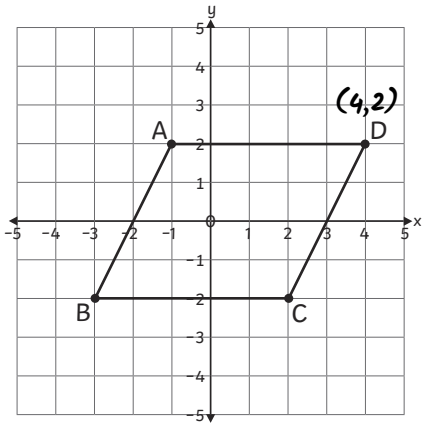
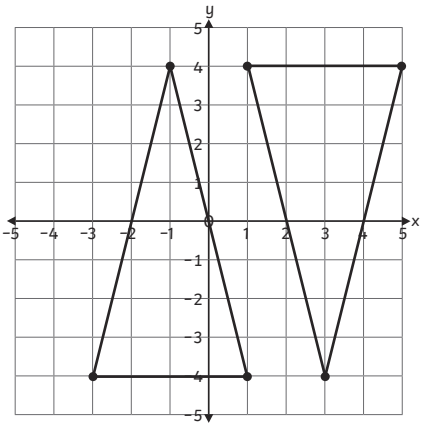
1)



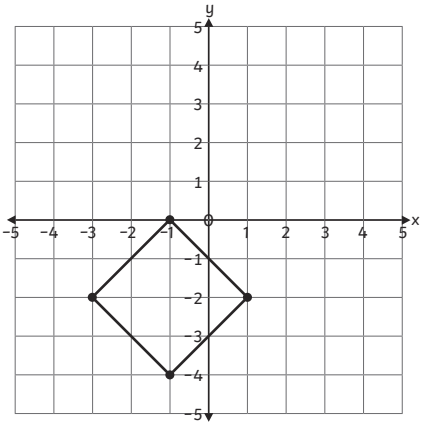
2)



The coordinates of the missing vertices are (1,-4) and (3,-4).

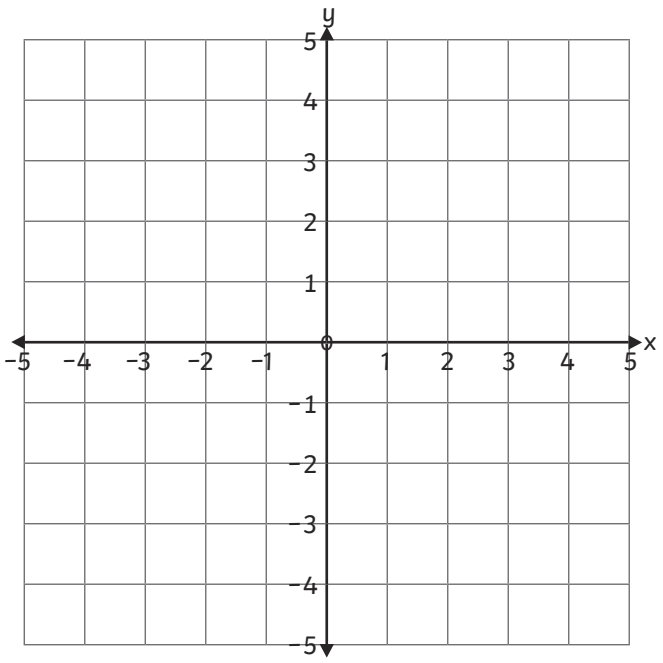
1) Alfie is incorrect. To find point B, he needs to calculate the difference between each x and y coordinate of point A and the midpoint. Then, he should add this difference onto each x and y coordinate of the midpoint. The coordinates of point B are (4,2).

2) Olivia is correct because her coordinates will make a square.



1) Z (1,6)
Y (5,6)
X (5,2)
W (1,2)
V (-3,2)
U (-3,-2)
T (1,-2)

2) A (-3,-2)
B (5,6)
C (3,-2)
D (-5,6)
N (-1,2)
M (1,2)



1) a) Here are the coordinates of three vertices of a parallelogram where the secret agent found evidence. Plot these on the grid. Remember to label each vertex.

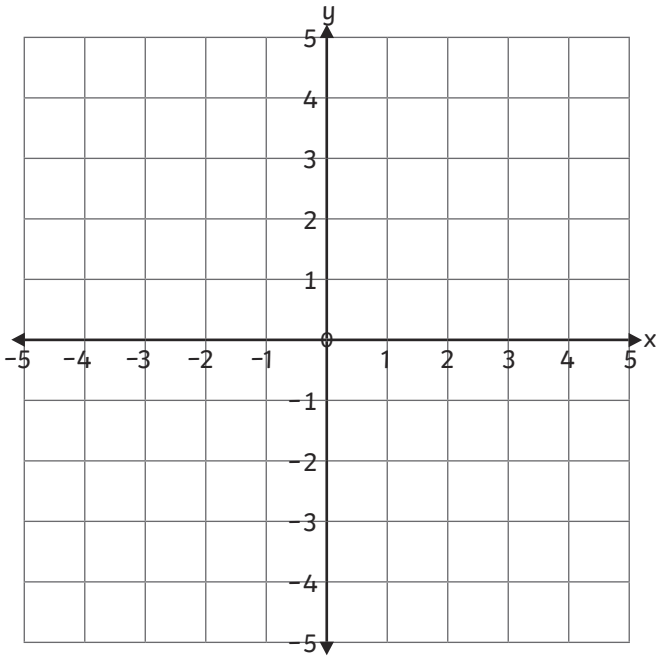
Vertex **A**: (-1,2)

Vertex **B**: (-3,-2)

Vertex **C**: (2,-2)

b) Now plot vertex D, labelling its coordinates on the grid.

c) Complete the drawing of the parallelogram to show where the evidence was found.



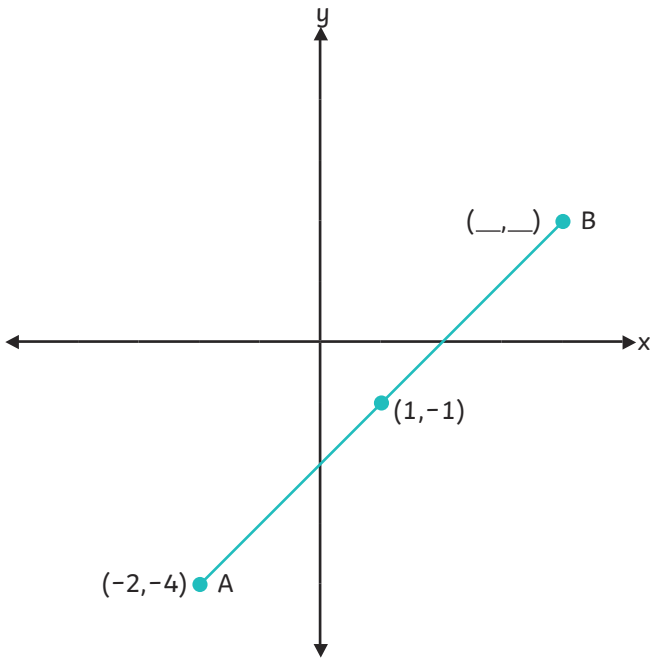
2) The secret agent needs to draw two congruent isosceles triangles on this grid for surveillance.

Here are some of the coordinates of the vertices of both triangles.

(-1,4) (1,4) (5,4) (-3,-4)

a) Plot the above coordinates on the grid.

b) Use these coordinates to help you plot the missing vertices of each isosceles triangle. Then, draw each triangle on the grid so that the secret agent can complete her route.

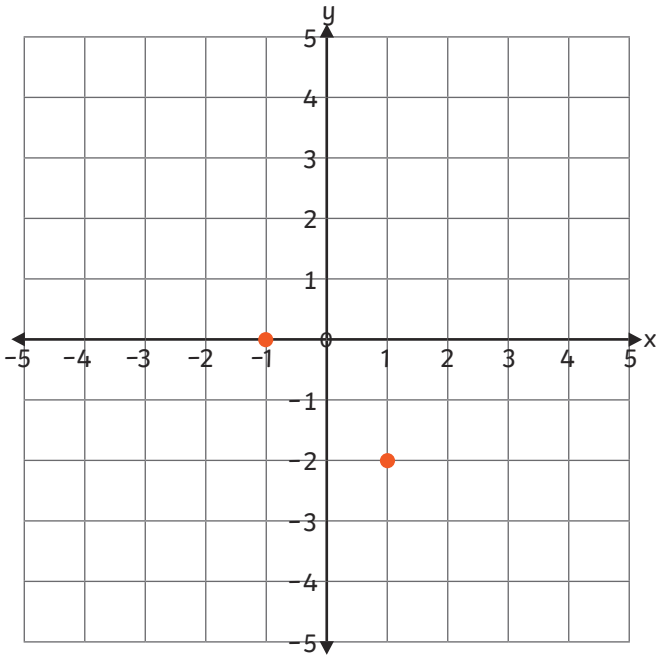


1) Alfie, the secret agent, is solving this problem to establish where fingerprint B was found.

If the coordinates (1,-1) are the midpoint between A and B, what are the coordinates of B?

In order to find the coordinates of point B, I will just need to double the coordinates of A. I think the coordinates of B must be (-4,-8).

Is Alfie correct?
Explain your reasoning.

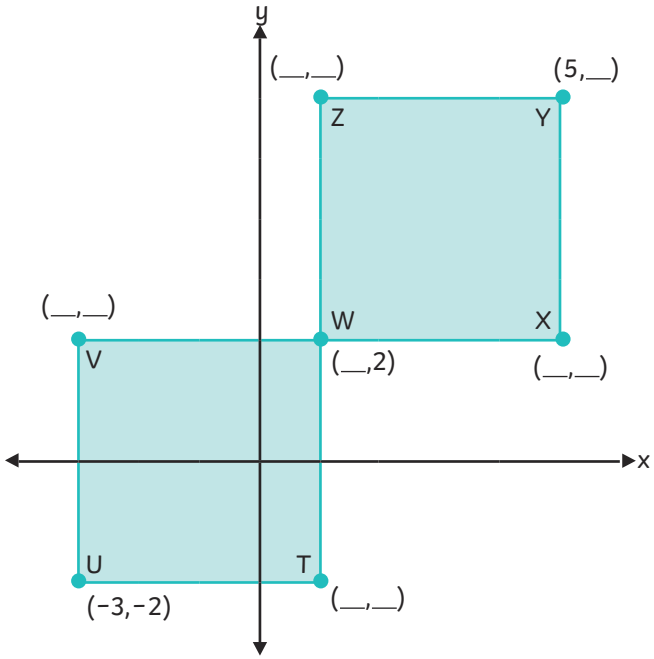


2) Halim, the secret agent, is plotting the missing vertices to complete this square of where clues were found.

He thinks he needs to plot the coordinates (-2,-3) and (-4,-1) but his partner Olivia thinks he needs to use (-3,-2) and (-1,-4).

a) Explain which secret agent is correct.

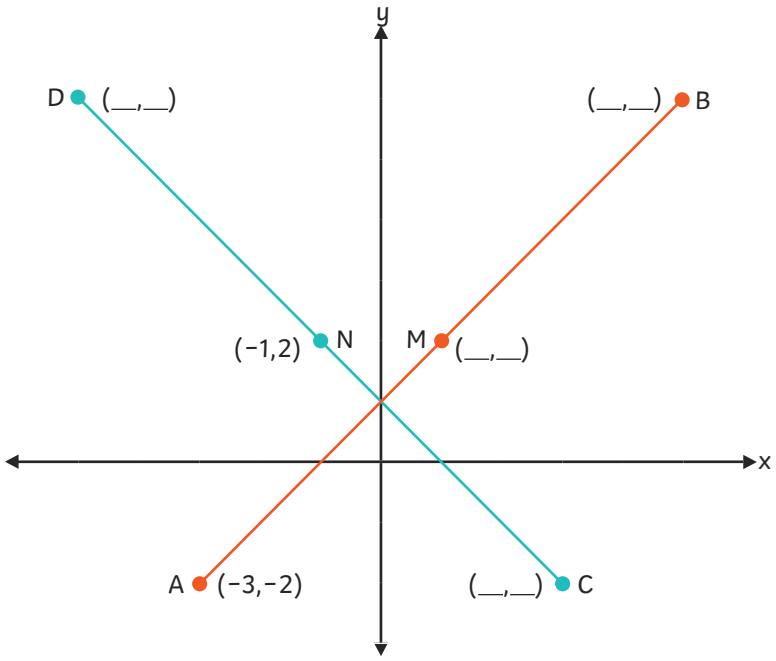
b) Complete the drawing of the square for the detectives.



1) The secret agent needs to describe these hidden locations to his team.

He has drawn two congruent squares on this four-quadrant coordinate grid.

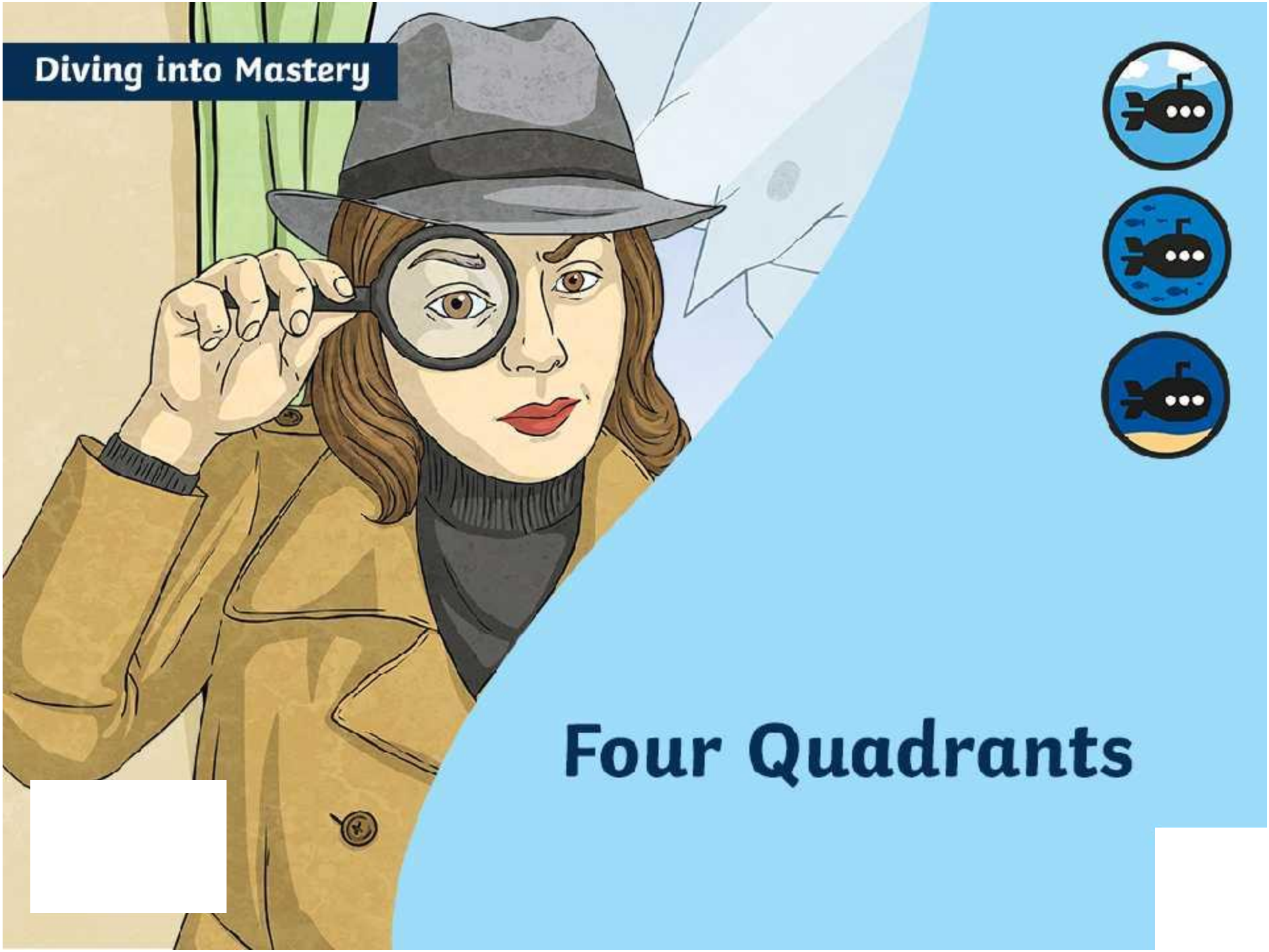
Identify the missing coordinates.



2) Lines AB and CD are congruent.

M and N are the midpoints of each line, where important fingerprints were found.

Use the information on the coordinate grid to find the missing coordinates to show where the fingerprints were detected.


Diving into Mastery
Four Quadrants

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

Diving

Deeper

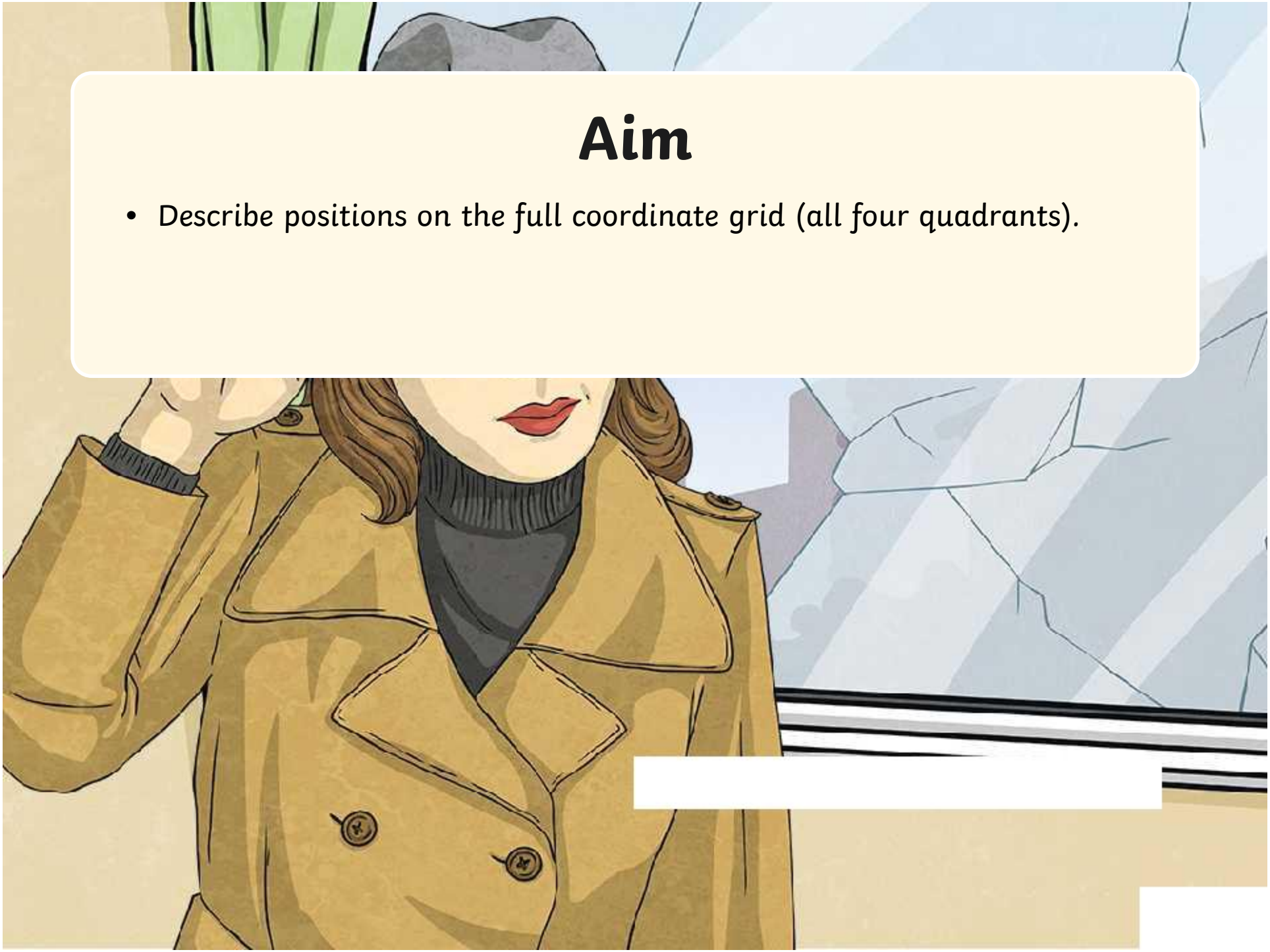
Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Aim

- Describe positions on the full coordinate grid (all four quadrants).



Four Quadrants **Diving**

The vertices of the two polygons show where the secret agent found important evidence.

What are the coordinates of the vertices of the trapezium?

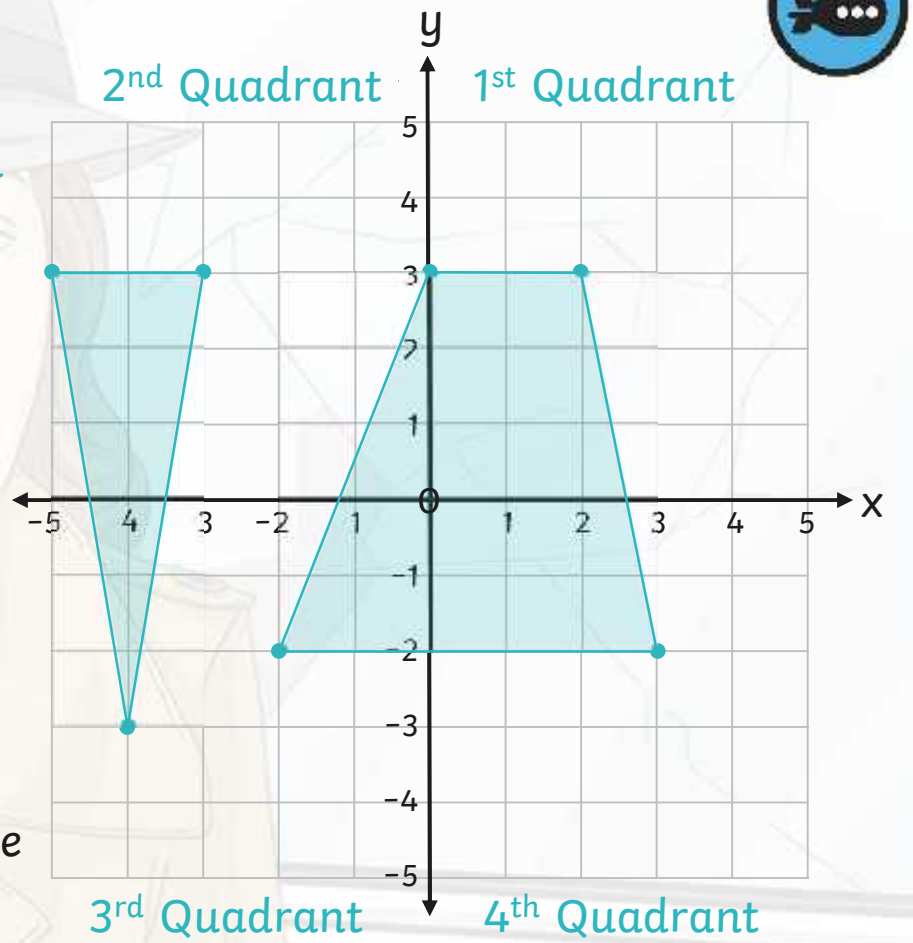
What are the coordinates of the vertices of the isosceles triangle?

Isosceles Triangle:
(−4,−3) (−5,3) (−3,3)

Trapezium
(−2,−2) (3,−2) (2,3) (0,3)

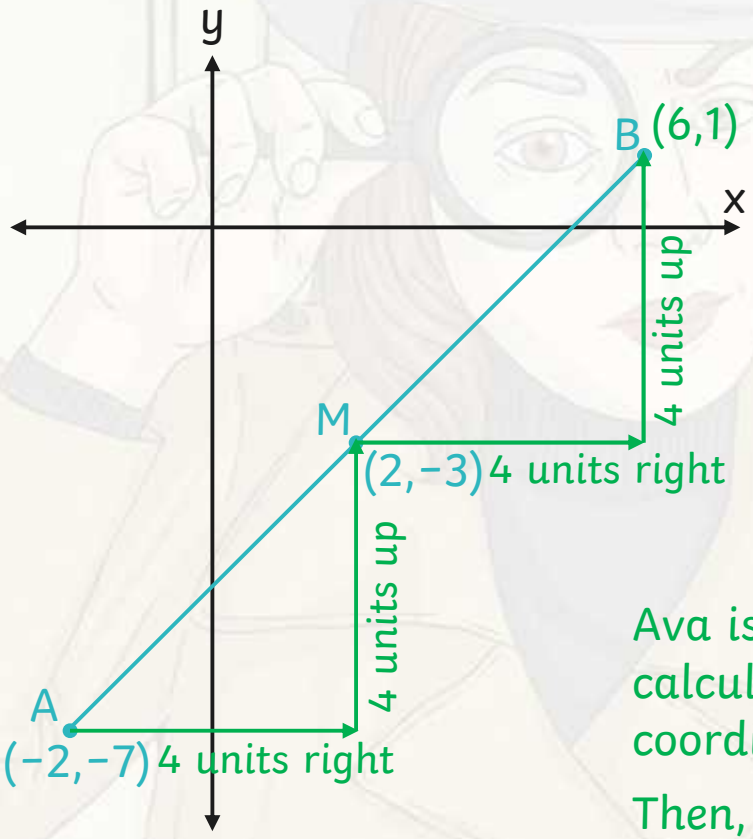
What do you notice about all of the coordinates in the third quadrant?

Points in the third quadrant always have a negative x-axis coordinate and a negative y-axis coordinate.



Four Quadrants **Deeper**

Charlie, the secret agent, asked his partner Ava this question to establish where fingerprint B was found.



Ava

In order to find the coordinates of point B, I will just need to double the coordinates of the midpoint. The coordinates of B must be (4,−6).

Is Ava correct? Explain your reasoning.

Ava is incorrect. To find point B, she needs to calculate the difference between each x and y coordinate of point A and the midpoint M.

Then, she should add this difference on to each x and y coordinate of the midpoint.

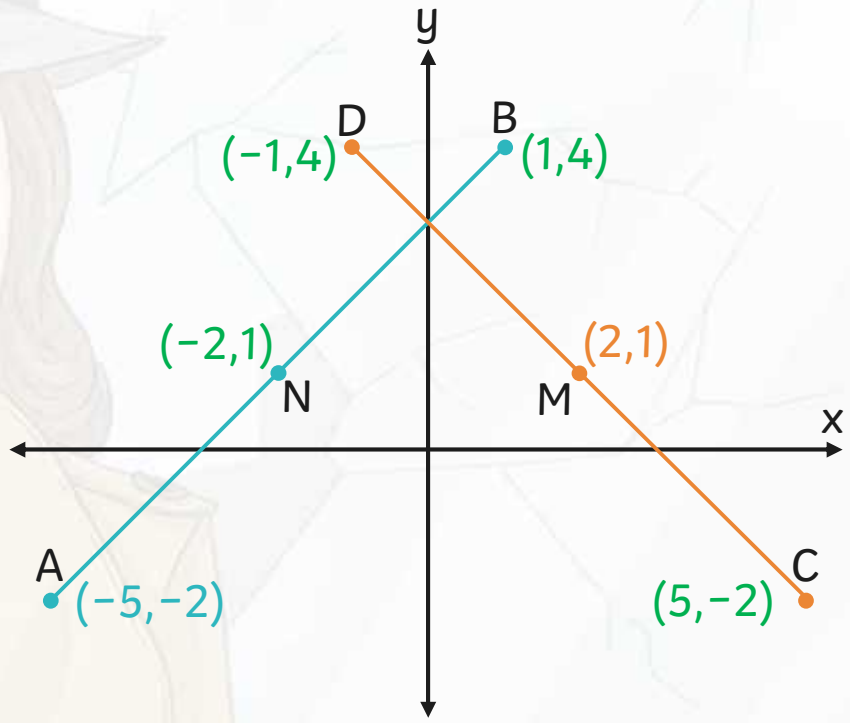
The coordinates of B are (6,1).

Four Quadrants **Deepest**

Lines AB and CD are congruent.

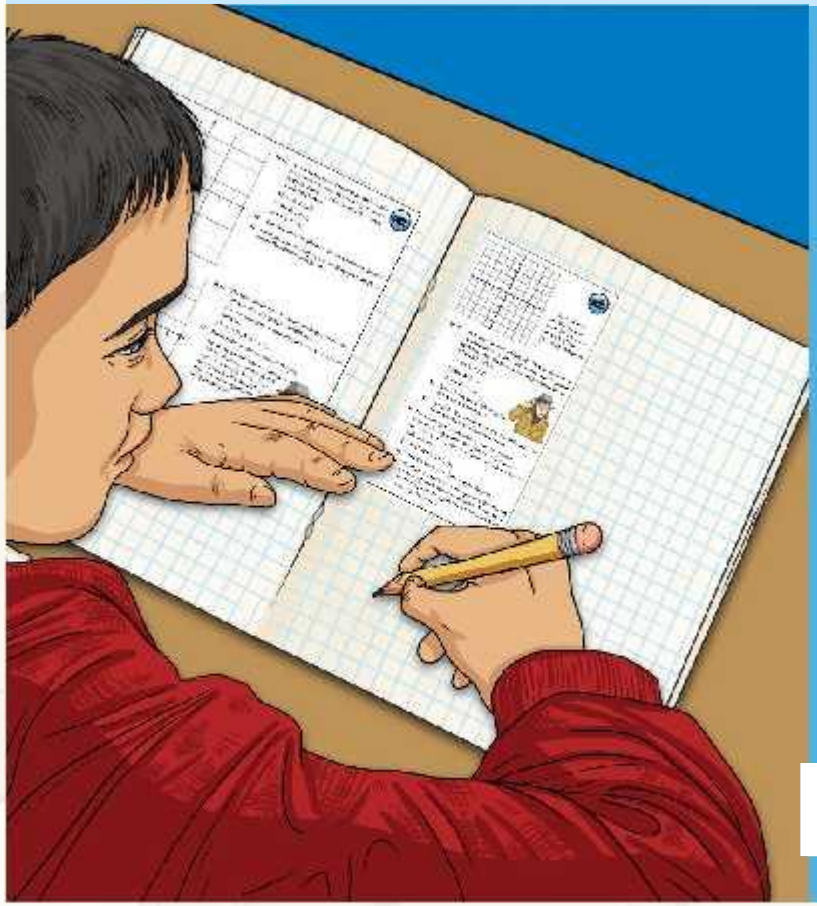
M and N are the midpoints of each line, where important fingerprints were found.

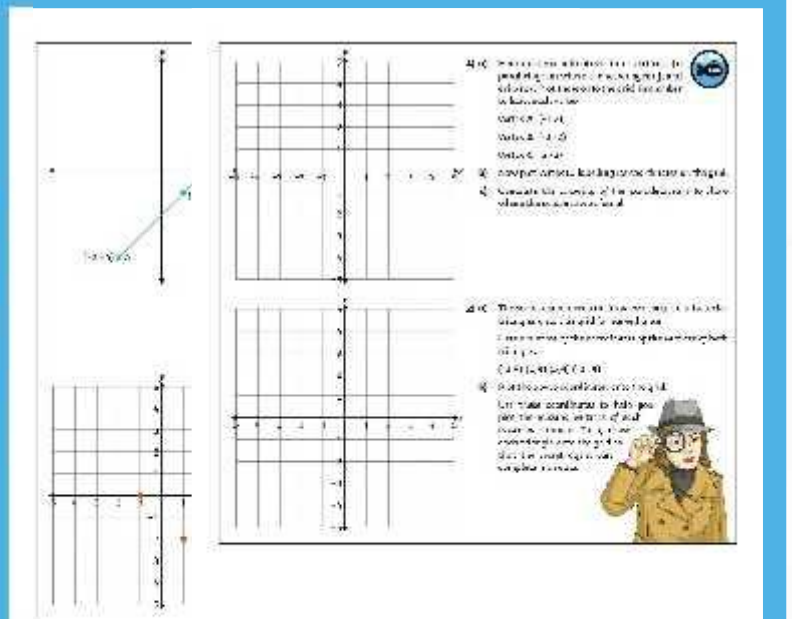
Use the information on the coordinate grid to find the missing coordinates to show where the fingerprints were detected.

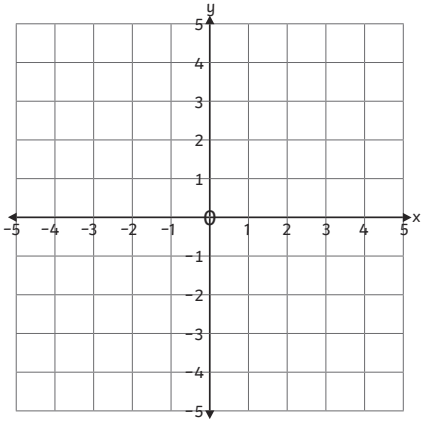


Four Quadrants

Dive in by completing your own activity!







Draw two grids like this in your book, then use one for each of the following questions.

1) **a)** Here are the coordinates of three vertices of a parallelogram where the secret agent found evidence. Plot these on your first grid. Remember to label each vertex.

Vertex **A**: (-1,2)

Vertex **B**: (-3,-2)

Vertex **C**: (2,-2)

b) Now plot vertex D, labelling its coordinates on the grid.

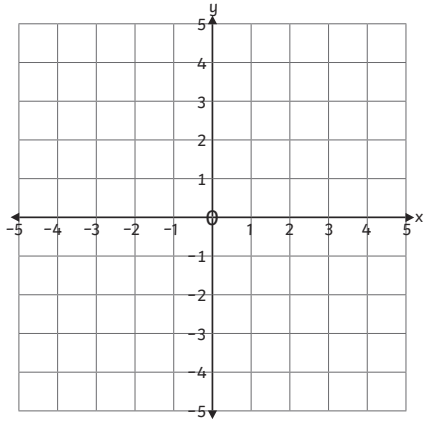
c) Complete the drawing of the parallelogram to show where the evidence was found.

2) The secret agent needs to draw two congruent isosceles triangles on a grid for surveillance.
Here are some of the coordinates of the vertices of both triangles.

(-1,4) (1,4) (5,4) (-3,-4)

a) Plot the above coordinates on your second grid.

b) Use these coordinates to help you plot the missing vertices of each isosceles triangle. Then, draw each triangle on the grid so that the secret agent can complete her route.



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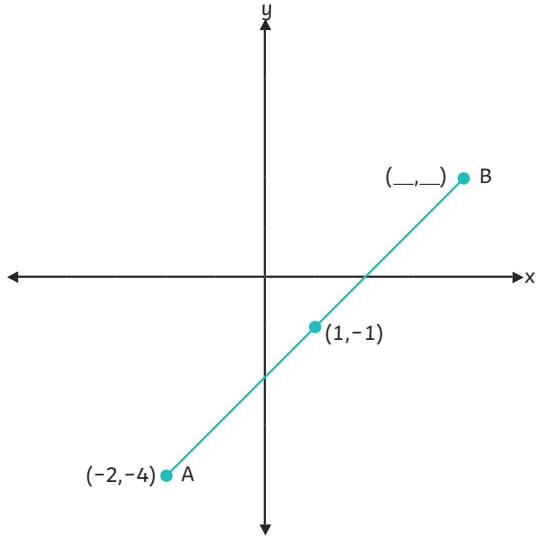
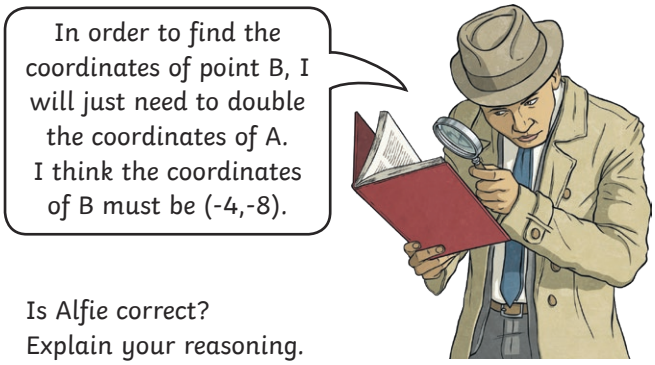
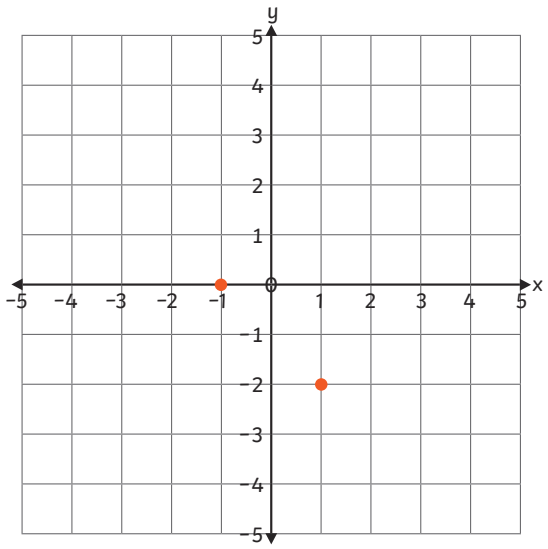
1) Alfie, the secret agent, is solving this problem to establish where fingerprint B was found. If the coordinates (1,-1) are the midpoint between A and B, what are the coordinates of B?





Is Alfie correct?
Explain your reasoning.

2) Halim, the secret agent, is plotting the missing vertices to complete this square of where clues were found.



He thinks he needs to plot the coordinates (-2,-3) and (-4,-1) but his partner Olivia thinks he needs to use (-3,-2) and (-1,-4).

a) Explain which secret agent is correct.

b) Copy the grid and complete the drawing of the square for the detectives.

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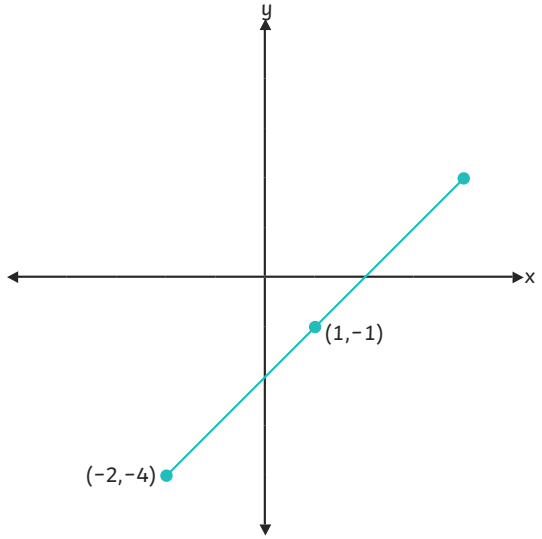

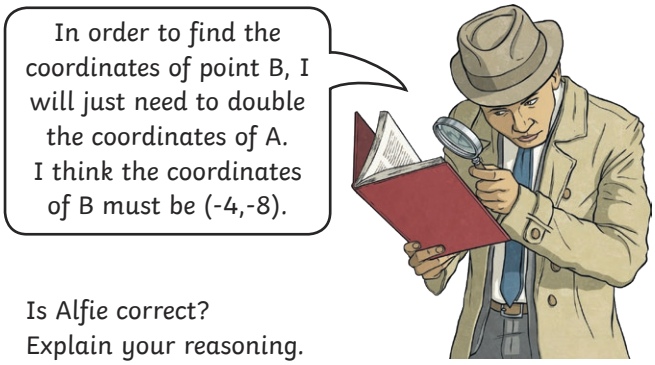

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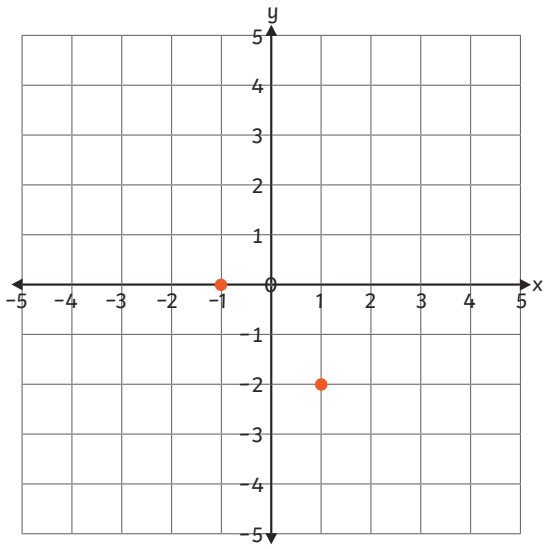

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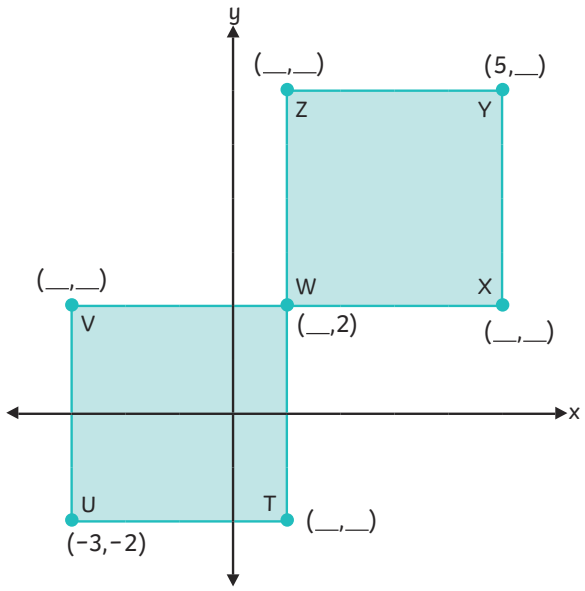
He has drawn two congruent squares on this four-quadrant coordinate grid.

Identify the missing coordinates.



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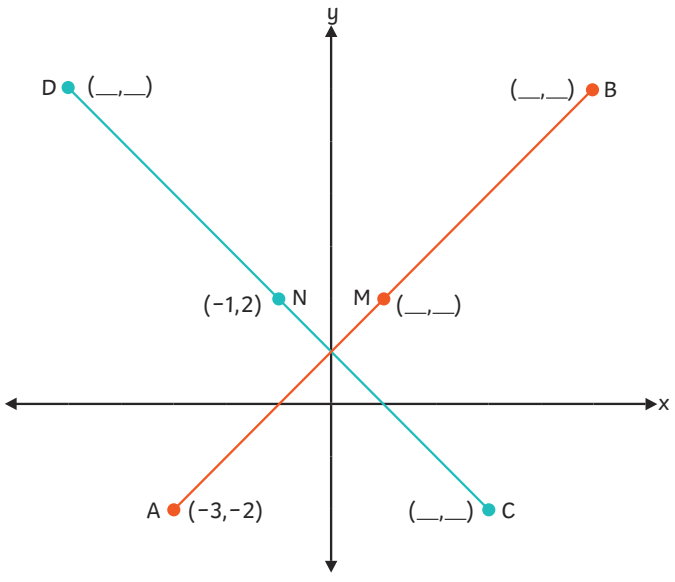
Use the information on the coordinate grid to find the missing coordinates to show where the fingerprints were detected.



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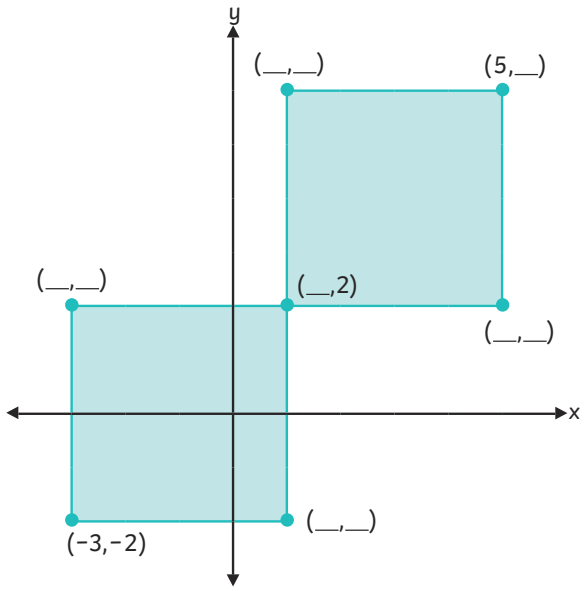

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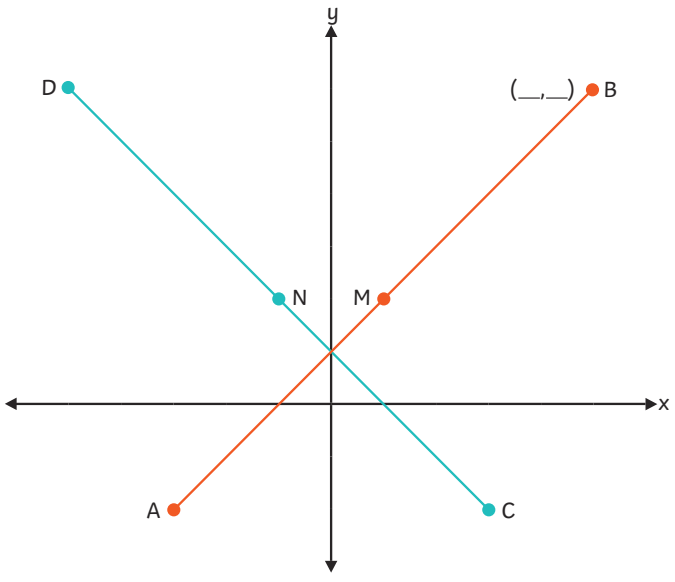
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