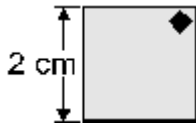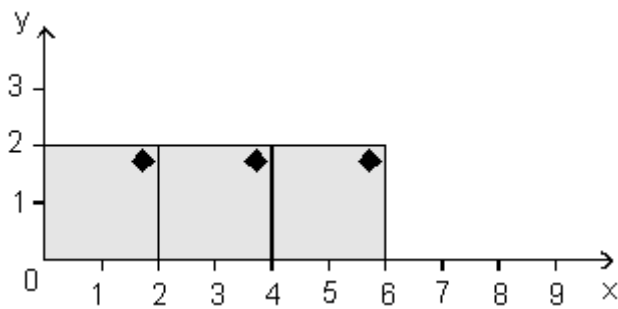**Q1.**   Marc has ten square tiles like this:

2 cm

Marc places all the square tiles in a row.
He starts his row like this:

For each square tile he writes down the co-ordinates of the corner which has a ♦.

The co-ordinates of the first corner are **(2, 2).**

(a)   Write down the co-ordinates of the next five corners which have a ♦ .

(........**2**........,........**2**......)

(....................,..................)

(....................,..................)

(....................,..................)

(....................,..................)

(....................,..................)

2 marks

(b)   Look at the **numbers** in the co-ordinates.
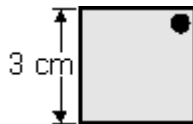
Describe **two** things you notice.

(c)   Marc thinks that (17,2) are the co-ordinates of one of the corners which have a ♦ .

Explain why he is **wrong**.

1 mark

(d)   Sam has some bigger square tiles, like this:

She places them next to each other in a row, like Marc's tiles.

Write down the co-ordinates of the first two corners which have a ● .

(.....................,.................)

(.....................,.................)

2 marks

Q2.   Robot

A robot can move about on a grid. It can move North, South, East or West.
It must move one step at a time.

The robot starts from the point marked ⬤ on the grid below.

It takes **2 steps**.

1st step	West
2nd step	North

It gets to the point marked **✗.**

1 mark

(a)   The robot **starts again** from the point marked ●.

It takes **2 steps**.

1st step	South
2nd step	South

Mark the point it gets to with an **X.**

1 step
North
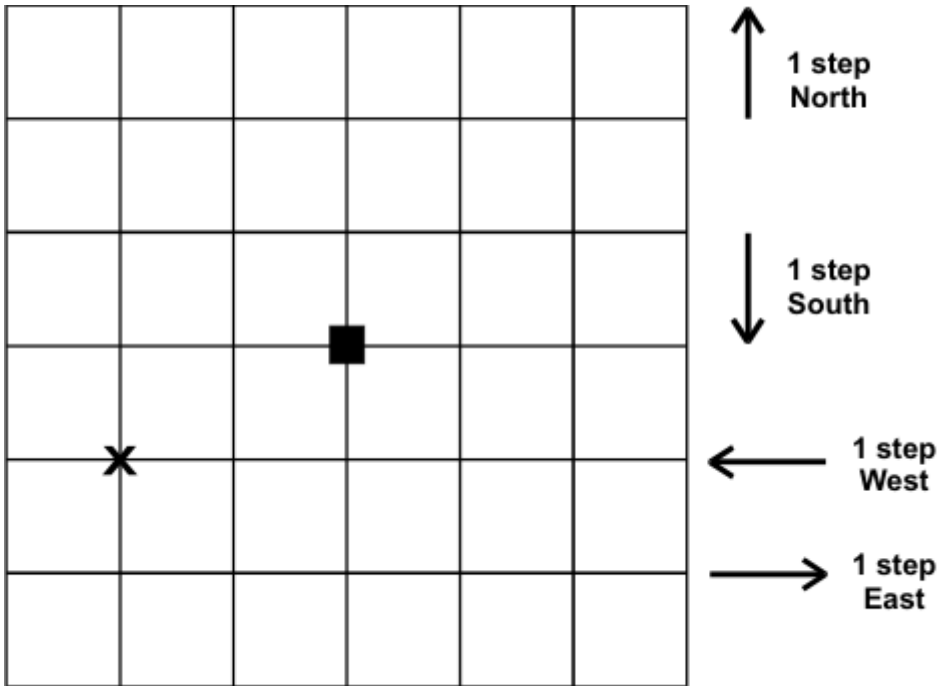
1 step
South

1 step
West

1 step
East
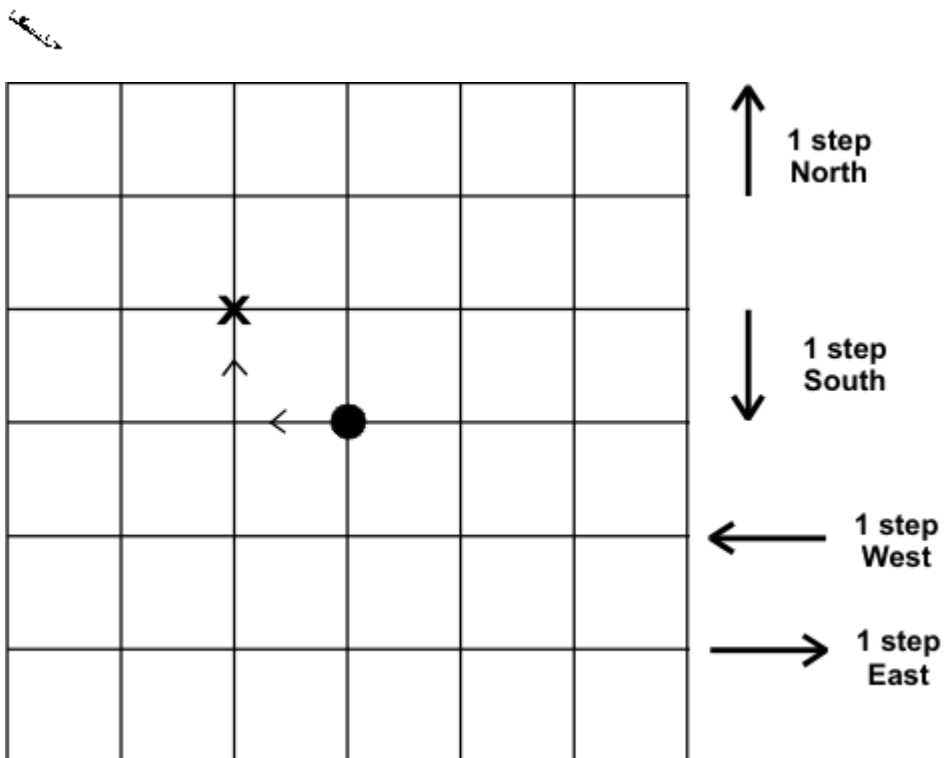
1 mark

(b)   The robot **always** starts from the point marked ●.

Find **all** the points the robot can reach in **2 steps.**

Mark each point with an **X** on the grid above.

3 marks

Another robot always starts from the point marked ■ on this grid.

It takes **3 steps**.

1st step	South
2nd step	West
3rd step	West

It gets to the point marked ✖.
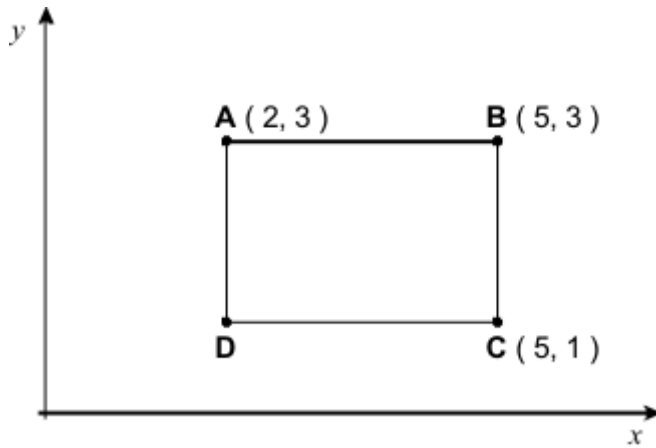
(c)   The robot **starts again** from the point marked ■ .

Fill in the table to show **two more ways** for the robot to get to the point marked ✖ in **3 steps.**

1st step	South	West	
2nd step	West		
3rd step	West		

2 marks

Q3. **What's the Point?**

Look at the diagram.

(a) The point K is **halfway** between points B and C

What are the coordinates of point K?

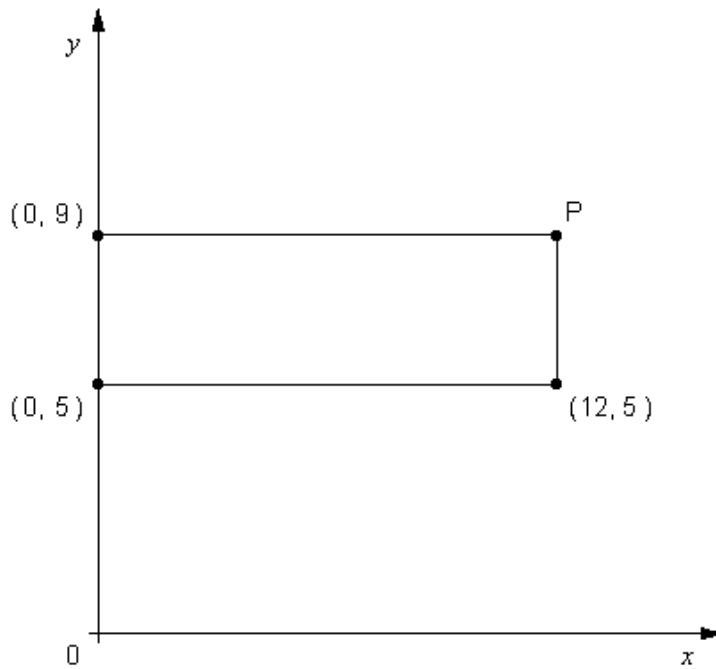(............ , ...)

1 mark

(b) Shape ABCD is a rectangle.

What are the coordinates of point D?

(............ , ...)

1 mark

Q4. **Finding points**

The graph shows a **rectangle**.

Not drawn accurately

Write the coordinates of point P

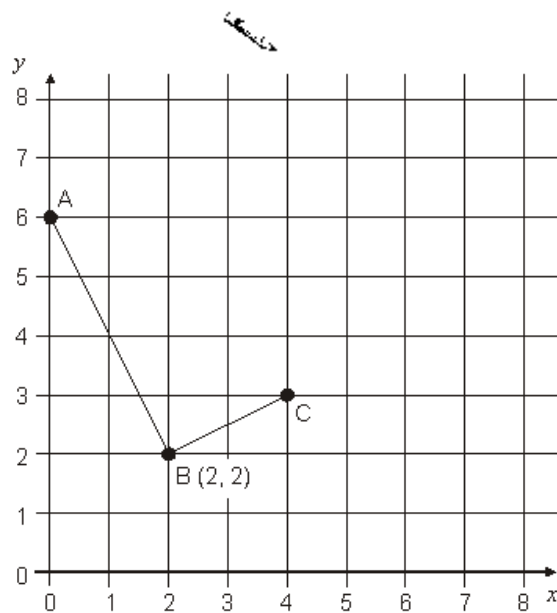(............... , ...)

2 marks

Q5. **Coordinates**

Look at the graph.

(a)   Write down the coordinates of points A and C.

A is (,   )

1 mark

C is (,   )

1 mark

(b)   Point D can be marked so that ABCD is a **rectangle**.

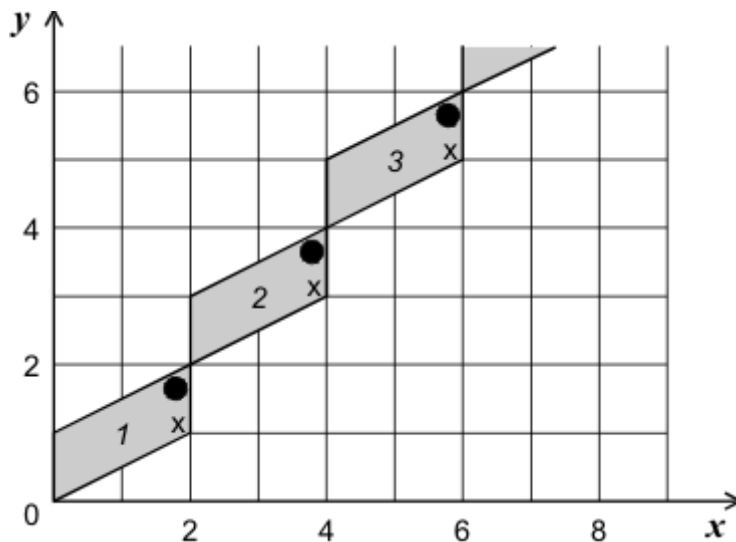Mark point D accurately on the graph.

1 mark

Q6.   Tiles

Daniel has some parallelogram tiles.

He puts them on a grid, in a continuing pattern.

He numbers each tile.

The diagram shows part of the pattern of tiles on the grid.

Daniel marks the **top right corner** of each tile with a ●

The co-ordinates of the corner with a ● on **tile number 3** are (**6, 6**)

(a)   What are the co-ordinates of the corner with a ● on **tile number 4**?

(............ , ...)

1 mark

(b) What are the co-ordinates of the corner with a ● on **tile number 20**?

↖ (............ , ...)

1 mark

Explain how you worked out your answer.

↖

1 mark

(c) Daniel says:

One tile in the pattern has a ● in the corner at (**25** , **25**)

Explain why Daniel is **wrong**.

↖

1 mark

(d)   Daniel marks the **bottom right corner** of each tile with a ✖

       Fill in the table to show the co-ordinates of each corner with a ✖

tile number	co-ordinates of the corner with a ✖
1	(.....2..... , ...1.....)
2	(............ , ...)
3	(............ , ...)
4	(............ , ...)

Fill in the missing numbers below.

(e)   Tile number **7** has a ✖ in the corner at (............ , ...)

(f)   Tile number .... has a ✖ in the corner at (**20** , **19**)

Q7. **Moving on a grid**

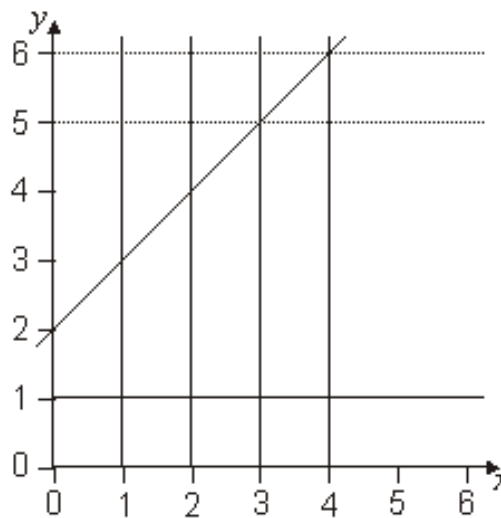Here is a line on a square grid.

Points A and B are on the line.
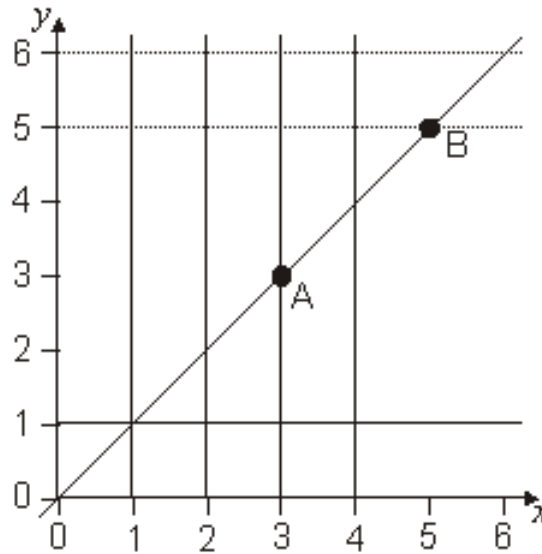
(a) The coordinates of point A are (3 , 3)

What are the coordinates of point B?

(.............. , ...)

1 mark

(b) Here is a different line on the square grid.

Write the coordinates of any point on this line.

(.............. , ...)

1 mark

Q8.   Triangle statement

Look at the triangle ABC, drawn on a square grid.
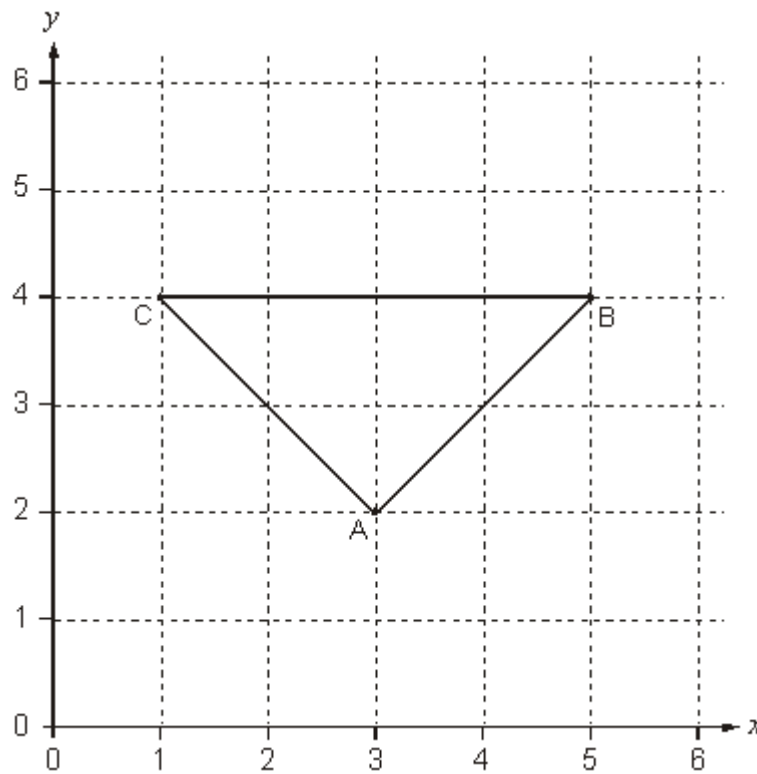
Here are some statements about triangle ABC.

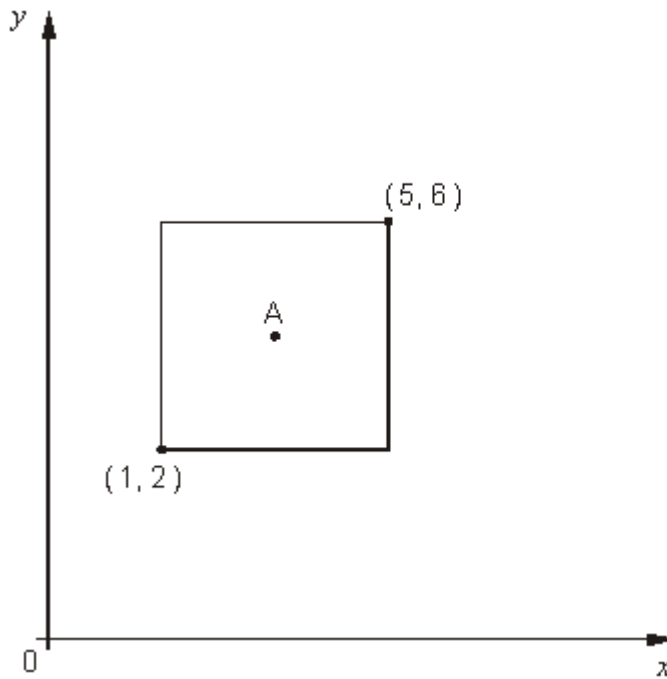For each statement tick (✓) True or False.

	True	False
The triangle is isosceles.	☐	☐
The triangle has only one line of symmetry.	☐	☐
The triangle is right-angled.	☐	☐
The coordinates of A are (2, 3)	☐	☐

2 marks

Q9.   Coordinates

Look at the square drawn on the graph.

Not drawn accurately

Point A is the centre of the square.
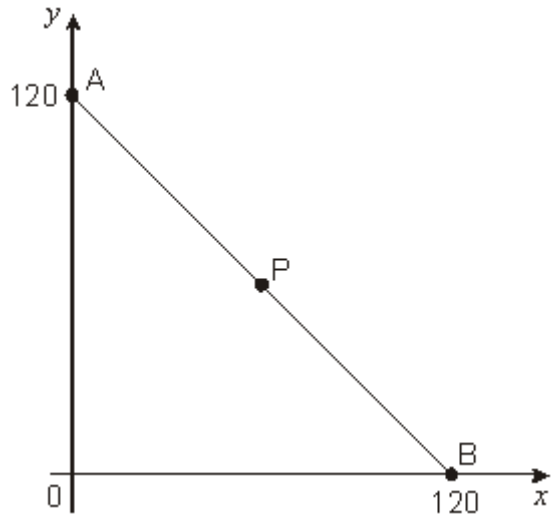
What are the coordinates of point A?

A is (........... , ...)

2 marks

Q10.   **Midpoint**

P is the **midpoint** of line AB.

What are the coordinates of point **P**?

P is (................ , ...)

1 mark

Q11. **Moving C**

On this square grid, **A and B must not move**.
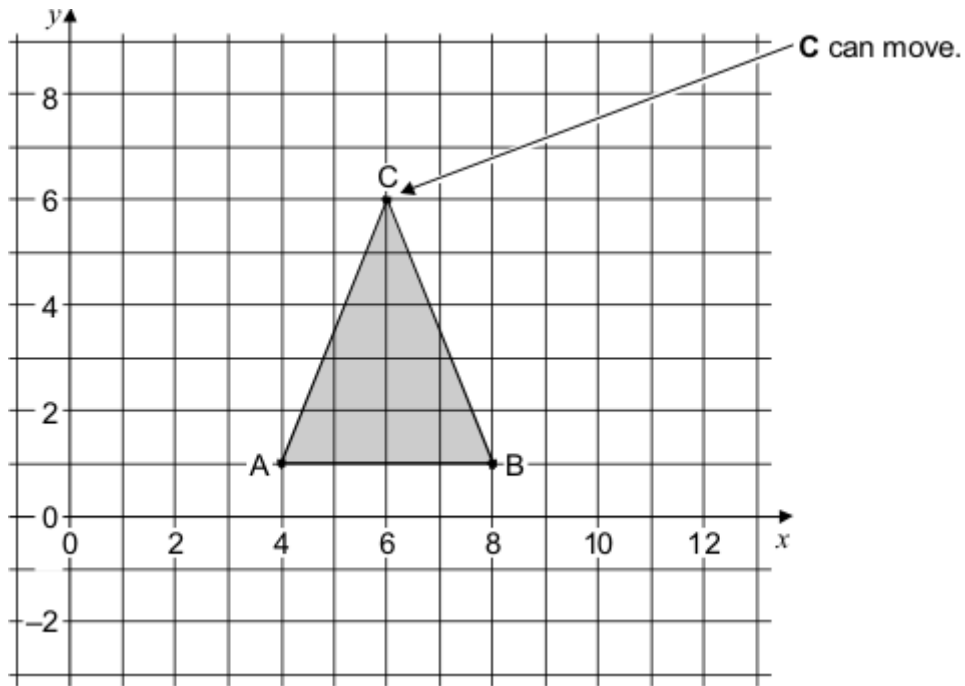
When C is at (6, 6), triangle ABC is **isosceles**.

(a)   C moves so that triangle ABC is still **isosceles**.

Where could C have moved to?
Write the coordinates of its new position.

(............... , ...)

1 mark

(b)   Then C moves so that triangle ABC is **isosceles and right-angled**.

Where could C have moved to?
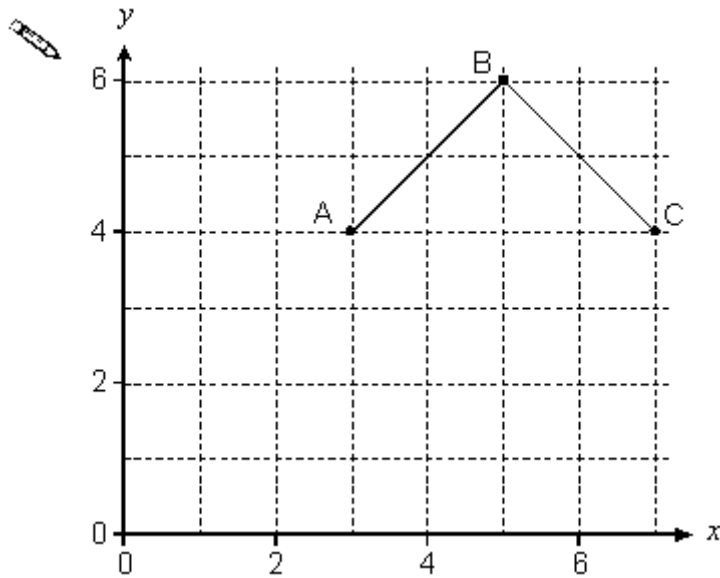Write the coordinates of its new position.

(............... , ...)

1 mark

Q12.   Finding D

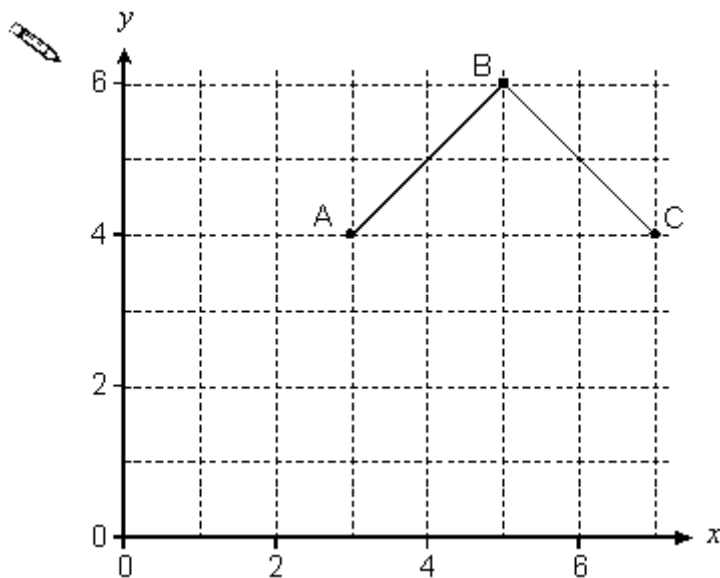(a)   Where should you put point D so that shape ABCD is a **square**?

Mark point D on the grid.

1 mark

(b)   Where could you put point E so that shape ABCDE is a **trapezium**?
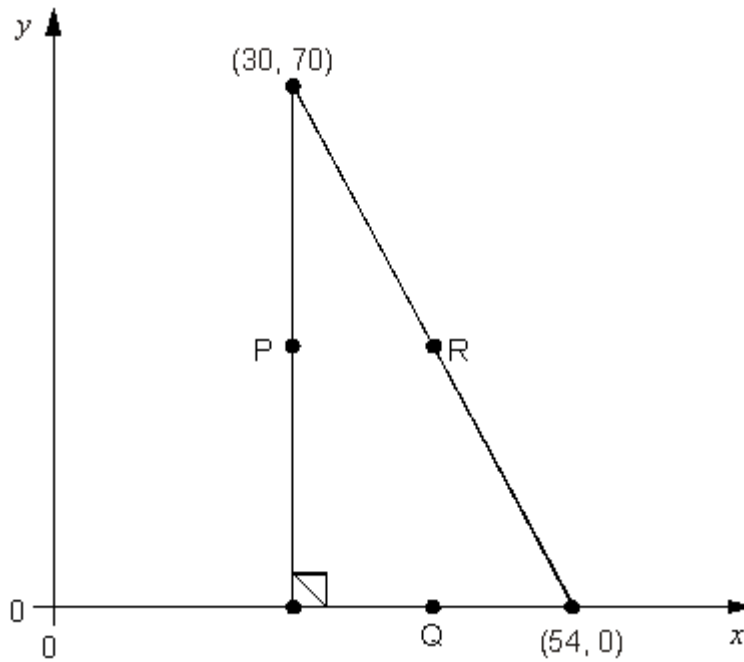
Mark point E on the grid below.

1 mark

Now write the coordinates of point E

(,   )

1 mark

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Q13. **Midpoints**

The diagram shows a right-angled triangle.

Not drawn accurately

P, Q and R are the **midpoints** of the sides of the triangle.

Work out the coordinates of P, Q and R.

P is (............. , ...)

1 mark

Q is (............. , ...)

1 mark

R is (............. , ...)
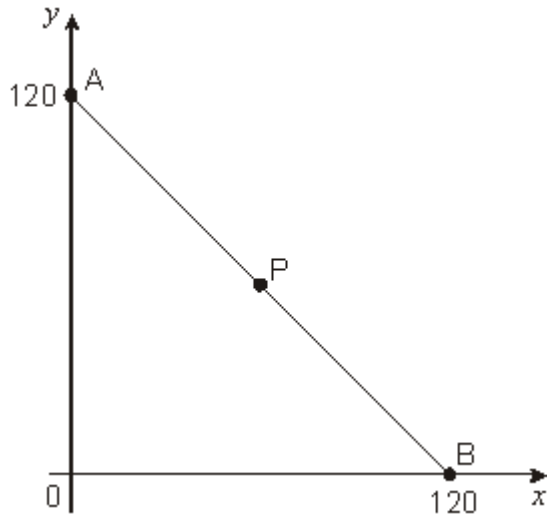
1 mark

Q14. **Midpoint**

(a)   P is the **midpoint** of line AB.

What are the coordinates of point **P**?

P is (................. , ...)

1 mark

(b)   Q is the **midpoint** of line MN.

The coordinates of Q are (30, 50)
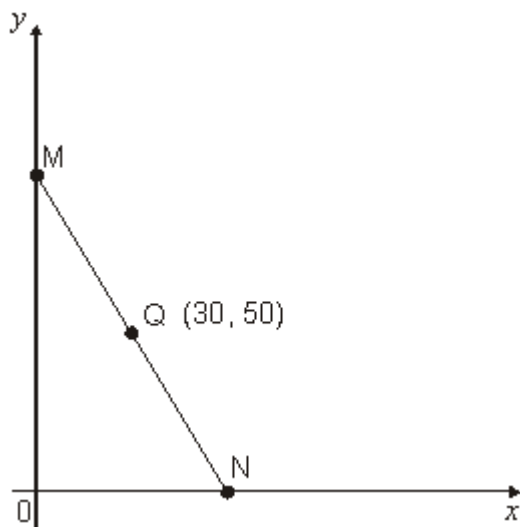
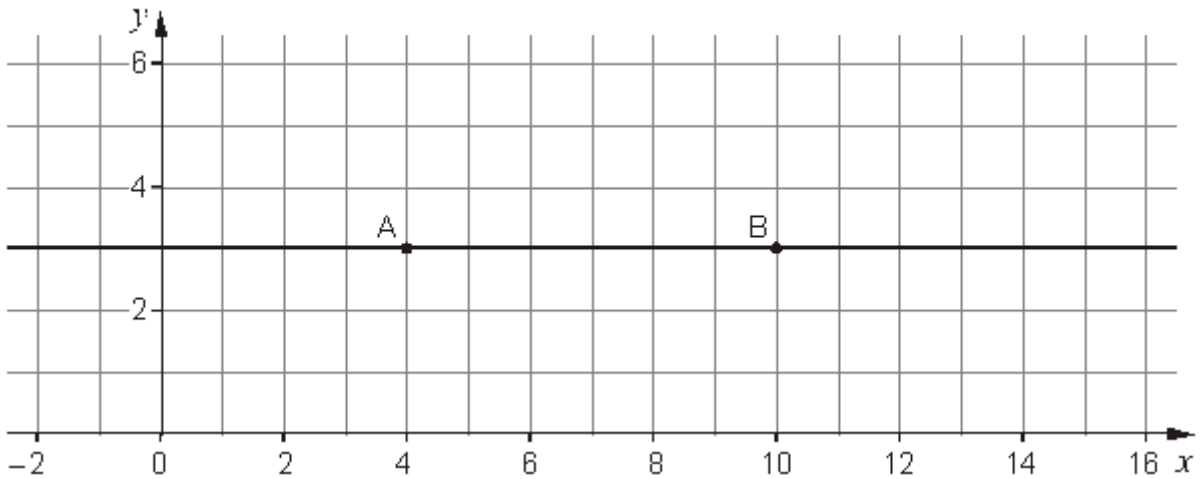What are the coordinates of points **M** and **N**?

M is (................ , ...)

N is (................ , ...)

Q15.   **Twice as far**

Point A has coordinates (4, 3) and point B has coordinates (10, 3)

They lie on a horizontal line.

Another point, P, lies on the **same** horizontal line.

P is **twice as far from A** as it is from B.

What could the coordinates of point P be?

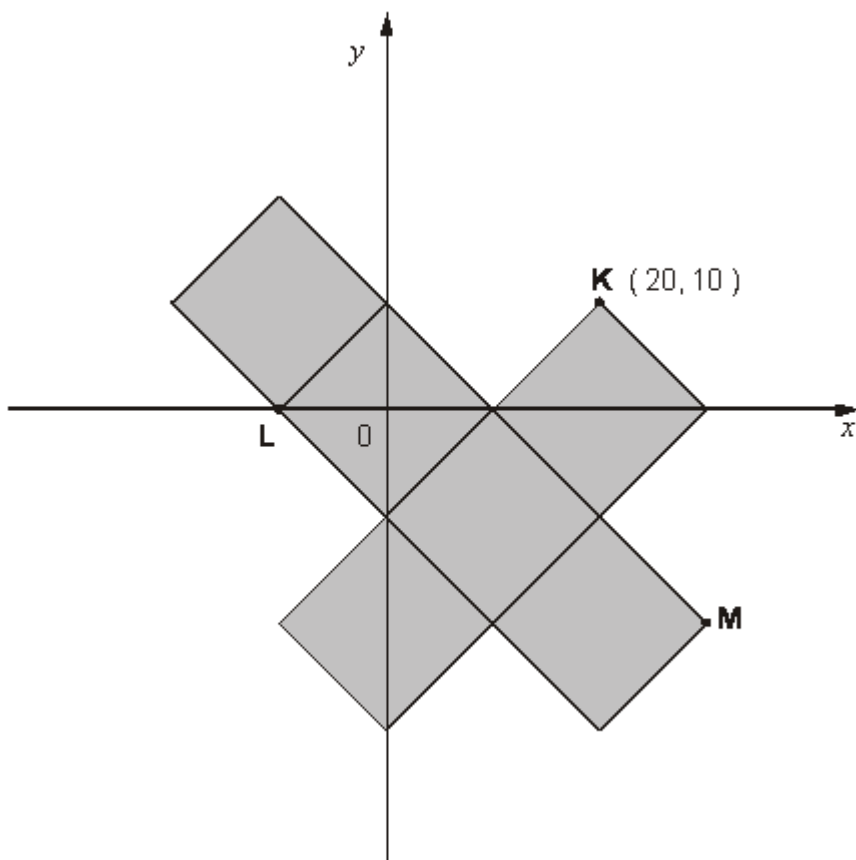There are two possible answers. Give them both.

(............, ...) or (............, ...)

Q16. **Coordinate net**

The diagram shows the net of a cube made of 6 squares.

Not drawn accurately

K is the point **(20, 10)**

What are the coordinates of the points **L** and **M**?

L is (........... , ...)

1 mark

M is (........... , ...)

1 mark

Q17. **Dots**

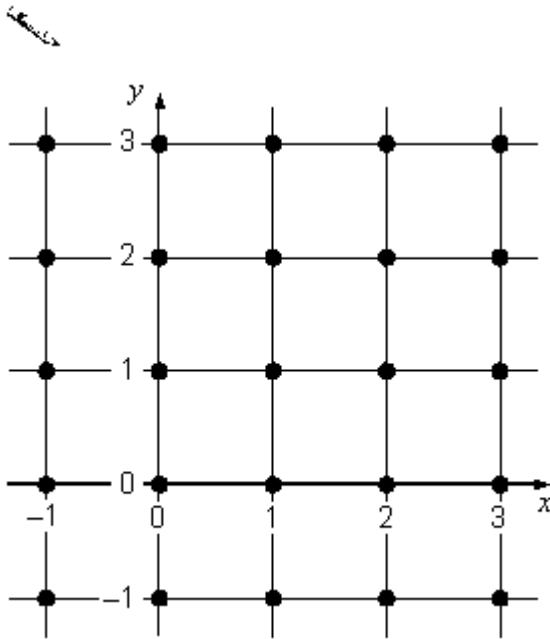I am thinking of a point on the dotted grid below.

The co-ordinates of my point are (x, y)

You have 3 clues to find which of the dots is my point.

(a) **First clue: $x > 0$ and $y > 0$**

Which dots **cannot** represent my point?

On the grid below, **cross them out** like this ✖

2 marks

(b) **Second clue:** $x + y < 4$

Which other dots **cannot** represent my point?

This time, put a **square around them** like this ▣

1 mark

(c) **Third clue:** $x > y$

What are the co-ordinates of my point?

(,   )

1 mark