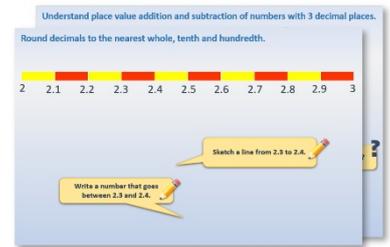


Week 9, Day 3

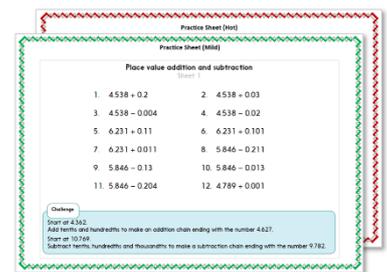
Co-ordinates

Each day covers one maths topic. It should take you about 1 hour or just a little more.

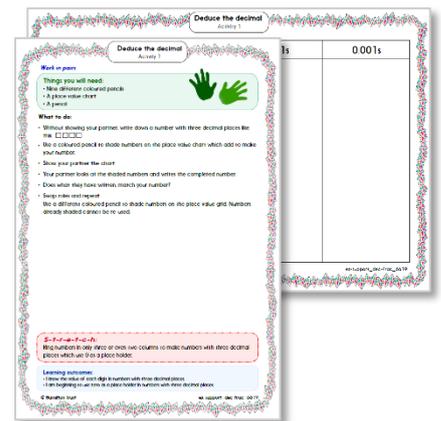
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



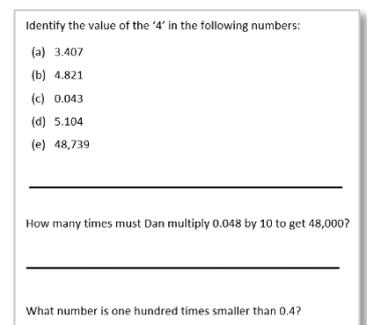
2. Tackle the questions on the **Practice Sheet**. There might be a choice of either **Mild** (easier) or **Hot** (harder)! Check the answers.



3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**



4. Have I mastered the topic? A few questions to **Check your understanding**. Fold the page to hide the answers!



Learning Reminders

Plot points and draw polygons in all 4 quadrants.

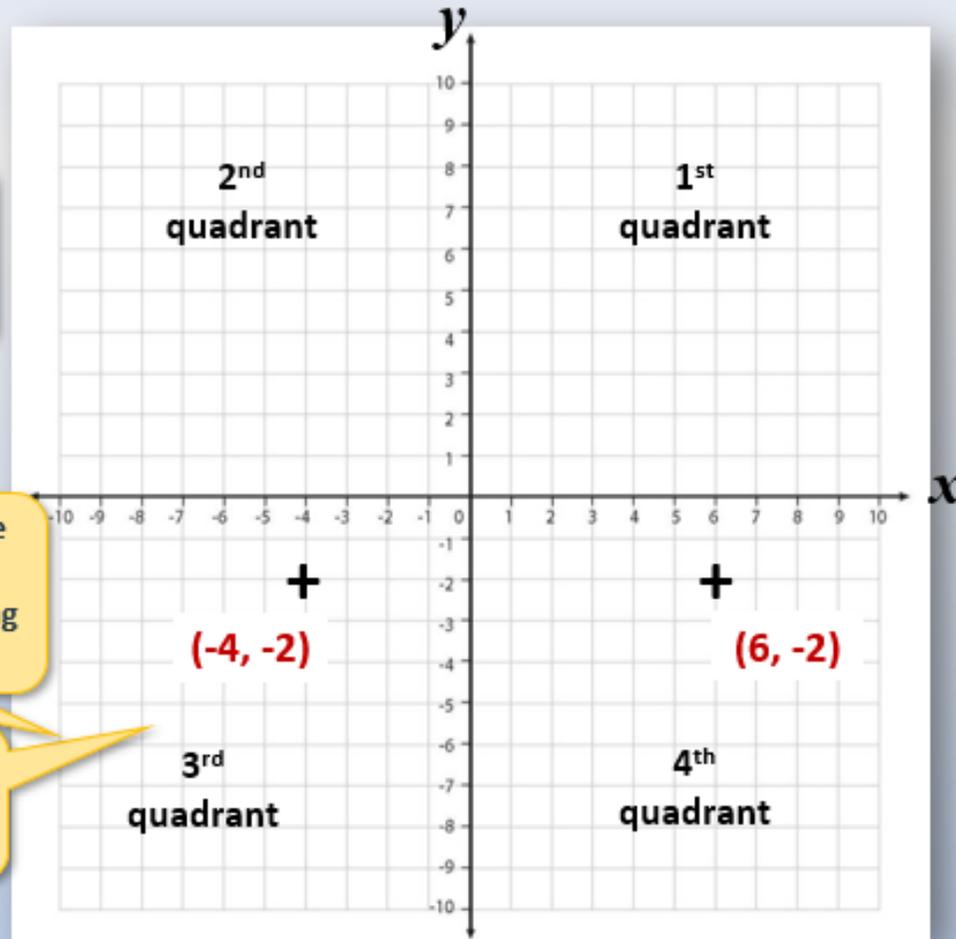
? Do you remember which axis is which on the co-ordinate grid?

The x -axis goes across. When reading and plotting, the x co-ordinate goes first and then the y . *Walk before you fly!*

Today we are going to use all four QUADRANTS...

The y -coordinate is negative each time as it is below the horizontal axis, a bit like being below ground!

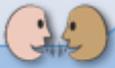
See how co-ordinates below the y axis are written.



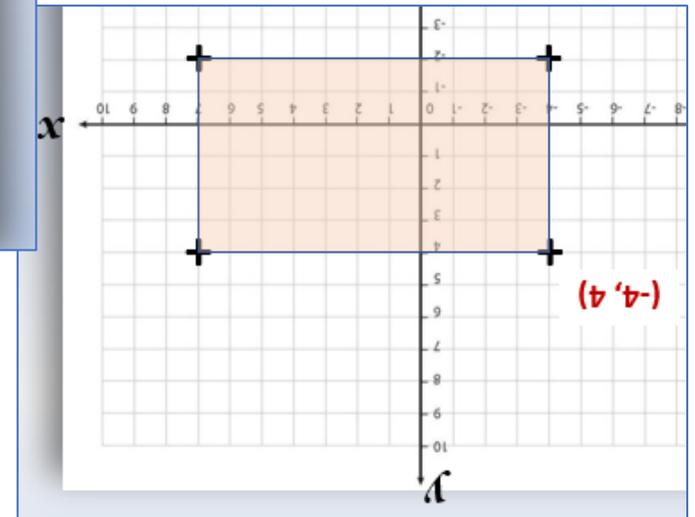
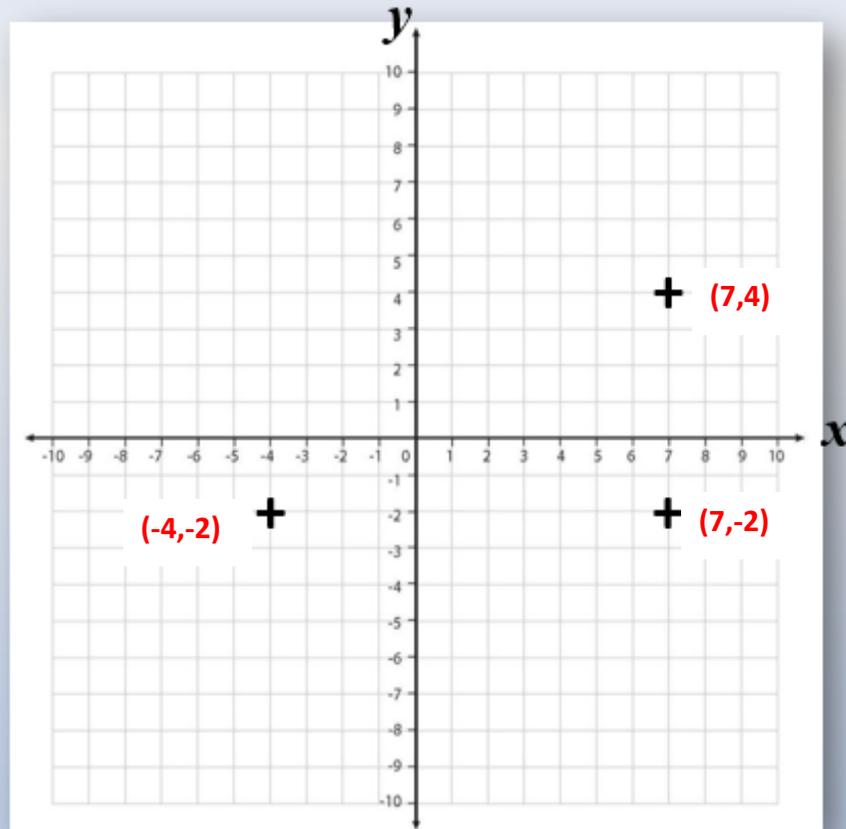
Learning Reminders

Plot points and draw polygons in all 4 quadrants.

These are three of the four vertices of a rectangle.

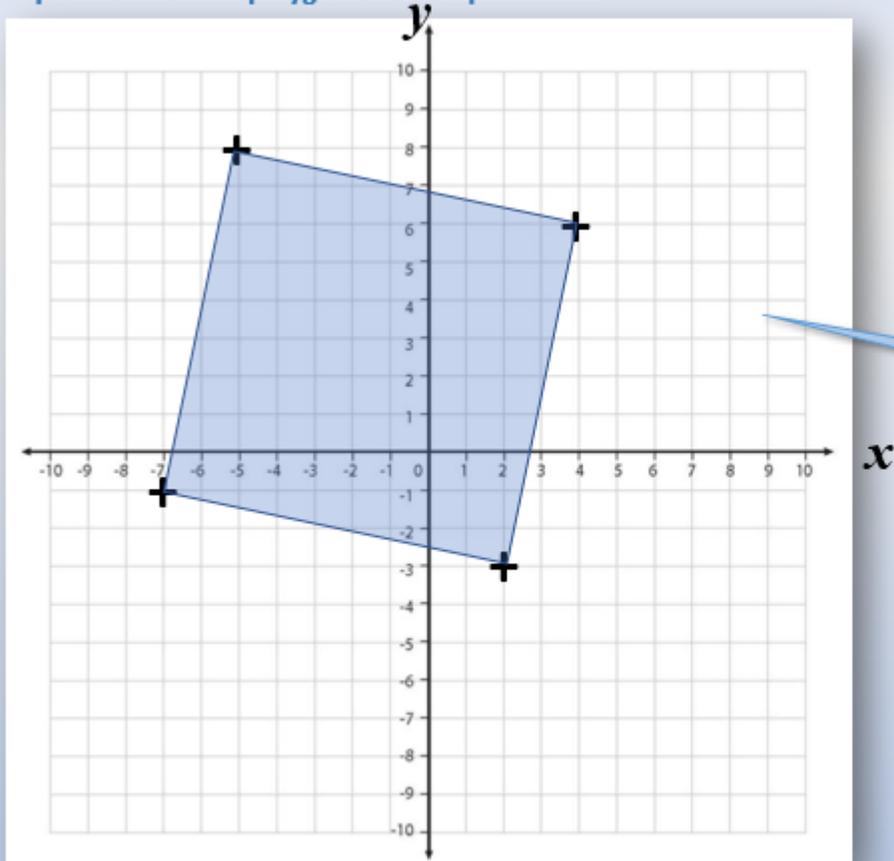


What are the co-ordinates of the missing vertex?

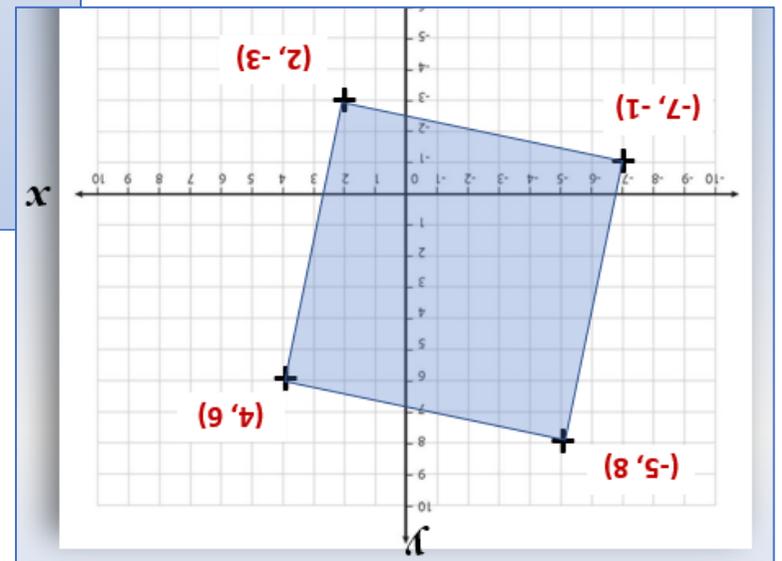


Learning Reminders

Plot points and draw polygons in all 4 quadrants.



What are the co-ordinates of the vertices of this square?



Learning Reminders

Plot points and draw polygons in all 4 quadrants.

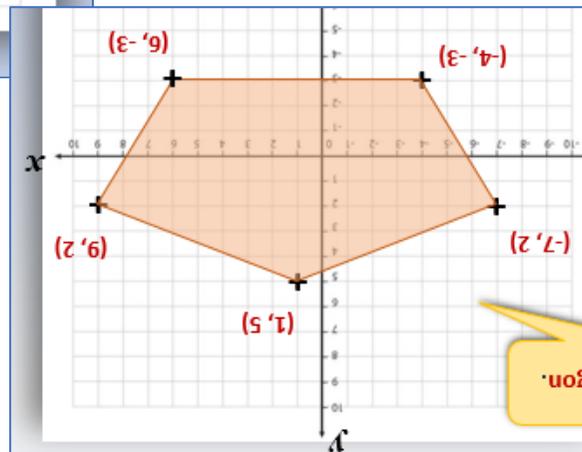
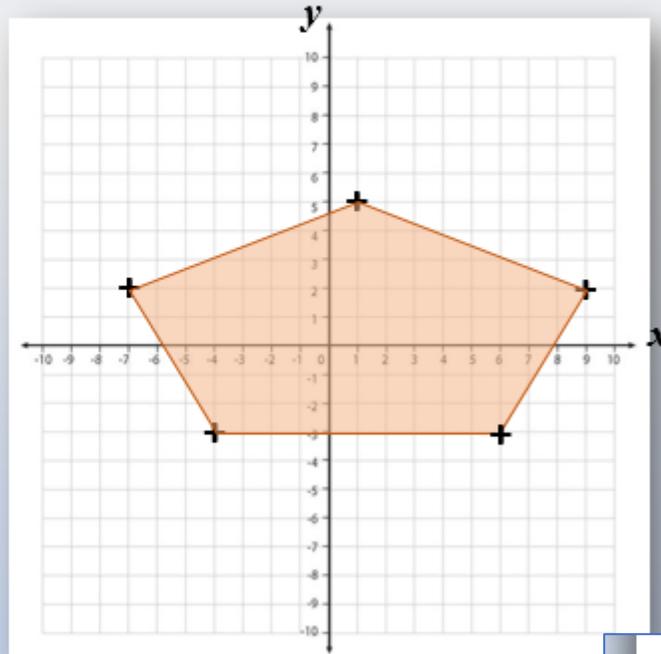


What shape is this?

Sketch the shape (not the grid) and label the co-ordinates of its vertices...



How do you remember which order to plot and read coordinates?

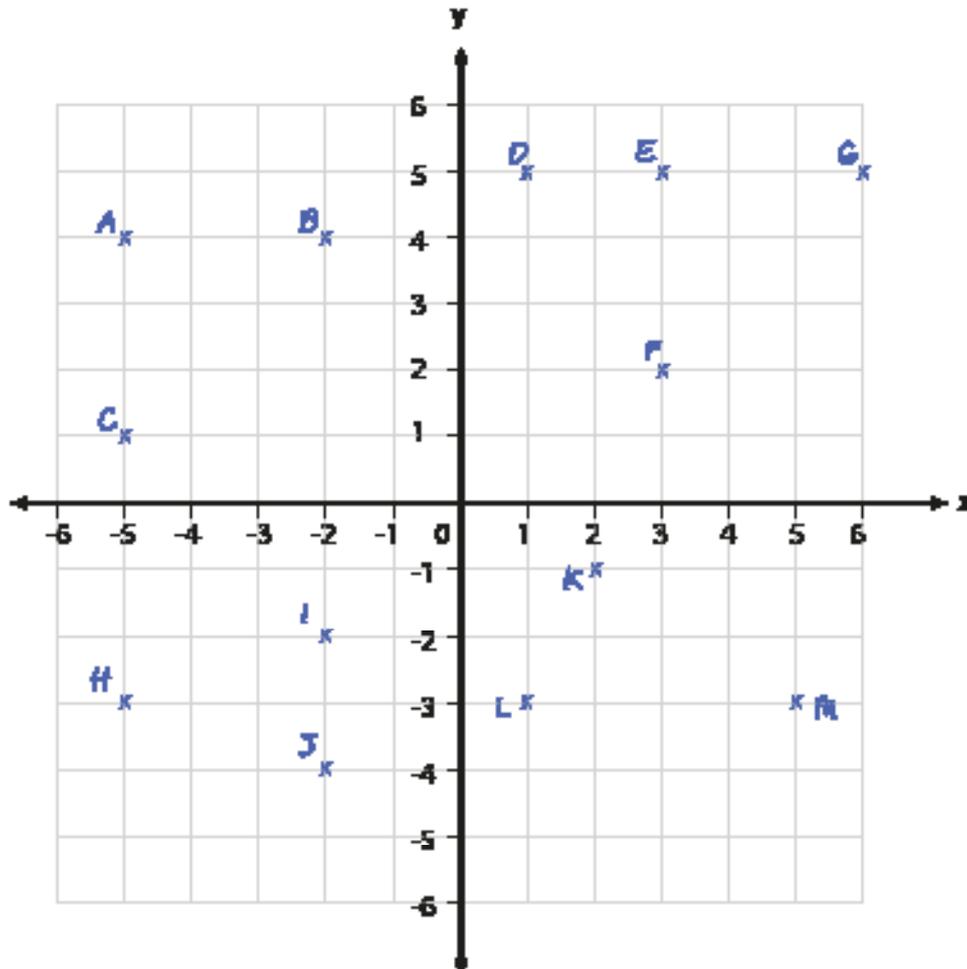


The shape is a pentagon.

Practice Sheet for All

Hunt the vertices

All the points shown are vertices of different quadrilaterals that fit on the 6 x 6 grid, but some c



Plot any missing vertices in each shape. Write their co-ordinates.

Use a ruler to draw each quadrilateral.

1. The square with vertices A, B, C and ?
2. The rectangle with vertices D, E, F and ?
3. The square with vertices D, G, and ?
And ?
4. The trapezium with a long side measuring 4 squares, and vertices E, F, G and ?
5. The parallelogram with vertices K, L, M and ?
6. One of the three possible parallelograms with vertices H, I, J and ?
7. The rectangle with vertices A, H, M and ?
8. The isosceles trapezium with vertices J, K, L and ?

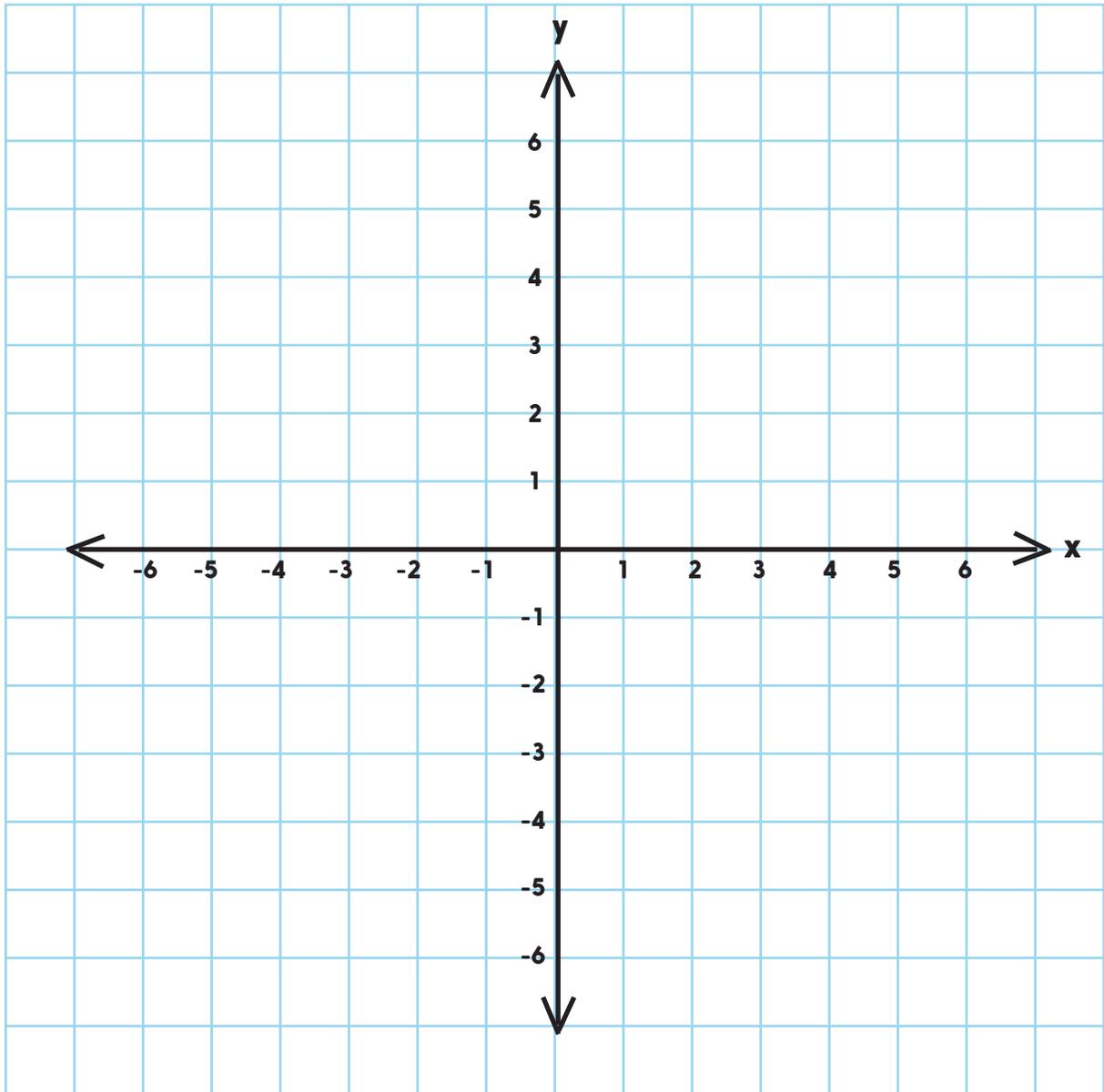
Hot: Have a go at this Challenge too!

Challenge

- (a) What is the perimeter of the square in (3)?
- (b) Draw the diagonals in the parallelogram drawn in (5).
What are the co-ordinates of the point where these cross?
- (c) Draw five different types of quadrilateral on a similar 6 x 6 grid and write the co-ordinates of each one.

Practice Sheet for All

Hunt the vertices



Practice Sheet Answers

Hunt the vertices

1. The square with vertices A, B, C and $(-2, 1)$
2. The rectangle with vertices D, E, F and $(1, 2)$
3. The square with vertices D, G and $(1, 0)$ And $(6, 0)$
4. The trapezium with a long side measuring 4 squares, and vertices E, F, G and $(6, 1)$
5. The parallelogram with vertices K, L, M and $(6, -1)$
6. One possible parallelogram has a fourth vertex H, I, J and $(-5, -5)$ another has a fourth vertex $(-5, -1)$ and the other $(1, -3)$
7. The rectangle with vertices A, H, M and $(5, 4)$
8. The isosceles trapezium with vertices J, K, L and $(-4, 3)$

Challenge

- (a) The perimeter of the square in (3) is 20 squares.
- (b) The diagonals cross at $(3.5, -2)$

A Bit Stuck? Walk then fly!

Work in pairs

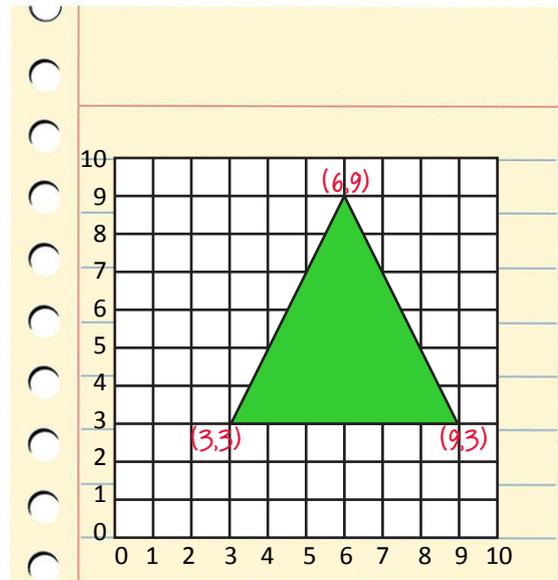
Things you will need:

- A grid
- Coloured pencils



What to do:

- Sit back to back.
- Choose a coloured pencil.
Use it to draw a triangle on your grid.
- Tell your partner the colour pencil you chose.
Call out the co-ordinates of the points of your triangle to your partner.
They draw the points, then join them to make a triangle using the same coloured pencil.
- Now compare your triangles.
Are they the same?
If so, you both score 3 points.
If not, you score 1 point for each matching point.
- Swap roles and repeat using a different coloured pencil.



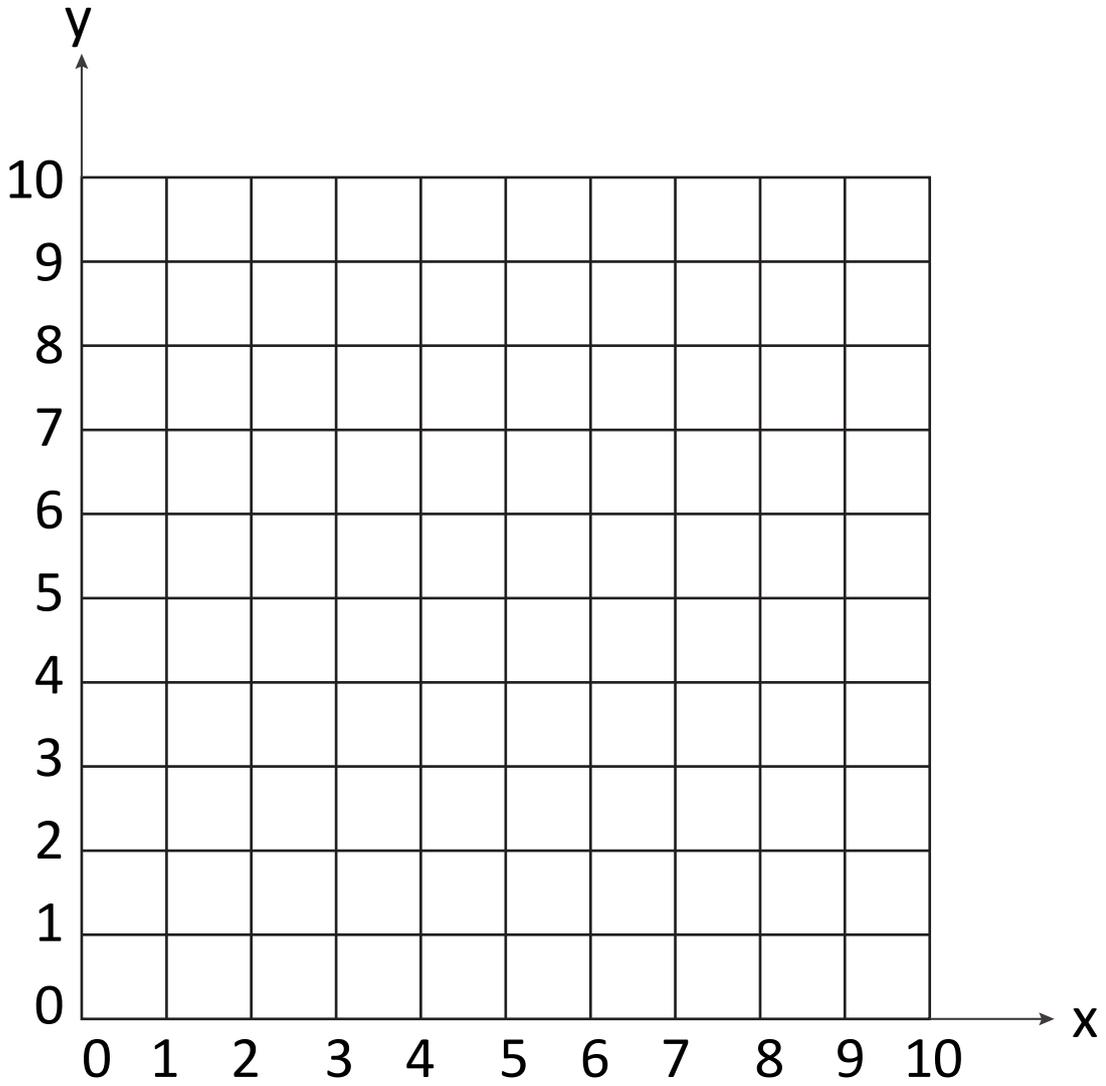
S-t-r-e-t-c-h:

Move one of your triangles up by two squares. Record the new co-ordinates.

Learning outcomes:

- I can use co-ordinates in the first quadrant.
- I am beginning to work out new co-ordinates after a translation.

A Bit Stuck?
Walk then fly!



Check your understanding

Questions

If joined in the order given, with straight lines, each of these sets of coordinates are the corners of a polygon. Without drawing a co-ordinate grid and plotting the points, can you identify the shape? Be as specific as you can!

(a) (2,1) (2,5) (6,1) (6,5)

(b) (1,1) (5,1) (3,6)

(c) (-1, -1) (-1, -3) (-3, 0) (-5, -2) (-3, -4)

Now plot each set of co-ordinates and join them in the order given to create each shape to check your answers.

Fold here to hide answers

Check your understanding

Answers

If joined in the order given, with straight lines, each of these sets of coordinates are the corners of a polygon. Without drawing a co-ordinate grid and plotting the points, can you identify the shape? Be as specific as you can!

(a) (2,1) (2,5) (6,1) (6,5)

It's a quadrilateral as it has 4 vertices.

The difference between both the x- and y-values of the pairs of coordinates is 4 (6 - 2 and 5 - 1).

This means that the 4 sides are the same length – the shape is a square.

(b) (1,1) (5,1) (3,6)

It's a triangle. It has a **horizontal** side as **two** of the vertices have a y-value of 1. The third vertex is half-way between the other two (its x-value of 3 is half way between 1 and 5), making this an isosceles triangle.

(c) (-1, -1) (-1, -3) (-3, 0) (-5, -2) (-3, -4)

It's a pentagon, having 5 vertices. It sits in the 3rd quadrant, as all co-ordinate values are negative.

One vertex sits on the x-axis, having a y-value of zero. Two pairs of co-ordinates are vertically in line with one another as they share the same x-value: (-1,-1) and (-1, -3); (-3, 0) and (-3, -4).

Now plot each set of co-ordinates and join them in the order given to create each shape to check your answers.

Look for accurately plotted shapes. Common misconceptions include plotting x and y values in the wrong order, and becoming confused with the negative co-ordinates in example (c).

Co-ordinates grid

