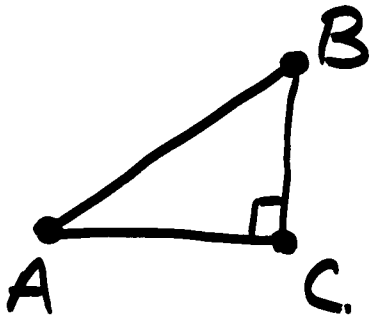
Alg. 1-BE | Monday 3-21-11

① Given $\triangle ABC$



(A.) $\angle A$ and $\angle B$ are complementary, what does that mean?

(B.) If the $m\angle A$ is 30°, what is $m\angle B$?

(C.) If $a = 7$, $c = 12$, $b = ?$

(D.) What is the area of $\triangle ABC$?

- Make up Quiz 1 with missed answers & keep for study and redo if needed.

Comparing Numbers

If x, y are any real numbers:

$$x > y$$
$$x = y$$
$$x < y$$

Comparing "Flat" Shapes

Let $\triangle, \triangle$ be any two flat shapes,

$\not\cong$ NOT SAME SHAPE OR SIZE, NOT CONGRUENT

$\triangle \cong \triangle$ CONGRUENT, EXACTLY THE SAME SHAPE AND SIZE. FIT EXACTLY OVER EACH OTHER.

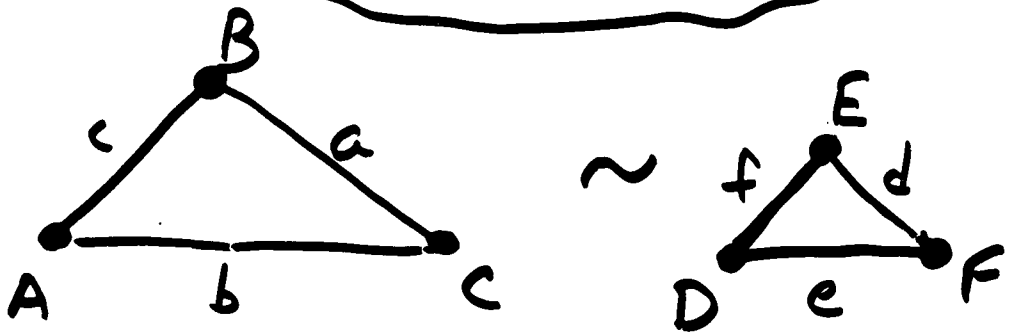
$\sim$ SAME SHAPE, but different size, the sides are proportional to EACH other.

$\sim$ SHAPES ARE SAME
$=$ MEASURES OF SHAPES ARE SAME

Ex) SCALE MODELS or SCALE DRAWINGS (blueprints)

Triangles are named using their vertices, note capital letters.

Vertex ⇒ intersection = singular
Vertices ⇒ plural



Also

$\triangle ABC$	$\sim$	$\triangle DEF$	$m\angle A = m\angle D$
or $\triangle BCA$	$\sim$	$\triangle EFD$	$m\angle B = m\angle E$
or $\triangle CAB$	$\sim$	$\triangle FDE$	$m\angle C = m\angle F$
or $\triangle ACB$	$\sim$	$\triangle DFE$	
or $\triangle CBA$	$\sim$	$\triangle FED$	
or $\triangle BAC$	$\sim$	$\triangle EDF$	

$$\frac{\overline{AB}}{\overline{ED}} = \frac{\overline{BC}}{\overline{EF}} = \frac{\overline{AC}}{\overline{DF}}$$

or $\frac{c}{f} = \frac{a}{d} = \frac{b}{e}$

NOTE:
The cross-products of proportions are equal

The two important facts about similar triangles:

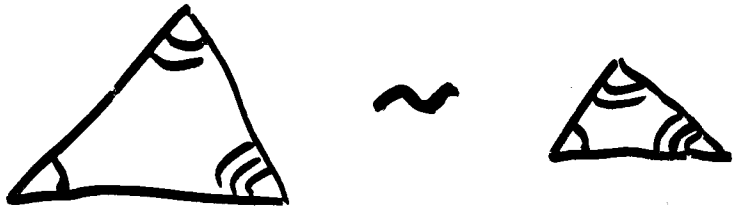
1. the measures of corresponding sides are proportional.
2. the measures of corresponding angles are equal.

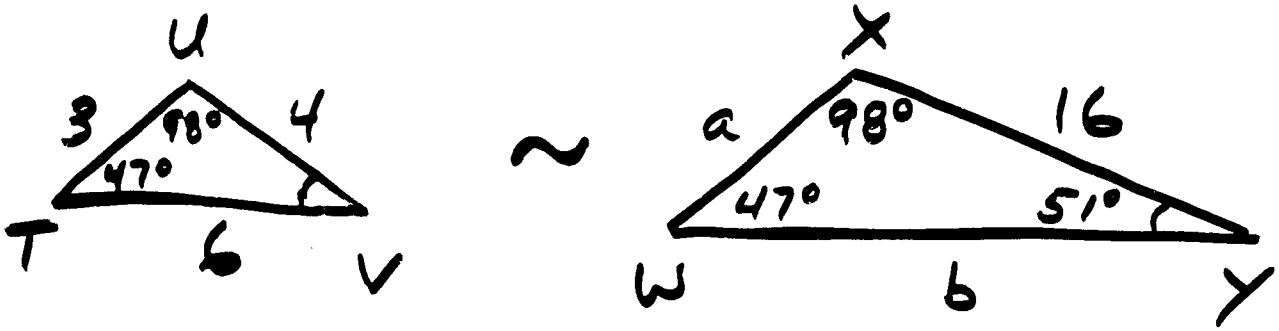
To test if two triangles are similar:

1. if the 3 pairs of corresponding sides are proportional, the Δ's are $\sim$.
2. if the 3 corresponding angles are equal, Δ's are $\sim$.

To show 3 different but correspondingly equal angles:

Ex)





① FIND a

$$\begin{matrix}\text{small} \to 3 \\ \text{large} \to a\end{matrix} = \frac{4 \leftarrow \text{small}}{16 \leftarrow \text{large}} \quad \therefore \quad 4a = 3 \cdot 16$$

$$\boxed{a = 12}$$

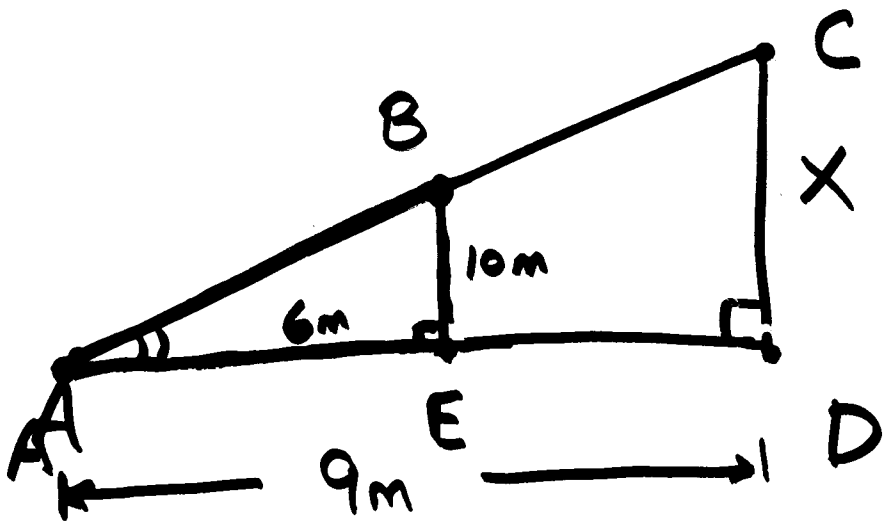
$$\text{or} \quad \begin{matrix}\ell \to a \\ s \to 3\end{matrix} = \frac{16 \leftarrow \ell}{4 \leftarrow s} \quad \therefore \quad 4a = 3 \cdot 16 \quad a = 12 \checkmark$$

② FIND b

$$\frac{6}{b} = \frac{4}{16} \quad \therefore \quad 4b = 6 \cdot 16$$

$$\boxed{b = 24}$$

↑ Ex 2 Pg 617 ↑



Since $m\angle BEA = m\angle CDA = 90°$

AND $m\angle A = m\angle A$ = same for both $\triangle$

$\therefore$ $m\angle ABE = m\angle ACD$ ⇒ only $\angle$ left in both $\triangle$'s, if 2 $\angle$'s are equal, third must be too

$\therefore$ Since ALL the angles in $\triangle ACD = \triangle ABE$

$\triangle ABE \sim \triangle ACD$

Find X

$$\frac{9}{x} = \frac{6}{10} \quad \therefore 6x = 90$$

$$\boxed{x = 15\text{ m}}$$

{Ex 2 Pg 617}

Homework: ① Read Ch 11-6 ② Pg 619 # 11-14 17-19