HOMEWORK QUESTIONS... SOH (CAH) TOA

10.7   6b) $\triangle PQR$; $\angle R = 35°$

$\angle Q = 90°$

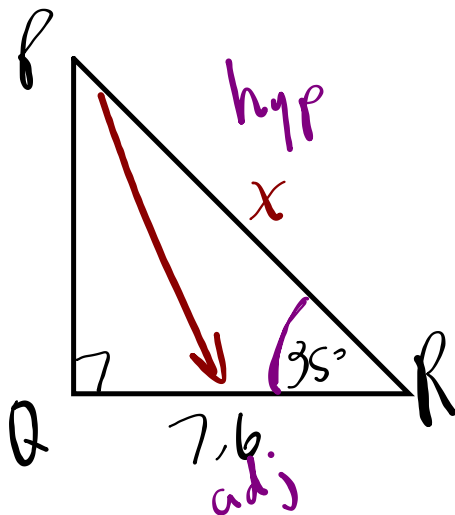$RQ = 7.6$ or $p = 7.6$

$RP = ?$

$\cos 35° = \dfrac{7.6}{X}$

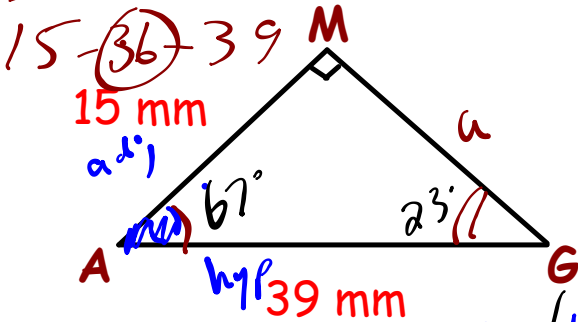$X = \dfrac{7.6}{\cos 35}$

$X = 9.28$

hyp
x

35°

Q   7.6   R
adj

EXAMPLE - Solve the triangle (find ALL sides and angles)

5-12-13

15 - (36) - 39

M

15 mm
adj

67°

23°

A   hyp   39 mm   **G**

a

$a = \sqrt{39^2 - 15^2}$

$\cos^{-1}\cos A = \left(\frac{15}{39}\right)$

$\cos^{-1}\left(\frac{15}{39}\right)$

$a = 36$

$\angle A = 67°$

$\angle G = 23°$

L

adj
$b = 14.639$

I

35°

opp

i hyp   55°

10.25

$\angle B = 55°$

B
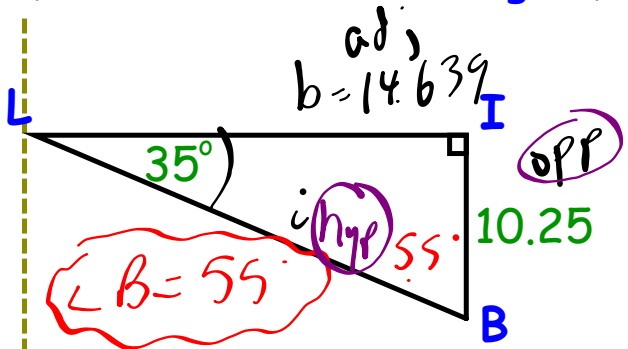
$\tan 35 = \frac{10.25}{b}$

$b = \frac{10.25}{\tan 35}$
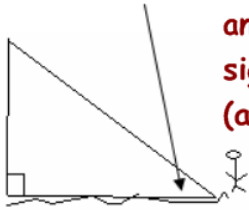
$b = 14.639$

$\sin 35° = \frac{10.25}{i}$

$i = \frac{10.25}{\sin 35}$

$i = 17.870$

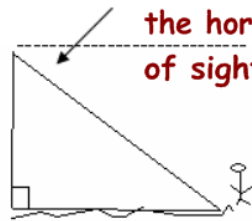## Applications of Right Angle Trigonometry

ANGLE OF ELEVATION/DEPRESSION

Angle of elevation – is the angle between the ground and the line of sight. (angle of inclination)

Always from the GROUND up

Angle of Depression – is the angle between the horizon and the line of sight.

Always outside the triangle

Example 1:

Two trees are 100m apart. From a point on (midway) between them, the angles of elevation to their tops are 8° and 13°. How much taller is one tree than the other?

① $\tan 8° = \dfrac{x}{50}$

$50\tan 8° = x$

$7.0 = x$

② $\tan 13° = \dfrac{y}{50}$

$50\tan 13° = y$

$11.5 = y$

③ $Taller = y - x$

$= 11.5 - 7$

$= 4.5\ m$
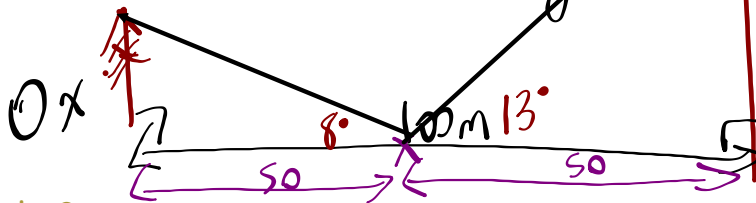
Example 2:

The 8th floor of an apartment building is 25m above the ground. From the 8th floor, the angle of elevation to the top of the other building is 50°. The angle of depression to the base of the taller building is 34°. Determine the height of the taller building.

① $\tan 34° = \dfrac{25}{y}$

$y = \dfrac{25}{\tan 34°}$

$y = 37.1$

② $\tan 50° = \dfrac{x}{37.1}$

$37.1\tan 50° = x$

$44.2 = x$

③ $h = 25 + 44.2$

$h = 69.2\ m$

3

A

Dep

$\angle elev = \angle dep$

Elev
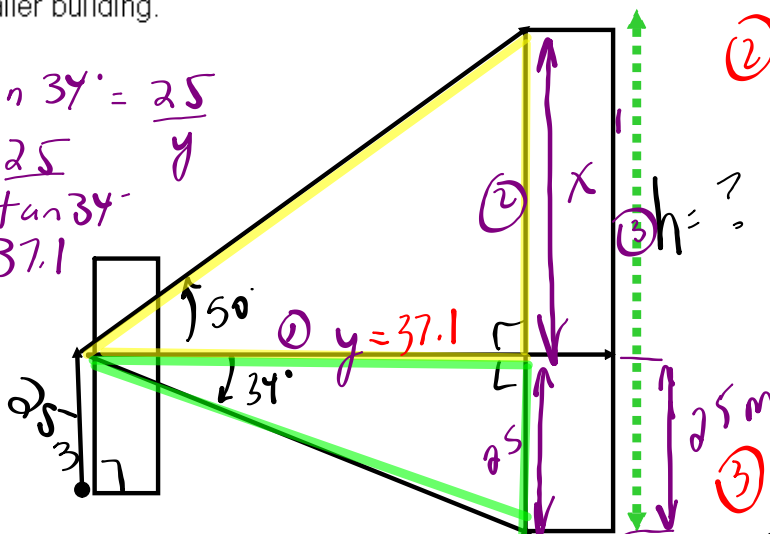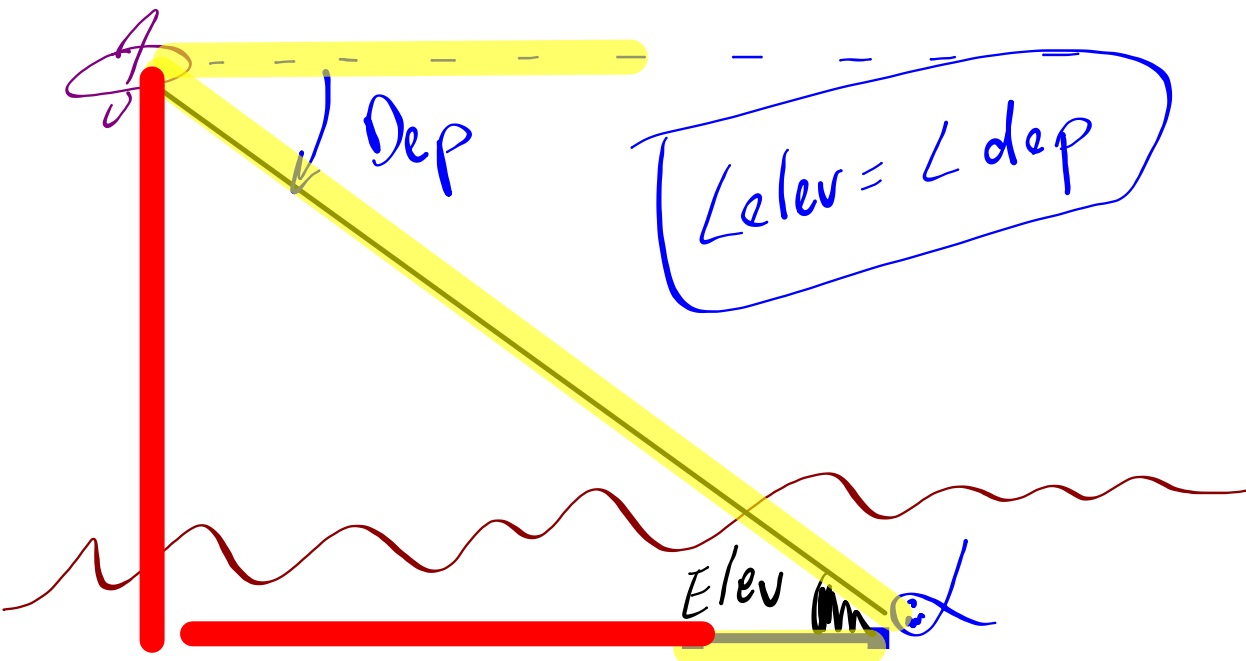
Exercise   HOMEWORK

SOLVE 10.7   #10 , #11 ac , #12 ac

Word Problems 10.8   # 1 , 3-6