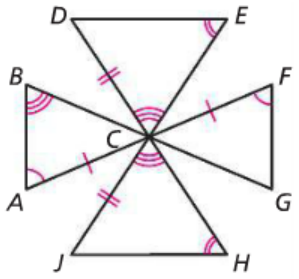
9. The figure below contains three congruent triangles.



   a. Write a correct congruence statement for the three congruent triangles.
   b. On your own sketch, mark congruent corresponding parts.
   c. In quadrilateral *ABDC*, which triangle is congruent to $\triangle ABC$?
   d. In $\triangle BCE$, which triangle is congruent to $\triangle ECD$?

Homework Investigation 2A **Name:**

10. The figure at the right is not drawn to scale. The markings indicate which pairs of segments and which pairs of angles are congruent. Segments that appear to be straight are meant to be.



a. Assume $m\angle F = 80°$, $m\angle H = 50°$, and $m\angle B = 40°$. What are the measures of $\angle A$, $\angle E$, and $\angle D$?

b. Use a ruler and protractor to draw the figure to scale. Draw each angle with the correct angle measure. Draw congruent segments so that they are actually congruent.

2.04

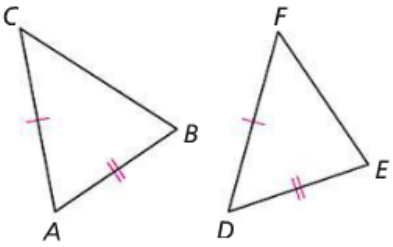
On Your Own

For Exercises 8–12, do each of the following:

a. Tell whether the given information is enough to show that the triangles are congruent. The triangles are not necessarily drawn to scale.

b. If the given information is enough, list the pairs of corresponding vertices of the two triangles. Then state which triangle congruence postulate guarantees that the triangles are congruent.

8.



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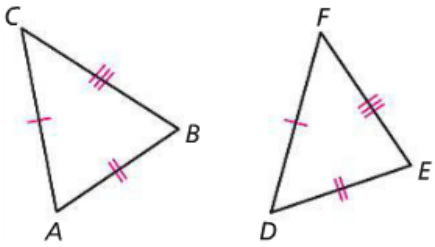

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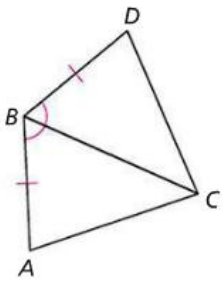

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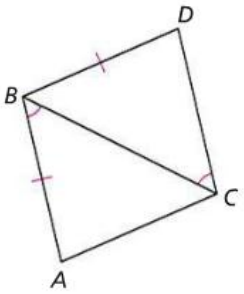
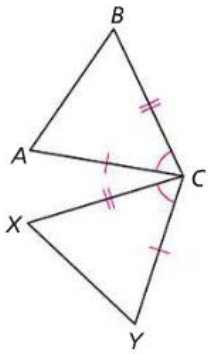


12.



13. Standardized Test Prep In $\triangle ABC$, $\overline{CD}$ is the bisector of $\angle ACB$. Which of the following conjectures is true?

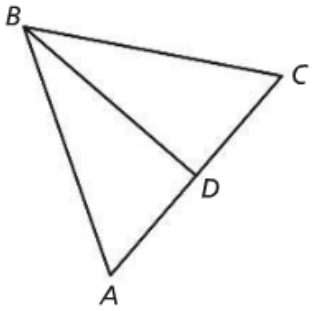
A. There is not sufficient evidence to prove that $\triangle ACD \cong \triangle BCD$.

B. $\triangle ACD \cong \triangle BCD$ is true by the Angle-Side-Angle postulate. In each triangle, the side between the two angles is $\overline{CD}$.

C. $\triangle ACD \cong \triangle BCD$ is true by the Side-Angle-Side postulate. Angle ACD and $\angle BCD$ are the congruent angles that are between the two pairs of congruent sides.

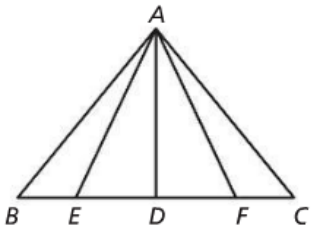
D. $\triangle ACD \cong \triangle BCD$ is true by the Side-Side-Side postulate.

14. In the figure at the right, $\overline{BD}$ is the perpendicular bisector of $\overline{AC}$. Based on this statement, which two triangles are congruent? Prove that they are congruent.



15. Take It Further In the figure at the right, $\overline{AD}$ is the perpendicular bisector of $\overline{BC}$. Based on this information, two triangles in the figure are congruent.

For each part, does the given piece of information help you determine that any additional triangles are congruent? If so, state the triangles and the congruence postulate that guarantees their congruence.



a. $AB = AC$

b. $\overline{AD}$ is the perpendicular bisector of $\overline{EF}$.

c. $\angle EAD \cong \angle FAD$

16. Assume you know that the sum of the measures of the angles in a triangle is 180°.

a. In $\triangle ABC$ and $\triangle DEF$, $m\angle A = m\angle D = 72°$, $m\angle B = m\angle E = 47°$, and $AC = DF = 10$ in. Is $\triangle ABC \cong \triangle DEF$? Explain.

b. Explain why the AAS triplet guarantees triangle congruence.