Geometry
Unit 7 ~ Day 2

Notes: _____

Triangle Similarity Theorems

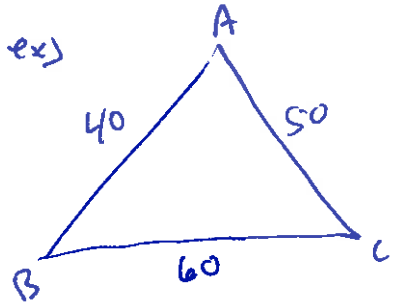
1. Angle-Angle Similarity: If 2 pairs of corr. ∠'s are ≅, then △'s are ~.
(AA)

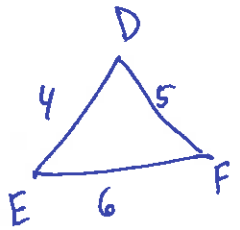
ex)

Since ∠B ≅ ∠F and ∠A ≅ ∠D, then △ABC ~ △DFE by AA sim.

2. Side-Side-Side Similarity: If Ratio of corr. sides are =, then △'s are ~.
(SSS)

ex)





$\frac{AB}{DE} = \frac{40}{4} = 10$

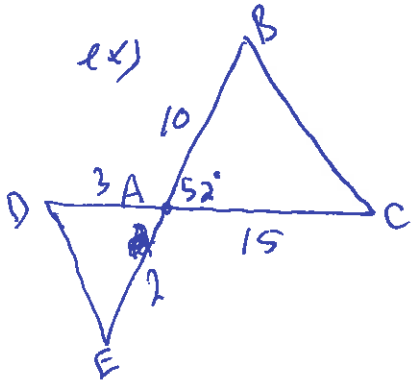
$\frac{AC}{DF} = \frac{50}{5} = 10$

$\frac{BC}{EF} = \frac{60}{6} = 10$

Thus △ABC ~ △DEF by SSS sim

3. Side-Angle-Side Similarity: If ratios of 2 pairs of corr. sides are = and included ∠'s are ≅, then △'s are ~.
(SAS)

ex)



$\frac{AB}{EA} = \frac{10}{2} = 5$

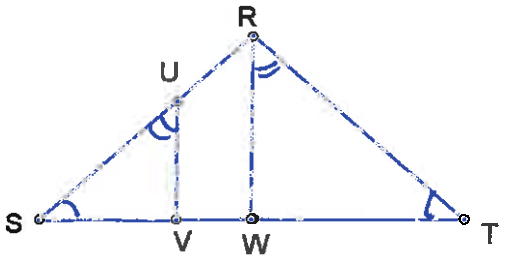
$\frac{CA}{DA} = \frac{15}{3} = 5$

∠BAC ≅ ∠EAD

△BAC ~ △EAD by SAS sim.

Proving Triangles Similar

Example 1:

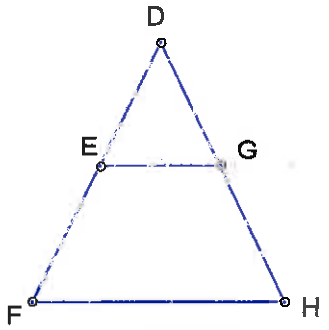


Given: $\overline{RS} \cong \overline{RT}$
$< SUV \cong < TRW$

Prove: $\Delta SUV \sim \Delta TRW$

Statements	Reasons
1. $\overline{RS} \cong \overline{RT}$, $\angle SUV \cong \angle TRW$	1. Given
2. $\angle S \cong \angle T$	2. in a Δ, angles opp. $\cong$ sides are $\cong$.
3. $\Delta SUV \sim \Delta TRW$	3. AA similarity.

Example 2:



Given: $(DE)(DH) = (DG)(DF)$

Prove: $\Delta DEG \sim \Delta DFH$

S B S B

Small = Small
Big Big

DE DG Small ΔDEG
DF DH Big ΔDFH

Statement	Reason
1. $(DE)(DH) = (DG)(DF)$	1. Given
2. $\frac{DE}{DF} = \frac{DG}{DH}$	2. Division
3. $\angle D \cong \angle D$	3. Reflexive
4. $\Delta DEG \sim \Delta DFH$	4. SAS similarity.