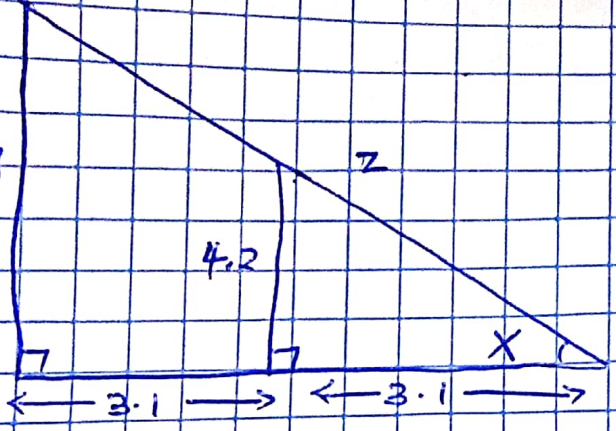
1.



$$\tan X = \frac{\text{opp}}{\text{adj}} = \frac{4.2}{3.1}$$

$$X = \tan^{-1}\left(\frac{4.2}{3.1}\right) = 53.57^\circ$$

$$\tan(53.57^\circ) = \frac{y}{6.2}$$

$$y = 6.2\tan(53.57^\circ)$$
$$= 8.4 \text{ cm}$$

$$\cos(53.57^\circ) = \frac{6.2}{z}$$

$$z = \frac{6.2}{\cos(53.57^\circ)} = 10.4 \text{ cm}$$

2. $AC = \sqrt{AB^2 + BC^2}$

$$= \sqrt{8^2 + 6^2} = 10 \text{ cm}$$

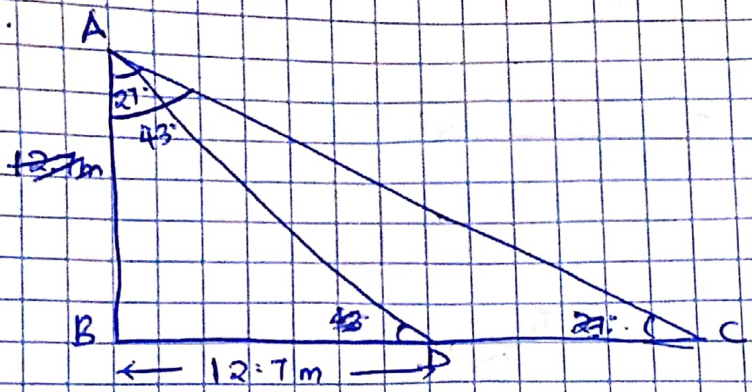
$$AG = \sqrt{AC^2 + CG^2}$$

$$= \sqrt{10^2 + 5^2} = 11.2 \text{ cm}$$

$$\tan\theta = \frac{5}{10}$$

$$\theta = \tan^{-1}(0.5) = 26.57^\circ$$

3.



$$\tan 27^\circ = \frac{BD}{AB} = \frac{12.7}{AB}$$

$$AB = \frac{12.7}{\tan 27^\circ} = 24.93\ m$$

$$\tan 43^\circ = \frac{BC}{AB} = \frac{BC}{24.93}$$

$$BC = 24.93 \tan 43^\circ$$

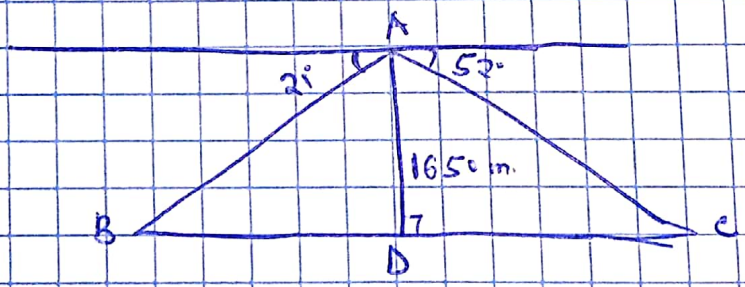
$$= 23.25\ m$$

$$DC = BC - BD = 23.25 - 12.7$$

$$= 10.55\ m$$

$$= 10.6\ m.$$

4.



$\angle BAD = 90 - 21 = 69^\circ$

$\angle CAD = 90 - 52 = 38^\circ$

$$\tan 69^\circ = \frac{BD}{AD} = \frac{BD}{1650}$$

$$\tan 38^\circ = \frac{CD}{1650}$$

$$BD = 1650 \tan 69^\circ$$

$$= 4298.4\ m$$

$$CD = 1650 \tan 38^\circ$$

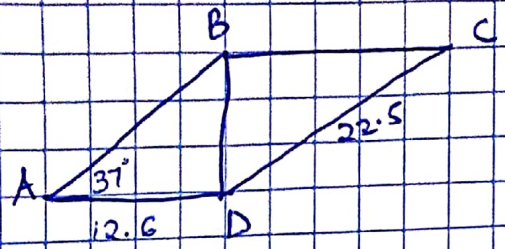
$$= 1289.12\ m$$

$$BC = BD + CD = 4298.4 + 1289.12$$

$$= 5587.52\ m$$

$$= 5587.5\ m$$

5.



$\angle B = 90 - 37 = 53°$

$\tan 37° = \frac{BD}{12.6}$

$BD = 12.6 \tan(37°) = 9.5 \text{ cm}$

$\cos 37° = \frac{12.6}{AB}$

$AB = \frac{12.6}{\cos 37} = 15.8 \text{ cm}$

$\sin D = \frac{BD}{CD} = \frac{9.5}{22.5}$

$\sin D = D = \sin^{-1}\left(\frac{9.5}{22.5}\right)$

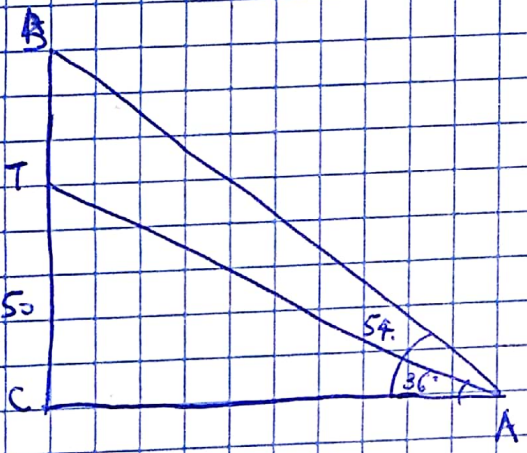
$\angle D = 25°$

$\angle C = 90 - 25 = 65°$

$BC = \sqrt{22.5^2 - 9.5^2}$

$= 20.4 \text{ cm}$

6



$\tan 36 = \frac{150}{AC}$

$AC = \frac{150}{\tan 36} = 206.46 \text{ m}$

$\cos 54° = \frac{206.46}{AB}$

$AB = \frac{206.46}{\cos 54°} = 351.25 \text{ m}$ = distance of point B from A

7. 123 - 45 - 67 + 89 = 100