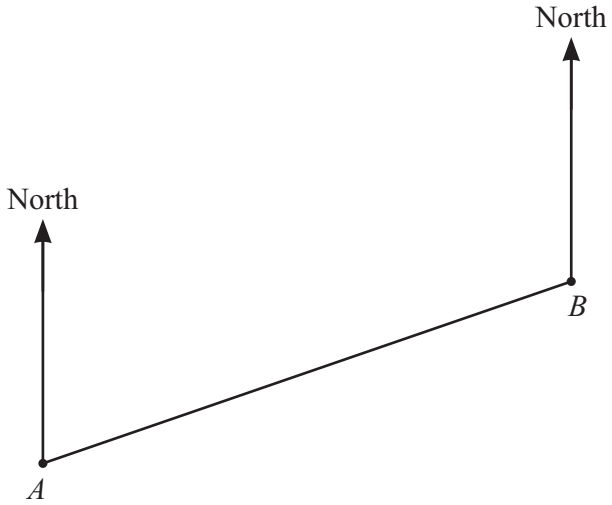
1 The bearing of A from B is 137°.

Find the bearing of B from A.

..... [2]

[Total: 2]

2 The scale drawing shows the positions of town A and town B.
The scale is 1 cm represents 15 km.



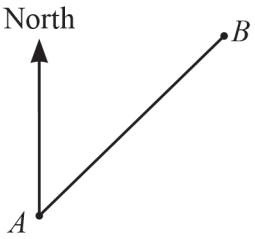
Scale: 1 cm to 15 km

Measure the bearing of town B from town A.

..... [1]

[Total: 1]

3



NOT TO SCALE

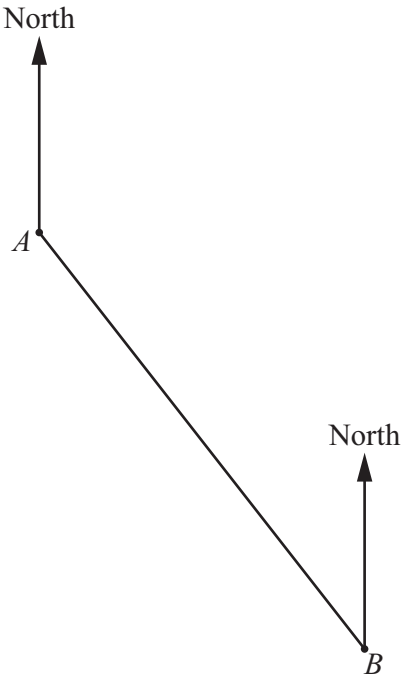
The bearing of B from A is 059°.

Work out the bearing of A from B.

..... [2]

[Total: 2]

4



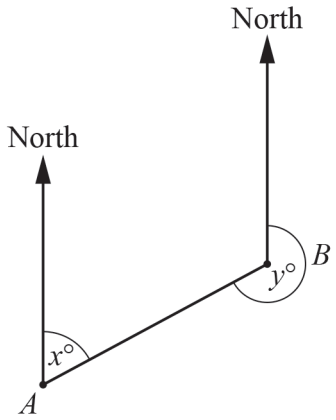
Measure the bearing of point B from point A.

..... [1]

[Total: 1]

5 The bearing of B from A is $x°$.
The bearing of A from B is $y°$.
$x : y = 2 : 7$

Calculate the value of y.



NOT TO SCALE

$y =$ ..... [3]

[Total: 3]

6 The bearing of a boat from a harbour is 322°.

Work out the bearing of the harbour from the boat.

..... [2]

[Total: 2]

7 The scale drawing shows the positions of two towns, P and Q.
The scale is 1 cm represents 4 km.

Scale: 1 cm to 4 km

(a) Find the actual distance between town P and town Q.

..... km [2]

(b) Measure the bearing of town Q from town P.

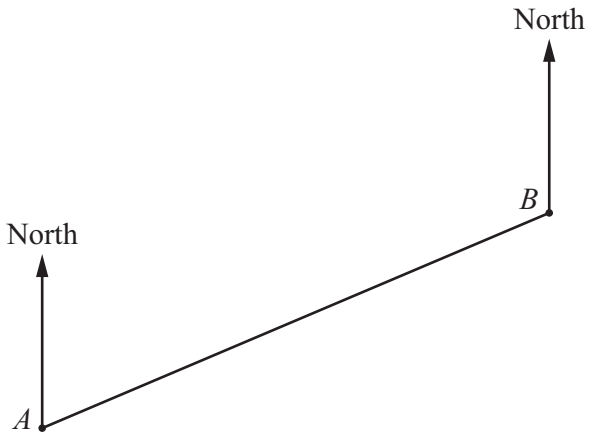
..... [1]

(c) Town X is 28 km from town P on a bearing of 140°.

On the scale drawing, mark the position of town X. [2]

[Total: 5]

8 The scale drawing shows the positions of house *A* and house *B*.
The scale is 1 centimetre represents 12 metres.



Scale: 1 cm to 12 m

(a) Measure the bearing of house *A* from house *B*.

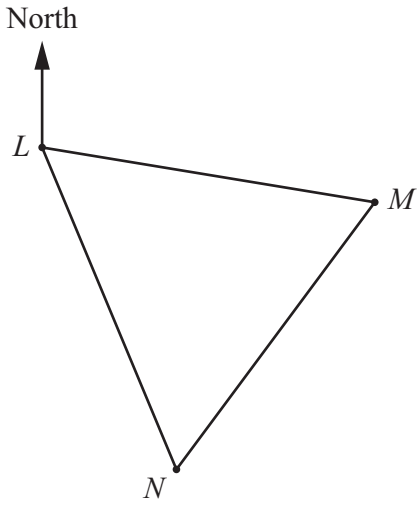
..... [1]

(b) Another house, *C*, is 102 metres from house *B* on a bearing of 157°.

On the scale drawing, mark the position of house *C*. [3]

[Total: 4]

9



NOT TO SCALE

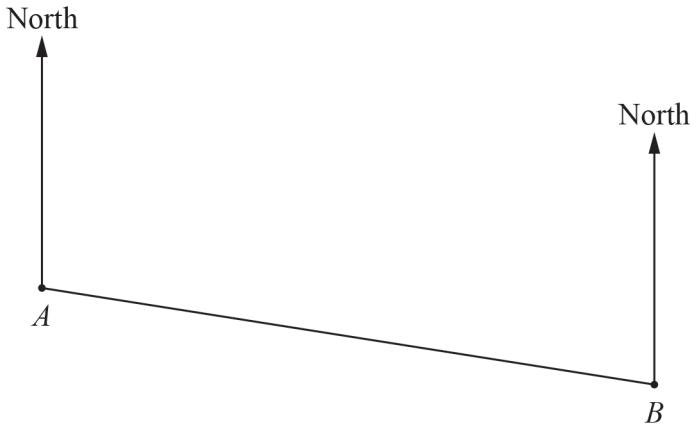
On a map, the positions of the towns L, M and N form an equilateral triangle.
The bearing of M from L is 103°.

Work out the bearing of L from N.

..... [2]

[Total: 2]

10



NOT TO SCALE

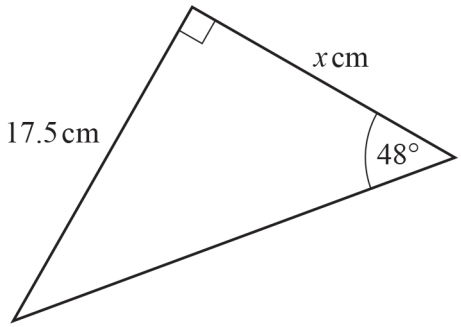
The bearing of B from A is 105°.

Find the bearing of A from B.

..... [2]

[Total: 2]

11



NOT TO SCALE

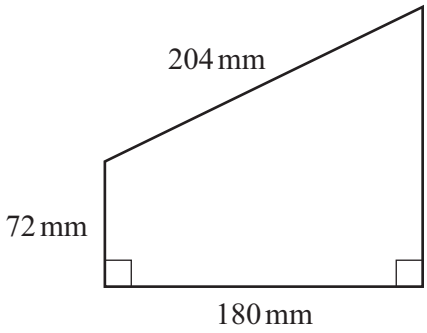
The diagram shows a right-angled triangle.

Show that the value of x is 15.8, correct to 3 significant figures.

[3]

[Total: 3]

12



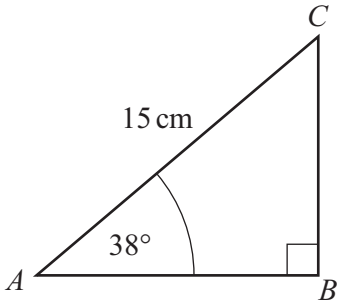
NOT TO SCALE

Work out the area of this trapezium.

..... mm^2 [5]

[Total: 5]

13



NOT TO SCALE

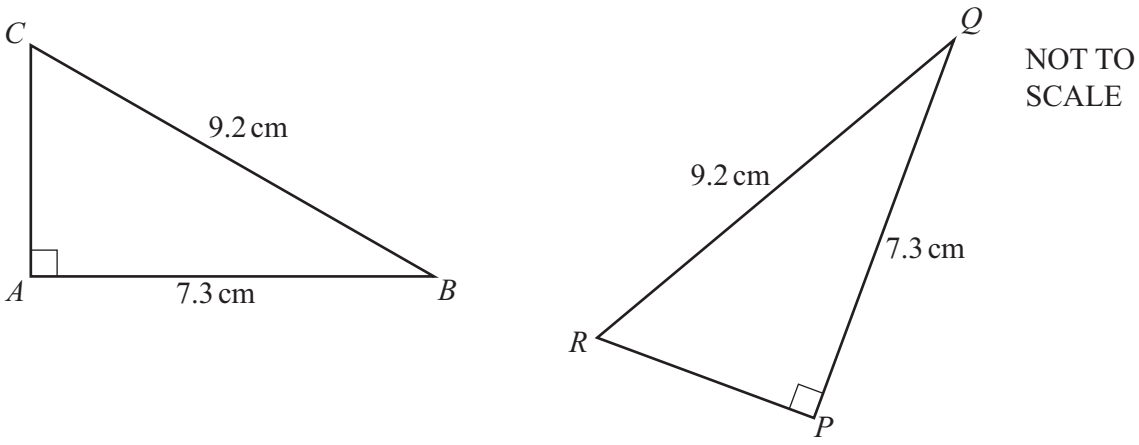
The diagram shows a right-angled triangle, *ABC*.
AC = 15 cm and angle *BAC* = 38°.

Calculate *BC*.

BC = ... cm [2]

[Total: 2]

14



The diagram shows two right-angled triangles, *ABC* and *PQR*.

(a) Complete this statement with a geometrical term.

Triangle *ABC* is ..... to triangle *PQR*. [1]

(b) Calculate angle *ABC*.

Angle *ABC* = ... [2]

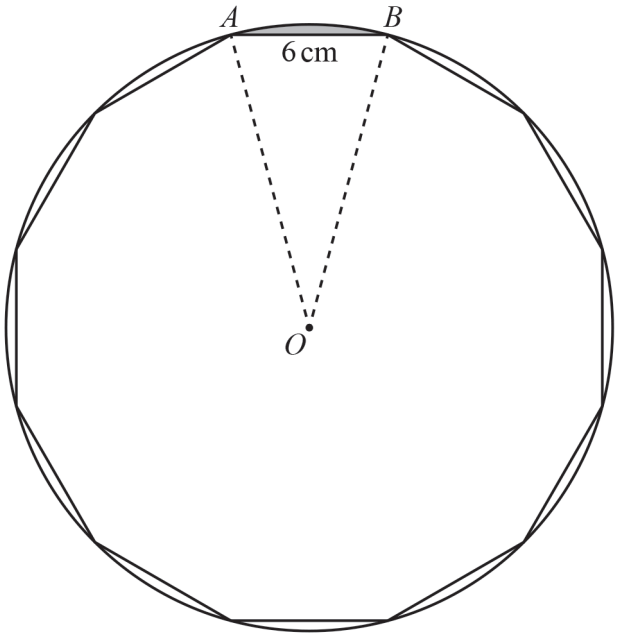
[Total: 3]

15 A regular 12-sided polygon has side length 6 cm.

(a) Show that one interior angle of the polygon is 150°.

[1]

(b) The polygon is enclosed by a circle, centre O, so that each vertex touches the circumference of the circle.



NOT TO SCALE

(i) Show that the radius, AO, of the circle is 11.6 cm, correct to 1 decimal place.

[3]

(ii) Calculate

A the circumference of the circle,

..... cm [2]

B the perimeter of the shaded **minor** segment formed by the chord AB.

..... cm [2]

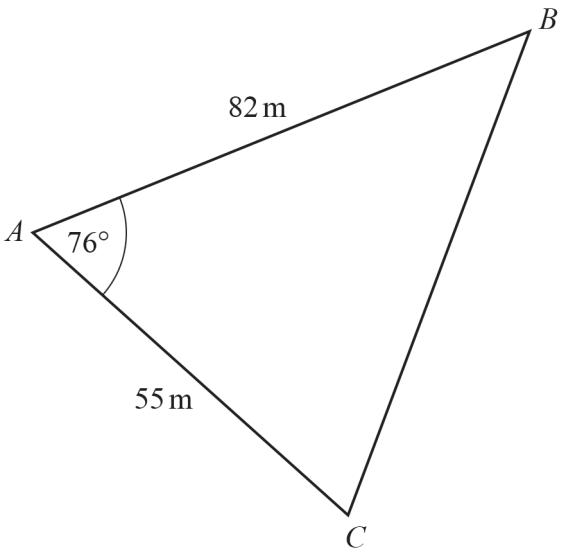
(c) The regular 12-sided polygon is the cross-section of a prism of length 2 cm.

Calculate the volume of the prism.

..... cm^3 [3]

[Total: 11]

16



NOT TO SCALE

The diagram shows a field ABC.

(a) Calculate BC.

$BC =$ ..... m [3]

(b) Calculate angle ACB.

Angle $ACB =$ ..... [3]

(c) A gate, G, lies on AB at the shortest distance from C.

Calculate AG.

$AG =$ ..... m [3]

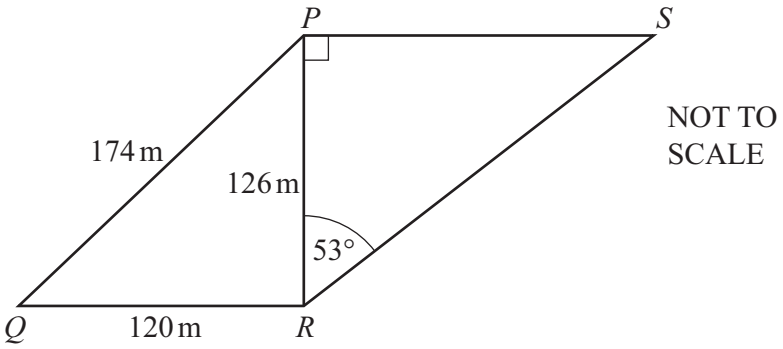
(d) A different triangular field PQR has the same area as ABC.
$PQ = 90$ m and $QR = 60$ m.

Work out the two possible values of angle PQR.

Angle $PQR =$ ..... or ..... [5]

[Total: 14]

17



The diagram shows Tarak's two triangular fields, *PQR* and *PRS*.
Angle *RPS* = 90° and angle *PRS* = 53°.
PQ = 174 m, *QR* = 120 m and *PR* = 126 m.

(a) Show that angle *PRQ* = 90°.

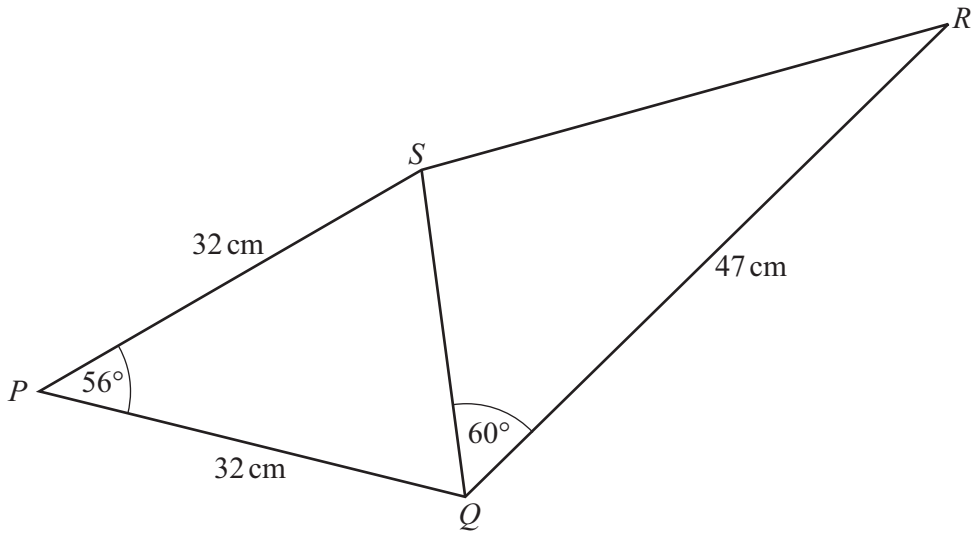
[2]

(b) Calculate the area of the quadrilateral *PQRS*.
Give your answer correct to 4 significant figures.

..... m^2 [5]

[Total: 7]

18



NOT TO SCALE

The diagram shows a quadrilateral *PQRS* formed from two triangles, *PQS* and *QRS*.
Triangle *PQS* is isosceles, with $PQ = PS = 32$ cm and angle $SPQ = 56°$.
$QR = 47$ cm and angle $SQR = 60°$.

(a) Calculate *SR*.

SR = ... cm [4]

(b) Calculate the shortest distance from *P* to *SQ*.

..... cm [3]

[Total: 7]

19

(a) On the diagram, sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$. [2]

(b) Solve the equation $\cos x = -\frac{1}{2}$ for $0° \leqslant x \leqslant 360°$.

x = ... or x = ... [2]

[Total: 4]

20 **(a)** Sketch the graph of $y = \sin x$ for $0° \leqslant x \leqslant 360°$.

[2]

20 **(b)** Solve the equation $3 \sin x + 1 = 0$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [3]

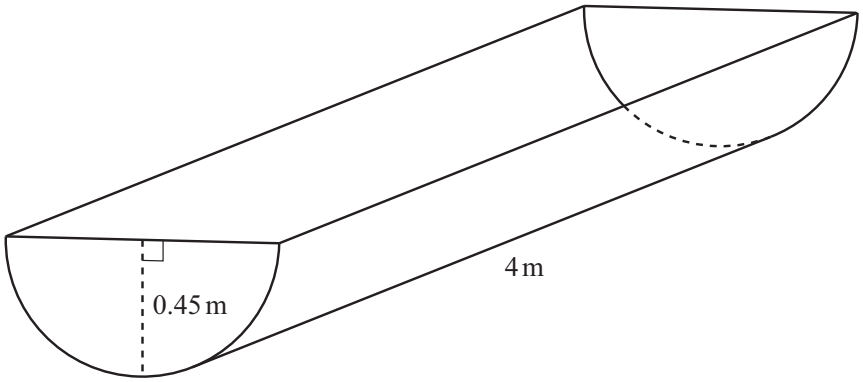
[Total: 5]

21 Solve the equation $3 \sin x + 3 = 1$ for $0° \leqslant x \leqslant 360°$.

$x =$ ..... or $x =$ ..... [3]

[Total: 3]

22



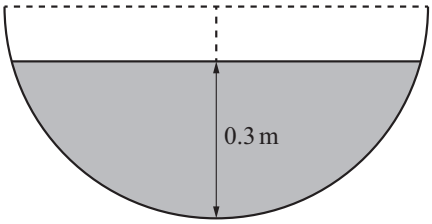
NOT TO SCALE

The diagram shows a horizontal container for water with a uniform cross-section.
The cross-section is a semicircle.
The radius of the semicircle is 0.45 m and the length of the container is 4 m.

(a) Calculate the volume of the container.

..... m^3 [2]

(b)



NOT TO SCALE

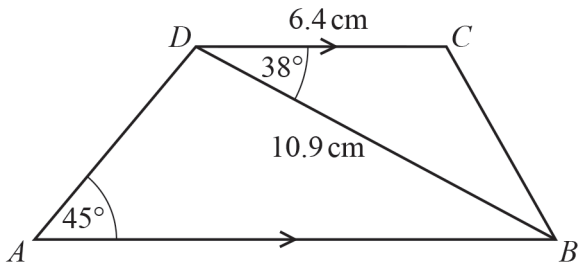
The greatest depth of the water in the container is 0.3 m.
The diagram shows the cross-section.

Calculate the number of litres of water in the container.
Give your answer correct to the nearest integer.

..... litres [6]

[Total: 8]

23



NOT TO SCALE

ABCD is a trapezium with *DC* parallel to *AB*.
DC = 6.4 cm, *DB* = 10.9 cm, angle *CDB* = 38° and angle *DAB* = 45°.

(a) Find *CB*.

CB = ... cm [3]

(b) **(i)** Find angle *ADB*.

Angle *ADB* = ... [1]

(ii) Find *AB*.

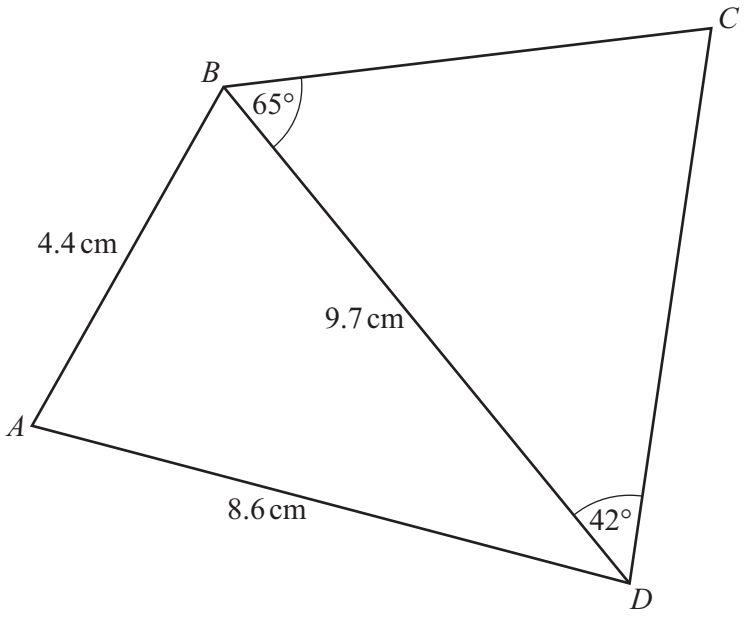
AB = ... cm [3]

(c) Calculate the area of the trapezium.

..... cm^2 [3]

[Total: 10]

24



NOT TO SCALE

(a) Calculate angle *ADB*.

Angle *ADB* = ... [3]

(b) Calculate *DC*.

DC = ... [4]

(c) Calculate the shortest distance from *C* to *BD*.

..... cm [3]

[Total: 10]

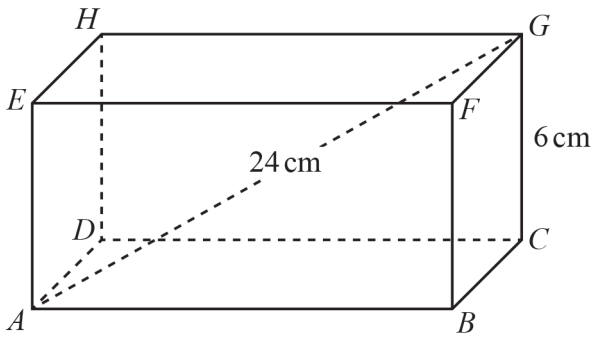
25 A cuboid measures 24 cm by 12 cm by 8 cm.

Calculate the length of a diagonal of the cuboid.

..... cm [3]

[Total: 3]

26



NOT TO SCALE

The diagram shows a cuboid $ABCDEFGH$.
$CG = 6$ cm, $AG = 24$ cm and $AB = 2BC$.

(a) Calculate AB.

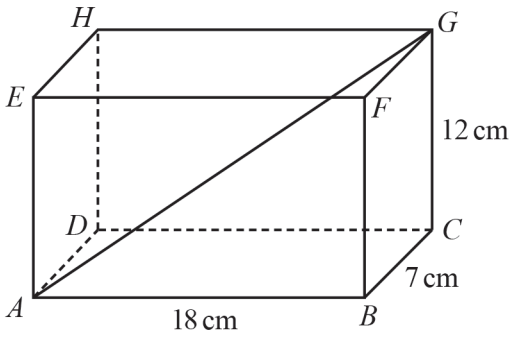
$AB =$ ..... cm [4]

(b) Calculate the angle between AG and the base $ABCD$.

..... [3]

[Total: 7]

27



NOT TO SCALE

$ABCDEFGH$ is a cuboid.
$AB = 18$ cm, $BC = 7$ cm and $CG = 12$ cm.

Calculate the angle that the diagonal AG makes with the base $ABCD$.

..... [4]

[Total: 4]