

## Test Review: Triangles

1. CPCTC stands for corresponding parts

$\triangle \cong \triangle$ 's are  $\cong$

2. If the vertex angle of an isosceles triangle is  $54^\circ$ , then a base angle must measure  $63^\circ$ .  
(Hint: Draw the figure!)

$$x + x + 54 = 180$$

$$2x + 54 = 180$$

$$2x = 126$$

$$x = 63$$

$$x = 63$$

3. Given two sides of a triangle with lengths of 5cm and 8 cm, which of the following could NOT be the length of the third side?

- (a) 3cm  $\rightarrow$  3, 5, 8  
(b) 5cm  $\rightarrow$  5, 5, 8  
(c) 10cm  $\rightarrow$  5, 8, 10  
(d) 12cm  $\rightarrow$  5, 8, 12

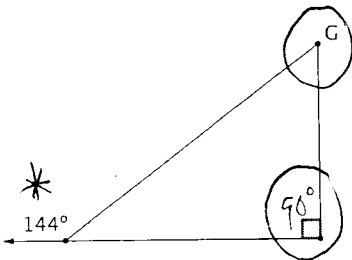
4. List the four different conjectures you can use to prove triangles are congruent. (Also referred to as *congruency shortcuts* in your textbook.)

SSS SAS ASA AAS

What are two shortcuts that *cannot* be used?

SSA AAA

5. (a) Put an asterisk (\*) by the exterior angle in the triangle below. (b) Then, circle the two *remote interior angles*. (c) Find  $m\angle G$ .



$$144^\circ = m\angle G + 90^\circ$$

$$-90^\circ \quad -90^\circ$$

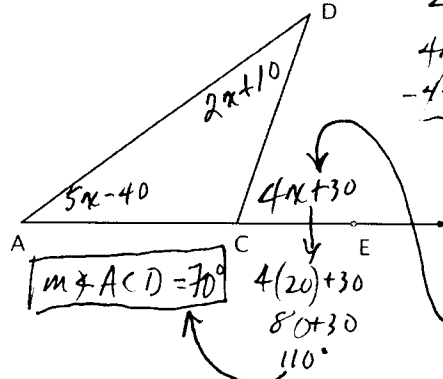
$$54^\circ = m\angle G$$

Name: Solutions

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Geometry 1/2, Mr. Ferraro/Mr. Wong

6. Label the figure below such that  $m\angle ADC = 2x + 10$ ,  $m\angle CAD = 5x - 40$ , and  $m\angle DCE = 4x + 30$ . What is  $m\angle ACD$ ?



$$4x + 30 = 5x - 40 + 2x + 10$$

$$4x + 30 = 7x - 30$$

$$-4x \quad -4x$$

$$30 = 3x - 30$$

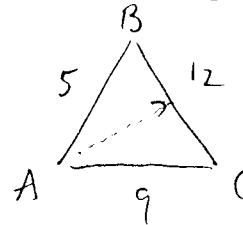
$$+30 \quad +30$$

$$60 = 3x$$

$$\frac{60}{3} = \frac{3x}{3}$$

$$20 = x$$

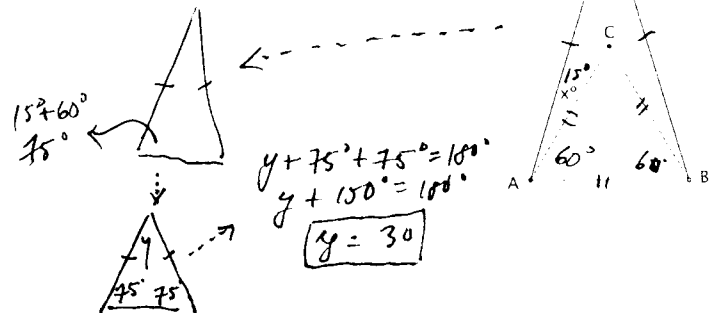
7. Given  $\triangle ABC$ , if  $AB = 5$ ,  $BC = 12$ , and  $AC = 9$ , list the angles from greatest to least.  
(Hint: **Draw the triangle!**)



Greatest, ..., Least

$\angle A, \angle B, \angle C$

8. In the figure at right,  $\triangle ABD$  is isosceles and  $\triangle ABC$  is equilateral. If  $x = 15$ , find  $y$ .



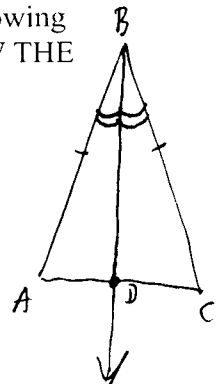
$$y + 75^\circ + 75^\circ = 180^\circ$$

$$y + 150^\circ = 180^\circ$$

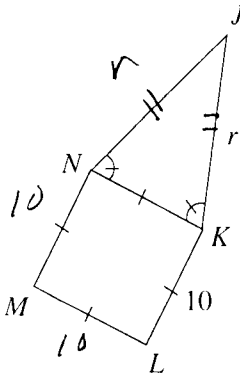
$$y = 30$$

9. Given  $\triangle ABC$ , with  $\overline{AB} \cong \overline{BC}$ , where  $\overline{BD}$  bisects  $\angle ABC$ , which of the following statements must be false? (DRAW THE TRIANGLE!)

- ✓(a) D is the midpoint of  $\overline{AC}$   
✓(b)  $\triangle ABD \cong \triangle CBD$   
✓(c)  $\overline{BD} \perp \overline{AC}$   
⊗(d)  $\triangle ABD$  is isosceles  
✓(e)  $\overline{BD}$  is an altitude



10. If the perimeter of JKLMN is 60, find the value of  $r$ .

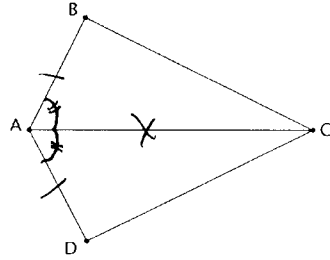


$$r + r + 10 + 10 + 10 = 60$$

$$2r + 30 = 60$$

$$\begin{array}{r} 2r + 30 = 60 \\ -30 \quad -30 \\ \hline 2r = 30 \\ \frac{2r}{2} = \frac{30}{2} \\ \boxed{r = 15} \end{array}$$

11. Given:  
 $\overline{AB} \cong \overline{AD}$ ;  
 $\overline{AC}$  bisects  $\angle BAD$

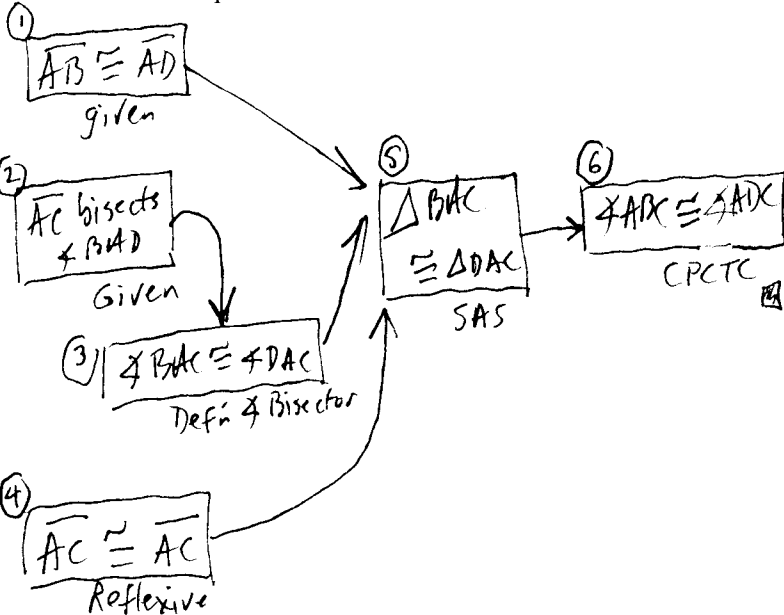


Prove:  
 $\angle ABC \cong \angle ADC$

**MARK THE DIAGRAM!**

Statements	Reasons
1. $\overline{AB} \cong \overline{AD}$	1. Given
2. $\overline{AC}$ bisects $\angle BAD$	2. Given
3. $\angle BAC \cong \angle DAC$	3. Definition of Angle Bisector
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive
5. $\triangle BAC \cong \triangle DAC$	5. SAS
6. $\angle ABC \cong \angle ADC$	6. CPCTC

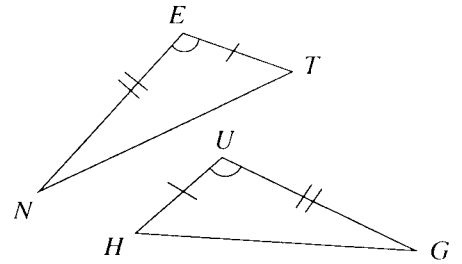
12. Complete #11 as a flowchart proof below.



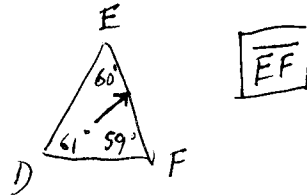
13. Complete #11 as a paragraph proof

We are given that  $\overline{AB} \cong \overline{AD}$ . And since  $\overline{AC}$  bisects  $\angle BAD$ ,  $\angle BAC \cong \angle DAC$  by the def'n of  $\angle$  Bisector.  $\overline{AC} \cong \overline{AC}$  by the Reflexive property. By SAS,  $\triangle BAC \cong \triangle DAC$ . Finally, by CPCTC,  $\angle ABC \cong \angle ADC$ .  $\square$

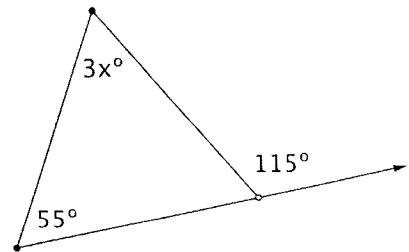
14.  $\triangle TEN \cong \triangle HUG$  by SAS



15. In  $\triangle DEF$ ,  $m\angle D = 61^\circ$ ,  $m\angle E = 60^\circ$ , and  $m\angle F = 59^\circ$ . Which side is the longest?



16. Find  $x$ .



$$115^\circ = 3x + 55^\circ$$

$$\begin{array}{r} 115^\circ = 3x + 55^\circ \\ -55^\circ \quad -55^\circ \\ \hline 60^\circ = 3x \\ \frac{60^\circ}{3} = \frac{3x}{3} \end{array}$$

$$\boxed{20 = x}$$