

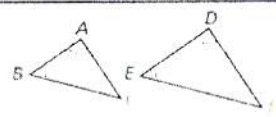
Triangle Similarity Guided Notes

Triangle can be proved congruent by SSS, SAS, ASA, AAS and HL.

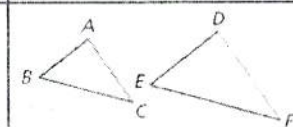
Triangles can be proved SIMILAR (\sim) using the following Theorems:

3 ways:
AA, SAS, SSS

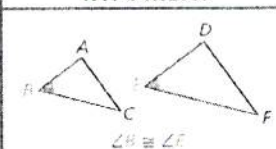
Postulate 7-3-1 Angle-Angle (AA) Similarity

POSTULATE	HYPOTHESIS	CONCLUSION
If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Theorem 7-3-2 Side-Side-Side (SSS) Similarity

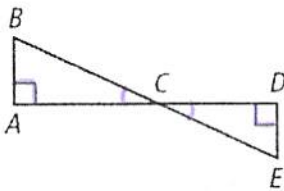
THEOREM	HYPOTHESIS	CONCLUSION
If the three sides of one triangle are proportional to the three corresponding sides of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Theorem 7-3-3 Side-Angle-Side (SAS) Similarity

THEOREM	HYPOTHESIS	CONCLUSION
If two sides of one triangle are proportional to two sides of another triangle and their included angles are congruent, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Similarity:
- \angle 's are \cong (congruent)
- sides are proportional

1. Explain why the triangles are similar and write a similarity statement.



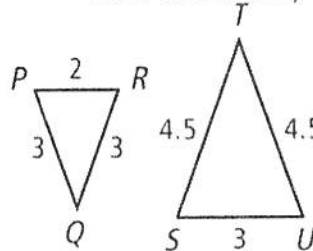
AA~

① $\angle A \cong \angle D$ Right \angle 's are \cong .

② $\angle BCA \cong \angle ECD$ Vertical \angle 's are \cong .

* $\triangle BAC \sim \triangle EDC$ by AA~

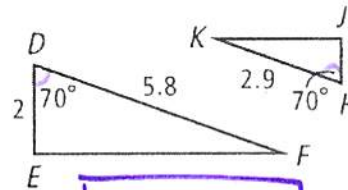
2. Explain why the triangles are similar and write a similarity statement.



**$\triangle PQR \sim \triangle STU$
by SSS~**

PR: 2 SU: 3 $\frac{2}{3}$
PQ: 3 ST: 4.5 $\frac{3}{4.5} = \frac{2}{3}$
RQ: 3 TU: 4.5 $\frac{3}{4.5} = \frac{2}{3}$

3. Explain why the triangles are similar and write a similarity statement.



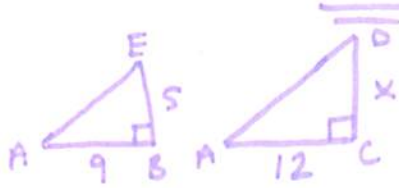
SAS~

$\triangle EDF \sim \triangle JHK$
by SAS.

$\frac{2}{1} = \frac{5.8}{2.9}$
 $\downarrow \quad \downarrow$
 $2 = 2$

* 2 sides are proportional & the included \angle 's are \cong .

4. If $\triangle ABE \sim \triangle ACD$. Find CD.



$$\frac{5}{9} \sim \frac{x}{12}$$

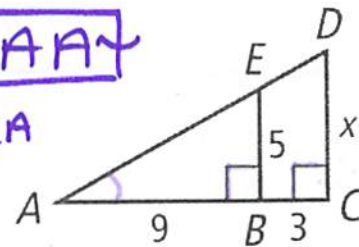
$$\frac{60}{9} = \frac{9x}{9}$$

$$x = \frac{20}{3} \text{ or } 6.66$$

AA

① $\angle EBA \cong \angle DCA$
rt \angle 's \cong .

② $\angle A \cong \angle A$
ref. prop.

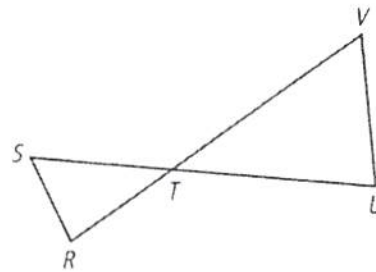


5. Given: $3UT = 5RT$ and $3VT = 5ST$
Prove: $\triangle UVT \sim \triangle RST$

$$\frac{UT}{RT} = \frac{5}{3}$$

$$\frac{3UT}{3} = \frac{5RT}{3}$$

$$UT = \frac{5RT}{3}$$



Statements	Reasons
1. $3UT = 5RT$ $3VT = 5ST$	1. Given
2. $\frac{UT}{RT} = \frac{5}{3}$	2. Division Property
3. $\frac{3VT}{3} = \frac{5ST}{3}$ $\frac{VT}{ST} = \frac{5}{3}$ $VT = \frac{5ST}{3}$	3. Division Property
4. $\angle STR \cong \angle VTU$	4. Vertical Angles Theorem
5. $\triangle UVT \sim \triangle RST$	5. SAS \sim
6.	6.