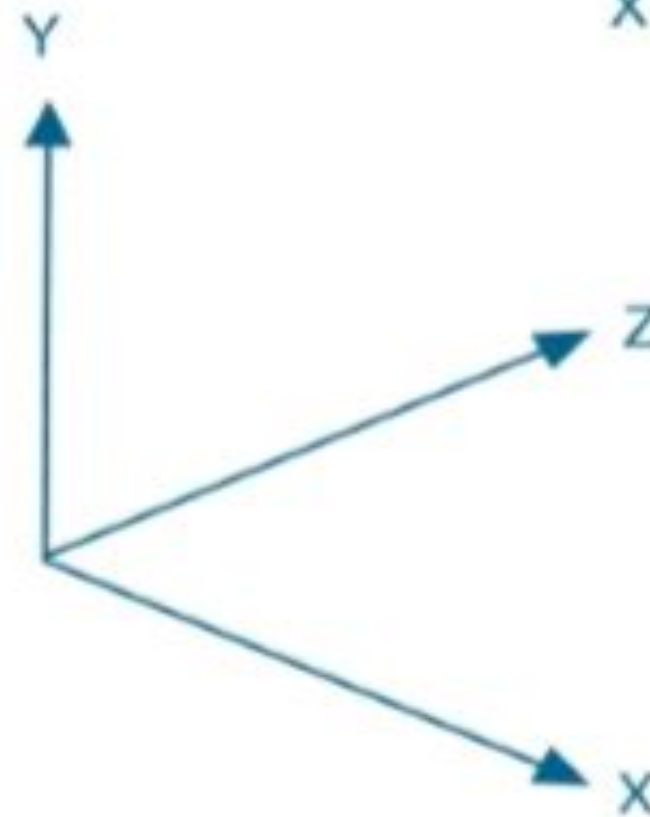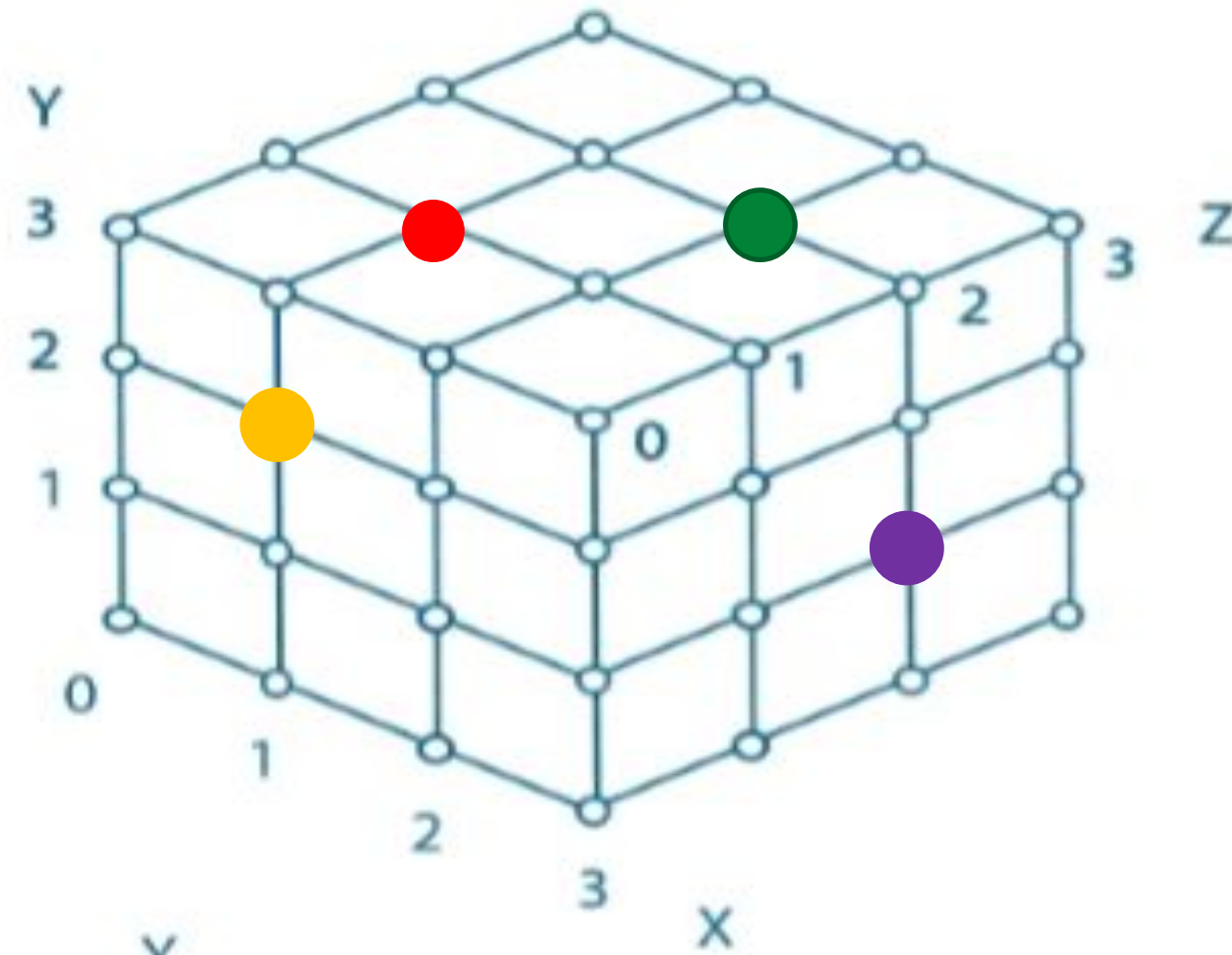Mathematics

3D Co-ordinates

Mr Millar

Try this

A 3x3x3 cube has an x, y and z co-ordinate.

For example, the ● dot has co-ordinates (1, 3, 1).

Write down the co-ordinates of the other dots

●

●

●

Connect

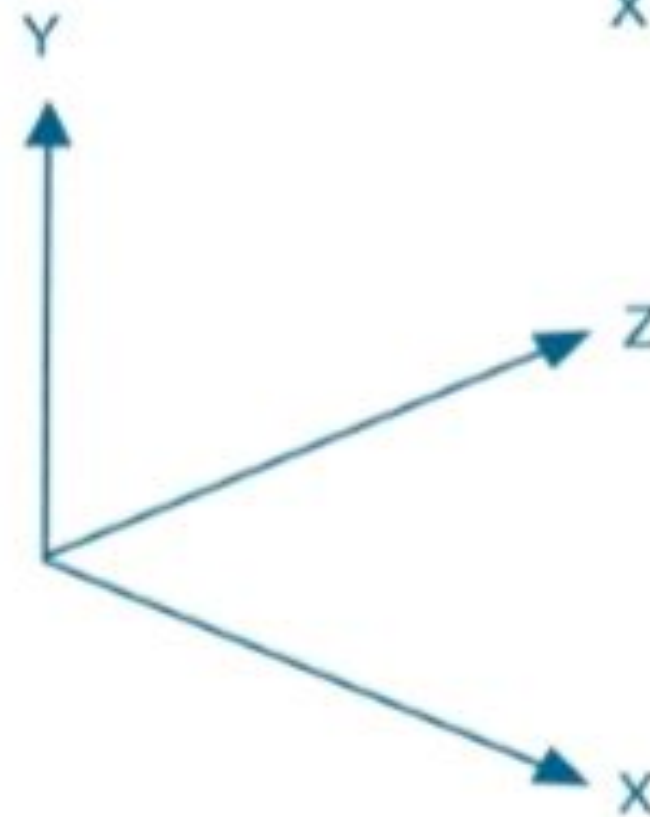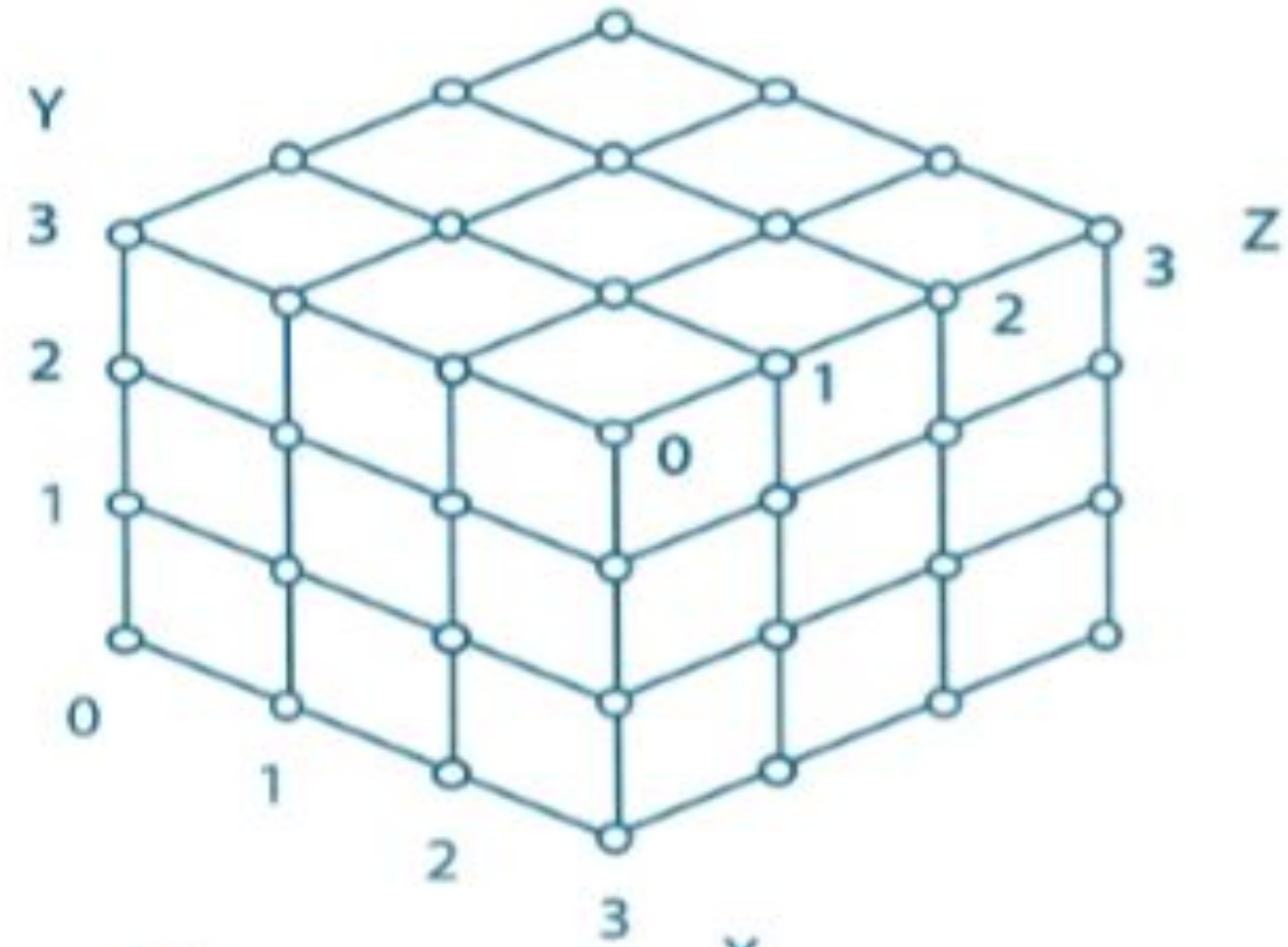Copy the cube and plot the co-ordinates:

(0, 3, 0)   (1, 1, 0)

(3, 0, 0)   (3, 3, 2)

Write the co-ordinates of a point you can't see on the grid.

Independent task

Somewhere in the grid a piece of treasure is hidden! You will get a series of clues which will lead to the treasure.

Clue 1:

The x co-ordinate + z co-ordinate = y co-ordinate

x	y	z
0	0	0
0	0	1
0	0	2
0	0	3
0	1	0
0	1	1
0	1	2
0	1	3
0	2	0
0	2	1
0	2	2
0	2	3
0	3	0
0	3	1
0	3	2
0	3	3
1	0	0
1	0	1
1	0	2
1	0	3
1	1	0
1	1	1
1	1	2
1	1	3

x	y	z
1	2	0
1	2	1
1	2	2
1	2	3
1	3	0
1	3	1
1	3	2
1	3	3
2	0	0
2	0	1
2	0	2
2	0	3
2	1	0
2	1	1
2	1	2
2	1	3
2	2	0
2	2	1
2	2	2
2	2	3
2	3	0
2	3	1
2	3	2
2	3	3

x	y	z
3	0	0
3	0	1
3	0	2
3	0	3
3	1	0
3	1	1
3	1	2
3	1	3
3	2	0
3	2	1
3	2	2
3	2	3
3	3	0
3	3	1
3	3	2
3	3	3

Explore

Find the treasure with the other clues

Clue 2: The treasure is not to be found at any of the corners

Clue 3: The z co-ordinate < the y co-ordinate

Clue 4: The answer contains exactly 2 prime numbers

Clue 5: The x co-ordinate > the z co-ordinate

Clue 6: Only 1 of the co-ordinates is a square number (0 is not a square number)

x	y	z
0	0	0
0	0	1
0	0	2
0	0	3
0	1	0
0	1	1
0	1	2
0	1	3
0	2	0
0	2	1
0	2	2
0	2	3
0	3	0
0	3	1
0	3	2
0	3	3
1	0	0
1	0	1
1	0	2
1	0	3
1	1	0
1	1	1
1	1	2
1	1	3

x	y	z
1	2	0
1	2	1
1	2	2
1	2	3
1	3	0
1	3	1
1	3	2
1	3	3
2	0	0
2	0	1
2	0	2
2	0	3
2	1	0
2	1	1
2	1	2
2	1	3
2	2	0
2	2	1
2	2	2
2	2	3
2	3	0
2	3	1
2	3	2
2	3	3

x	y	z
3	0	0
3	0	1
3	0	2
3	0	3
3	1	0
3	1	1
3	1	2
3	1	3
3	2	0
3	2	1
3	2	2
3	2	3
3	3	0
3	3	1
3	3	2
3	3	3

Answers

Try this

A 3x3x3 cube has an x, y and z co-ordinate.
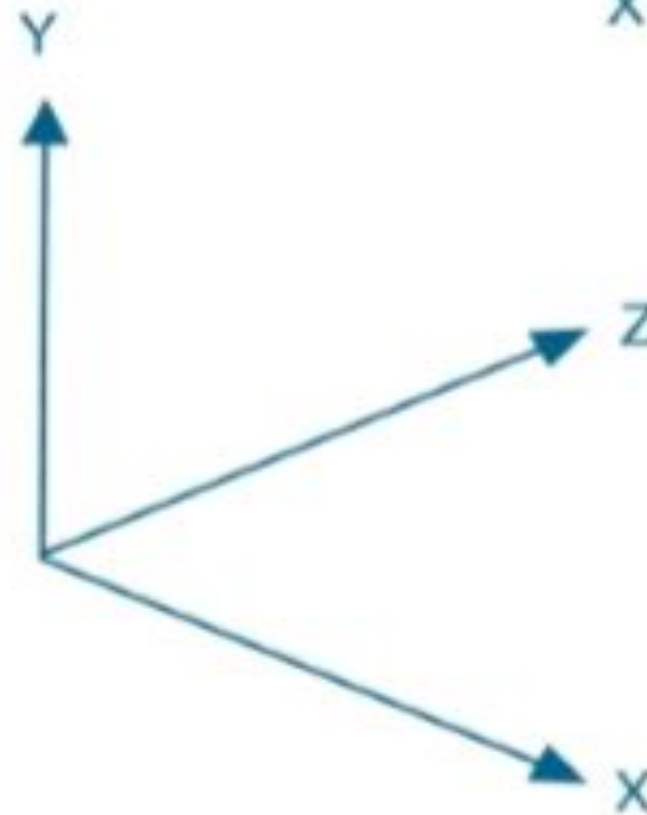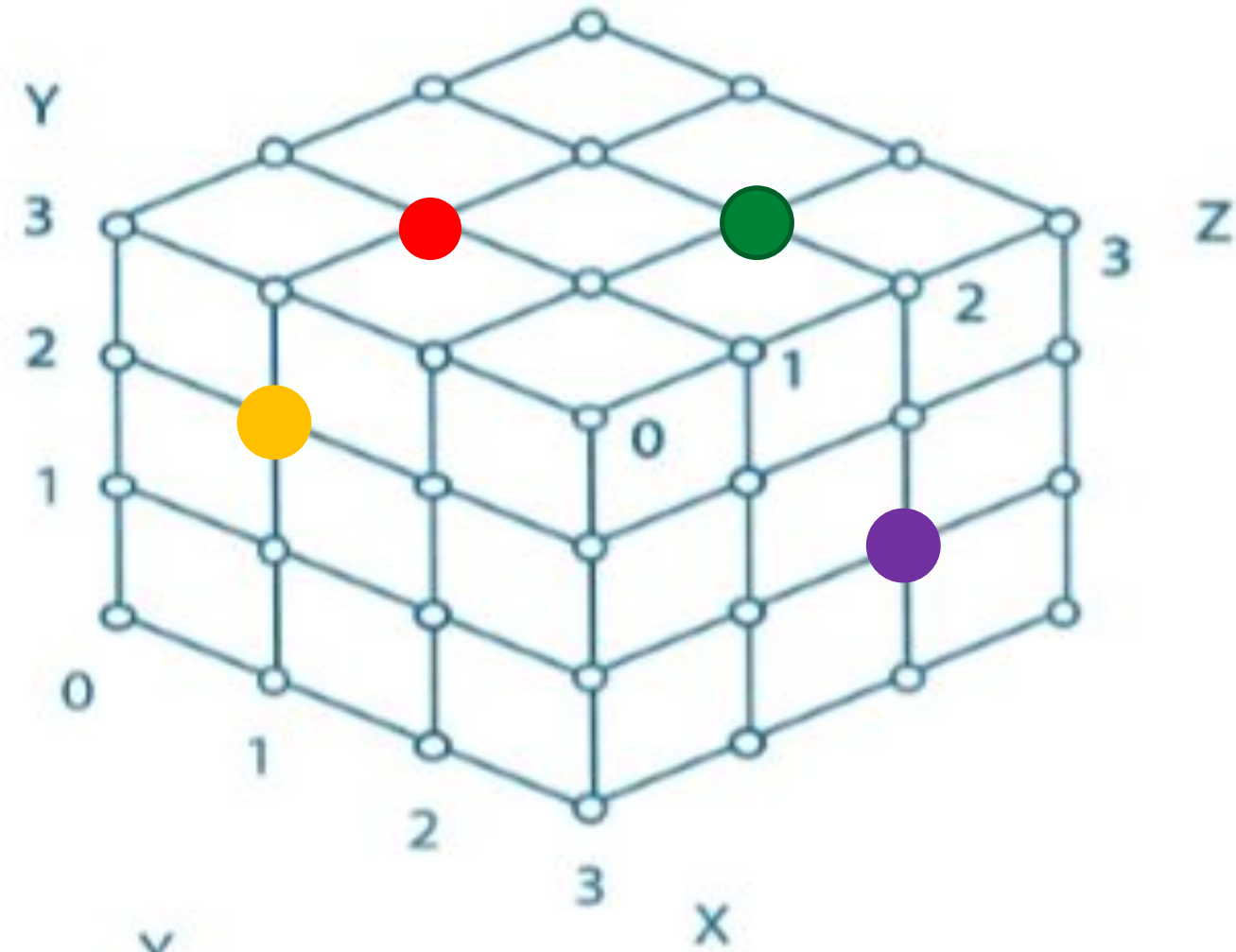
For example, the ● dot has co-ordinates (1, 3, 1).

Write down the co-ordinates of the other dots

●   (1, 2, 0)

●   (2, 3, 2)

●   (3, 1, 2)

Connect

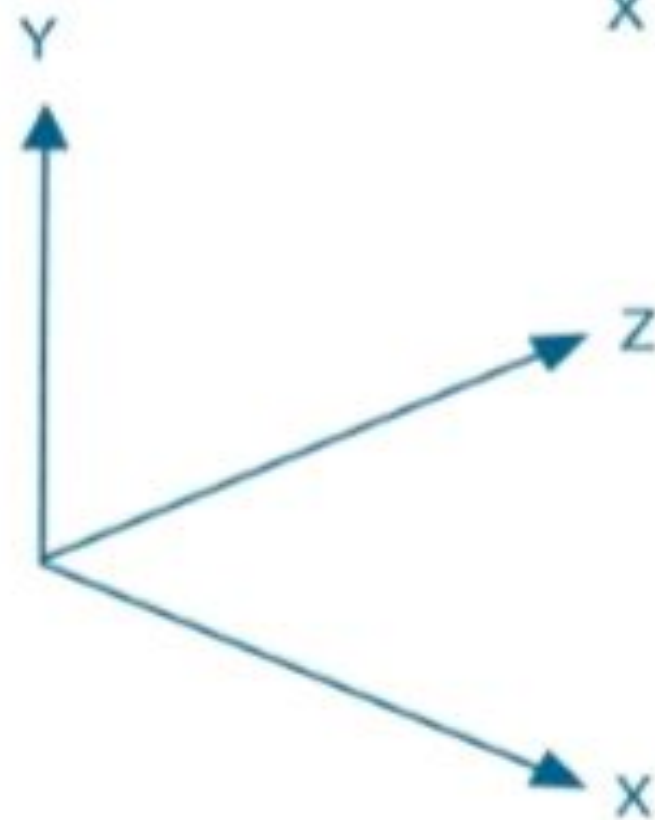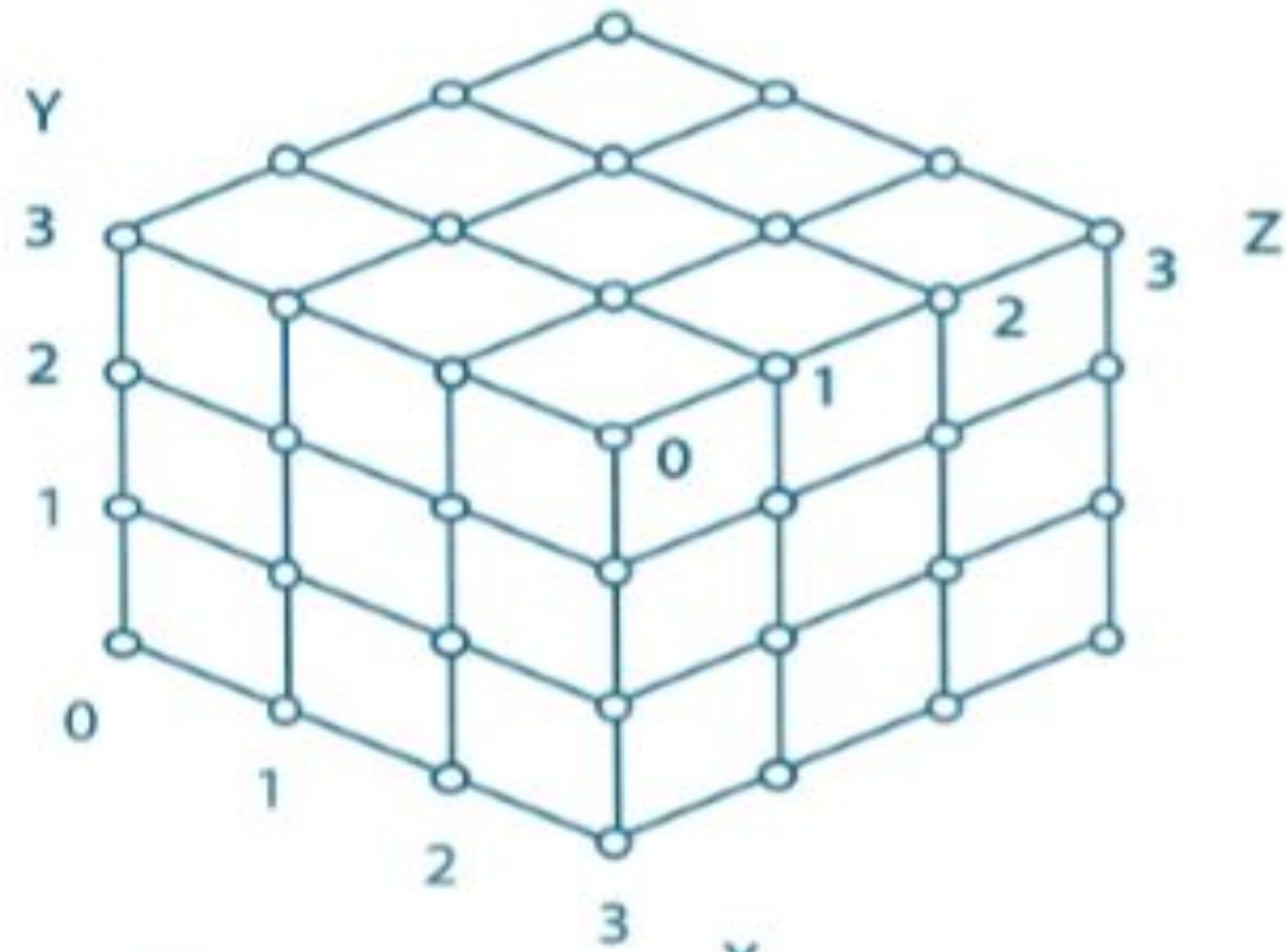Copy the cube and plot the co-ordinates:

(0, 3, 0)   (1, 1, 0)

(3, 0, 0)   (3, 3, 2)

Write the co-ordinates of a point you can't see on the grid.

(eg 1, 1, 1)

Explore

Find the treasure with the other clues

Clue 2: The treasure is not to be found at any of the corners

Clue 3: The z co-ordinate < the y co-ordinate

Clue 4: The answer contains exactly 2 prime numbers

Clue 5: The x co-ordinate > the z co-ordinate

Clue 6: Only 1 of the co-ordinates is a square number (0 is not a square number) **The treasure is hidden in (2, 3, 1)**

x	y	z
0	0	0
0	0	1
0	0	2
0	0	3
0	1	0
0	1	1
0	1	2
0	1	3
0	2	0
0	2	1
0	2	2
0	2	3
0	3	0
0	3	1
0	3	2
0	3	3
1	0	0
1	0	1
1	0	2
1	0	3
1	1	0
1	1	1
1	1	2
1	1	3

x	y	z
1	2	0
1	2	1
1	2	2
1	2	3
1	3	0
1	3	1
1	3	2
1	3	3
2	0	0
2	0	1
2	0	2
2	0	3
2	1	0
2	1	1
2	1	2
2	1	3
2	2	0
2	2	1
2	2	2
2	2	3
2	3	0
2	3	1
2	3	2
2	3	3

x	y	z
3	0	0
3	0	1
3	0	2
3	0	3
3	1	0
3	1	1
3	1	2
3	1	3
3	2	0
3	2	1
3	2	2
3	2	3
3	3	0
3	3	1
3	3	2
3	3	3