Name:

Exam Style Questions

3D Coordinates

Corbettmaths

Equipment needed: Calculator, pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

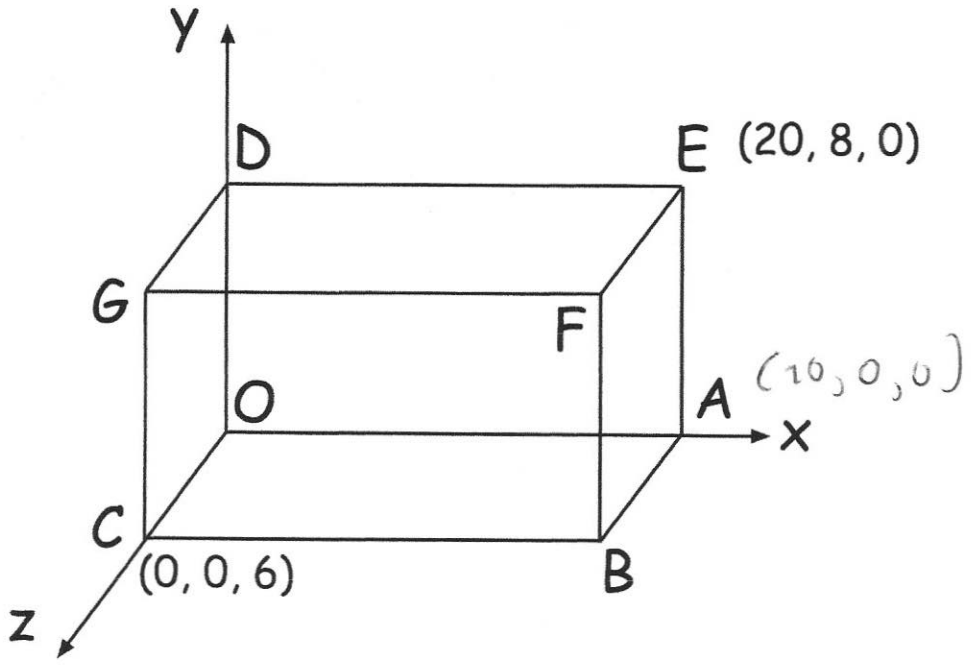
Video Tutorial

www.corbettmaths.com/contents

Video 86

Answers and Video Solutions

1. Shown below is a cuboid.



Vertex C has coordinates (0, 0, 6)

Vertex E has coordinates (20, 8, 0)

(a) Write down the coordinates of vertex A

(20, 0, 0)

(1)

(b) Write down the coordinates of vertex B

(20, 0, 6)

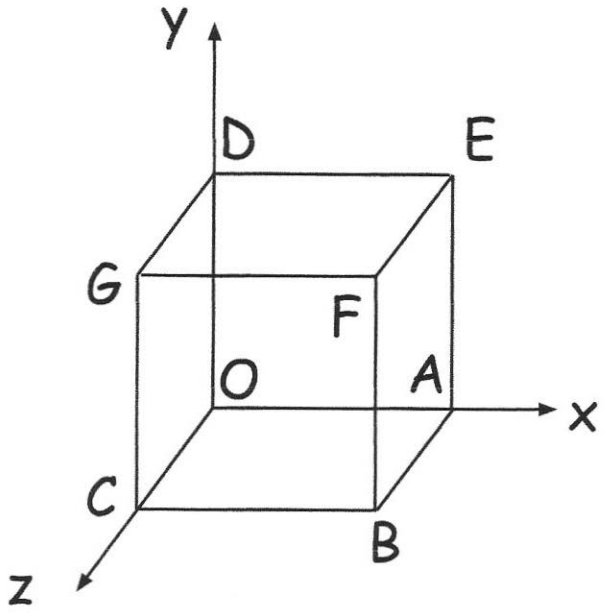
(1)

(c) Write down the coordinates of vertex F

(20, 8, 6)

(1)

2. Below is a cube on a 3D grid.



The coordinates of vertex B is (8, 0, 8)

(a) Write down the coordinates of vertex F

(8, 8, 8)

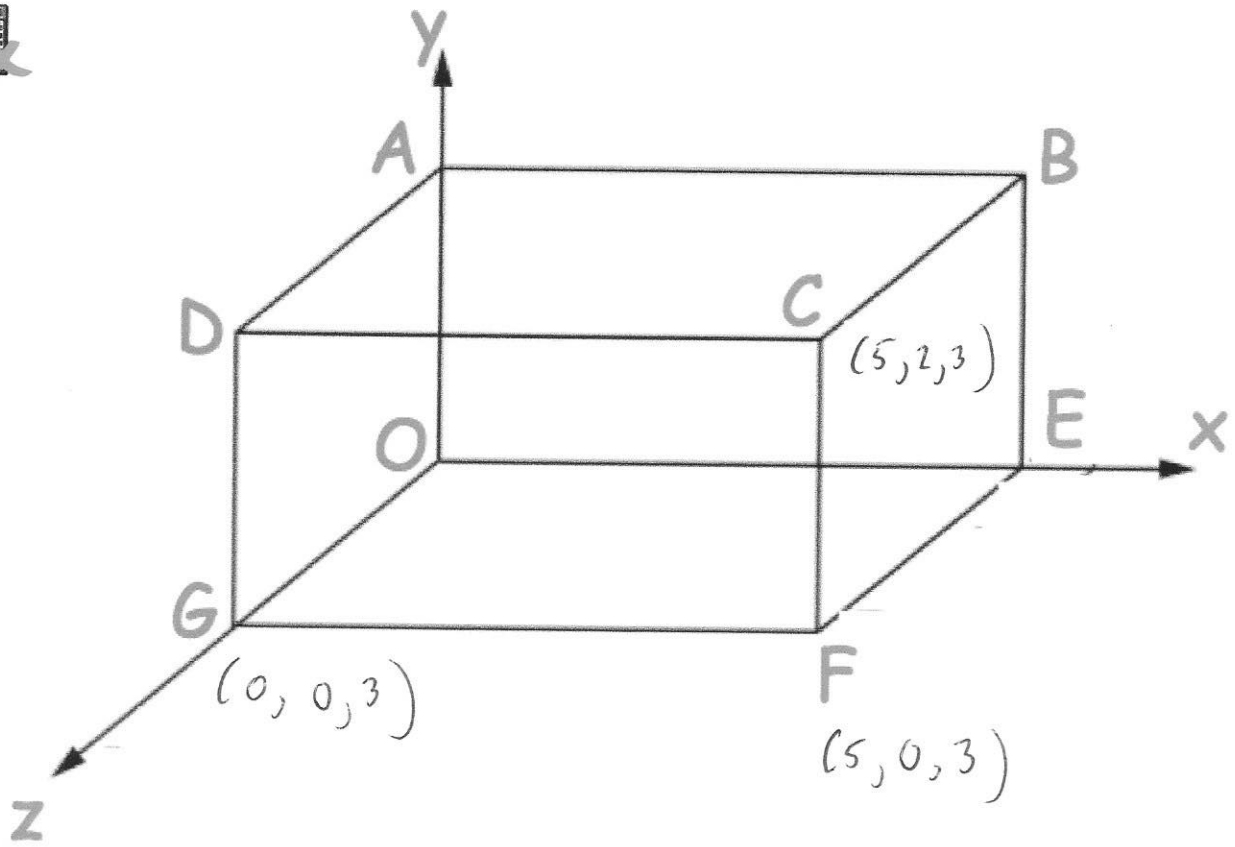
(1)

(b) Write down the coordinates of vertex G

(0, 8, 8)

(1)

3.



This diagram shows a cuboid drawn on a 3D grid.
C has coordinates (5, 2, 3).
x y z

(a) Write down the coordinates of the point A.

(0 , 2 , 0)

(1)

(b) Write down the coordinates of the point F.

(5 , 0 , 3)

(1)

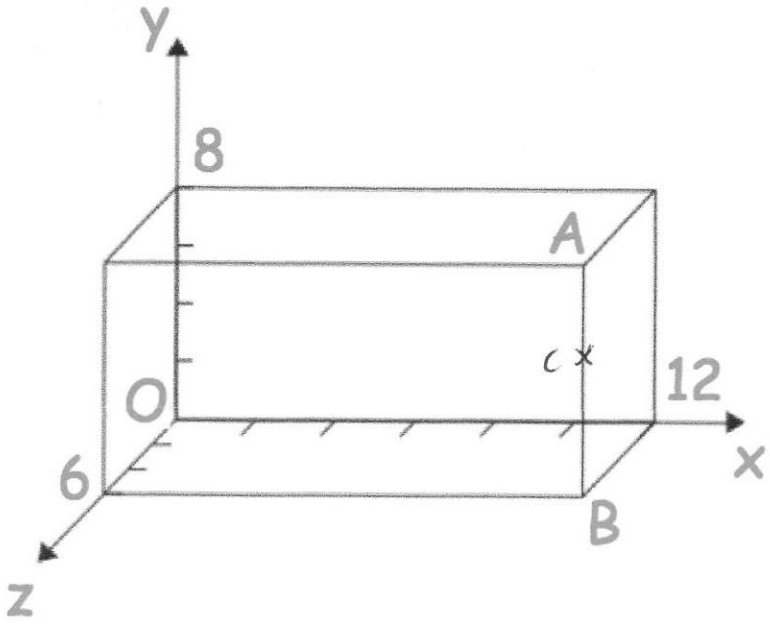
The coordinate H is the midpoint of FG.

(c) Write down the coordinates of the point H.

(2.5 , 0 , 3)

(1)

4. Here is a cuboid drawn on a 3D grid.



(a) Write down the coordinates of the point A.

(12 , 8 , 6)

(1)

(b) Write down the coordinates of the point B.

(12 , 0 , 6)

(1)

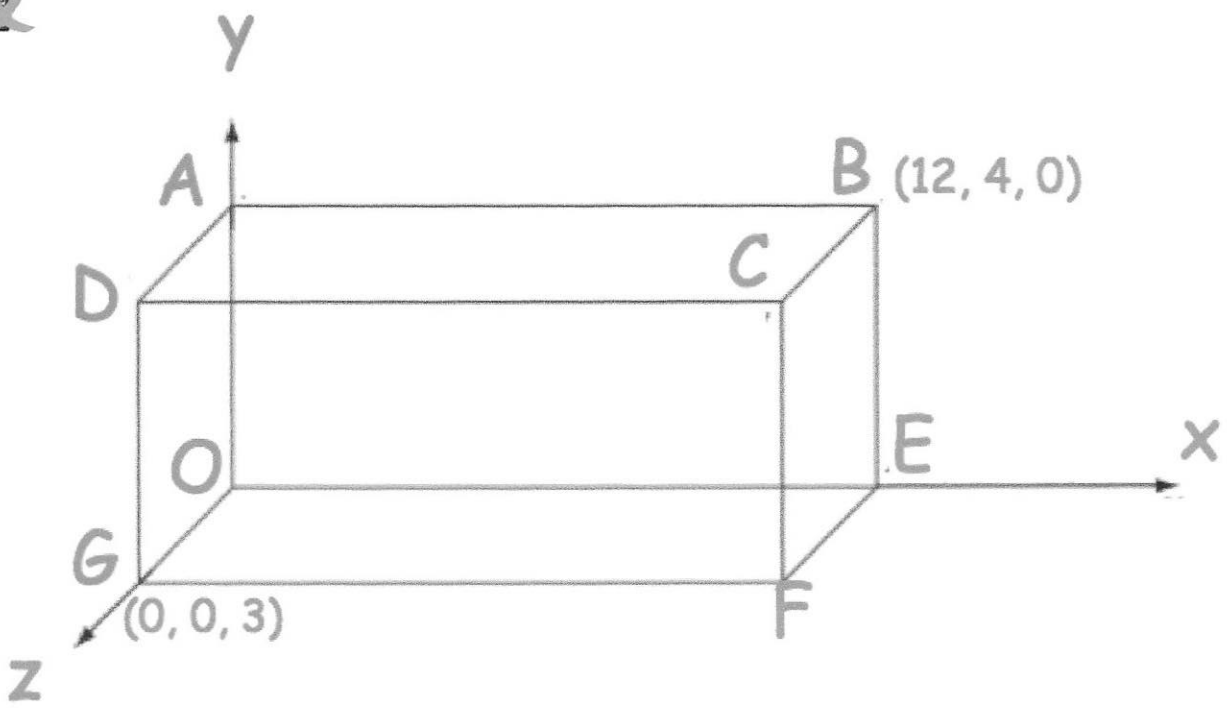
The coordinate C is the midpoint of AB.

(c) Write down the coordinates of the point C.

(12 , 4 , 6)

(1)

5. The diagram shows a cuboid on a 3D grid.



(a) Write down the coordinates of the point C.

(12 , 4 , 3)

(1)

(b) Write down the coordinates of the point F.

(12 , 0 , 3)

(1)

(c) Write down the coordinates of the midpoint of the line segment BG.

$\frac{12+0}{2} = 6$

$0 + 4 = 4$

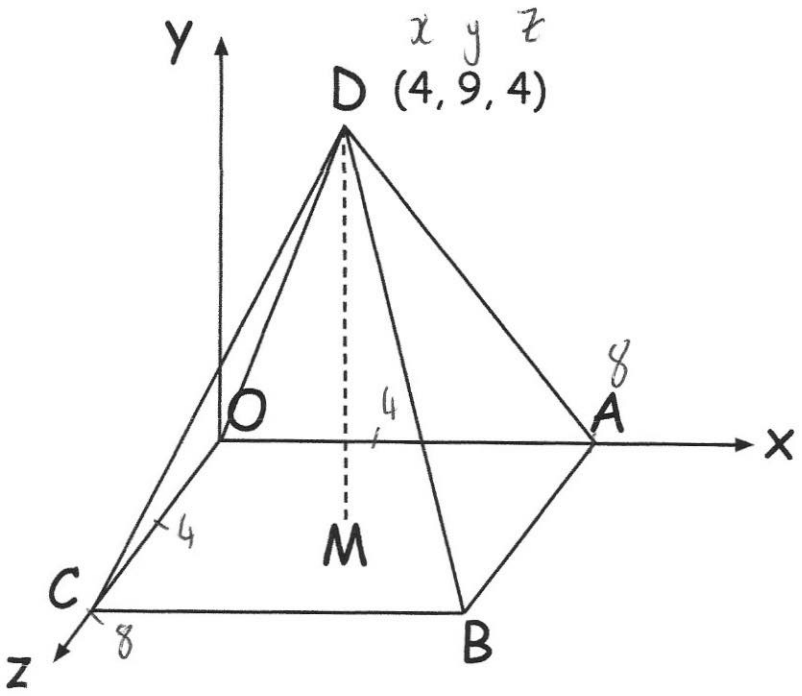
$4 \div 2 = 2$

$\frac{0+3}{2} = 1.5$

(6 , 2 , 1.5)

(1)

6. The diagram shows a square based pyramid drawn on a 3D grid.



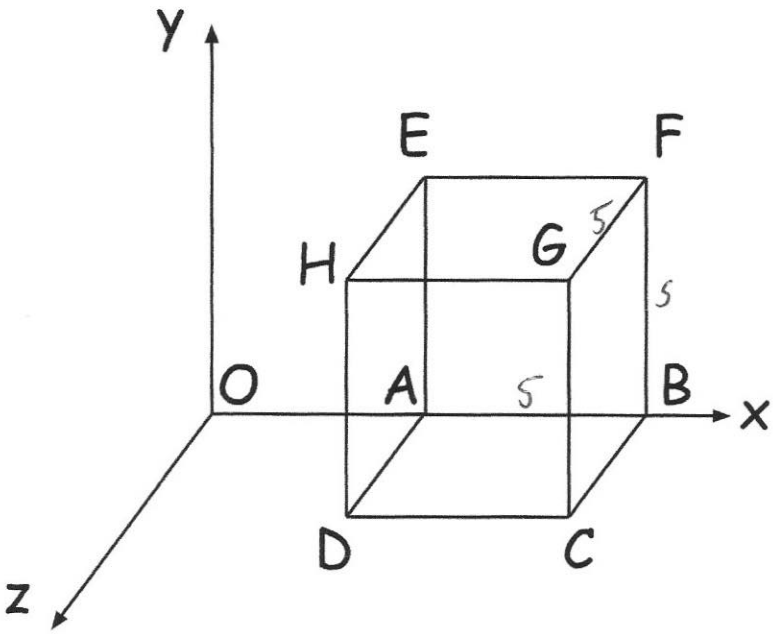
M is the centre of the base OABC.
D is directly above M.

Find the coordinates of the point B.

(8 , 0 , 8)

(2)

7. Shown below is a cube on a 3D grid.



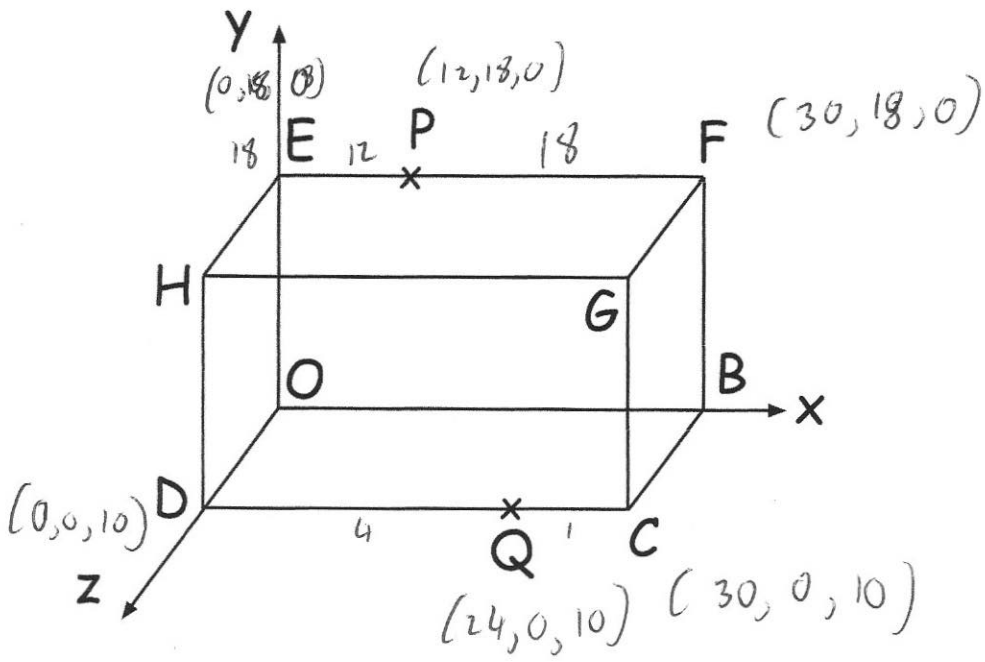
The coordinates of vertex A are (7, 0, 0)
The coordinates of vertex B are (12, 0, 0)

Write down the coordinates of vertex G

(12 , 5 , 5)

(2)

8. The diagram shows a cuboid on a 3D grid.



The coordinates of vertex E are (0, 18, 0)

The coordinates of vertex D are (0, 0, 10)

The point P lies on EF such that EP : PF = 2 : 3

The point Q lies on DC such that DQ : DC = 4 : 5

The coordinates of point P are (12, 18, 0)

Work out the coordinates of the midpoint of PQ.

$12 \div 2 = 6$

$6 \times 3 = 18$

$30 \div 5 = 6$

$6 \times 4 = 24$

(18, 9, 5)

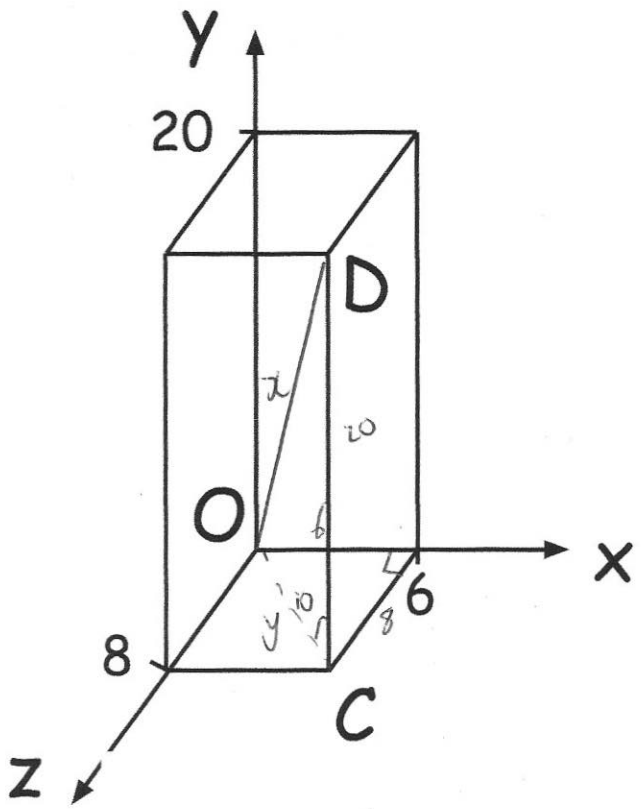
(4)

$\frac{12+24}{2} = 18$

$\frac{18+0}{2} = 9$

$\frac{0+10}{2} = 5$

9. (0, 0, 0), (6, 0, 0), (0, 20, 0) and (0, 0, 8) are vertices of a cuboid.
C and D are also vertices of the cuboid.



(a) Work out the distance between O and C.

$6^2 + 8^2 = y^2$

$100 = y^2$

$y = 10$

10

(2)

(b) Work out the distance between O and D.

$10^2 + 20^2 = x^2$

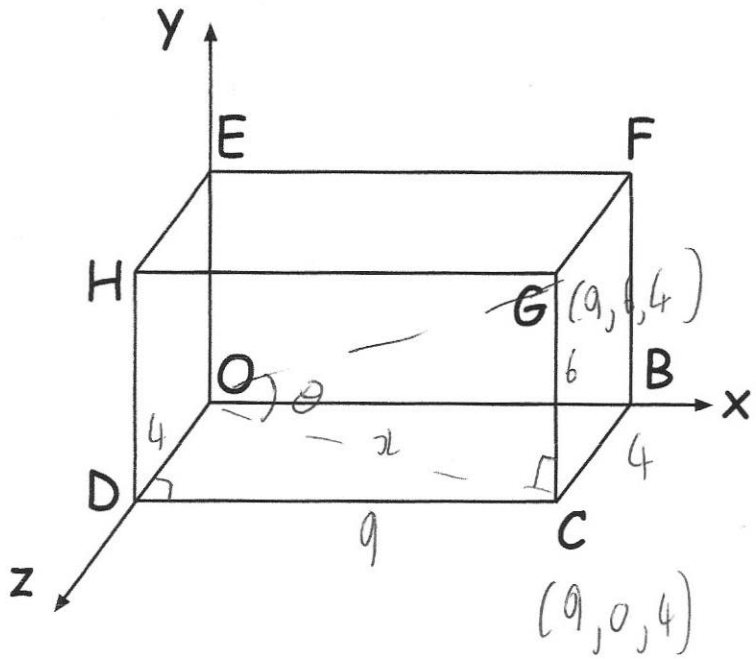
$500 = x^2$

$x = 22.36$

22.36

(3)

10. Shown below is a cuboid.



Vertex G has coordinates (9, 6, 4)

(a) Calculate the length of OC

$x^2 = 4^2 + 9^2$

$x^2 = 97$

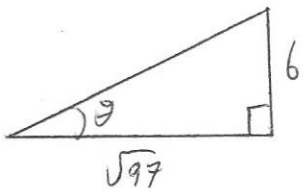
$x = 9.84885...$

9.85

.....

(2)

(b) Calculate the size of angle COG



$\tan\theta = \frac{6}{\sqrt{97}}$

$\theta = 31.35$

31.35°

.....

(3)