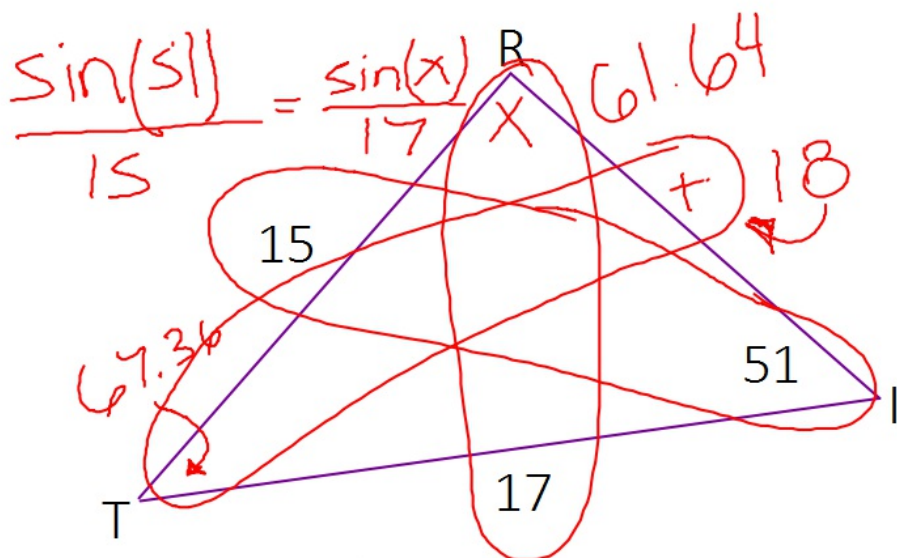


Have video notes homework out on desk please.

Warm up (in notes)

Find all the measures you can.



$$\frac{17 \cdot \sin(51)}{15} = \sin(x)$$

$$0.88 = \sin(x)$$

$$x = \sin^{-1}(0.88)$$

$$x = 61.64$$

How to remember the Law of Cosines

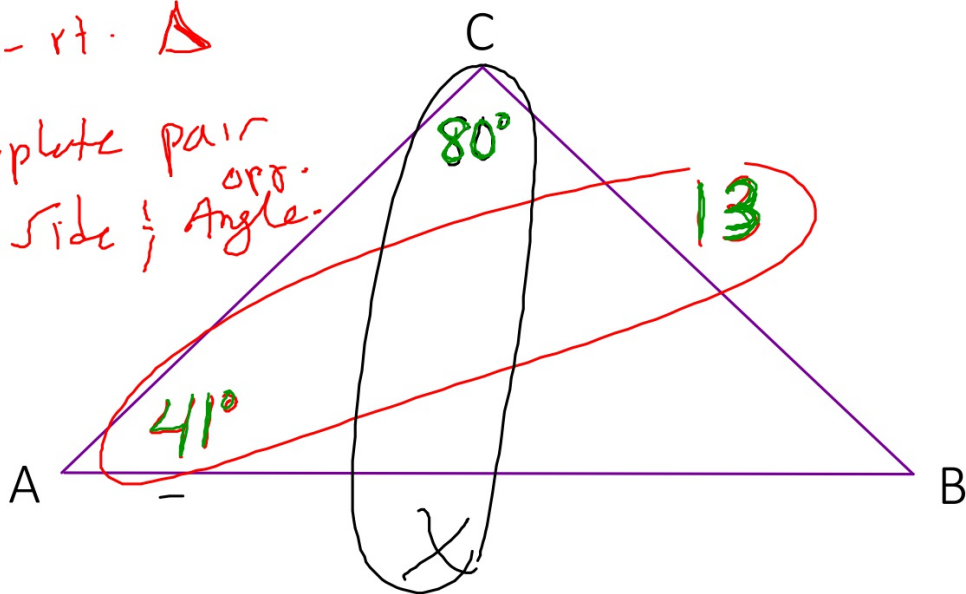
$$* c^2 = b^2 + a^2 - 2ab \cdot \cos C *$$

c b a a b C

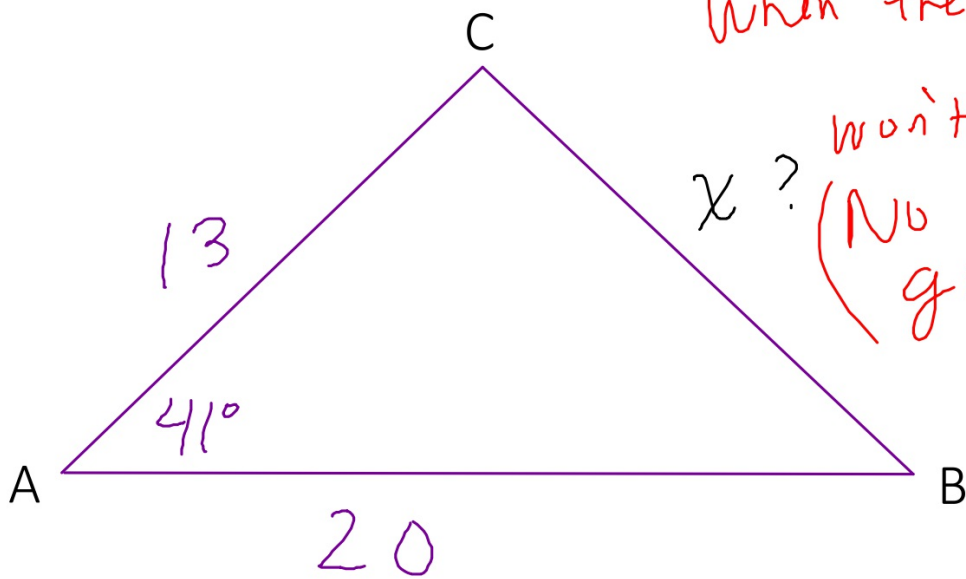
When to use the Law of Sines?

- non-rt. \triangle

- Complete pair
of side & Angle^{opp.}

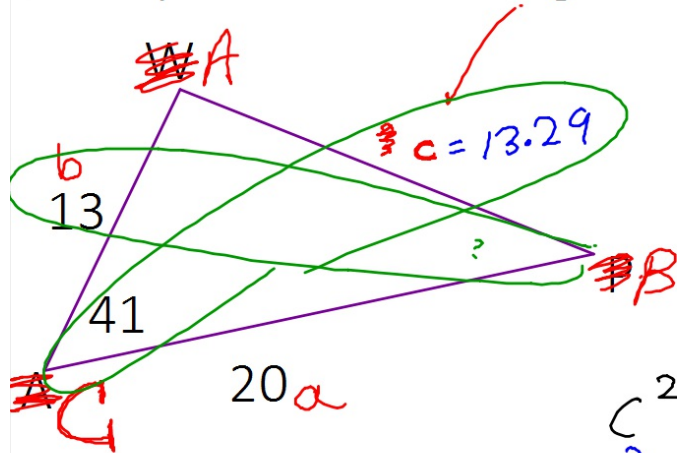


When to use the Law of Cosines?



When the Law of Sines won't work. (No pair given)

Example: Find side length WP



Step 1: Rename the given angle C and opp. side "c".

Step 2: Call the other 2 angles A & B.

$$c^2 = b^2 + a^2 - 2ab \cdot \cos C$$

? 13 20 20 · 13 41°

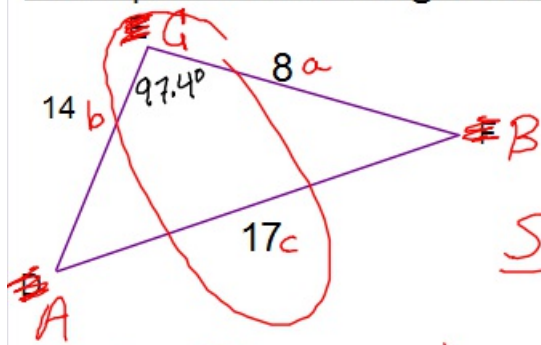
Step 3: Plug & compute.

$$c^2 = 13^2 + 20^2 - 2(20)(13)\cos(41^\circ)$$

$$\sqrt{c^2} = \sqrt{176.55}$$

$$c = 13.29$$

Example: Find all angle measures.



Step 1: Rename the Largest Angle C.
(across from longest side.)

Step 2: Rename the other 2 angles A & B.

Step 3: Plug in what you know.

$$c^2 = b^2 + a^2 - 2ab \cdot \cos C$$

$$17^2 = 14^2 + 8^2 - 2 \cdot 8 \cdot 14 \cdot \cos C$$

$$289 = 196 + 64 - 224 \cdot \cos C$$

$$289 = 260 - 224 \cos C$$

$$\begin{array}{r} -260 \\ \hline 29 = -224 \cos C \end{array}$$

$$\begin{array}{r} 29 = -224 \cos C \\ \hline -224 \quad -224 \\ \hline -0.129 = \cos C \end{array}$$

$$-0.129 = \cos C$$

$$C = \cos^{-1}(-0.129)$$

$$\boxed{C = 97.4^\circ}$$

