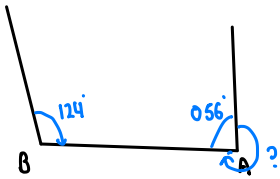

1 2
3 4
5 6
7 8
9 0
Bearing

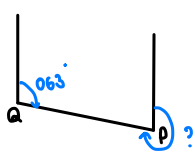
1. The bearing of village A from village B is 124°
   Find the bearing of village B from village A.



$180^\circ - 124^\circ = 056^\circ$

$360^\circ - 056^\circ = 304^\circ$

2. The bearing of P from Q is 063°
   Calculate the bearing of Q from P



$180^\circ - 063^\circ = 117^\circ$

$360^\circ - 117^\circ = 243^\circ$

3.

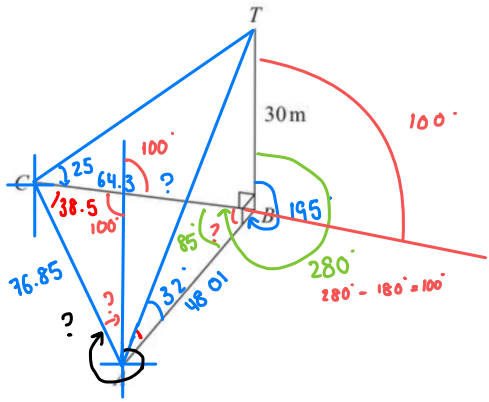


Figure 3 shows three points A, B and C on horizontal ground.
A vertical mast BT of height 30m is at point B.

The angle of elevation of T from A is 32°
The angle of elevation of T from C is 25°

The bearing of A from B is 195°
The bearing of C from B is 280°

Calculate the bearing, in degrees to the nearest degree, of C from A.

$\tan 32 = \frac{O}{A}$

$\tan 32 = \frac{30}{AB}$

$AB = \frac{30}{\tan 32} = 48.01\text{ m}$

$CB = \frac{30}{\tan 25} = 64.3\text{m}$

$\angle CBA = 280^\circ - 195^\circ$
$= 85^\circ$

$AC^2 = 48.01^2 + 64.34^2 - 2 \times (48.01)(64.34)\cos 85^\circ$

$AC = 76.85\text{ m}$

$\frac{\sin \angle CAB}{64.34} = \frac{\sin 85^\circ}{76.85}$

$\angle CAB = 56.5^\circ$

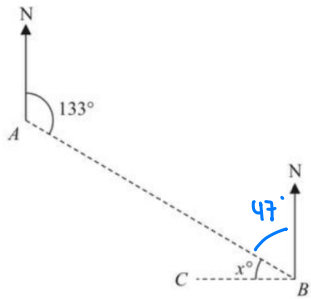
$\angle ACB = 180^\circ - 85^\circ - 56.5$
$= 38.5^\circ$

$180 - 100^\circ - 38.5^\circ$
$= 41.5^\circ$

bearing $= 360^\circ - 41.5^\circ$
$= 318.5^\circ$
$= 319^\circ$

Sine rule:	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
Cosine rule:	$a^2 = b^2 + c^2 - 2bc\cos A$

4.



The diagram shows the position of two ports, A and B, and the position of a ship C

The bearing of port B from port A is 133°

Given that C is due west of B

Calculate the value of x

$180^{\circ} - 133^{\circ} = 047^{\circ}$

$090^{\circ} - 047^{\circ} = 043^{\circ}$

5. A, P and B are three points on horizontal ground.
A is 1km due south of P

PQ is a vertical tower.
The angle of elevation of Q from A is 16.9°

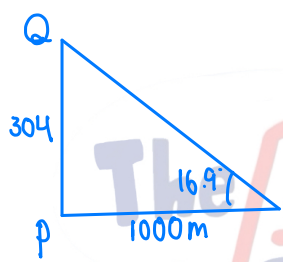
(a) Show that the height of the tower ,in metres to 3 significant figure , is 304 m.

B is 2 km due east of P

BC is a vertical radio mast.
The angle of elevation of Q from C, the top of the radio mast, is 8.2°

b) (a) Calculate the size, in degree to one decimal place,of the angle of elevation of C from A

a)

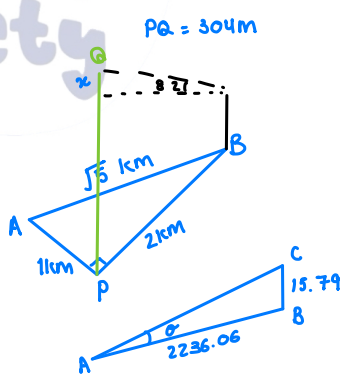


$\tan 16.9 = \frac{QP}{1000}$

$QP = 303.8\text{m}$

$\approx 304\text{m}$

b)



$\tan(8.2^\circ) = \frac{x}{2000}$

$x = 288.2\text{m}$

$BC = 304 - 288.2$

$= 15.79\text{m}$

$AB = \sqrt{1000^2 + 2000^2}$

$= 2236.06$

$\tan\theta = \frac{15.79}{2236.06}$

$= 0.4$