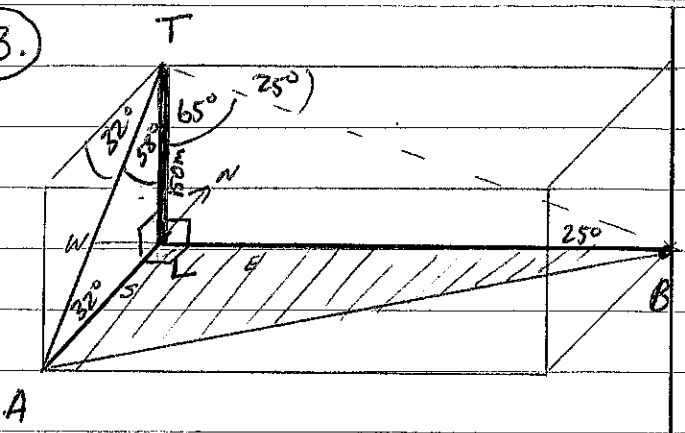
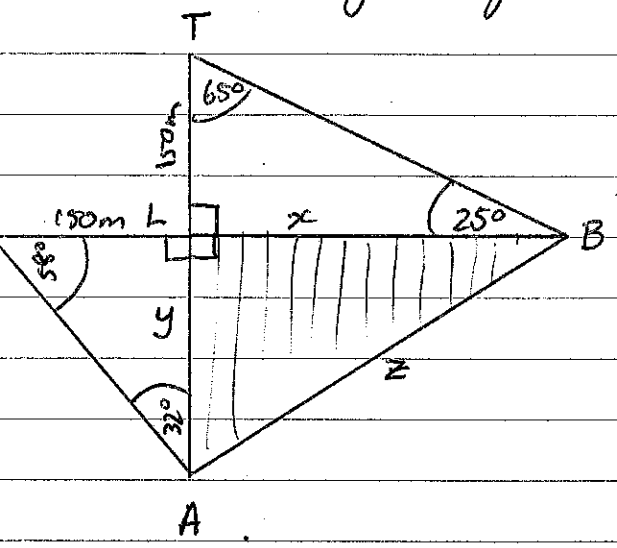
EX 1.6 #1

3.)



There are 3 right angled Δ's.



i ΔTLB

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

$\tan 25° = \frac{150}{x}$

$x = \frac{150}{\tan 25°}$

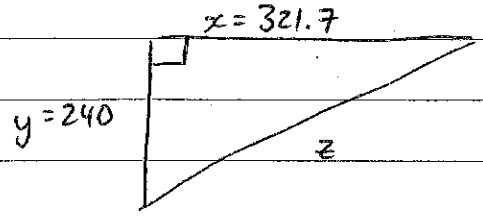
$= 321.7\ m.$

i ΔTLA

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

$\tan 58° = \frac{y}{150}$

We now have.



$z^2 = y^2 + x^2$

$= 240^2 + 321.7^2$

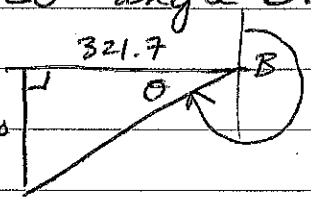
$= 161090$

$z = 401$

∴ distance between boats is 401 m ✓

b) Bearing of 2nd boat from first means bearing of A from B.

NEED angle B.



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

$\tan\theta = \frac{240}{321.7}$

$\theta = \tan^{-1}(0.746)$

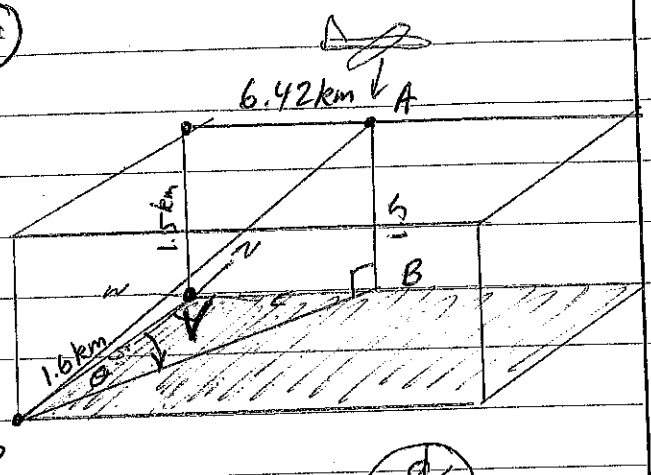
$= 36.7°$

∴ bearing is $270° - 36.7°$

$= 233°T$ ✓

EX 1.6 #2

(4)



d
s t

$d = s \times t$.

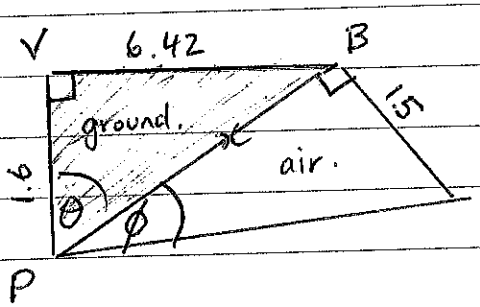
$385 \frac{km}{h}$

dist = speed x time

$= 385 \frac{km}{hr} \times (1/60)\,hr$

$= 6.42$ km

We have 2 connected Δ's.



θ is angle on ground Δ.

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

$\tan\theta = \frac{6.42}{1.6}$

$\theta = \tan^{-1}(4.0125)$

$= 76°$

Bearing of airplane from person is 076°T / (N76° E)

ϕ is angle of elevation

need another side to solve.

$x^2 = 1.6^2 + 6.42^2$

$= 43.8$

$x = 6.6$

now $\tan\phi = \frac{opp}{adj}$

$\tan\phi = \frac{1.5}{6.6}$

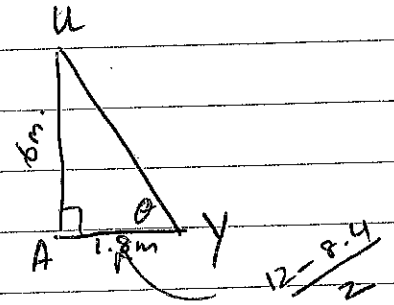
$\phi = \tan^{-1}(0.2273)$

$= 12.8°$

So angle of elevation is 12.8° ✓

(8)

a)



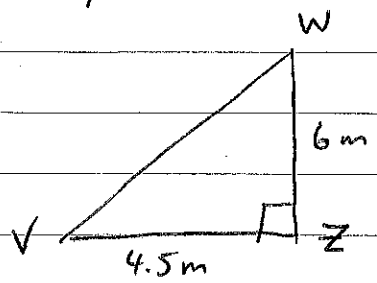
$\tan\theta = \frac{opp}{adj}$

$\tan\theta = \frac{6}{1.8}$

$\theta = 73.3°$ ✓

EX 1.6 #3

8b) rafter VW



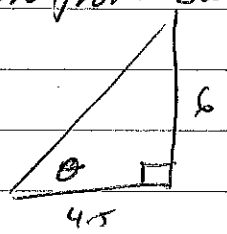
$z^2 = w^2 + v^2$

$= 4.5^2 + 6^2$

$z = 7.5$ ✓

Rafter is 7.5 m long

8c) Also from same Δ above.



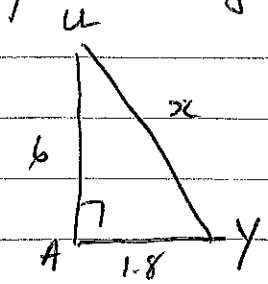
$\tan\theta = \frac{opp}{adj}$

$\tan\theta = \frac{6}{4.5}$

$\theta = 53.1°$ ✓

∴ Angle of sloping roof is 53.1°

8d) from triangle in part (a)



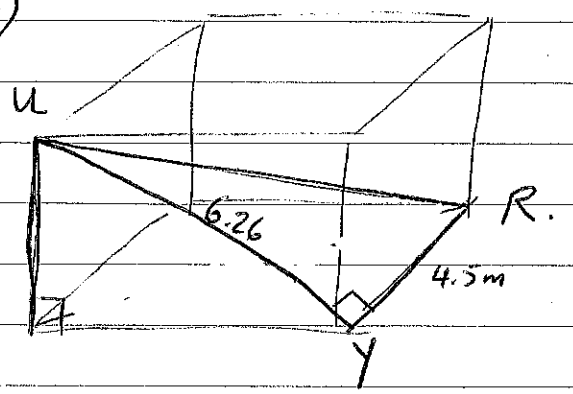
$x^2 = u^2 + y^2$

$= 6^2 + 1.8^2$

$x = 6.26$

So length of rafter UY is 6.26 m. ✓

8e)



$UR^2 = 6.26^2 + 4.5^2$

$= 58.7$

$UR = 7.66$

≈ 7.7 ✓

So length of UR is 7.7m

This whole question is about right angled triangles. Only draw the ones you need.