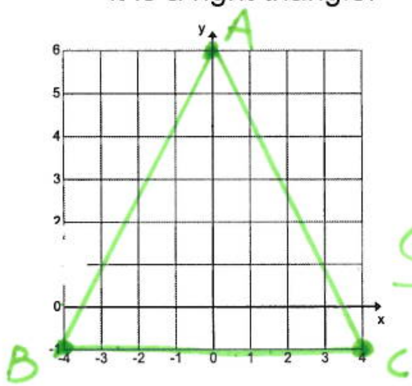
Geometry **REVIEW 4.1 – 4.4** Name Key

Hour ________

***SECTION 4.1***

Graph ΔABC with vertices A (0, 6), B (-4, -1), and C (4, -1). Classify it by its sides. Then determine if it is a right triangle.




$BC = 8$

$AC = \sqrt{(4-0)^2 + (-1-6)^2}$

$AC = \sqrt{16+49}$

$AC = \sqrt{65}$

$AB = \sqrt{(-4-0)^2 + (-1-6)^2}$

$AB = \sqrt{16+49}$

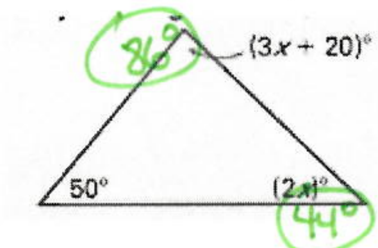
$AB = \sqrt{65}$

Isosceles

slope AC $\frac{7}{-4}$ slope AB $\frac{7}{4}$

not rt. Δ

Find x. Then classify the triangle by its angles.




$3x+20+2x+50=180$

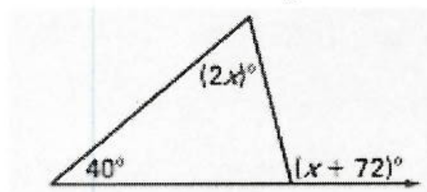
$5x+70=180$

$5x=110$

$x=22$

acute Δ

Find the measure of the exterior angle shown.



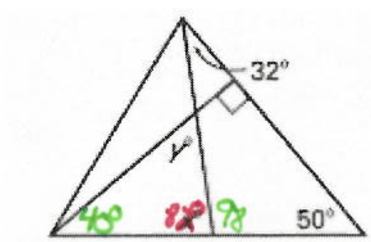

$40+2x = x+72$

$40+x=72$

$x=32$

Ext. ∠ = 32+72 = 104°

Find x and y.




$x=180-98 = 82°$

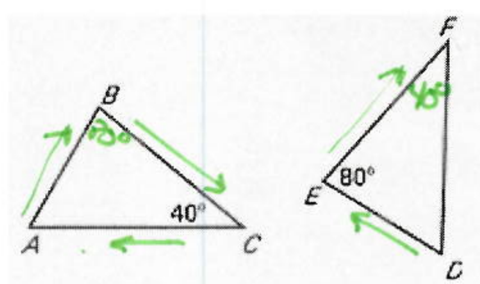
$y = 180-40-82 = 58°$

$x = 82°$

$y = 58°$

***SECTION 4.2***

In the diagram, $\Delta ABC \cong \Delta DEF$. Complete each statement.

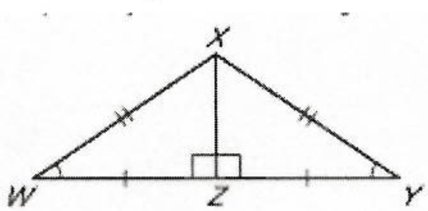



m∠A = 60°

$\overline{FD}$ = $\overline{CA}$

$\Delta EDF$ = ΔBAC has to be this exact order

Write a congruence statement for the two small triangles. EXPLAIN your reasoning.



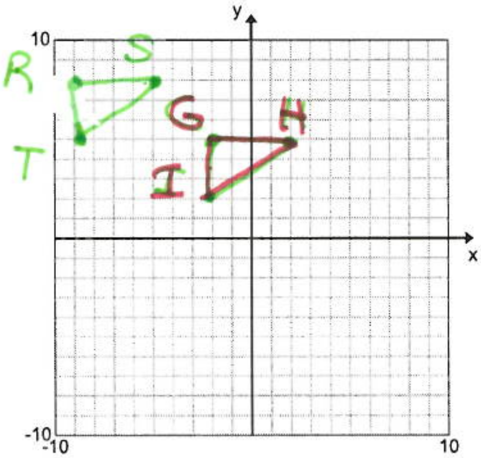

ΔXZW ≅ ΔXZY

by Hypotenuse Leg

or SAS or SSS

## ***SECTION 4.3***

The vertices of $\Delta GHI$ and $\Delta RST$ are G (-2, 5), H (2, 5), I (-2, 2), R (-9, 8), S (-5, 8), and T (-9, 5). Is $\Delta GHI \cong \Delta RST$? EXPLAIN.




$\boxed{RS = 4}$

$RT = \sqrt{(-9 - -9)^2 + (5-8)^2}$

$RT = \sqrt{9}$

$\boxed{RT = 3}$

$ST = \sqrt{(-9 + 5)^2 + (5-8)^2}$

$\sqrt{16+9}$

$\boxed{ST = 5}$

$\boxed{GH = 4}$

$\boxed{GI = 3}$

$HI = \sqrt{(-2-2)^2 + (2-5)^2}$

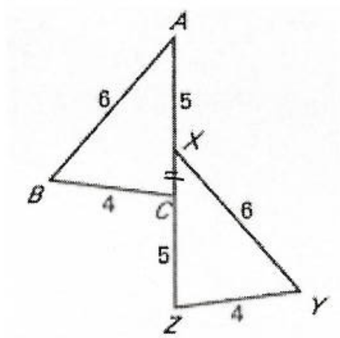
$\sqrt{16+9}$

$\sqrt{25}$

$\boxed{HI = 5}$

$\Delta GHI \cong \Delta RST$ by SSS

Is $\Delta ABC \cong \Delta XYZ$? EXPLAIN.




$\overline{AB} = \overline{XY}$ $\overline{BC} \cong \overline{YZ}$ $\overline{XC} \cong \overline{XC}$ (reflexive)

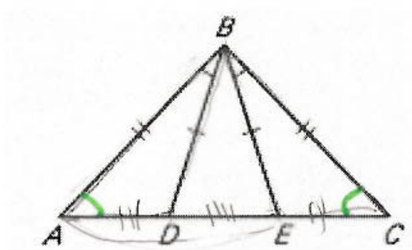
so $\overline{AC} \cong \overline{ZC}$

$\Delta ABC \cong \Delta XYZ$ by SSS

## ***SECTION 4.4***

Is there enough information to prove the triangles congruent? If there is, state the postulate or theorem.

$\Delta ABE \cong \Delta CBD$




by SSS

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

$\overline{BE} \cong \overline{BD}$

$\Delta ABD \cong \Delta CBE$ by SAS

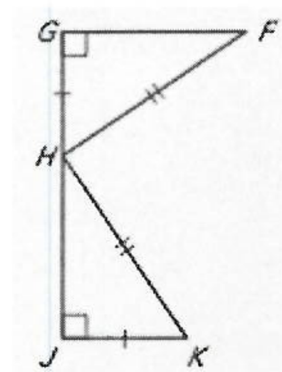
therefore $\overline{AD} \cong \overline{CE}$

and $\overline{DE} \cong \overline{DE}$ by reflexive

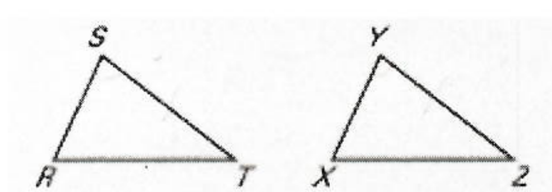
so $\overline{AE} \cong \overline{CD}$

$\Delta FGH \cong \Delta HJK$

yes HL




State a third congruence that would allow you to prove $\Delta RST \cong \Delta XYZ$ by the SAS Congruence Postulate.




$\overline{ST} \cong \overline{YZ}$, $\overline{RS} \cong \overline{XY}$ $\angle S \cong \angle Y$

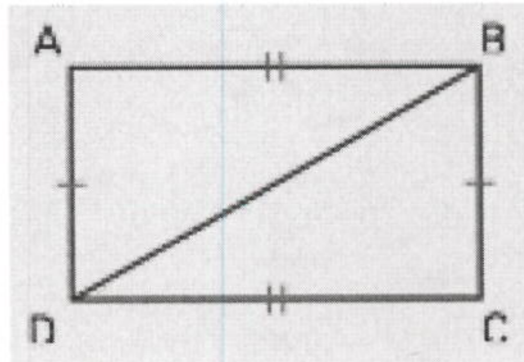
$\angle T \cong \angle Z$, $\overline{RT} \cong \overline{XZ}$ $\overline{ST} \cong \overline{YZ}$

Geometry **PROOF REVIEW 4.1 – 4.4** Name Key

Hour ____________

GIVEN: $\overline{AB} \cong \overline{CD}$

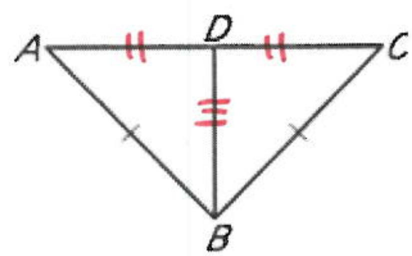
CONCLUDE: $\Delta ABD \cong \Delta CDB$




given $^{S}\overline{AB} \cong \overline{CD}$ and $^{S}\overline{AD} \cong \overline{BC}$.
We can say $^{S}\overline{BD} \cong \overline{BD}$ by the reflexive property.
Then $\Delta ABD \cong \Delta CDB$ by S.S.S.

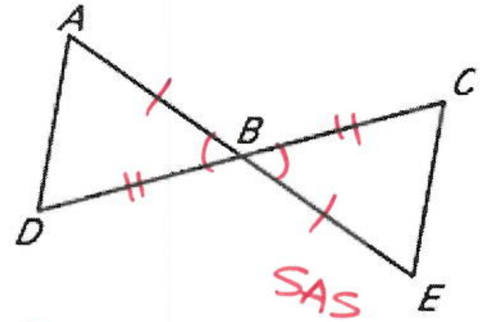
**GIVEN:** $\overline{AB} \cong \overline{CB}$, D is the midpoint of $\overline{AC}$

**CONCLUDE**: $\Delta ABD \cong \Delta CBD$




Given $^{S}\overline{AB} \cong \overline{CB}$ and D is the midpoint of $\overline{AC}$. We can say $^{S}\overline{AD} \cong \overline{CD}$ by the definition of midpoint. Also $^{S}\overline{DB} \cong \overline{DB}$ by the reflexive property.
So $\Delta ABD \cong \Delta CBD$ by S.S.S.

**GIVEN:** B is the midpoint of $\overline{AE}$, B is the midpoint of $\overline{CD}$




**CONCLUDE**: $\Delta ABD \cong \Delta EBC$

givenB is the mdpt. of $\overline{AE}$ and B is the mdpt. of $\overline{CD}$.

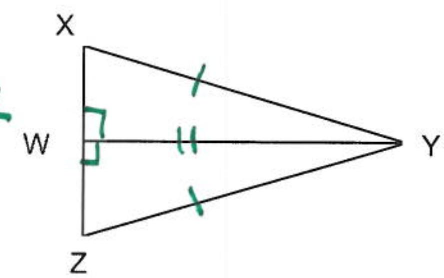
SAS

We can say $^{S}\overline{AB} \cong \overline{BE}$ and $^{S}\overline{CB} \cong \overline{DB}$ by the definition of midpoint. $^{A}\angle ABD \cong \angle EBC$ by vertical angle theorem.

Then $\Delta ABD \cong \Delta EBC$ by SAS

GIVEN: $\overline{YW} \perp \overline{XZ}$, $\overline{XY} \cong \overline{ZY}$

HL




CONCLUDE: $\Delta XYW \cong \Delta ZYW$

given $\overline{YW} \perp \overline{XZ}$, so $\angle XWZ$ and $\angle ZWY$ are right angles by the definition of perpendicular lines.

$\Delta YWX$ and $\Delta YZW$ are right triangles by definition of right triangles.

given $\overline{XY} \cong \overline{ZY}$, and $\overline{WY} \cong \overline{WY}$ by the reflexive property.

Therefore $\Delta XYW \cong \Delta ZYW$ by hypotenuse-leg.