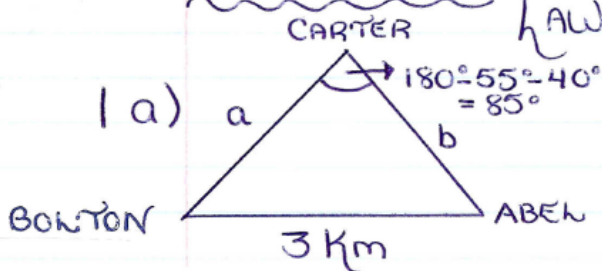


SOLUTIONS \Rightarrow Solving Problems Using The
LAW OF SINES & COSINES.



\Rightarrow To find Carter to Bolton \Rightarrow To find Carter to Abel

$$\frac{a}{\sin A} = \frac{c}{\sin C}$$

$$\frac{a}{\sin 55^\circ} = \frac{3}{\sin 85^\circ}$$

$$a \sin 85^\circ = 3 \sin 55^\circ$$

$$a = \frac{3(0.8192)}{0.9962}$$

$$a = 2.5 \text{ km}$$

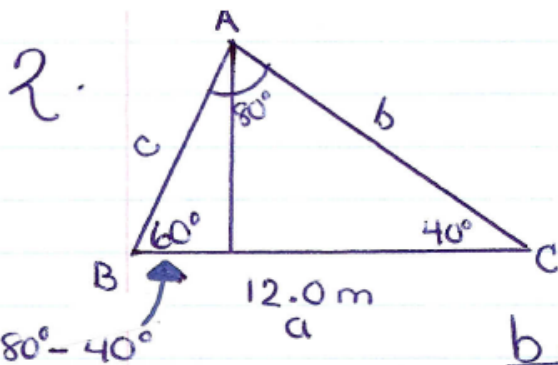
$$\frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{b}{\sin 40^\circ} = \frac{3}{\sin 85^\circ}$$

$$b \sin 85^\circ = 3 \sin 40^\circ$$

$$b = \frac{3(0.6428)}{0.9962}$$

$$b = 1.9 \text{ km}$$



To find c:

$$\frac{c}{\sin C} = \frac{a}{\sin A}$$

$$\frac{c}{\sin 40^\circ} = \frac{12.0}{\sin 80^\circ}$$

$$\frac{c \sin 80^\circ}{\cancel{\sin 80^\circ}} = \frac{12.0 \sin 40^\circ}{\sin 80^\circ}$$

$$c = \frac{12.0(0.6428)}{0.9848}$$

$$c = 7.8 \text{ m}$$

To find b:

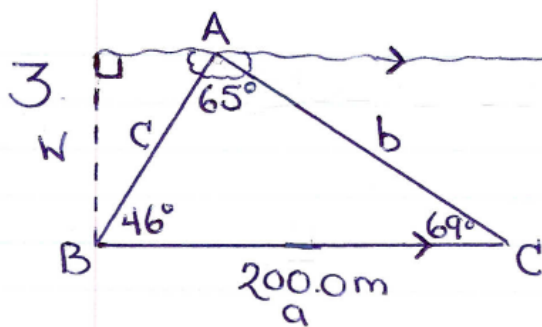
$$\frac{b}{\sin B} = \frac{a}{\sin A}$$

$$\frac{b}{\sin 60^\circ} = \frac{12.0}{\sin 80^\circ}$$

$$\cancel{b \sin 80^\circ} = \frac{12.0 \sin 60^\circ}{\sin 80^\circ}$$

$$b = \frac{12.0(0.8660)}{0.9848}$$

$$b = 10.6 \text{ m}$$

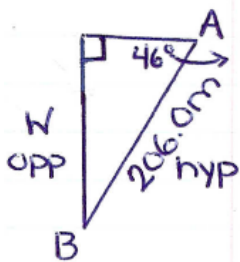


First, we need to find $\angle A$ and c :

$$\angle A = 180^\circ - 69^\circ - 46^\circ$$

$$\angle A = 65^\circ$$

Now we have:



By Alternate Angles

$$\sin 46^\circ = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 46^\circ = \frac{W}{206.0}$$

$$206.0 \sin 46^\circ = W$$

$$206.0 (0.7193) = W$$

$$148.2 \text{ m} = W$$

$$\frac{c}{\sin C} = \frac{a}{\sin A}$$

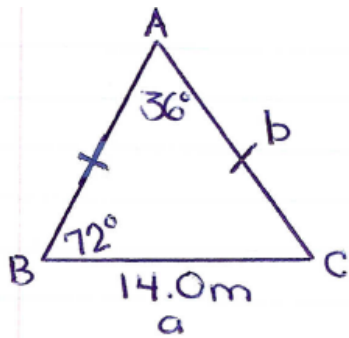
$$\frac{c}{\sin 69^\circ} = \frac{200.0}{\sin 65^\circ}$$

$$\frac{c \sin 65^\circ}{\sin 65^\circ} = \frac{200.0 \sin 69^\circ}{\sin 65^\circ}$$

$$c = \frac{200.0 (0.9336)}{0.9063}$$

$$c = 206.0 \text{ m}$$

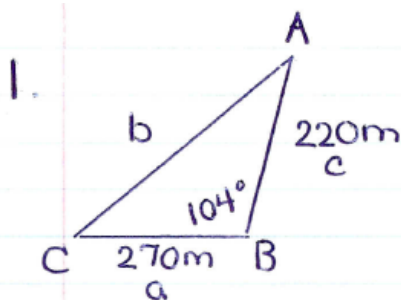
4.



First, we need to find $\angle B$:

$$\begin{aligned}\angle B &= \frac{180^\circ - 36^\circ}{2} \\ &= \frac{144^\circ}{2} \\ &= 72^\circ\end{aligned}$$

$$\begin{aligned}\frac{b}{\sin B} &= \frac{a}{\sin A} \\ \frac{b}{\sin 72^\circ} &= \frac{14.0}{\sin 36^\circ} \\ b \sin 36^\circ &= \frac{14.0 \sin 72^\circ}{\sin 36^\circ} \\ b &= \frac{14.0(0.9511)}{0.5878} \\ b &= 22.7\text{m}\end{aligned}$$



$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$b^2 = (270)^2 + (220)^2 - 2(270)(220)\cos 104^\circ$$

$$b^2 = 72900 + 48400 - 118800(-0.2419)$$

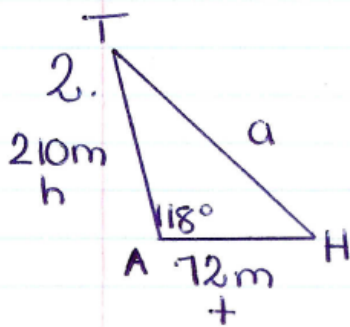
$$b^2 = 121300 + 28737.72$$

$$b^2 = 150037.72$$

$$b = 387.4 \text{ m}$$

$$\text{Perimeter} = 270 \text{ m} + 220 \text{ m} + 387.4 \text{ m}$$

$$= 877.4 \text{ m}$$



$$a^2 = h^2 + t^2 - 2ht \cos A$$

$$a^2 = (210)^2 + (72)^2 - 2(210)(72)\cos 118^\circ$$

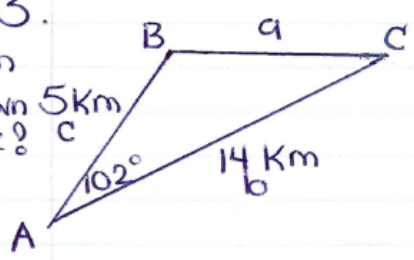
$$a^2 = 44100 + 5184 - 30240(-0.4695)$$

$$a^2 = 49284 + 14197.68$$

$$a^2 = 63481.68$$

$$a = 252.0 \text{ m}$$

* 3.
Diagram
NOT drawn
to scale?



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = (14)^2 + (5)^2 - 2(14)(5) \cos 102^\circ$$

$$a^2 = 196 + 25 - 140(-0.2079)$$

$$a^2 = 221 + 29.106$$

$$a^2 = 250.106$$

$$a = 15.8 \text{ Km or } \underline{\underline{16 \text{ Km}}}$$



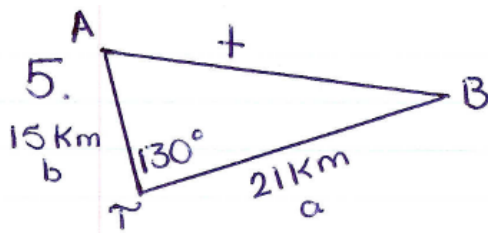
$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = (27)^2 + (30)^2 - 2(27)(30) \cos 90^\circ$$

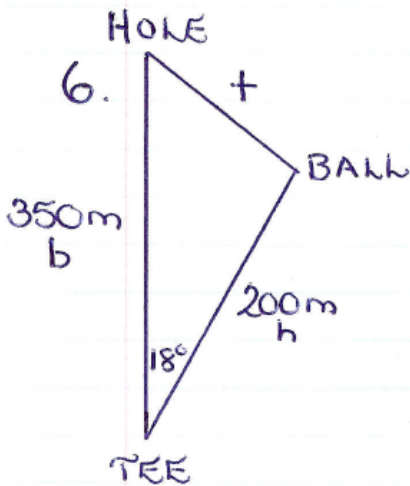
$$a^2 = 729 + 900 - 1620(0)$$

$$a^2 = 1629$$

$$a = 40.4 \text{ m.}$$



$$\begin{aligned}
 +^2 &= a^2 + b^2 - 2ab \cos T \\
 +^2 &= (21)^2 + (15)^2 - 2(21)(15) \cos 130^\circ \\
 +^2 &= 441 + 225 - 630(-0.6428) \\
 +^2 &= 666 + 404.9640 \\
 +^2 &= 1070.9640 \\
 + &= 32.7 \text{ Km}
 \end{aligned}$$



$$\begin{aligned}
 +^2 &= h^2 + b^2 - 2hb \cos T \\
 +^2 &= (200)^2 + (350)^2 - 2(200)(350) \cos 18^\circ \\
 +^2 &= 40000 + 122500 - 140000(0.9511) \\
 +^2 &= 162500 - 133154 \\
 +^2 &= 29346 \\
 + &= 171.3 \text{ m or } \underline{\underline{171 \text{ m}}}
 \end{aligned}$$