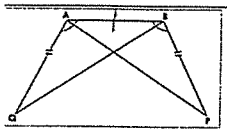
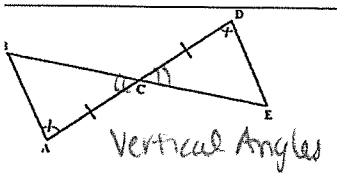
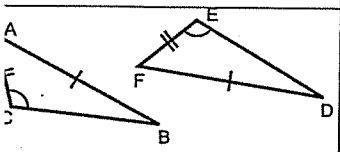
Unit 3 Congruent Triangles Review Name:

I can prove that triangles are congruent using valid theorems/postulates. (G-CO.8)

1. What congruence shortcuts can you use to prove that triangles are congruent? List all 4 of the methods.

ASA, AAS, SAS, SSS

2. For each of the following triangles, determine which theorem/postulate could be used to show that the triangles are congruent. If they are congruent, write a congruence statement, if there is not enough information, explain why you can not prove the triangle congruent.

Triangles: Don't forget to mark additional sides/angles which are congruent!	Are these triangles Congruent? By which theorem or postulate?	If the triangles are congruent, write a congruence statement. If the triangles are NOT congruent, explain why they are not congruent.
 $\overline{AB} \cong \overline{AB}$ Reflexive	SAS	$\triangle QAB \cong \triangle PBA$
 Vertical Angles	ASA	$\triangle ABC \cong \triangle DEC$
	SSA	False Shortcut.

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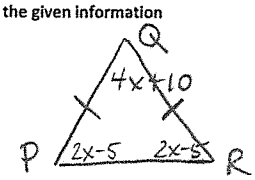
I can use the definition of congruent triangles and corresponding parts to solve problems. (G-CO.7)

5. Given that $\triangle LMN \cong \triangle PQR$, complete the following congruence statements:

$\angle L \cong \angle P$	$\overline{MN} \cong \overline{QR}$	$\angle R \cong \angle N$	$\overline{PR} \cong \overline{LN}$

6. In an isosceles triangle PQR, $\overline{PQ} \cong \overline{QR}$, the measure of the vertex angle is $(4x+10)$ The measure of each base angle is $(2x-5)$.

a. Draw an isosceles triangle and label each angle with the given information



b. Write an equation and solve for x.

$4x+10+2x-5+2x-5=180$

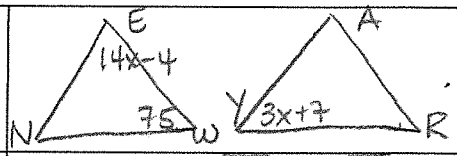
$\frac{8x}{8}=\frac{180}{8}$

$x=22.5$

c. Find the measure of each base angle.

$2(22.5)-5=45-5=40$

7. Given: $\Delta NEW \cong \Delta YAR$. Let $m\angle E=(14x-4)°$, $m\angle Y=(3x+7)°$ and $m\angle W=75°$

Draw and Label Both Triangles	
List all six pairs of corresponding congruent parts	$\angle N \cong \angle Y$ $\overline{NE} \cong \overline{YA}$ $\angle E \cong \angle A$ $\overline{EW} \cong \overline{AR}$ $\angle W \cong \angle R$ $\overline{NW} \cong \overline{YR}$
Write an equation to solve for x.	$N \cong Y$ $N=3x+7$ $3x+7+14x-14+75=180$ $17x+68=180$ $x=16$ $\frac{7x}{7}=\frac{112}{7}$

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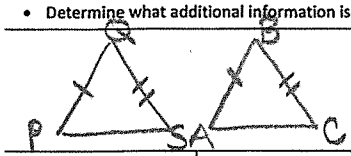
I can prove that triangles are congruent using valid theorems/postulates. (G-CO.8)

3. Suppose $\overline{PQ} \cong \overline{AB}$ and $\overline{QS} \cong \overline{BC}$.

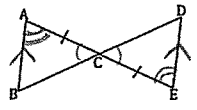
- Draw two triangles representing this situation.
- Determine what additional information is needed to prove $\Delta PQS \cong \Delta ABC$



What additional information is needed to prove congruent by SSS?	You need $\overline{PS} \cong \overline{AC}$ for SSS.
What additional information is needed to prove congruent by SAS?	You need $\angle Q \cong \angle B$ for SAS.

4. Complete the following proof (you may not have to use all of the blanks)

Given $\overline{AB} \parallel \overline{ED}$, $\overline{AC} \cong \overline{EC}$



Prove: $\Delta ABC \cong \Delta EDC$

$\angle ACB \cong \angle ECD$ Vertical

$\angle BAC \cong \angle DEC$ Alt. Int.

ASA

Statements	Justifications
$\overline{AB} \parallel \overline{ED}$, $\overline{AC} \cong \overline{EC}$	1. Given
$\angle ACB \cong \angle ECD$	2. Vertical angles are congruent
$\angle BAC \cong \angle DEC$	3. Alternate Interior Angles are congruent
$\triangle ABC \cong \triangle EDC$	4. ASA
	5.
	6.

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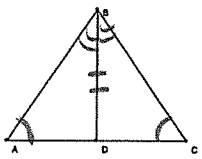
I can prove theorems about triangles and use these theorems to solve problems.(G-CO.10)

8. Write a proof for the following, all spaces may not be used:



Given: $\angle A \cong \angle C$

Prove: $\overline{AB} \cong \overline{CB}$

AAS

	Statements	Justifications
A	1. $\angle A \cong \angle C$	Given
	2. Construct $\overline{BD}$, the angle bisector of $\angle ABC$.	For each angle, there is a unique angle bisector.
A	3. $\angle ABD \cong \angle CBD$	Definition of bisector.
S	4. $\overline{BD} \cong \overline{BD}$	Reflexive
△	5. $\triangle ABD \cong \triangle CBD$	AAS
	6. $\overline{AB} \cong \overline{CB}$	CPCTC
	7.	

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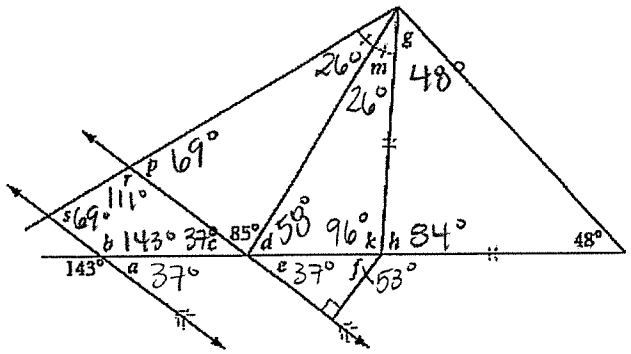
I can prove theorems about triangles and use these theorems to solve problems.(G-CO.10)

9. Find all the missing angle measures in the diagram shown.



m∠a= 37°
m∠b= 143°
m∠c= 37°
m∠d= 58°
m∠e= 37°
m∠f= 53°
m∠g= 48°

m∠h= 84°
m∠k= 96°
m∠m= 26°
m∠p= 69°
m∠r= 111°
m∠s= 69°

$a + 143 = 180$ (Linear Pair)

$a = 37°$

$b = 143$ (vertical)

$c = 37°$ (Alternate Interior)

$e = 37°$ (Corresponding)

$d + 85 + 37 = 180$ (Supplementary)

$d = 58$

$f + 37 + 90 = 180$ ($\triangle$ sum = 180)

$f = 53°$

$g = 48°$ (Isosceles base angles are congruent)

$h + 48 + 48 = 180$ ($\triangle$ sum = 180)

$h = 84°$

$k + 84 = 180$ (Linear Pair)

$k = 96°$

$m + 58 + 96 = 180$ ($\triangle$ sum = 180)

$m = 26°$

$p + 26 + 85 = 180$ ($\triangle$ sum = 180)

$p = 69°$

$r + 69 = 180$ (Linear Pair)

$r = 111°$

$S + 111 + 143 + 37 = 360$ (Quad sum = 360)

$S = 69°$