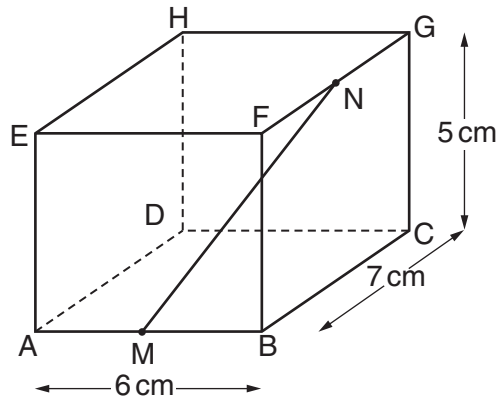


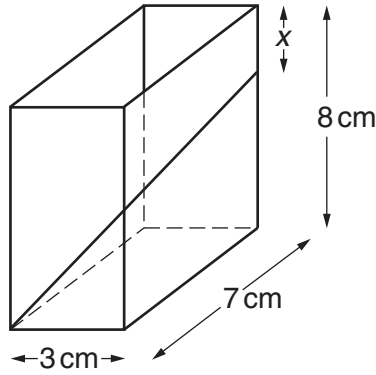
1 A cuboid ABCDEFGH has dimensions 6 cm by 7 cm by 5 cm.



M is the midpoint of AB and N is the midpoint of FG.
 Work out the angle that the line MN makes with the base, ABCD, of the cuboid.

..... ° [5]

- 2 A box is a cuboid measuring 3 cm by 7 cm by 8 cm.
A stick of length 10 cm is placed in the box with one end of the stick in one corner of the box, as shown in the diagram.



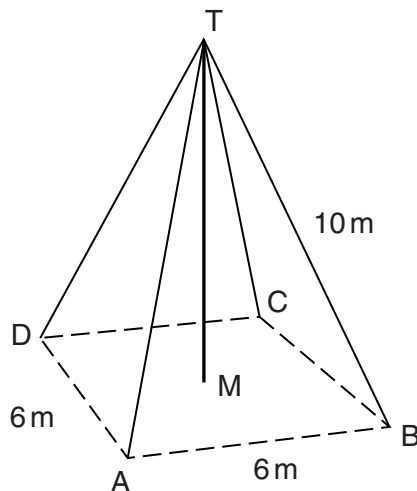
- (a) Show that x , the distance of the upper end of the stick from the top corner of the box, is 1.5 cm correct to 1 decimal place.

[5]

- (b) Work out the angle that the stick makes with the base of the box.

(b) ° [3]

- 3 A vertical transmitter mast, TM , stands on horizontal ground. Straight wires, each of length 10 m , are fixed to the top of the mast, T , and to points A , B , C and D on the ground. A , B , C and D are the corners of a square of side 6 m .



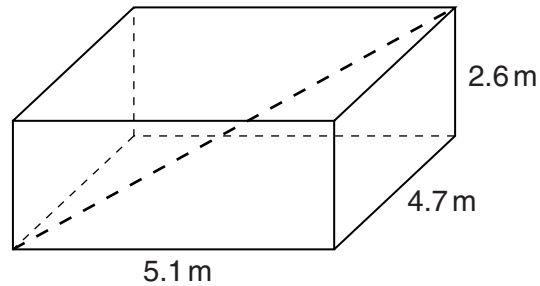
- (a) Show that the height of the mast, TM , is 9.1 m correct to one decimal place.

[3]

- (b) Calculate the angle that the wires make with the ground.

(b) _____ ° [3]

- 4 Shirley and Jay are in a room which is a cuboid 5.1 m by 4.7 m by 2.6 m.



- (a) Shirley estimates the length of the diagonal of the room (shown on the diagram) to be 13 m.

Jay says:

You are wrong! $5.1 + 4.7 + 2.6$ is 12.4. That's less than 13.

Explain why Jay's reasoning shows that the diagonal is less than 13 m.

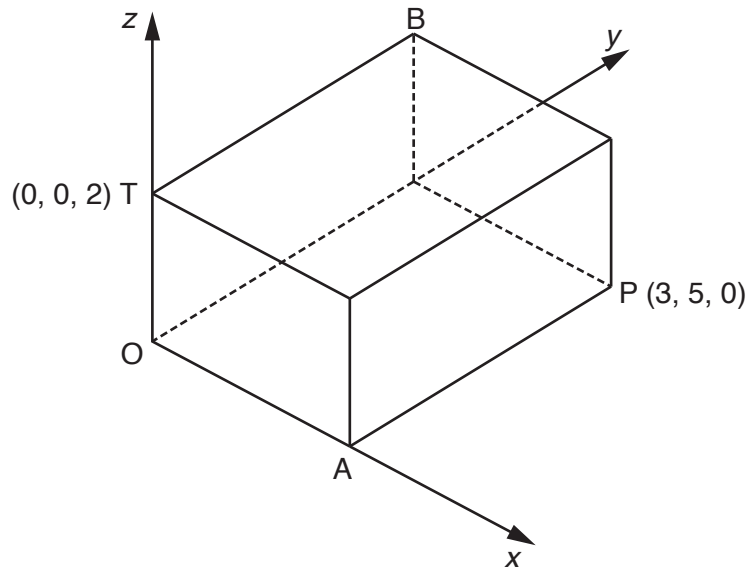
[1]

- (b) Calculate the actual length of the diagonal of the room.

(b) _____ m [3]

5 The diagram shows a cuboid.

O is the origin, P is the point (3, 5, 0) and T is the point (0, 0, 2).



(a) Write down the coordinates of

(i) A,

(a)(i) (.....,,) [1]

(ii) B.

(ii) (.....,,) [1]

(b) One unit on the grid is 1 cm.

Work out the length PT.

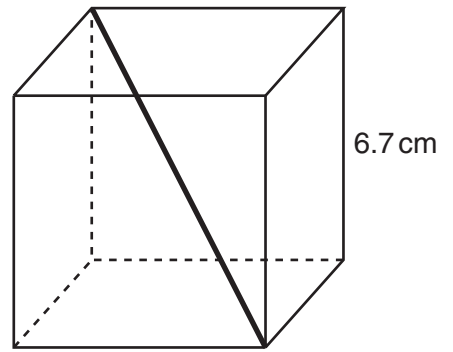
(b) cm [3]

- 6 Kahli has a sewing box which is a cuboid measuring 15 cm by 35 cm by 10 cm. She buys a pair of thin knitting needles which are 40 cm long.

Calculate whether a 40 cm knitting needle can fit in her sewing box.
Show how you decide.

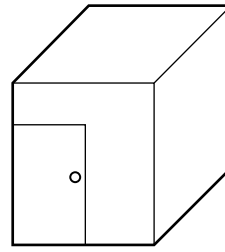
[3]

- 7 Calculate the length of the diagonal of a cube with side 6.7 cm.



_____ cm [3]

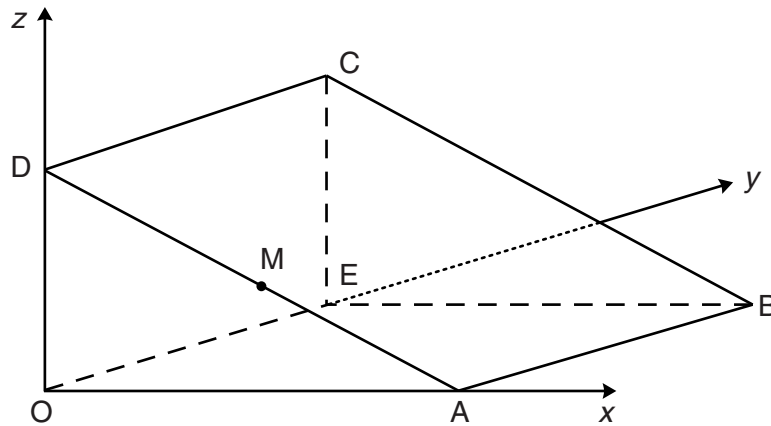
- 8 Anil's shed is a cuboid 220 cm by 180 cm by 200 cm.
He buys a thin metal pole of length 3 m.



Will this 3 m pole fit in the shed?
Show calculations to support your answer.

[4]

- 9 The diagram shows a triangular prism.
 O is the origin, A is (6, 0, 0), E is (0, 5, 0) and D is (0, 0, 3).
 All lengths are in centimetres.



(a) Write down the coordinates of

(i) C,

(a)(i) (_____ , _____ , _____) [1]

(ii) B,

(ii) (_____ , _____ , _____) [1]

(iii) M, the midpoint of AD.

(iii) (_____ , _____ , _____) [1]

(b) Work out the area of triangle OAD.

(b) _____ cm² [2]

(c) Work out the length BD.

(c) _____ cm [3]

- 10** Mata's box for her art materials is a cuboid 35 cm by 28 cm by 15 cm.
She has a thin paintbrush which is 48 cm long.

Will this paintbrush fit into Mata's box?
Show calculations to support your answer.

[3]