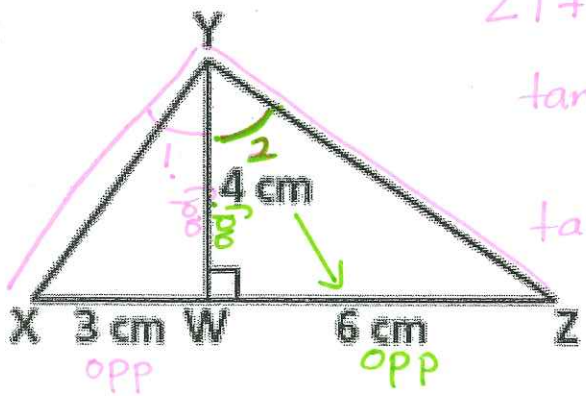
Section 2.7 –Find Angle <XYZ for each problem below:

nearest degree!

a)



opp opp

$\angle 1 + \angle 2 = \angle XYZ$

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

$\tan\angle 1 = \frac{3}{4}$

$\angle 1 = \tan^{-1}\left(\frac{3}{4}\right)$

$\angle 1 = 36.8699$

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

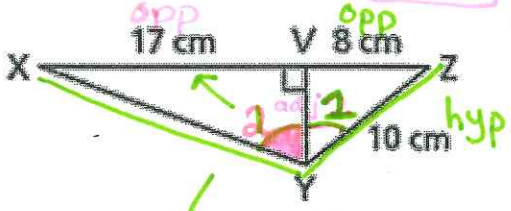
$\tan\angle 2 = \frac{6}{4}$

$\angle 2 = \tan^{-1}\left(\frac{6}{4}\right)$

$\angle 2 = 56.3099$

$\angle XYZ = 36.8699 + 56.3099 =$ 93° nearest degree

b)



opp opp

$\angle 1$:

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

$\sin\angle 1 = \frac{8}{10}$

$\angle 1 = \sin^{-1}\left(\frac{8}{10}\right)$

$\angle 1 = 53.1°$

8, 10

$b^2 = c^2 - a^2$

$b^2 = 10^2 - 8^2$

$b^2 = 100 - 64$

$b^2 = 36$

$b = 6$

$\angle 2$:

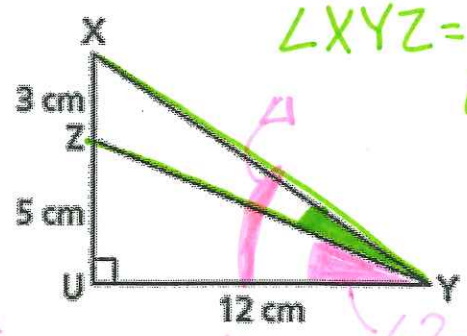
$\tan\theta = \frac{opp}{adj}$

$\tan\angle 2 = \frac{17}{6}$

$\angle 2 = \tan^{-1}\left(\frac{17}{6}\right)$

$\angle 2 = 70.5599...$

c)



opp adj

$\angle XYZ = 53.1 + 70.6$

$\angle XYZ =$ 124° nearest degree

$\angle 1$: $\tan\theta = \frac{opp}{adj}$

$\tan\angle 1 = \frac{8}{12}$

$\angle 1 = \tan^{-1}\left(\frac{8}{12}\right)$

$\angle 1 = 33.6900$

$\angle 2$: $\tan\theta = \frac{opp}{adj}$

$\tan\angle 2 = \frac{5}{12}$

$\angle 2 = \tan^{-1}\left(\frac{5}{12}\right)$

$\angle 2 = 22.6$

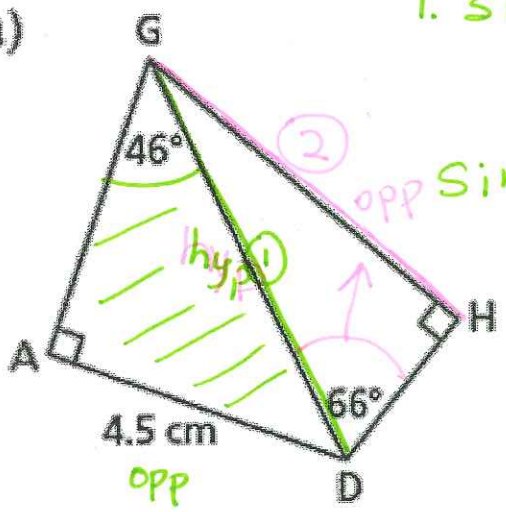
$\angle XYZ = 11°$ (nearest degree)

$\angle XYZ = \angle 1 - \angle 2$

In each quadrilateral, calculate the length of GH to the nearest tenth of a centimetre.

Master

a)



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

$\sin 46 = \frac{4.5}{DG}$

$DG = \frac{4.5}{\sin 46°}$

$DG = 6.25573616$

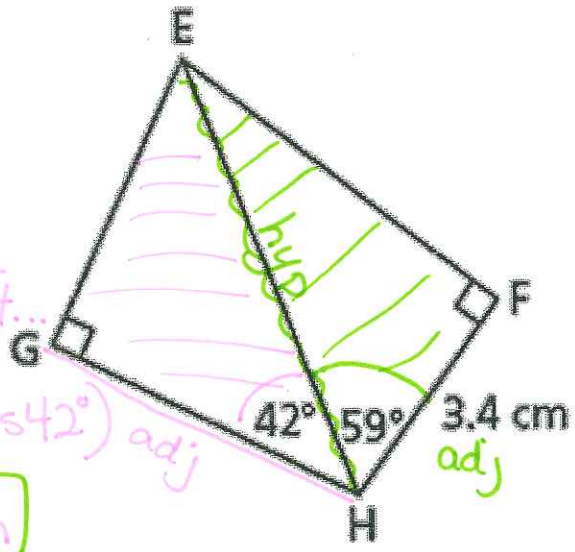
② $\sin\theta = \frac{opp}{hyp}$

$\sin 66° = \frac{GH}{6.25573616}$

$GH = 6.25573616(\sin 66)$

$GH = 5.7$ cm

b)



1. $\cos\theta = \frac{adj}{hyp}$

$\cos 59° = \frac{3.4}{EH}$

$EH = \frac{3.4}{\cos 59°}$

$EH = 6.60145369$

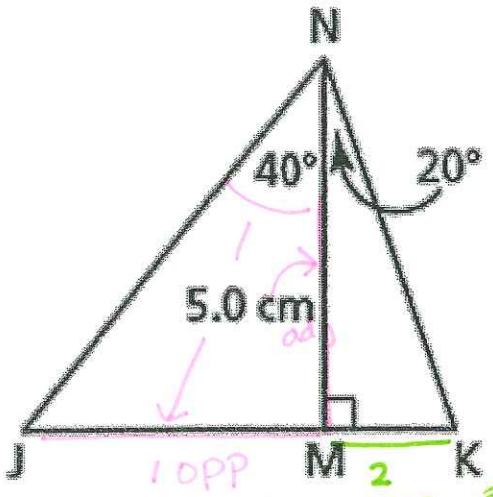
2. $\cos\theta = \frac{adj}{hyp}$

$\cos 42° = \frac{GH}{6.6104...}$

$GH = 6.6104(\cos 42°)$

$GH = 4.9$ cm

2. Determine the length of JK to the nearest tenth. 6.0cm



1 + 2 = JK

① $\tan\theta = \frac{opp}{adj}$

$\tan 40° = \frac{JM}{5}$

$JM = 5(\tan 40°)$

$JM = 4.19549...$

② $\tan\theta = \frac{opp}{adj}$

$\tan 20 = \frac{MK}{5}$

$MK = 5 \cdot \tan 20$

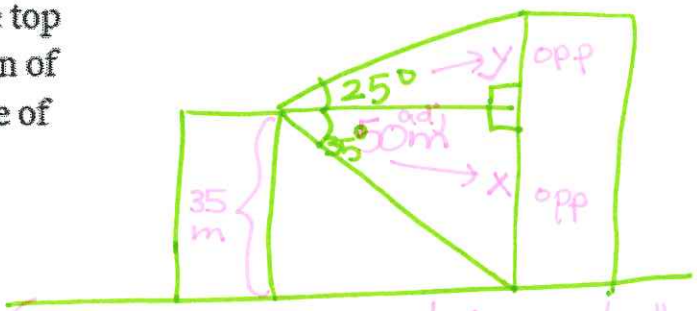
$MK = 1.81985...$

③ $JK = 4.195 + 1.819 =$ 6.0 cm

4.

Draw the diagram for the problem below. Feel free to ask if your drawing is correct before solving.

Two office towers are 50 m apart. From the top of the shorter tower, the angle of depression of the base of the taller tower is 35°. The angle of elevation of the top of this tower is 25°. Determine the height of each tower to the nearest metre.



To find x: (Shorter Building)

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

$\tan 35° = \frac{x}{50}$

$x = 50(\tan 35)$

$x = 35.0104\text{m}$

The short building is 35m tall.

To find y:

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

$\tan 25° = \frac{y}{50}$

$y = 50(\tan 25°)$

$y = 23.31538\text{m}$

x+y = taller building

35.0104 + 23.31538 = 58.3 ~ 58m

The taller building is 58m.

5.

From a window on the second floor of her house, a student measured the angles of depression to the bottom of a tree 40 degrees and elevation to the top of the tree to be 16 degrees.

If she knows she has made the measuresments 16 ft above the ground, what is the horizontal distance between the student and the tree?

The horizontal distance between the student and the tree is 19m.

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

$\tan 40° = \frac{16}{x}$

$x = \frac{16}{\tan 40°}$

$x = 19.068$

Answer:

19ft

Assignments Due TOMORROW!