



**THIRD SPACE
LEARNING**

Math Intervention Pack

Graphing points on a
coordinate plane

Grade 5

How To Use This Resource

1. Title Slide

Use this slide to activate prior knowledge needed for lesson. Students should be encouraged to initially attempt the question presented independently.

2. Let's Learn

Use this slide to introduce the concept. Tutors should work with the student to explore the concept together, usually using diagrams to support understanding.

3. Follow Me + Your Turn

The tutor should work through the follow me slide, modeling the process and explaining their thinking out loud.

Students should use the your turn slide as an opportunity to work through a question similar to the follow me questions. They should apply the method modeled by the tutor in the follow me slide. Students should be encouraged to explain their thinking out loud.

4. You Do

Students should work through a range of questions that build in complexity.

Tutors can offer support but students should initially be encouraged to attempt these questions independently.

5. Go Further

Use this slide to allow students to apply their understanding to a more challenging question in an unfamiliar context.

6. Support for Slides

The support slide is used to support students during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

7. Check Your Understanding

Tutors should use this slide to assess the student's knowledge and whether or not they have mastered the concept within the lesson.

Standard

5.G.A.1 - Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Key Mathematical Ideas

1. Plot points on a coordinate plane
2. Use line segments to connect points on a given coordinate plane

Overview

Terminology

- **Axis (axes):** the horizontal line (x-axis) and vertical line (y-axis) on a coordinate plane.
- **Coordinate:** a number in an ordered pair that names the location of a point on a coordinate plane.
- **Horizontal:** a straight line on a coordinate plane where all points have the same y coordinate.
- **Ordered pairs:** a pair of numbers used to locate a point on a coordinate plane; the first number states the horizontal position, and the second number states the vertical position.
- **Origin:** the starting point on a coordinate plane; (0,0).
- **Plot:** pinpoint where places on a line are located
- **Vertical:** a straight line on a coordinate plane where all points have the same x coordinate.

Sentence stems:

- The coordinates of the point are (__,__).
- The x coordinate is _____.
- The y coordinate is _____.

Overview

Common Misconceptions

Common Misconceptions	Tutoring Strategies	Checks for Understanding
Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane. (they may move vertically first and then horizontally.)	Remind students that we move along the x-axis first; tell them that x comes before y alphabetically, which can help them remember. Have students label or point out the x and y axes on each graph.	Ask students to narrate as they are graphing an ordered pair. (i.e., first I move along the x-axis to the 5, then I move up the y-axis to the 3...) Have students practice or describe how to plot opposite ordered pairs such as (2,4) and (4,2).

Title Slide

If students...

- get both sections correct:
 - start at You do
- miss the learning goal section only:
 - start at Let's learn
- miss the prior learning section:
 - start at Prior learning

Prior Learning

Teaching prompts

- Review the definition of a polygon, emphasizing that the sides must be straight.

If stuck

- Ask students prompting questions as they review each shape. If any of the answers to the questions are no, then the shape is not a polygon.
 - Is this shape 2D?
 - Does it have at least 3 sides?
 - Does it have at least 3 angles?

Let's Learn

If stuck

- Remind students that when you plot an ordered pair, the x coordinate, or the first number in the ordered pair, is first. The x coordinate is along the horizontal line.
- The y coordinate is next, or the second number in the ordered pair. The y-coordinate is along the horizontal line of the plane.

Questions

- What are the coordinates for the purple x? (2, 4)
- When plotting points on a coordinate plane, do you find the x-coordinate or y-coordinate first? (Count over the x-coordinate first, then move up the y-coordinate).
- What do you notice about the four points that are plotted on the coordinate plane? (It appears to have created a polygon/square.)

Watch out for

- Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane.

Follow Me

Modeling prompts

- Plot each point on the coordinate grid first.
- You will be creating a polygon, so connect all the points with a line segment.
- Discuss the shape that has been created.

Your turn

If stuck

- Remind students that when you plot an ordered pair, the x coordinate, or the first number in the ordered pair, is first. The x coordinate is along the horizontal line.
- The y coordinate is next, or the second number in the ordered pair. The y-coordinate is along the horizontal line of the plane.

Questions

- Because we know the polygon has 4 points, can you guess what the shape is before you plot the points? (The shape has 4 points, which means it is a 4-sided shape. It could be a rectangle, square, or any kind of quadrilateral).

Watch out for

- Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane.

You do

If stuck

- Remind students that when you plot an ordered pair, the x coordinate, or the first number in the ordered pair, is first. The x coordinate is along the horizontal line.
- The y coordinate is next, or the second number in the ordered pair. The y-coordinate is along the vertical line of the plane.

Questions

- What are the properties of a kite? (A kite is a 4-sided shape with two pairs of adjacent sides that are congruent).
- What point would you move to make the square into a kite? (I would move the point (5, 4) to (7,4).

Watch out for

- Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane.

Go further

If stuck

- Remind students that when you plot an ordered pair, the x coordinate, or the first number in the ordered pair, is first. The x coordinate is along the horizontal line.
- The y coordinate is next, or the second number in the ordered pair. The y-coordinate is along the vertical line of the plane.

Questions

- Because we know the polygon has 3 points, can you guess what the shape is before you plot the points? (The shape has 3 points which means it will be a 3-sided shape, or triangle).
- When writing an ordered pair, which coordinate comes first? Second? (The x-coordinate is written first, followed by the y-coordinate).

Watch out for

- Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane.

Support for Slide(s)

If stuck

- This coordinate plane has removed all of the numbering, meaning students have to focus on counting.
- Give the student coordinates to practice with, if needed. (For example, plot the point (1,3) or (3,6).)

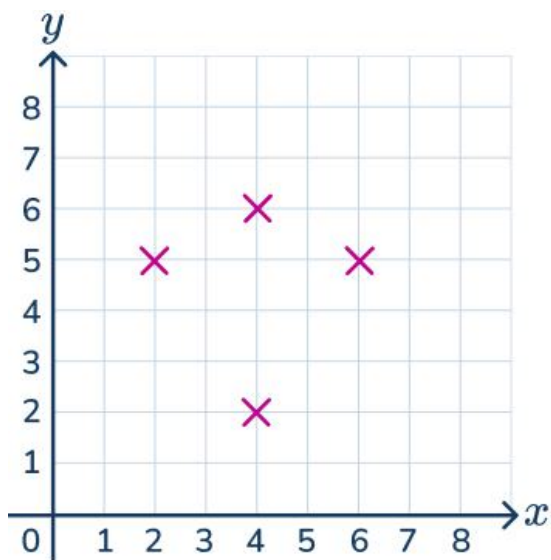
Questions

- How many squares to the right did you count? (5)
- How many squares did you count up? (4)

Assessment question:

Correct answers

- See below



Today you will learn about

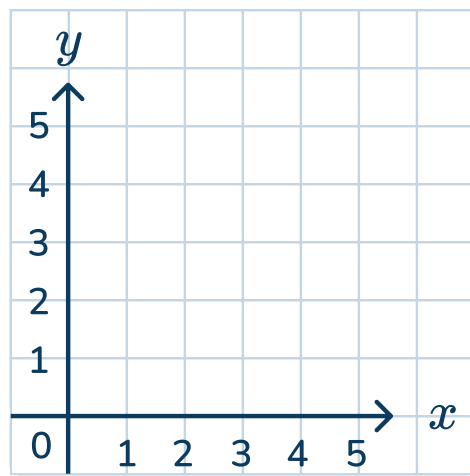
Graphing points on a coordinate plane



Learning Goal

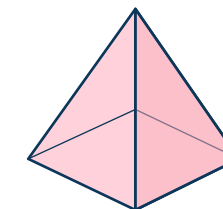
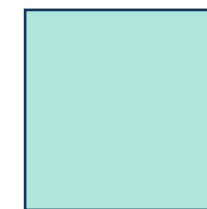
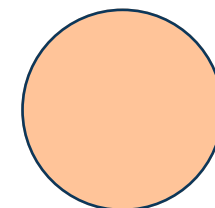
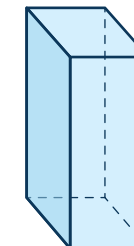
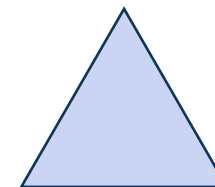
Plot the following points on the coordinate plane.

$(3, 4)$ $(1, 5)$ $(5, 2)$ $(4, 1)$



Prior Learning

Mark the shapes that are polygons.



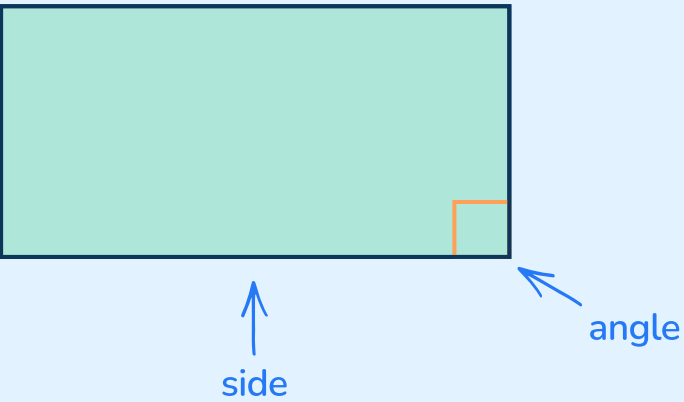
Prior learning

Before we can plot points to create polygons on a coordinate plane, we need to be able to identify polygons.

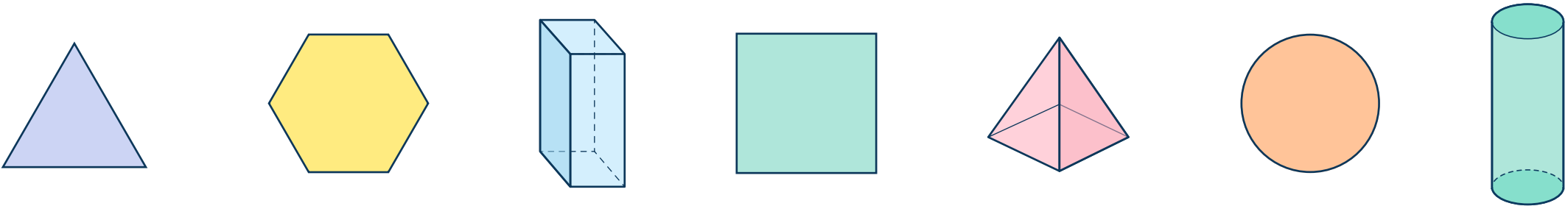
A **polygon** is a 2D figure with at least three straight sides and angles.

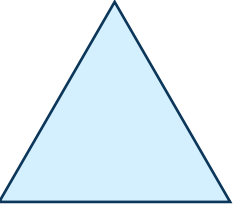
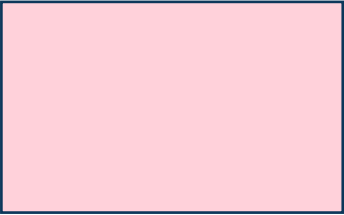
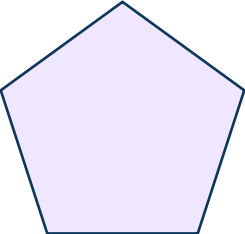
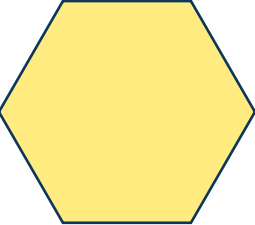
The straight lines around a polygon are called its **sides**.

When two sides of a polygon meet, they form an **angle**.



a Mark the polygons.



b	Triangle	Quadrilateral	Pentagon	Hexagon
				
 sides sides sides sides
 angles angles angles angles

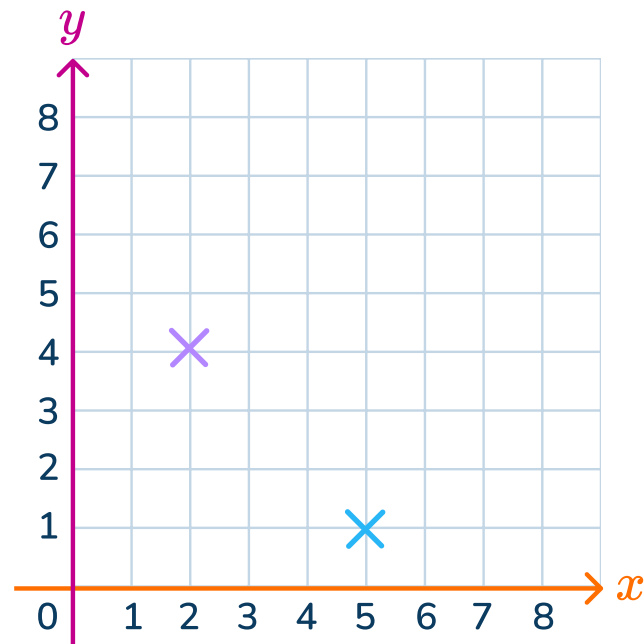
Let's learn

You can plot points on a coordinate plane using an **ordered pair of numbers**, or its **coordinates**.

The coordinates of \times are (5, 1)

The first value in a pair of coordinates tells you how far along the x -axis the point is.

The second value in a pair of coordinates tells you how far up the y -axis the point is.



First count along the x -axis,
then count along the y -axis.

a The coordinates of \times are (..... ,)

b Mark these points on the coordinate plane.

(2, 1) (5, 4)

Follow me

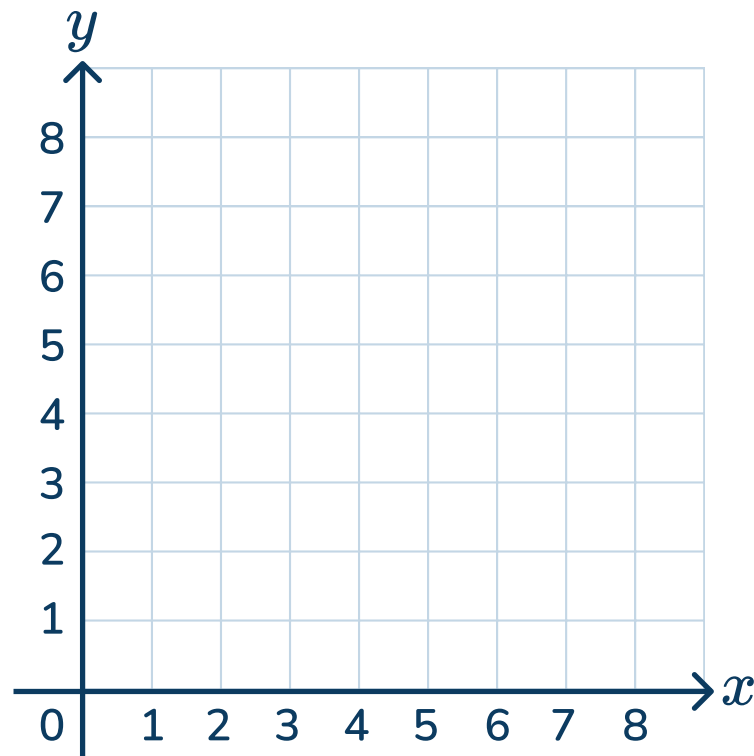
You can also join the points with line segments and create polygons.

(5, 0)

(3, 1)

(5, 2)

(7, 1)



- Plot each point.
- Draw straight lines to join the points.
- What shape has been made?

Your turn

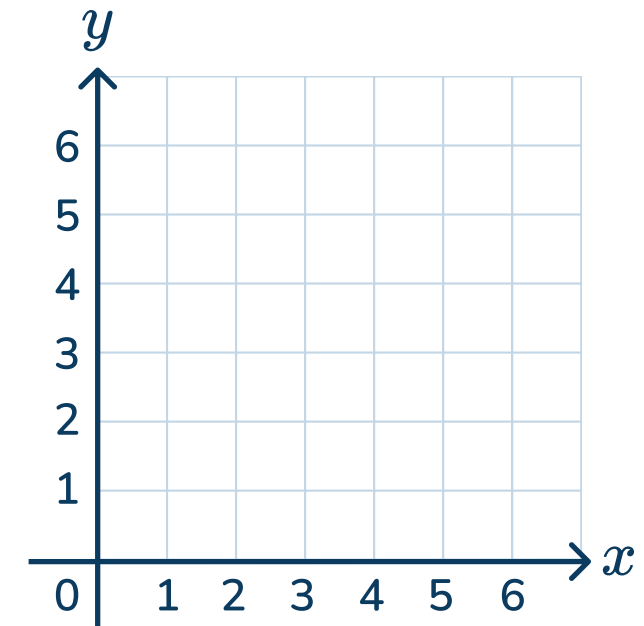
Plot the following points and join them with line segments.

(2, 1)

(0, 3)

(4, 3)

(6, 1)



- Plot each point.
- Draw straight lines to join the points.
- What shape has been made?

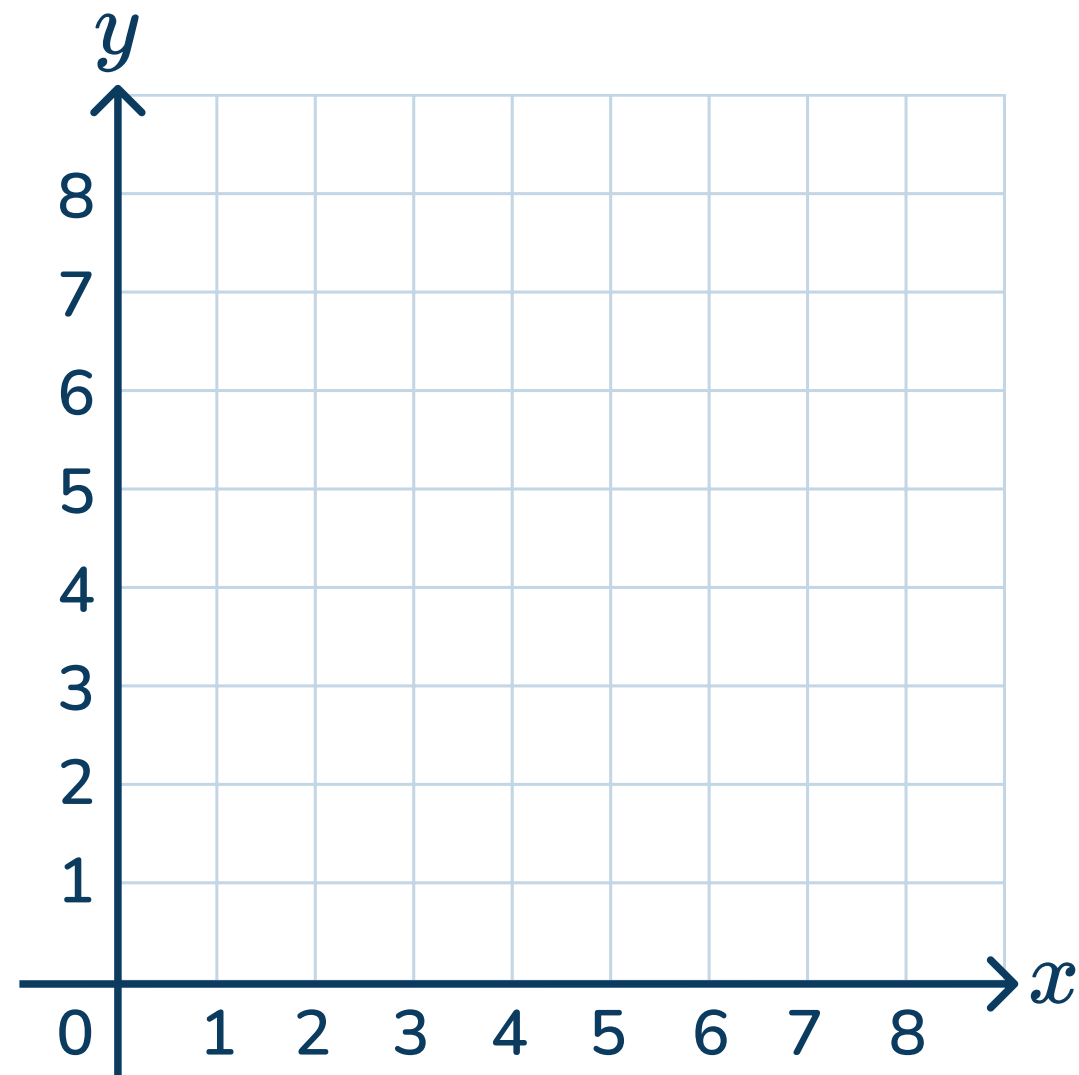
a Plot the coordinates below and join them to make a polygon.

(1, 4)

(3, 6)

(3, 2)

(5, 4)

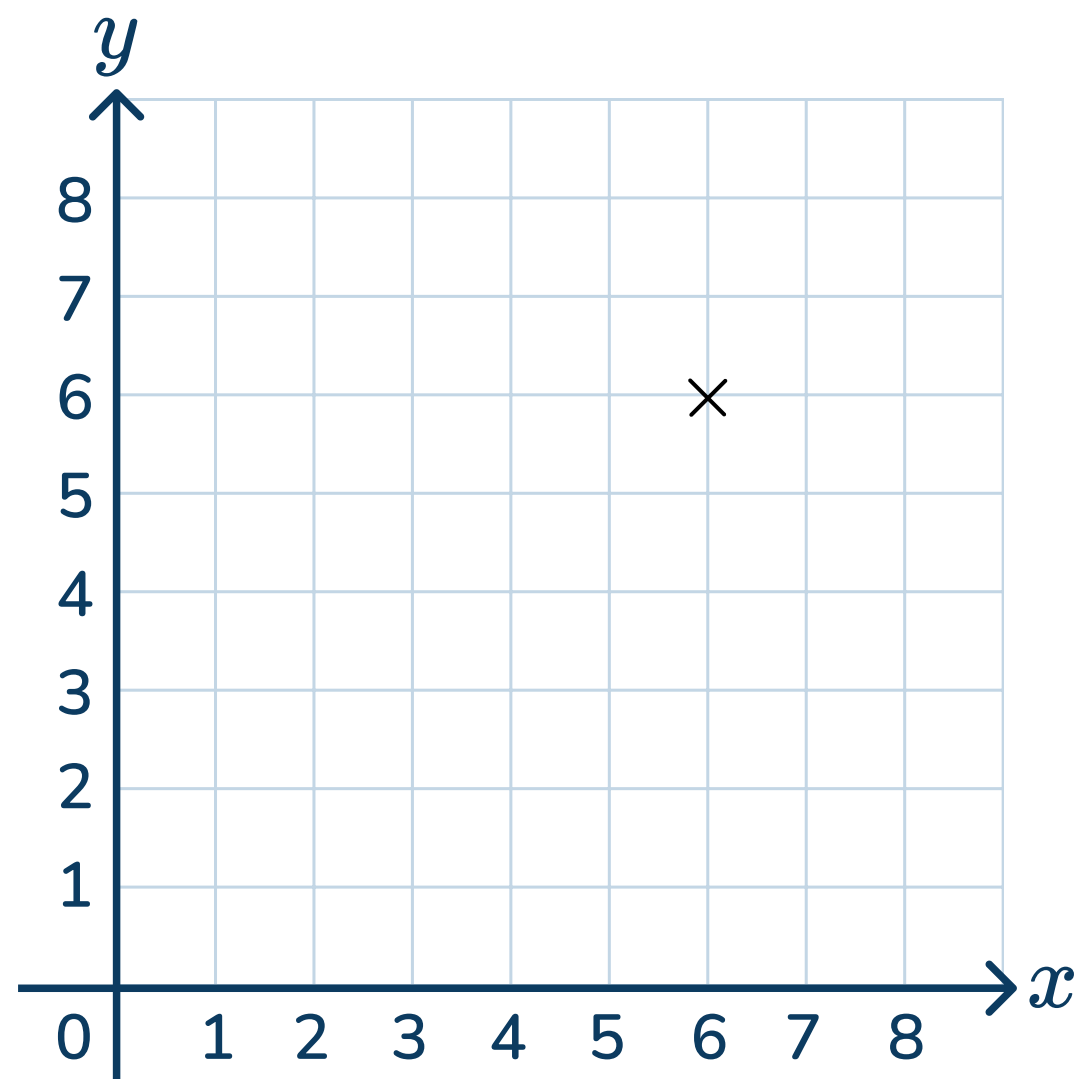


b What is the shape?

c Can you change 1 of the coordinates to make a kite?

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

Tom plots a point on a coordinate grid.



Can you draw a shape using the given point and two other points?

Can you name the shape you have drawn?

.....

Write the coordinates of each vertex.

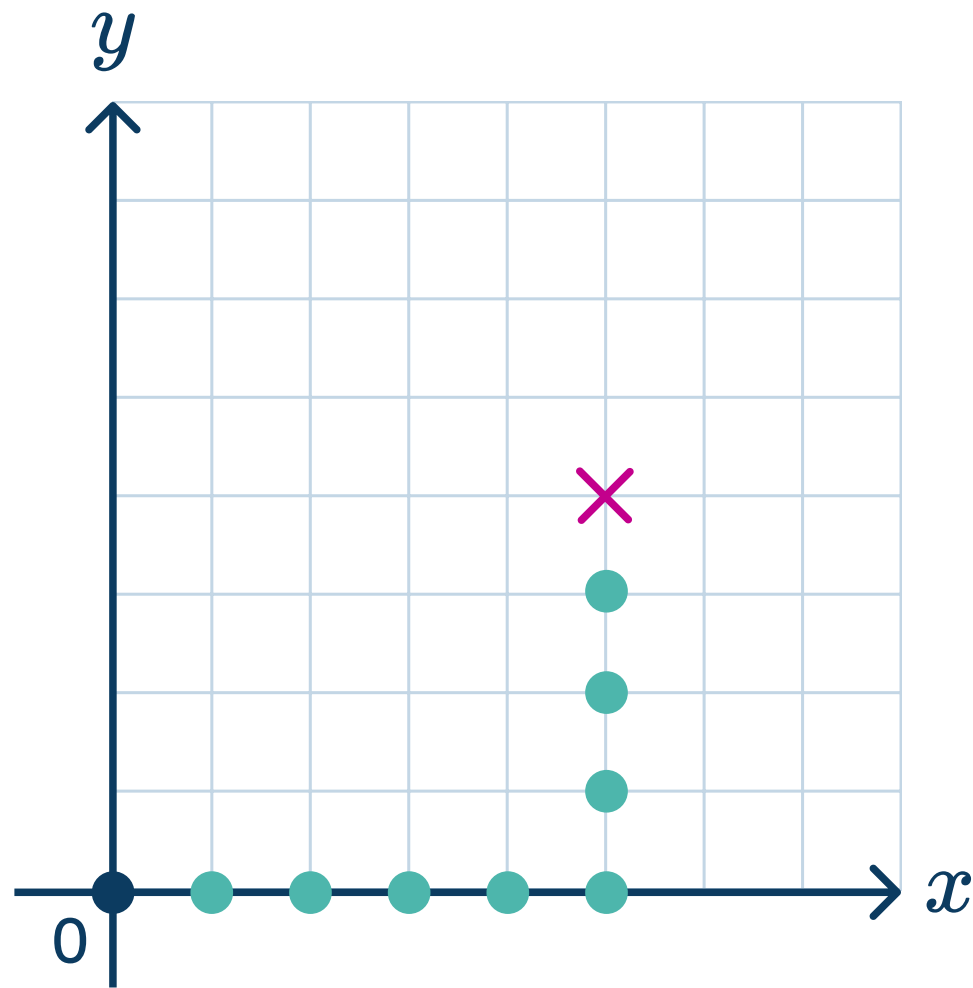
(..... ,) (..... ,)

(..... ,)

Support

Let's look at a coordinate plane with no number labels.

The **vertical line** is called the **y -axis**.



The **horizontal line** is called the **x -axis**.

a Starting at the origin $(0,0)$, the cross is

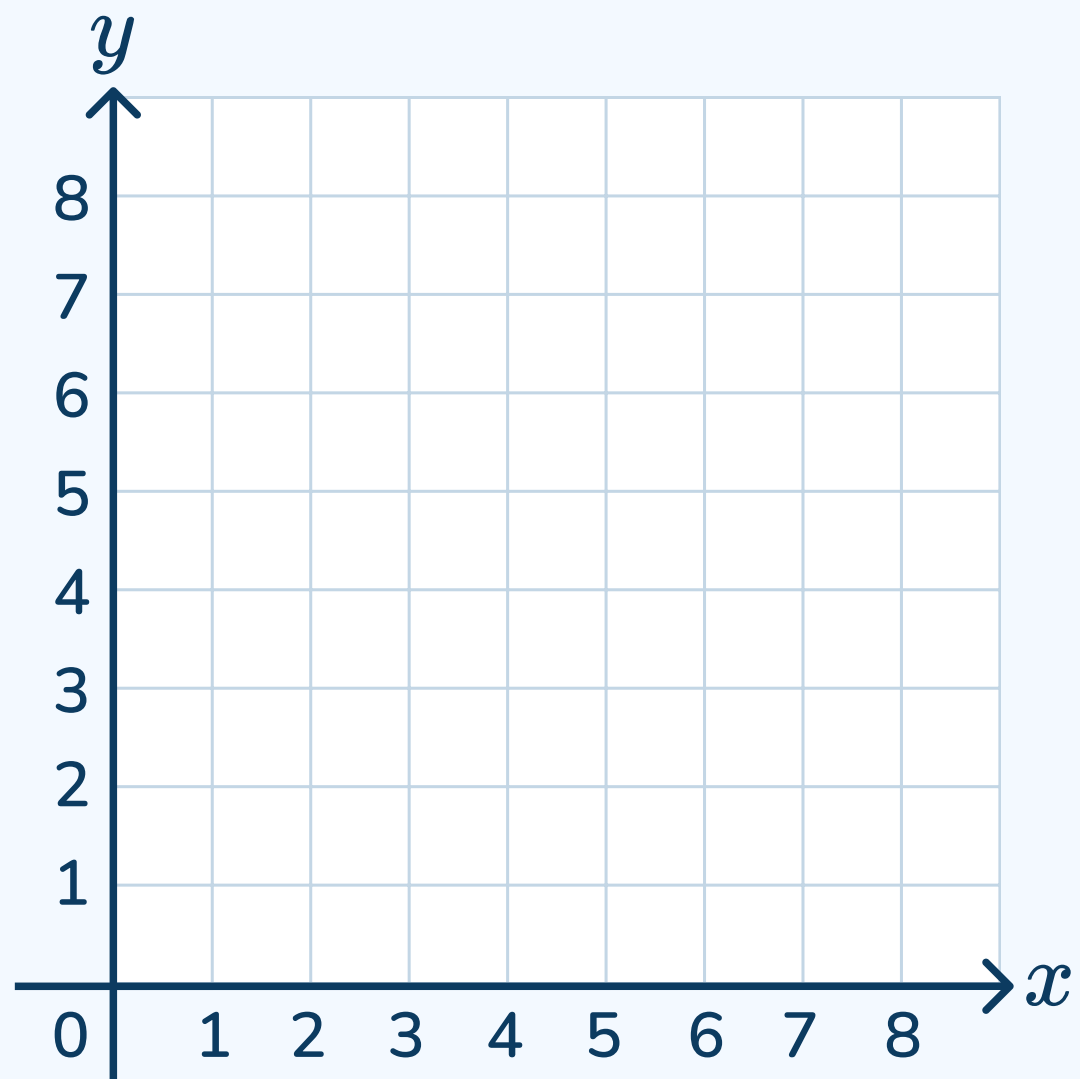
squares along and squares up.

b Can you mark a point that is 2 squares along and 1 square up?

Check your understanding

Plot the following points on the coordinate plane.

$(2,5)$ $(4,6)$ $(6,5)$ $(4,2)$






Why do I need to try this question on my own first?

- To show your tutor what you understand
- To give you more practice
- To show your teacher how you are doing



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Michelle Craig, Instructional Coach,
Sherwood Forest Elementary, Washington

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