Trigonometry
Difficulty: Medium

Question Paper 3

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 3

Time allowed: **91 minutes**

Score: **/79**

Percentage: **/100**

Grade Boundaries:

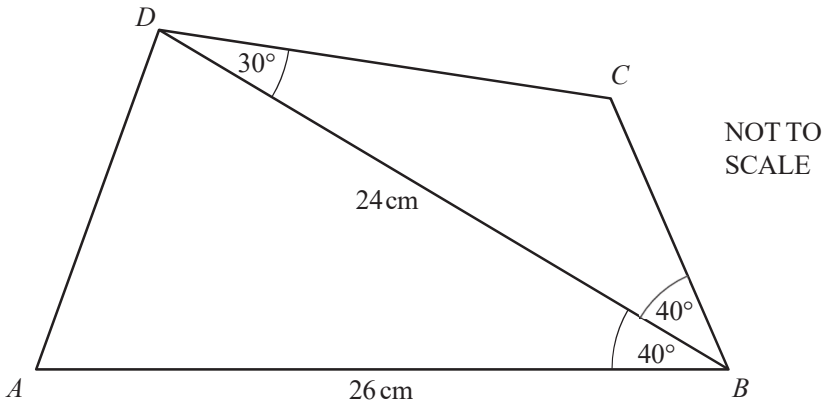
CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

Question 1



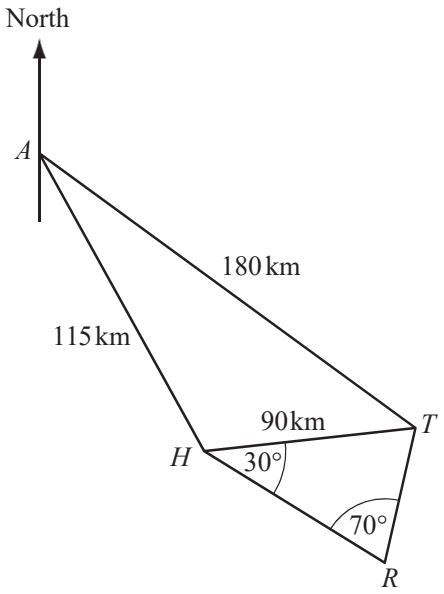
ABCD is a quadrilateral and *BD* is a diagonal.
AB = 26 cm, *BD* = 24 cm, angle *ABD* = 40°, angle *CBD* = 40° and angle *CDB* = 30°.

(a) Calculate the area of triangle *ABD*. [2]

(b) Calculate the length of *AD*. [4]

(c) Calculate the length of *BC*. [4]

(d) Calculate the shortest distance from the point *C* to the line *BD*. [2]



NOT TO SCALE

The diagram shows some straight line distances between Auckland (A), Hamilton (H), Tauranga (T) and Rotorua (R).
$AT = 180$ km, $AH = 115$ km and $HT = 90$ km.

(a) Calculate angle HAT.
Show that this rounds to 25.0°, correct to 3 significant figures. [4]

(b) The bearing of H from A is 150°.

Find the bearing of

(i) T from A, [1]

(ii) A from T. [1]

(c) Calculate how far T is east of A. [3]

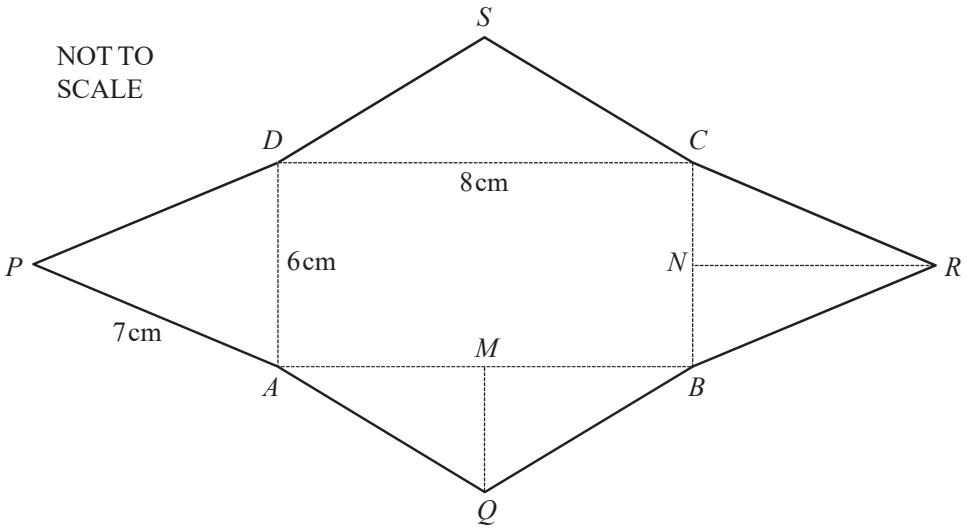
(d) Angle $THR = 30°$ and angle $HRT = 70°$.

Calculate the distance TR. [3]

(e) On a map the distance representing HT is 4.5cm.

The scale of the map is $1 : n$.

Calculate the value of n. [2]



The diagram above shows the net of a pyramid.

The base $ABCD$ is a rectangle 8 cm by 6 cm.

All the sloping edges of the pyramid are of length 7 cm.

M is the mid-point of AB and N is the mid-point of BC.

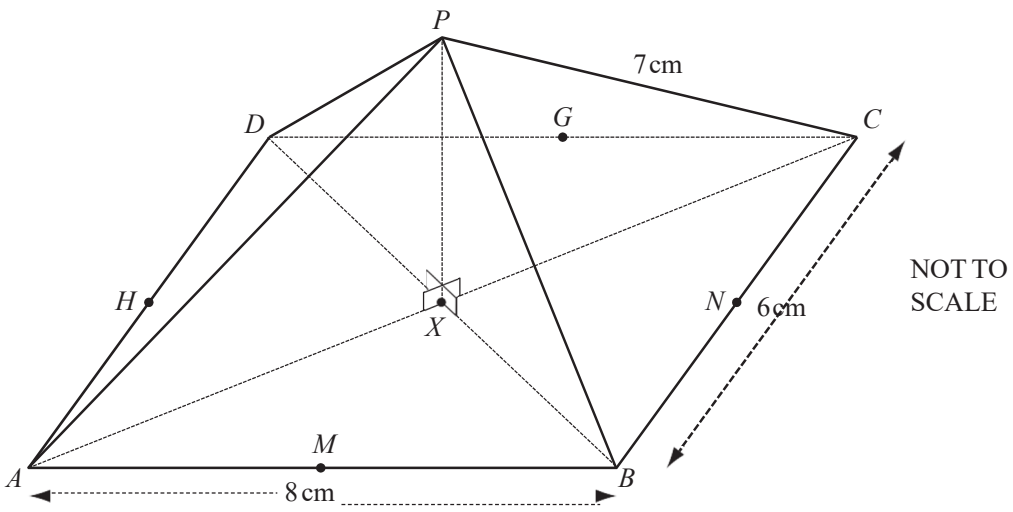
(a) Calculate the length of

(i) QM, [2]

(ii) RN. [1]

(b) Calculate the surface area of the pyramid. [2]

(c)



The net is made into a pyramid, with P, Q, R and S meeting at P.

The mid-point of CD is G and the mid-point of DA is H.

The diagonals of the rectangle $ABCD$ meet at X.

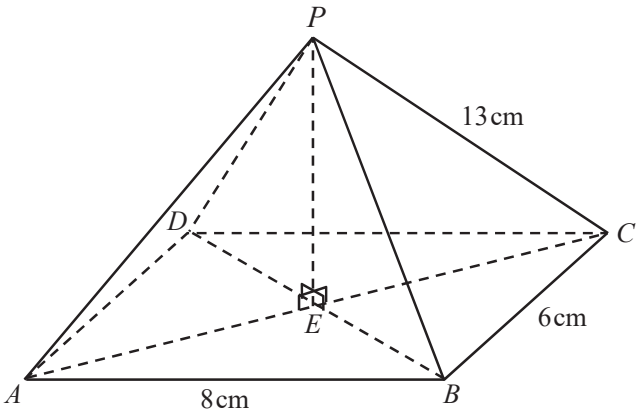
(i) Show that the height, PX, of the pyramid is 4.90 cm, correct to 2 decimal places. [2]

(ii) Calculate angle PNX. [2]

(iii) Calculate angle HPN. [2]

(iv) Calculate the angle between the edge PA and the base $ABCD$. [3]

(v) Write down the vertices of a triangle which is a plane of symmetry of the pyramid. [1]



NOT TO SCALE

The diagram shows a pyramid on a horizontal rectangular base $ABCD$.
The diagonals of $ABCD$ meet at E.
P is vertically above E.
$AB = 8$ cm, $BC = 6$ cm and $PC = 13$ cm.

(a) Calculate PE, the height of the pyramid. [3]

(b) Calculate the volume of the pyramid.

[The volume of a pyramid is given by $\frac{1}{3}$ × area of base × height.] [2]

(c) Calculate angle PCA. [2]

(d) M is the mid-point of AD and N is the mid-point of BC.
Calculate angle MPN.

[3]

(e) (i) Calculate angle PBC. [2]

(ii) K lies on PB so that $BK = 4$ cm.
Calculate the length of KC. [3]

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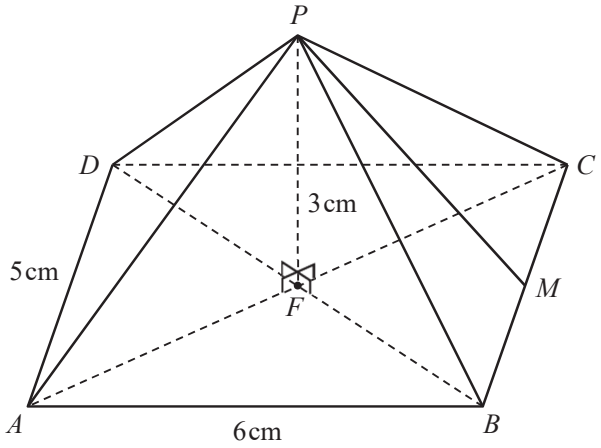
NOT TO SCALE



The diagram shows a pyramid on a rectangular base $ABCD$, with $AB = 6$ cm and $AD = 5$ cm.
The diagonals AC and BD intersect at F.
The vertical height $FP = 3$ cm.

(a) How many planes of symmetry does the pyramid have? [1]

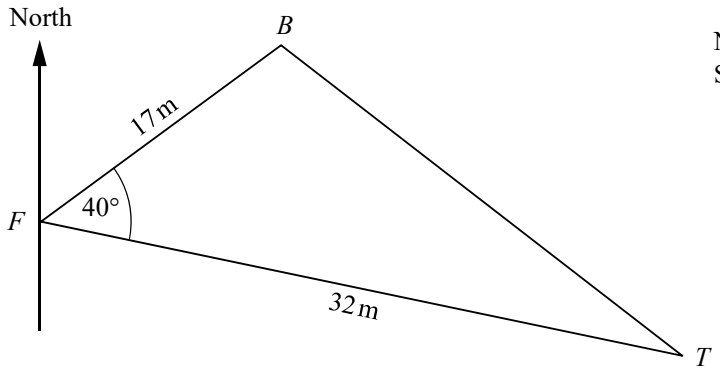
(b) Calculate the volume of the pyramid.

[The volume of a pyramid is $\frac{1}{3}$ × area of base × height.] [2]

(c) The mid-point of BC is M.
Calculate the angle between PM and the base. [2]

(d) Calculate the angle between PB and the base. [4]

(e) Calculate the length of PB. [2]



Felipe (F) stands 17 metres from a bridge (B) and 32 metres from a tree (T).
The points F, B and T are on level ground and angle BFT # 40°.

(a) Calculate

(i) the distance BT, [4]

[3]

(ii) the angle BTF.

(b) The bearing of B from F is 085°. Find the bearing of

(i) T from F, [1]

(ii) F from T, [1]

(iii) B from T. [1]

(c) The top of the tree is 30 metres vertically above T. [2]
Calculate the angle of elevation of the top of the tree from F.