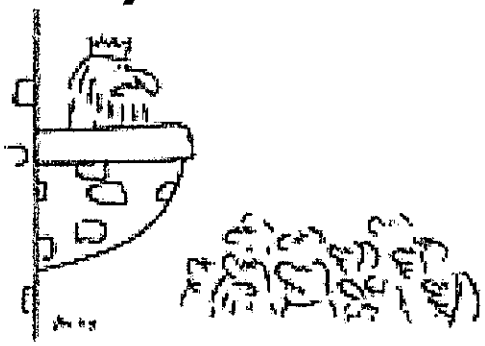
Name: KEY!

Hour: _____

Unit L:
Similar Triangles
Geometry 2nd Semester



Sorry about the economy,
but I was never very good
at story problems.

Lesson 13-1: The SSS Similarity Theorem

Vocabulary

SSS Similarity Theorem: if 3 sides on a triangle are proportional to 3 sides on another triangle, then the triangles are **similar**

↳ means: the 2 Δ's have the same angles & ratios of lengths are =

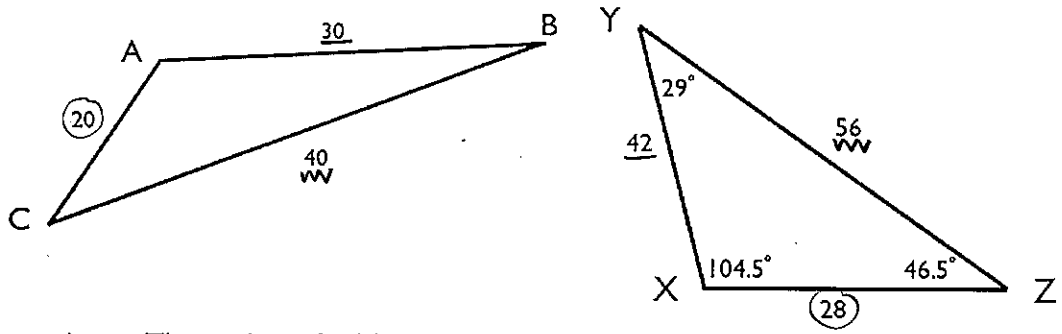
Practice

1. True or False. A triangle with sides 3, 4, and 6 is similar to a triangle with sides 8, 6, and 12.

$\frac{3}{6} = 0.5$, $\frac{4}{8} = 0.5$, & $\frac{6}{12} = 0.5$

TRUE

2. Use the given triangles below with the indicated sides and angle measures.



a) The ratios of which sides are equal?

$\frac{20}{28} = 1.4$, $\frac{30}{42} = 1.4$, & $\frac{40}{56} = 1.4$ } so all 3 sides

b) Are the triangles similar?

Yes, by SSS Similarity Theorem

c) ΔBAC ~ ΔYXZ

d) Give the measure of each angle of ΔABC.

$\angle A = 104.5$, $\angle B = 29°$, $\angle C = 46.5°$

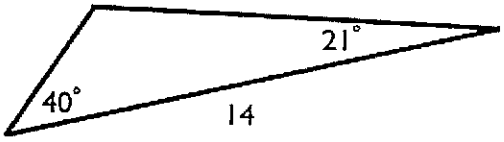
Lesson 13-2: The AA & SAS Similarity Theorem

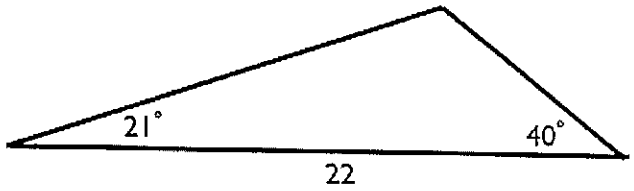
Vocabulary

AA Similarity Theorem: if two angles of one triangle are congruent to two angles of another, then the triangles are similar.

SAS Similarity Theorem: If, in two triangles, the ratios of two pairs of corresponding sides & the included angle are congruent, then the triangles are similar.

Practice





1. Are the two triangles above similar? If so, why?

   Yes, by AA Similarity Theorem

2. What is the magnitude of the dilation?

   $\frac{22}{14} = 1.57$ or $\frac{14}{22} = .64$

3. What is the other angle measure not given?

   119°

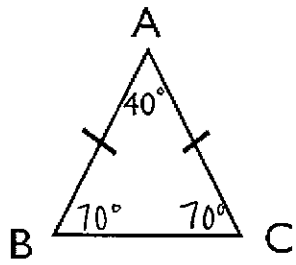
4. A meter stick casts a shadow 70 cm long while a tree casts a shadow 3.4 m long. How tall is the tree?

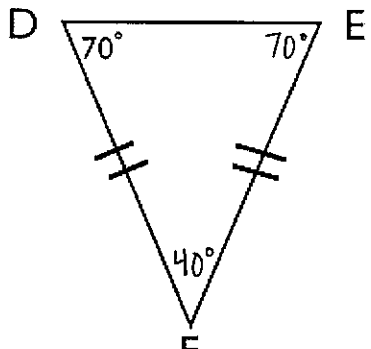
$\frac{1\text{ m}}{.7\text{m}} = \frac{x}{3.4}$

$\frac{.7x}{.7} = \frac{3.4}{.7}$

$x = \boxed{4.86\text{ m}}$

5. Are the following triangles similar? If so, why?





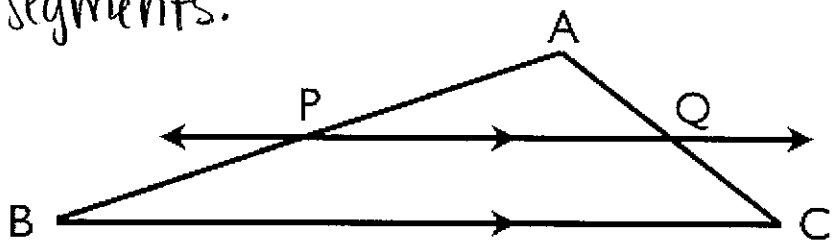
Since they are both isosceles triangles, we know the base angles are equal.

Then, by AA or SAS ~ Thm, the triangles are similar.

Lesson 13-3: The Side Splitting Theorem

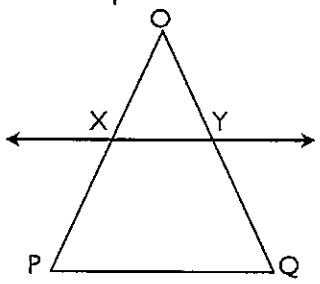
Vocabulary

Side Splitting Theorem: if a line is parallel to a side of a triangle & intersects the other 2 sides in distinct points, it splits these sides into proportional segments.



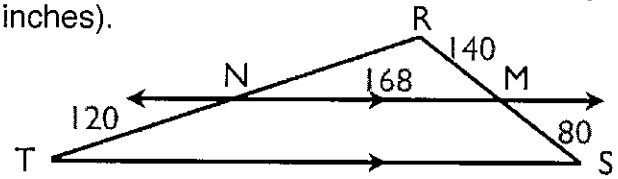
$$\frac{AP}{PB} = \frac{AQ}{QC}$$

Side Splitting Converse Theorem: if a line intersects OP & OQ at points X & Y, so that $\frac{OX}{XP} = \frac{OY}{YQ}$, then XY // PQ



Practice

1. Suppose MN and ST are parallel and split the triangle into lengths as shown below (in inches).



a) Find RN.

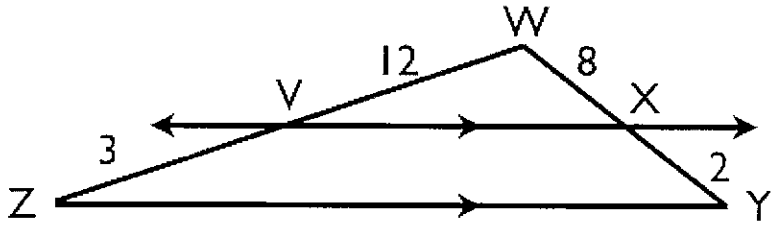
$\frac{RM}{MS} = \frac{RN}{NT}$, $\frac{140}{80} \times \frac{RN}{120} \rightarrow \frac{80 \cdot RN}{80} = \frac{16,800}{80}$, so $\boxed{RN = 210}$

b) Find ST.

$\frac{RM}{RS} = \frac{MN}{ST} \rightarrow \frac{140}{220} \times \frac{168}{ST} \rightarrow \frac{140 \cdot ST}{140} = \frac{36,960}{140}$

$\boxed{ST = 264}$

2. Is XV // YZ? Why or why not?



$$\frac{WX}{XY} = \frac{WV}{VZ}$$

$$\frac{8}{2} = \frac{12}{3}$$

$$4 = 4$$

Since the sides are proportional, by the Side Splitting Theorem $XV \parallel YZ$.