Trigonometry – 2022 O Level Math D 4024

1. Nov/2022/Paper_4024/12/No.24

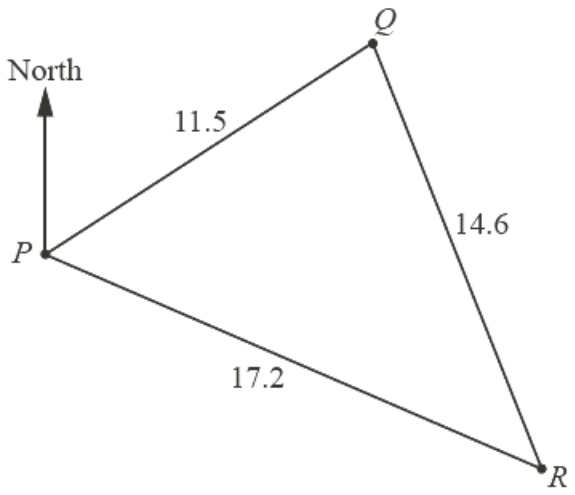
$\sin x^\circ = \sin 50^\circ$ and $90 < x < 180$.

Find the value of x.

$x =$ ..... [1]

2. Nov/2022/Paper_4024/21/No.10

(a)



NOT TO SCALE

The diagram shows the positions of three towns, P, Q and R.
Q is on a bearing of 052° from P.
$PQ = 11.5\,\text{km}$, $QR = 14.6\,\text{km}$ and $PR = 17.2\,\text{km}$.

Calculate the bearing of R from Q.

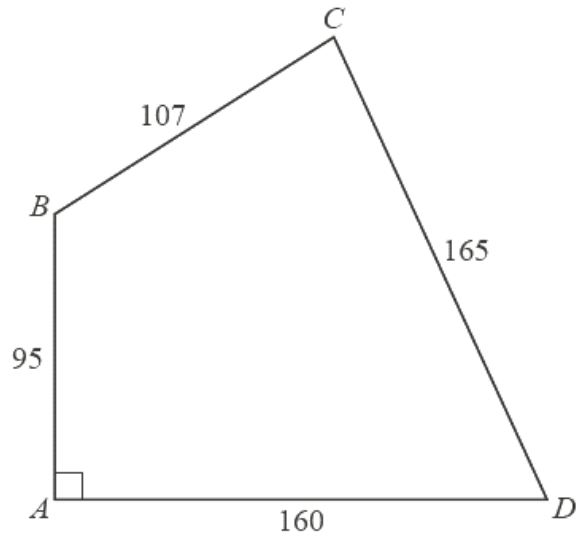
..... [4]

(b) A is a point on horizontal ground.
The angle of elevation of the top of a vertical mast from A is 68°, correct to the nearest degree.
The distance of the base of the mast from A is 45 m, correct to the nearest metre.

Calculate the lower bound of the height of the mast.

..... m [3]

3. Nov/2022/Paper_4024/22/No.7



NOT TO SCALE

ABCD is the floor plan of an exhibition hall with dimensions shown in metres.
Points *A*, *B*, *C* and *D* all lie on the same horizontal plane.

(a) Calculate angle *BCD*.

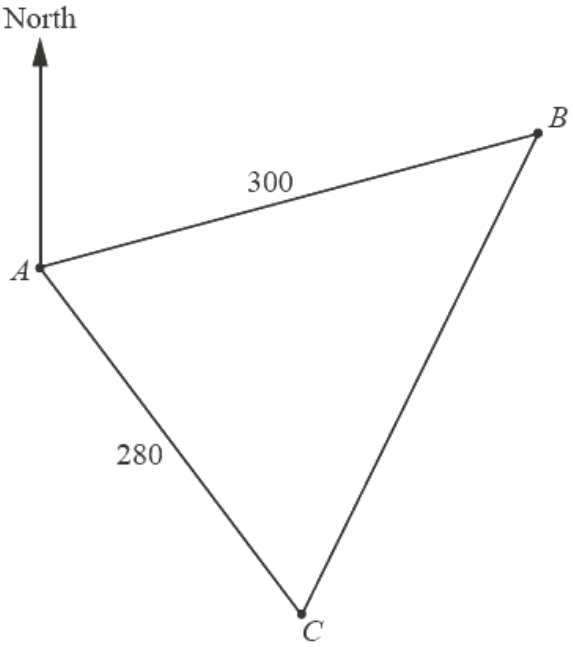
Angle *BCD* = ... [4]

(b) A light is attached to the ceiling vertically above B.
The angle of elevation of the light from C is 8.2°.

Calculate the angle of elevation of the light from A.

..... [4]

4. June/2022/Paper_4024/21/No.9



NOT TO SCALE

The diagram shows the positions of three towns, A, B and C.
B is on a bearing of 072° from A.
C is on a bearing of 150° from A.
$AB = 300$ km and $AC = 280$ km.

(a) Find the bearing of A from C.

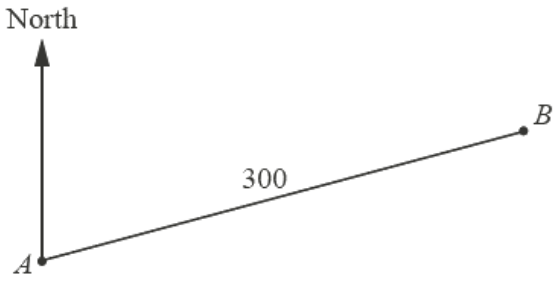
..... [1]

(b) Calculate BC.

$BC =$ ..... km [4]

(c) Town D is 145 km from town B.
Angle ADB is 120°.

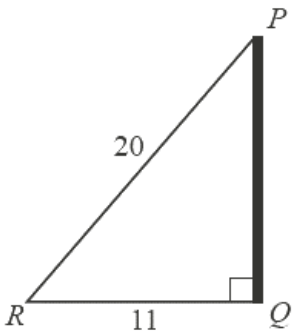
Find the two possible bearings of D from A.
You may add lines to this sketch to help you.



NOT TO SCALE

..... or ..... [5]

5. June/2022/Paper_4024/22/No.9



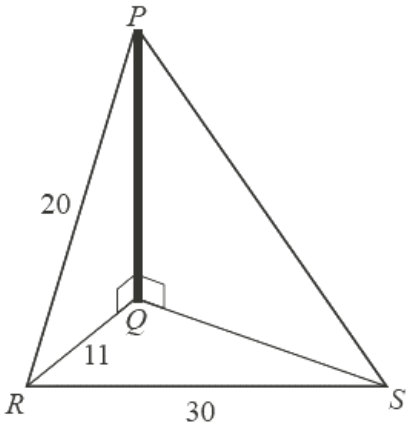
NOT TO SCALE

PQ is a vertical pole.
A rope is attached from the top of the pole, P, to a point on the ground, R.
$PR = 20\,\text{m}$, $RQ = 11\,\text{m}$ and $R\hat{Q}P = 90°$.

(a) Show that $PQ = 16.70\,\text{m}$, correct to 2 decimal places.

[2]

(b)

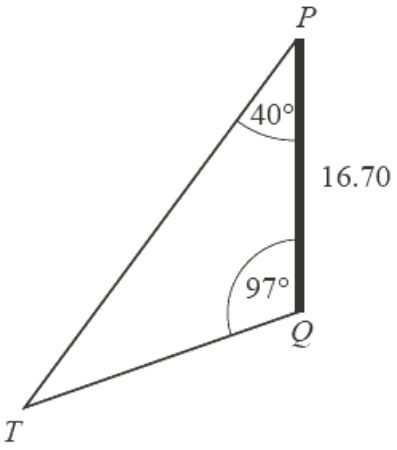


A second rope is attached from P to a point S.
$P\hat{Q}S = 90°$ and $RS = 30\,\text{m}$.
The angle of elevation of P from S is $36°$.

Calculate $R\hat{Q}S$.

$R\hat{Q}S =$ ..... [5]

(c)



NOT TO SCALE

A third rope is attached from P to a point T.
$T\hat{P}Q = 40°$ and $P\hat{Q}T = 97°$.

Calculate PT.

$PT =$ ..... m [4]