Topic: Congruence

Congruence refers to two measurements that have the same value.

Term	Definition	Description
Congruent segments	segments that are the same length	$AB \cong DE$ A •———• B D •———• E Indicates Congruence
Congruent angles	angles that have the same measure	$\angle B \cong \angle A$ Indicates Congruence B ‿ ‿ A
Congruent polygons	polygon whose corresponding angles and corresponding sides are congruent	$AB \cong CD$ $AD \cong BC$ $\angle A \cong \angle C$ $\angle B \cong \angle D$
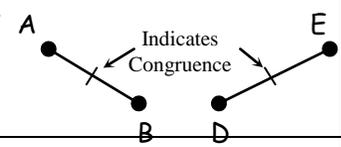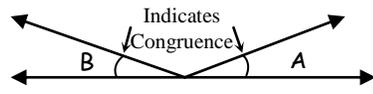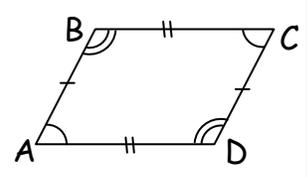
Example: Solve for x.

Step 1: Begin with what you know
   Two angles are congruent
   One of the congruent angles is 20 degrees
   A straight line is 180 degrees

Step 2: Solve for what you don't know:
 $20 + 20 = 180 - x$
   $x = 180 - (20 + 20)$
   $x = 140$

Note: When writing a congruence statement, the order of letters indicates which angles and line segments corresponding to one another.

   Example: Write a congruence statement.
 $\angle A \cong \angle Z;\ \angle B \cong \angle X;$ and $\angle C \cong \angle Y$
      $\triangle ABC \cong \triangle ZXY$ is the only correct way to write it.
 $\triangle ABC \cong \triangle XYZ$ is **incorrect**.
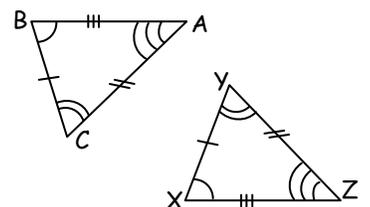
Practice. Write a congruence statement.

1.
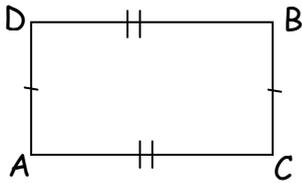
2.
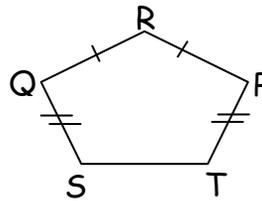
3. Triangle MNO
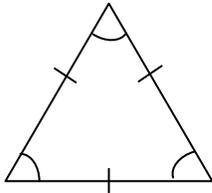
4.
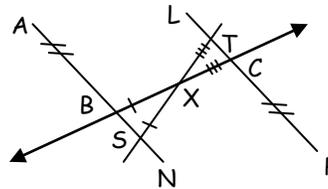
5-6. Fill in the blank.

5. Δ_____ ≅ Δ_____
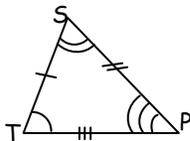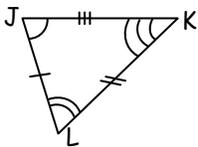
6. Polygon _____ ≅ Polygon _____

7-10. Solve for x.

7. ΔLMN ≅ ΔCAB
   LM = 2x+4

8. ΔABC ≅ ΔPNO
   NP = 3x

9. ΔACB ≅ ΔFEA
   EF = ½ x
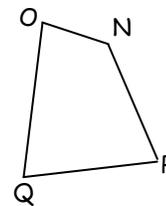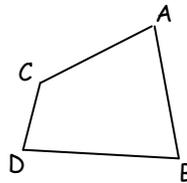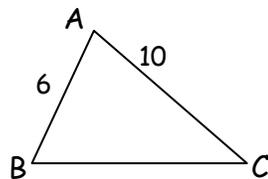
10. ΔBAC ≅ ΔDFE
    ED = x

Name:_____   Date:_____

Answer Key

Topic: Congruence

1. $CA \cong BD$; $DA \cong BC$

2. $QS \cong PT$; $QR \cong RP$

3. $MN \cong NO \cong MO$; $\angle M \cong \angle N \cong \angle O$

4. $AN \cong LP$; $SX \cong BX$; $CX \cong TX$ ($ST \cong BC$)

5. Answers will vary. $JKL \cong TPS$

6. Answers will vary. $ABDC \cong PQON$

7. $x = 3$

8. $x = 2$

9. $x = 20$

10. x