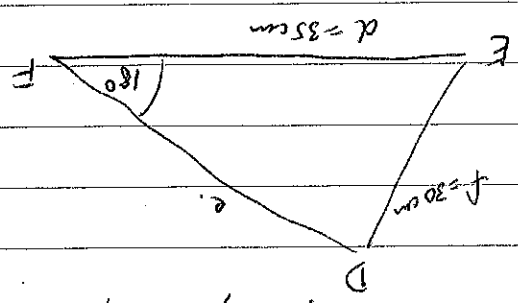


EX 1.3

5) $\triangle DEF$ $f=30$, $d=35$, $F=18^\circ$



$$\frac{\sin D}{d} = \frac{\sin F}{f}$$

$$\frac{\sin D}{35} = \frac{\sin 18^\circ}{30}$$

$$\sin D = \frac{35 \sin 18^\circ}{30}$$

$$= 0.3605$$

$$D = \sin^{-1}(0.3605)$$

$$= 21.13^\circ \text{ or } 158.8^\circ$$

$\triangle 1$

$$d = 35 \text{ cm}$$

$$e = ? \quad 61.2 \text{ cm}$$

$$D = 21.13^\circ$$

$$f = 30 \text{ cm} \quad F = 18^\circ$$

$$E = 180^\circ - 21.13^\circ - 18^\circ$$

$$= 140.9^\circ$$

$$\frac{e}{\sin E} = \frac{f}{\sin F}$$

$$\frac{e}{\sin 140.9^\circ} = \frac{30}{\sin 18^\circ}$$

$$e = \frac{30 \sin 140.9^\circ}{\sin 18^\circ} = 61.2 \text{ cm}$$

$\triangle 2$

$$d = 35 \text{ cm}$$

$$e = ? \quad 5.25 \text{ cm}$$

$$D = 158.9^\circ$$

$$f = 30 \text{ cm} \quad F = 18^\circ$$

$$E = 180^\circ - 158.9^\circ - 18^\circ$$

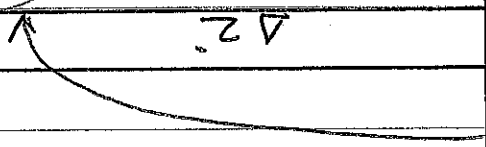
$$= 3.1^\circ$$

$$\frac{e}{\sin E} = \frac{f}{\sin F}$$

$$\frac{e}{\sin 3.1^\circ} = \frac{30}{\sin 18^\circ}$$

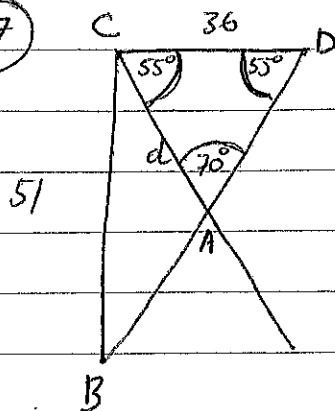
$$e = \frac{30 \sin 3.1^\circ}{\sin 18^\circ} = 5.25 \text{ cm}$$

- One you have used sine rule to find an angle, check to see if $180^\circ - \theta$ will also fit in triangle.
- This is ambiguous case
- split triangle solution into two columns as below.



EX 1.3

MPS (7)



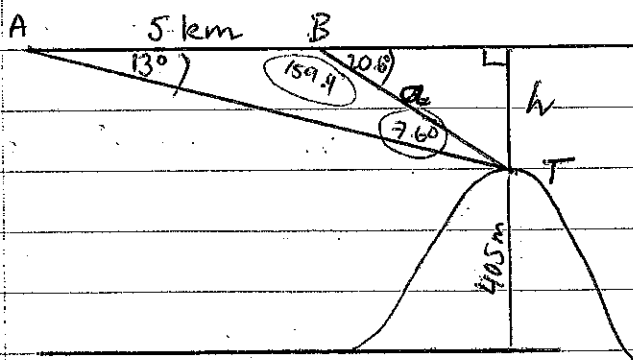
$$\frac{d}{\sin D} = \frac{a}{\sin A}$$

$$\frac{d}{\sin 55^\circ} = \frac{36}{\sin 70^\circ}$$

$$d = \frac{36 \sin 55^\circ}{\sin 70^\circ} = 31.4 \text{ cm}$$

∴ Distance from seat to join is 31.4 cm

MPS (10)



distance travelled

$$\frac{150 \text{ km}}{\text{hr}} \times \frac{2 \text{ hr}}{60}$$

$$= 5 \text{ km}$$

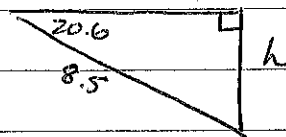
In $\triangle ABT$

$$\frac{t}{\sin T} = \frac{a}{\sin A}$$

$$\frac{5}{\sin 7.6^\circ} = \frac{a}{\sin 13^\circ}$$

$$a = \frac{5 \sin 13^\circ}{\sin 7.6^\circ} = 8.5 \text{ km}$$

In Right triangle



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

$$\sin 20.6 = \frac{h}{8.5}$$

$$h = 8.5 \sin 20.6 = \underline{\underline{3 \text{ km}}}$$

Answers say 2992m method OK

a) height above hill is 3 km (3000 m)

b) Altimeter should read 3405 m so it is definitely wrong.

She's lower than she thinks!