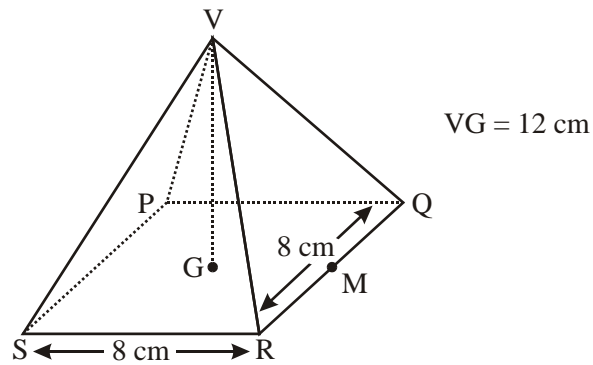


RIGHT ANGLED TRIGONOMETRY

1. In the diagram below, PQRS is the square base of a solid right pyramid with vertex V. The sides of the square are 8 cm, and the height VG is 12 cm. M is the midpoint of [QR].

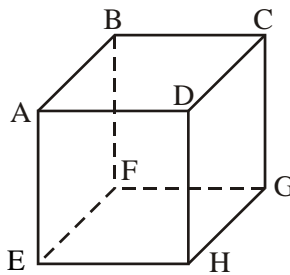
Diagram not to scale



- (a) (i) Write down the length of [GM].
 (ii) Calculate the length of [VM]. (2)
- (b) Find
- (i) the total surface area of the pyramid;
 (ii) the angle between the face VQR and the base of the pyramid.

(4)
(Total 6 marks)

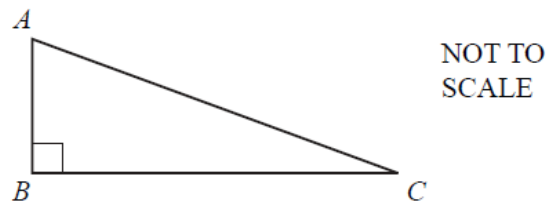
2. The following diagram shows a carton in the shape of a cube 8 cm long on each side:



- (a) The longest rod that will fit on the bottom of the carton would go from E to G. Find the length l of this rod.
- (b) Find the length L of the longest rod that would fit inside the carton.
- (c) Find the angle of elevation from E to C

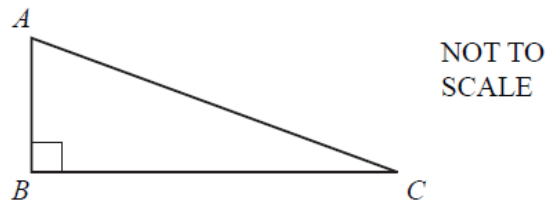
(Total 6 marks)

- 3.a) i) In the right-angled triangle ABC , $\cos C = \frac{4}{5}$. Find angle A .



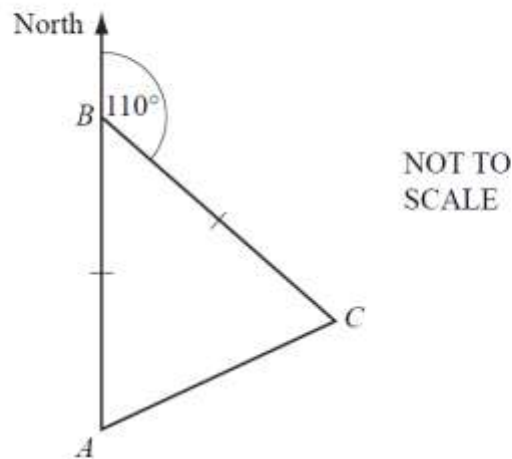
[2]

- ii) In the right-angled triangle ABC , $\angle C = 60^\circ$ and $AC = 10\text{cm}$. Find the EXACT value of AB



[2]

- (b) The route for the **sponsored walk in winter** is triangular.

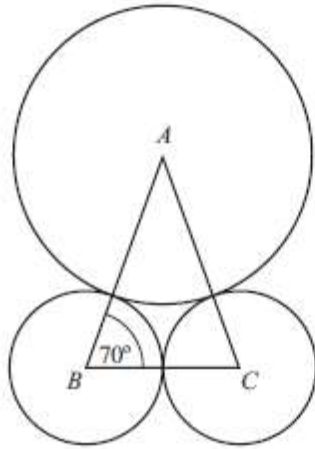


- (i) Senior students start at A , walk North to B , then walk on a bearing 110° to C . They then return to A .
 $AB = BC$.

Calculate the bearing of A from C .

[2]

4.



NOT TO SCALE

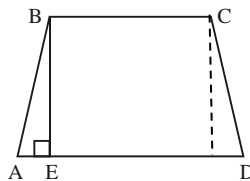
The diagram shows three touching circles.
 A is the centre of a circle of radius x centimetres.
 B and C are the centres of circles of radius 3.8 centimetres. Angle $ABC = 70^\circ$.
 Find the value of x .

Answer $x =$ [3]

5.

$ABCD$ is a trapezium with $AB = CD$ and $[BC]$ parallel to $[AD]$. $AD = 22$ cm, $BC = 12$ cm, $AB = 13$ cm.

Diagram not to scale

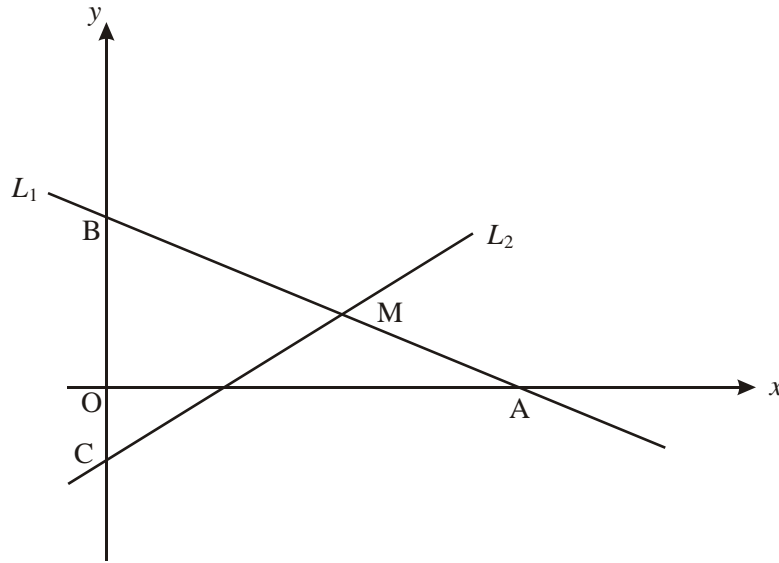


- (a) Show that $AE = 5$ cm. (2)
- (b) Calculate the height BE of the trapezium. (2)
- (c) Calculate
 - (i) \hat{BAE} ;
 - (ii) \hat{BCD} (3)
- (d) Calculate the length of the diagonal $[CA]$. (3)

(Total 10 marks)

6. The line L_1 shown on the set of axes below has equation $3x + 4y = 24$. L_1 cuts the x -axis at A and cuts the y -axis at B.

Diagram not drawn to scale



- (a) Write down the coordinates of A and B. (2)

M is the midpoint of the line segment [AB].

- (b) Write down the coordinates of M. *{hint: remember midpoint formula from grade 8 :-}*
given (x_1, y_1) and (x_2, y_2) the midpoint is $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$ } (2)

The line L_2 passes through the point M and the point C (0, -2).

- (c) Write down the equation of L_2 . (2)

(d) Find the length of

- (i) MC; *{hint: use formula for **Distance Between Two Points** see notes}* (2)

- (ii) AC. (2)

- (e) The length of AM is 5. Is triangle AMC right angled? (2)

(Total 12 marks)