SOLVING...

$$\text{SOH} \quad \text{CAH} \quad \text{TOA}$$
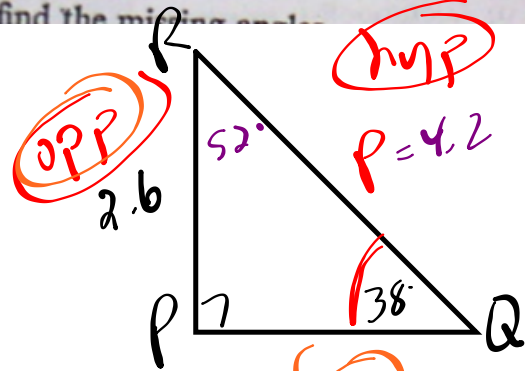
4 For $\triangle PQR$, find the missing sides.
(a) $\angle Q = 90°$, $\angle P = 61°$ $q = 14$.

(b) $\angle P = 90°$, $\angle Q = 38°$ $q = 2.6$.

5 In $\triangle ABC$, find the missing angles.

opp   hyp

2.6 $P = 4.2$

52°

P 38° Q

$\angle R = 90° - 38$
$\angle R = 52°$

$\sin 38° = \dfrac{2.6}{P}$

$P = \dfrac{2.6}{\sin 38°}$

$P = 4.2$
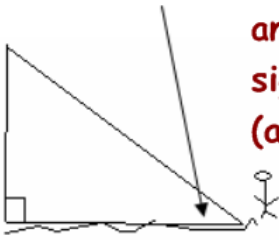
adj

$\tan 38° = \dfrac{2.6}{r}$

$r = \dfrac{2.6}{\tan 38°}$

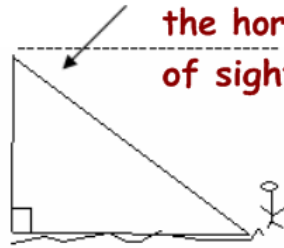$r = 3.3$

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.
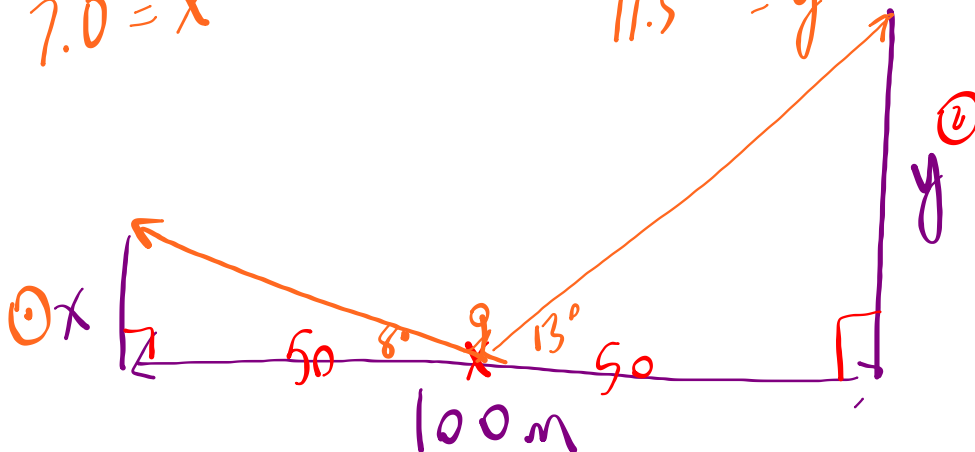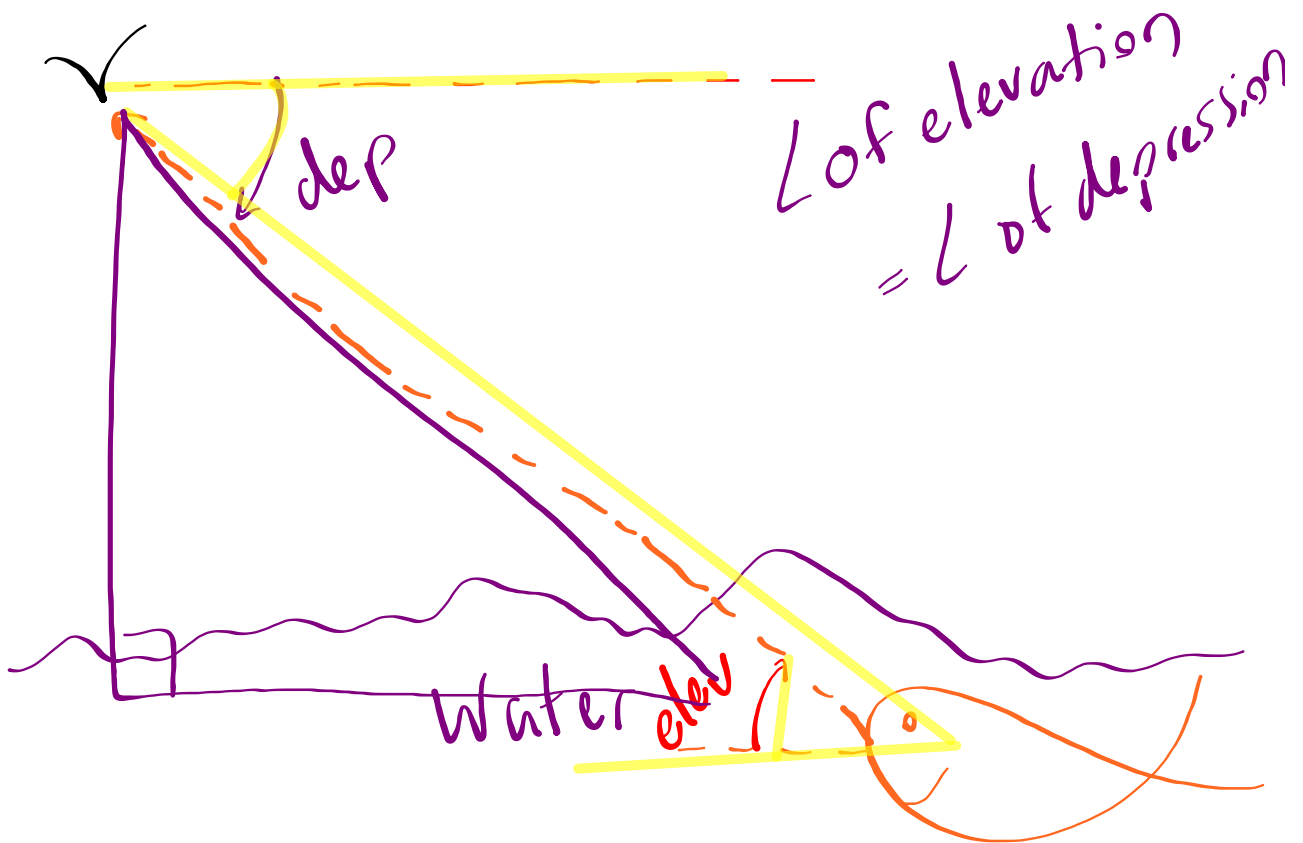
Always outside the triangle

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 $\tan 8° = \dfrac{x\,(50)}{50}$

$7.0 = x$
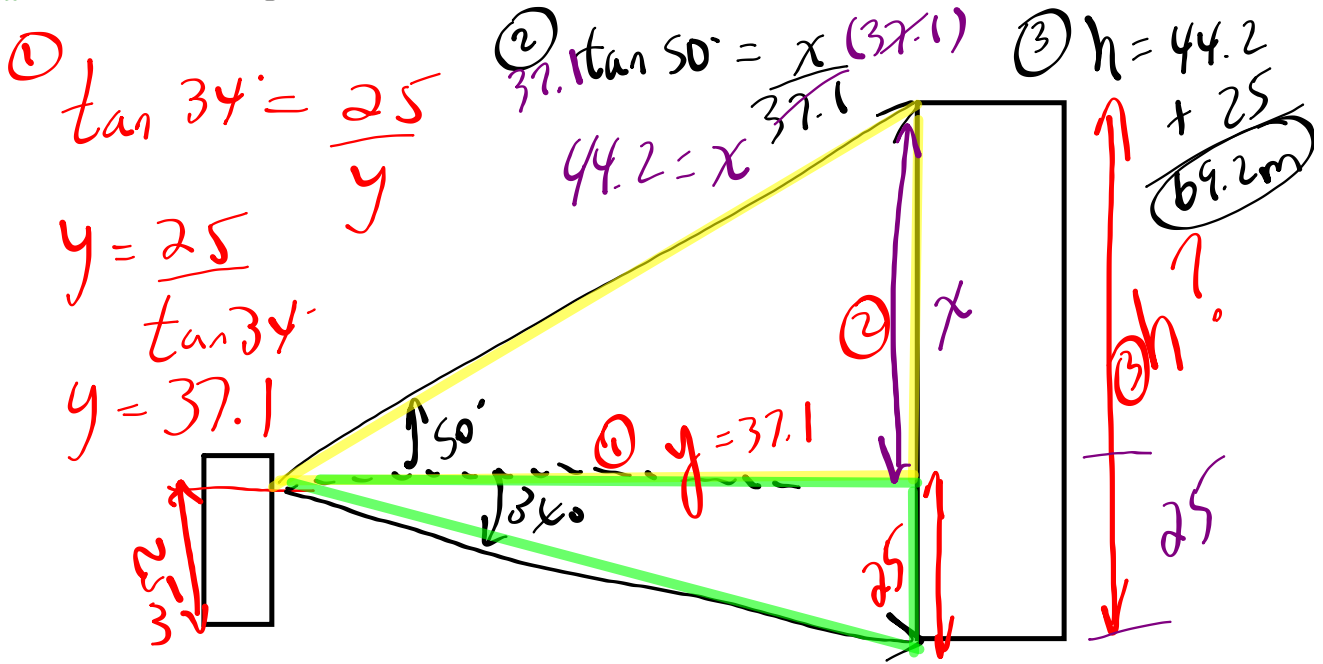
② $\tan 13° = \dfrac{y\,(50)}{50}$

$11.5 = y$

③ $\quad 11.5$
$\quad\, -7.0$
$\quad\; \boxed{4.5\,m}$

∠ of elevation
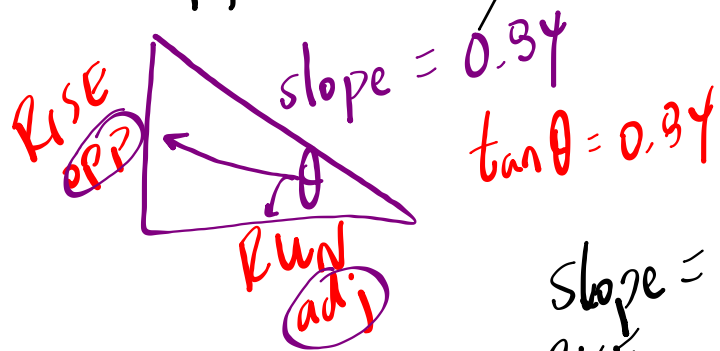= ∠ of depression

dep

Water elev

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 $37.1 \tan 50° = \dfrac{x}{37.1} (37.1)$

$44.2 = x$

③ $h = 44.2 + 25$

$\boxed{69.2m}$

$50°$

① $y = 37.1$

$34°$

② x

③ $h = ?$

25

25

$34°$

HW: 10.7 (Solving): #4a, #5a, #6

10.8 (Application): #1 - 6

slope = 0.84

$\tan \theta = 0.84$

RISE / opp

RUN / adj

slope = 0.84

$\dfrac{RISE}{RUN} = 0.84$

$\dfrac{opp}{adj} = 0.84$

$\tan \theta = 0.84$