ICA - Oct 27th (Thursday)

-HWP- Wednesday *

Test - Nov 4th (Friday)

1. Solve this triangle. Give the measures to the nearest tenth.

7.0 cm

M

K

57.8°

11.0 cm

13.0 cm

x

N
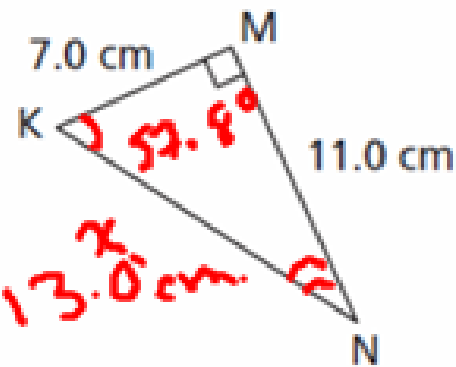
$$x^2 = a^2 + b^2$$
$$x^2 = 7^2 + 11^2$$
$$x^2 = 49 + 121$$
$$\sqrt{x^2} = \sqrt{170}$$
$$x = 13.0 \text{ cm}.$$

$$\angle N = 90° - 57.8°$$
$$\angle N = 32.2°$$

$\angle K.$ $\sin K = \dfrac{\text{opp}}{\text{hyp}}$

$\sin K = \dfrac{11.0}{13.0}$

$K = \sin^{-1}\left(\dfrac{11.0}{13.0}\right)$

$K = 57.8°$

2. Solve this triangle. Give the measures to the nearest tenth where necessary.

11.1 cm.

adj

G

x

opp
9.0 cm

39°

51°

H

y hyp

J
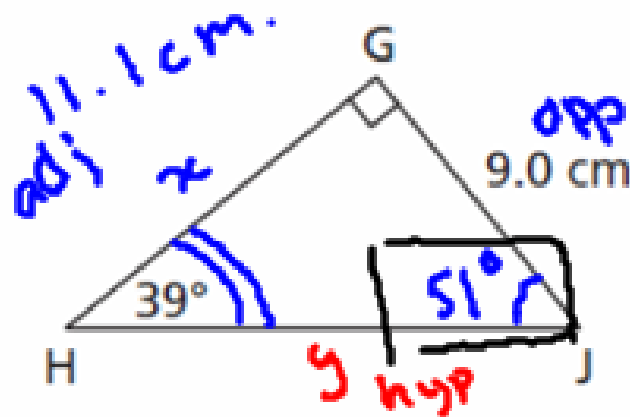
$\tan \theta = \dfrac{opp}{adj}$

$x \cdot \tan 39 = \dfrac{9.0}{x} \cdot x$

$\dfrac{x \cdot \tan 39}{\tan 39} = \dfrac{9.0}{\tan 39.}$

$x = \dfrac{9.0}{\tan 39} = \boxed{11.1 \ cm}$

$\angle J = 90° - 39°$

$\angle J = 51°$

$\cos \theta = \dfrac{adj}{hyp}$

$\cos 39 = \dfrac{11.1}{y}$ $\Rightarrow$ $y = \dfrac{11.1}{\cos 39} = \boxed{14.3 \ cm.}$

The triangle diagram shows:
- hyp, x (right side)
- opp, y, opp (inside)
- $39°$ (left angle)
- 60 (right angle)
- 38, adj. (bottom)

$$\tan \theta = \frac{opp}{adj}$$

$$\tan 39 = \frac{y}{38}$$

$$38 \cdot \tan 39 = y$$

$$30.77 = y$$

$$\sin \theta = \frac{opp}{hyp}$$

$$\sin(60) = \frac{30.77}{x}$$

$$x = \frac{30.77}{\sin(60)} = 35.5$$

Triangle diagram: apex angle labeled, left base angle $39°$, right base angle 60. Left slant side labeled 30.77 (crossed out), right slant side labeled 35.5. Base left segment 38, base right segment x, with a height line to the base and a right angle marked.

$$Area = \frac{bh}{2}$$

$h = 30.77$

$b = 38 + 17.7$

$b = 55.7$

$c^2 = a^2 + x^2$

$35.5^2 - (30.77)^2 = x^2$

$\sqrt{313.4571} = \sqrt{x^2}$

$17.7 \approx x$

$$Area = \frac{(55.7)(30.77)}{2} = 857 \ u^2$$

3. A window has the shape of a regular decagon. The distance from one vertex to the opposite vertex, measured through the centre of the window, is approximately 4 ft. Determine the length of the wood moulding material that forms the frame of the window, to the nearest foot.

4 ft.