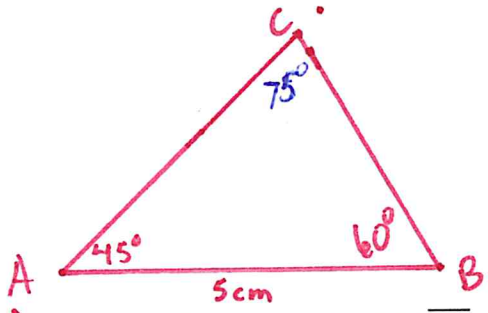
Unit 3 Review

Name: Key Date: _____ Hour: _____

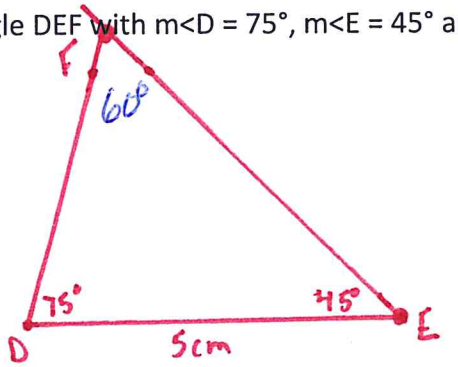
Triangle Construction:

1.) Construct the following triangles based on the given information:

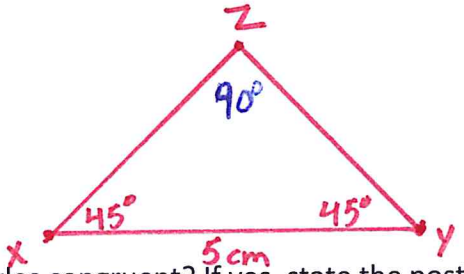
a.) Draw and label triangle ABC with m<A = 45°, m<B = 60° and $\overline{AB}$ = 5cm



b.) Draw and label triangle DEF with m<D = 75°, m<E = 45° and $\overline{DE}$ = 5cm



c.) Draw and label triangle XZY with m<X = 45°, m<Y = 45° and $\overline{XY}$ = 5cm



2.) Are any of the above constructed triangles congruent? If yes, state the postulate that supports your answer. If no, explain why not.

No; a and b have the same angles, but the known side is not in the same spot.

c has different angle measures.

3.) Can the following lengths make a triangle? Show your work!

a.) 10m, 6m, 5m

Yes

b.) 8cm, 3cm, 5cm

No

c.) 12yd, 12yd, 11yd

Yes

4.) What are the possible lengths for the third side of a triangle using the two given lengths? Write your answer as an inequality.

a.) 7cm, 15cm

$8 < x < 22$

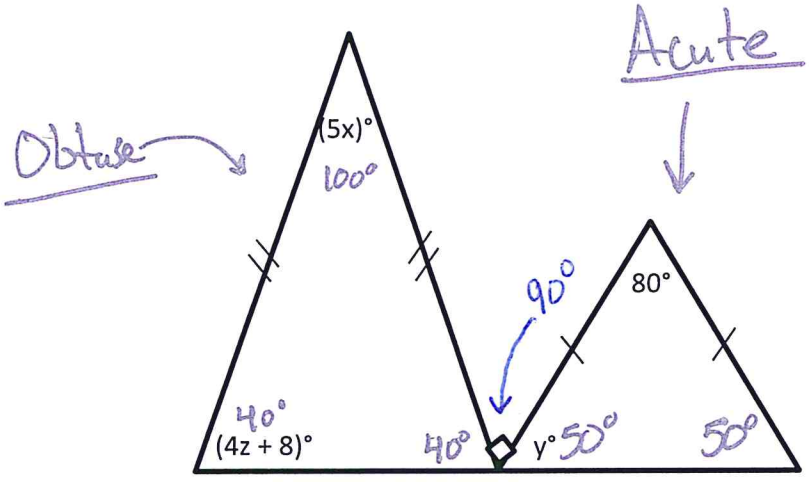
b.) 3ft, 10ft

$7 < x < 13$

c.) 2m, 8m

$6 < x < 10$

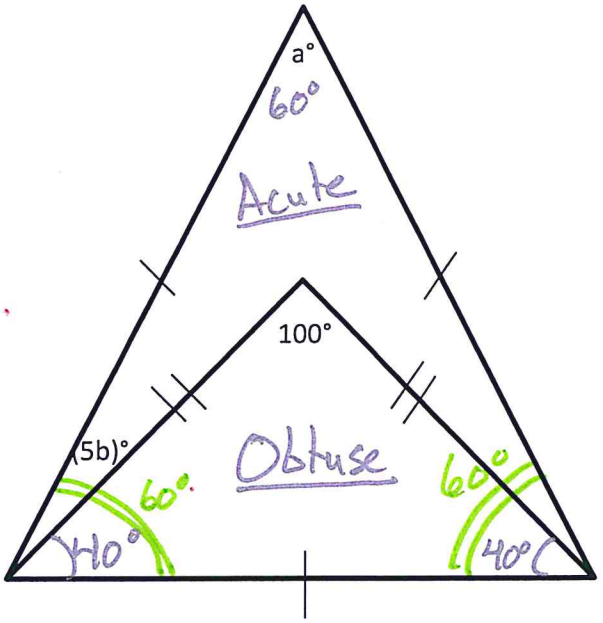
5.) Solve for each variable and find the measures of the angles of each triangle. Then classify each triangle by its angles. (Diagrams may not be drawn to scale)



$Y = 50°$

$z = 8$

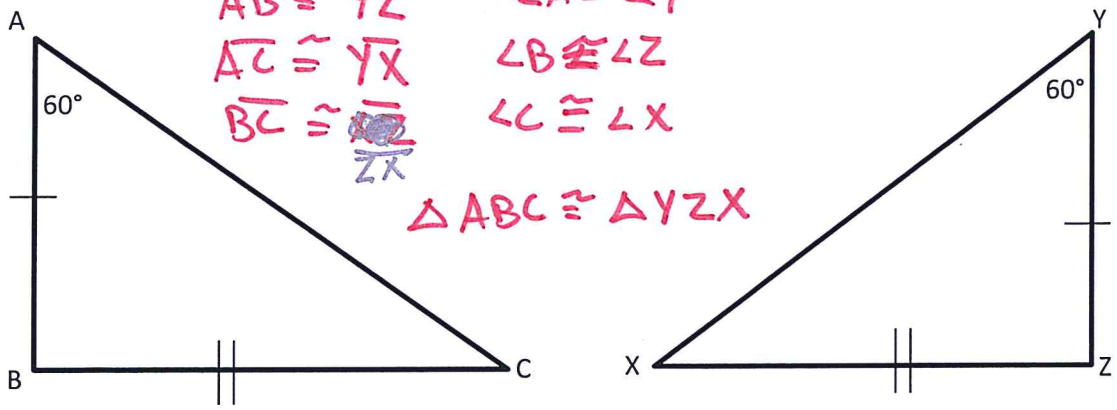
$x = 20$



$a = 60°$

$b = 4$

6.) List all possible congruency statements for the two triangles. You can assume the triangles are congruent.



$\overline{AB} \cong \overline{YZ}$ $\quad \angle A \cong \angle Y$

$\overline{AC} \cong \overline{YX}$ $\quad \angle B \cong \angle Z$

$\overline{BC} \cong \overline{ZX}$ $\quad \angle C \cong \angle X$

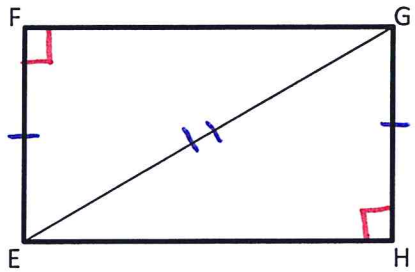
$\triangle ABC \cong \triangle YZX$

7.) **Given:** $\overline{GF} \perp \overline{EF}$

$\overline{EH} \perp \overline{GH}$

$\overline{EF} \cong \overline{GH}$

Prove: $\Delta FGE \cong \Delta HEG$

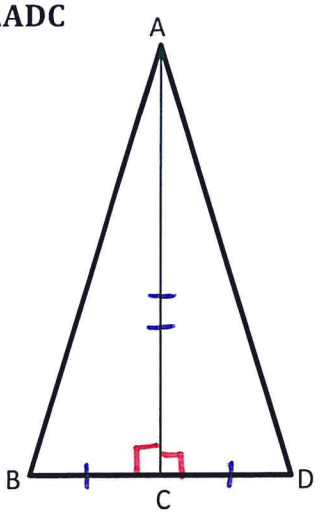


S	R
1) $\overline{GF} \perp \overline{EF}$, $\overline{EH} \perp \overline{GH}$, $\overline{EF} \cong \overline{GH}$	1) Given
2) $\angle F$ and $\angle H$ are 90°	2) Def. of Perpendicular
3) $\overline{EG} \cong \overline{EG}$	3) Reflexive Property
4) $\triangle FGE$ & $\triangle HEG$ are Right $\triangle$'s	4) Def. of Right $\triangle$
5) $\triangle FGE \cong \triangle HEG$	5) HL theorem

8.) **Given:** $\overline{AC} \perp \overline{BD}$

C is the midpoint of $\overline{BD}$

Prove: $\Delta ABC \cong \Delta ADC$

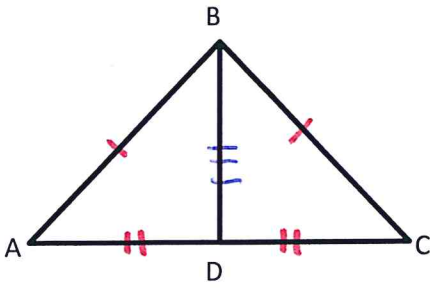


S	R
1) $\overline{AC} \perp \overline{BD}$, C is the midpoint of $\overline{BD}$	1) Given
2) $\angle ACB \cong \angle ACD$	2) Both 90°
3) $\overline{AC} \cong \overline{AC}$ 3.1 $\overline{BC} \cong \overline{DC}$	3) Reflexive Prop. 3.1 Def. of Midpoint
4) $\triangle ABC \cong \triangle ADC$	4) SAS Postulate

9.) **Given:** $\overline{AB} \cong \overline{CB}$

D is the midpoint of $\overline{AC}$

Prove: $\Delta ABD \cong \Delta CBD$

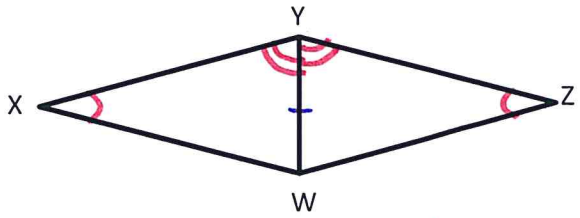


S	R
1) $\overline{AB} \cong \overline{CB}$, D is the midpoint of $\overline{AC}$	1) Given
2) $\overline{AD} \cong \overline{CD}$	2) Def. of Midpoint
3) $\overline{BD} \cong \overline{BD}$	3) Reflexive Property
4) $\Delta ABD \cong \Delta CBD$	4) SSS Postulate

10.) **Given:** <X ≅ <Z

$\overline{WY}$ **bisects <XYZ**

Prove: $\Delta WXY \cong \Delta WZY$

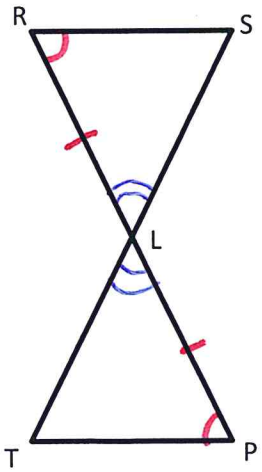


S	R
1) $\angle X \cong \angle Z$, $\overline{WY}$ bisects $\angle XYZ$.	1) Given
2) $\angle XYW \cong \angle ZYW$	2) Def. of Bisector
3) $\overline{YW} \cong \overline{YW}$	3) Reflexive Property
4) $\Delta WXY \cong \Delta WZY$	4) AAS Postulate

11.) **Given:** <R ≅ <P

$\overline{RL} \cong \overline{PL}$

Prove: $\Delta RLS \cong \Delta PLT$



S	R
1) $\angle R \cong \angle P$, $\overline{RL} \cong \overline{PL}$	1) Given
2) $\angle RLS \cong \angle PLT$	2) Vertical $\angle$'s
3) $\Delta RLS \cong \Delta PLT$	3) ASA Postulate