Chapter 7 – Similar Triangles and Trigonometry

7.0 - Beginnings

We will begin our study of trigonometry by looking closely at **Triangles.**

Two Terms you need to know:

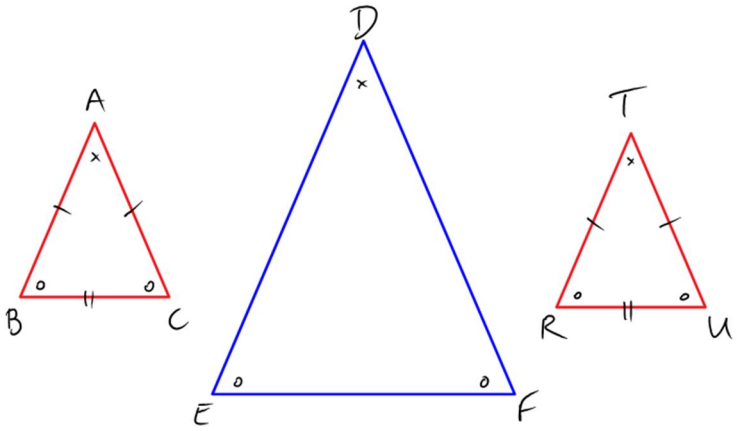
1) **Congruence** means Exact same (angles and sides)

AsA ≅, sAs ≅, sss ≅

2) **Similarity** means same shape (different size)

AA~ (~similarity), SAS~, SSS~ ex. 2, 3, 4 ~ 4, 6, 8 (twice the size)

Consider the triangles:



△ABC ≅ △TRU

★ order is important!

∠A = ∠T
∠B = ∠R
∠C = ∠U

△ABC ~ △DEF

In order to solve problems using triangles we need some technique (mostly algebra skills). For similar triangles, being able to solve proportions (using ratios) is HUGE.

Example 7.0.1: Solve the proportions for x

a) $\left(\frac{x}{3}\right)=\left(\frac{5}{8}\right)$ ×3

$x = \frac{15}{8}$

b) $\frac{5}{x}=\frac{9}{7}$

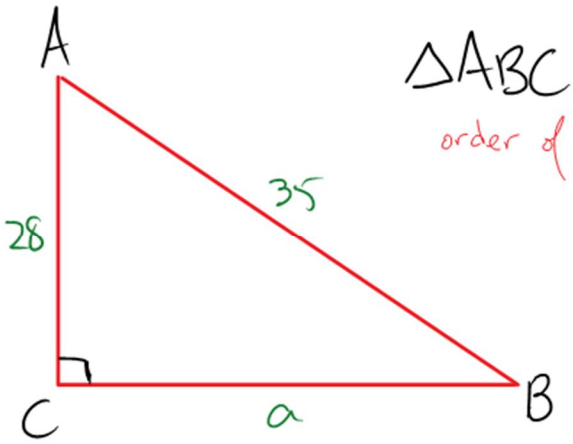
* Cross multiply when the unknown is on the bottom
* Equal sign inbetween

$\frac{9x}{9} = \frac{35}{9}$

$x = \frac{35}{9}$

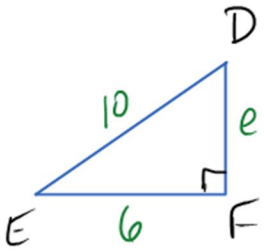
Example 7.0.2

Given the two similar triangles, find a and e.



$\triangle ABC \sim \triangle DEF$ mean $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

order of letters MATTERS!



$6 \times \left(\frac{a}{6}\right) = \left(\frac{35}{10}\right) \times 6$

$a = \frac{210}{10}$

$a = 21$

$28 \times \left(\frac{e}{28}\right) = \left(\frac{10}{35}\right) \times 28$

$e = \frac{280}{35}$

$e = 8$

Class/Homework: Pg. 371 - 372 # 2 – 9 (Ask for help if you need it!)