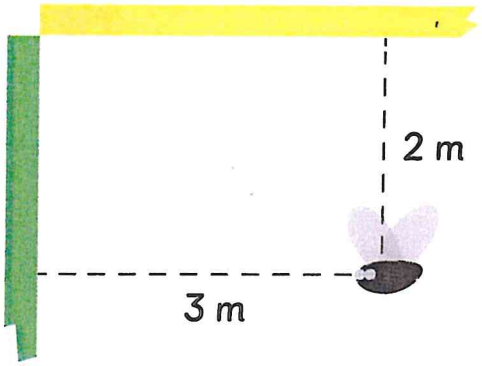
Monday 8/2/21

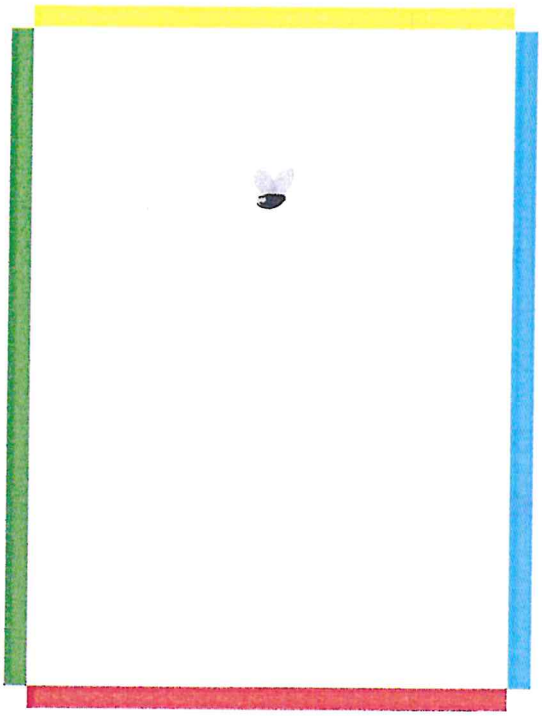
Describing Position

Lesson 1

In Focus

 lies on his bed and looks up at the ceiling.

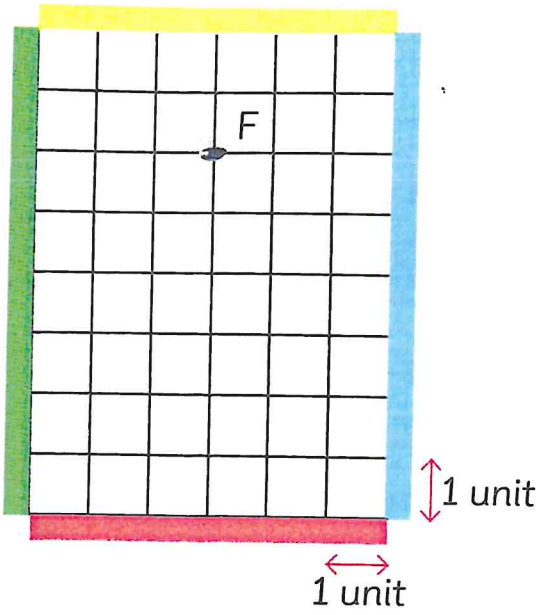




How can Charles tell the exact position of the fly?

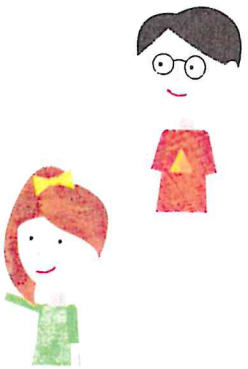
Let's Learn

1 How far is the fly from the walls?



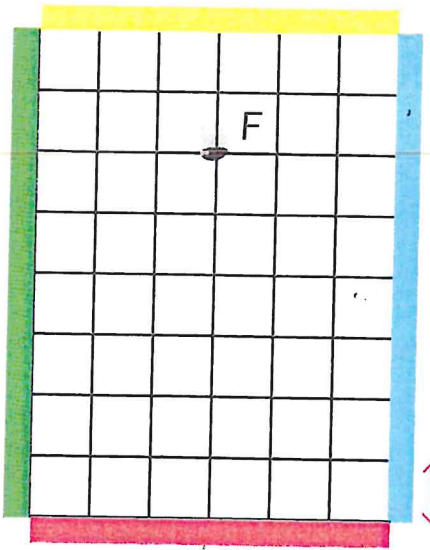
Use a letter to represent the fly.

1 unit could be 1 metre.



The fly is 2 units from the yellow wall.

The fly is 3 units from the green wall.

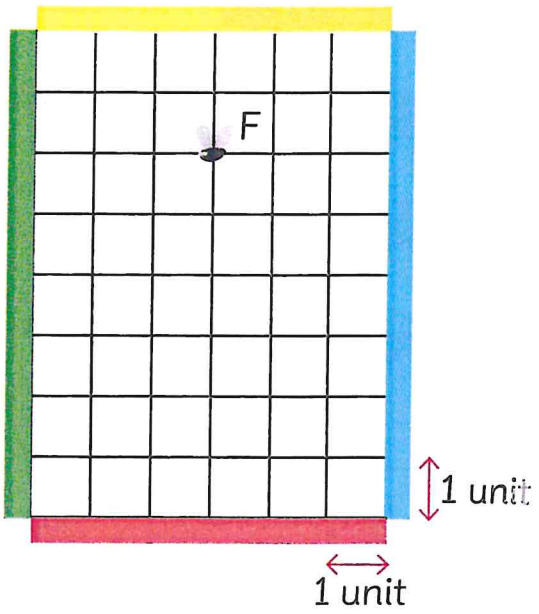


The fly is 3 units from the blue wall.

It is 6 units from the red wall.

2 What do you think of their suggestions?

How far is the fly from the red wall?



The fly is 6 units from the red wall and 2 units from the yellow wall.

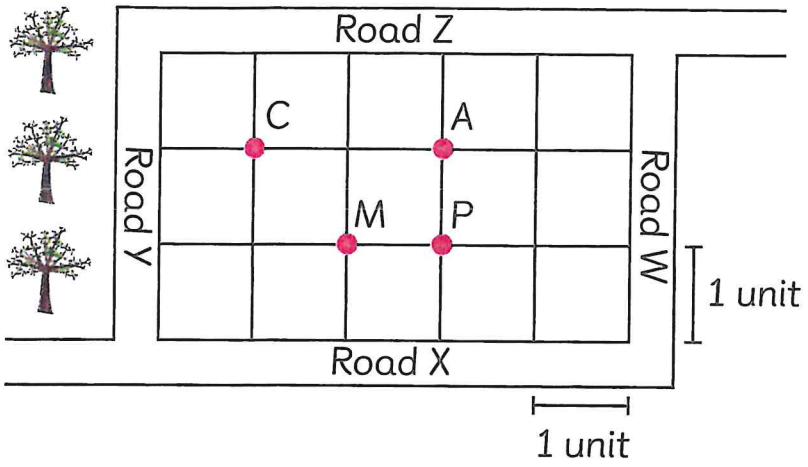
The fly is 3 units from the green wall and 3 units from the blue wall.

I think Charles must say how far the fly is from all four walls.

I don't think it is necessary to say how far the fly is from all four walls.

Guided Practice

1 Several tourist attractions are surrounded by four major roads.



C  Cathedral

A  Ancient Ruins

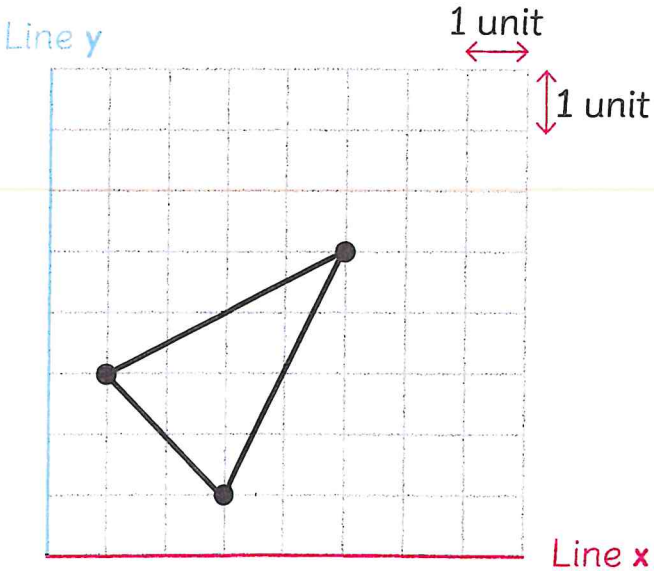
P  Palace

M  Museum

In this case, 1 unit could be 1 km.

Describe the location of each tourist attraction by describing its distance from the roads.

2 Describe the position of the vertices of the triangle.



How far are they from the two lines?

1 unit = 1 cm

Complete Worksheet **1** – Page **151 - 154**

Position and Movement

Chapter 13

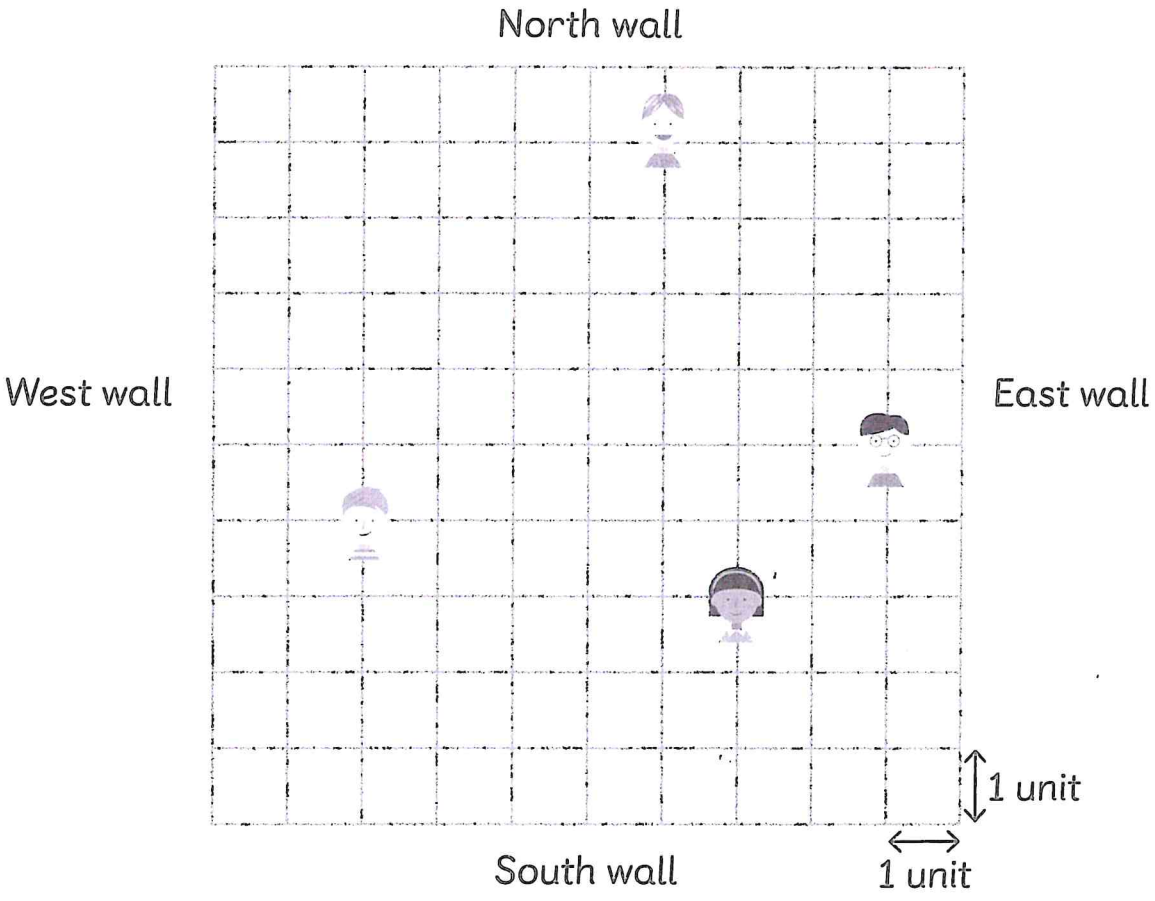
Name: _____ Class: _____ Date: _____

Worksheet 1

Describing Position

1  ,  ,  and  are standing at different locations in the hall.

Describe their positions.



(a)  is

☐ units from the North wall.

☐ units from the East wall.

☐ units from the South wall.

☐ units from the West wall.

(b)  is

☐ units from the North wall.

☐ units from the East wall.

☐ units from the South wall.

☐ units from the West wall.

(c)  is

☐ units from the North wall.

☐ units from the East wall.

☐ units from the South wall.

☐ units from the West wall.

(d)  is

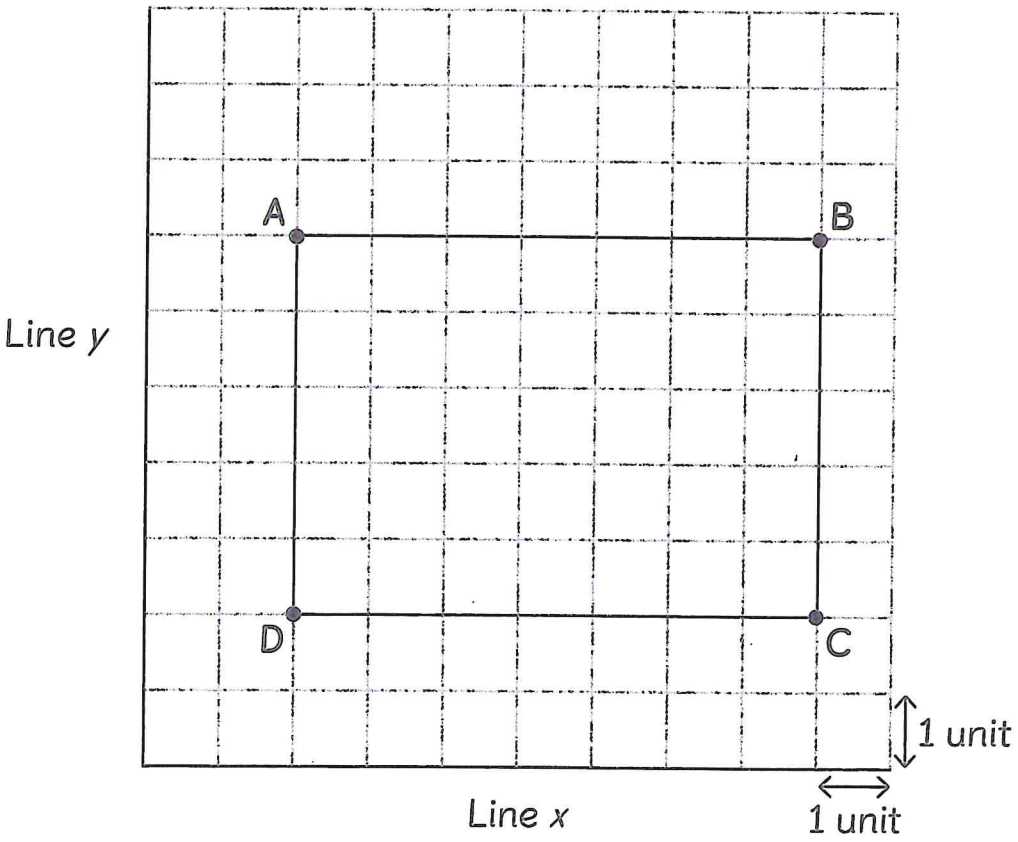
☐ units from the North wall.

☐ units from the East wall.

☐ units from the South wall.

☐ units from the West wall.

2 Describe the positions of the vertices of Rectangle ABCD.



(a) Point A:

☐ units from Line *y*

☐ units from Line *x*

(b) Point B:

☐ units from Line *y*

☐ units from Line *x*

(c) Point C:

☐ units from Line *y*

☐ units from Line *x*

(d) Point D:

☐ units from Line *y*

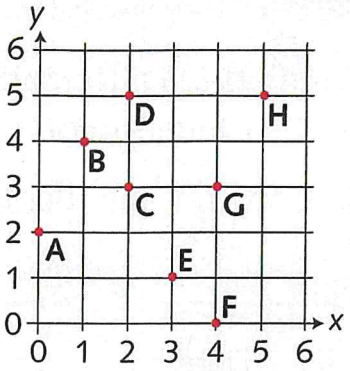
☐ units from Line *x*

Take off coordinates

Use coordinates to describe the position of a point on a grid in the first quadrant

Challenge 1

1 The grid shows the position of some moon craters. Write the coordinates of craters **B**, **C** and **D**.



2 Copy and complete these sentences.

a Craters with an *x*-coordinate of 4 are **F** (4,) and (,).

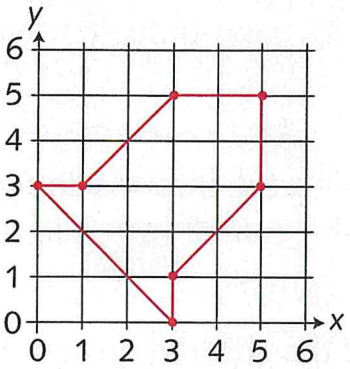
b Crater has the same *x*-coordinate and *y*-coordinate.

Example
Crater **A** (0, 2)

Challenges 2,3

1 The coordinates are joined to make a picture. Write the coordinates in order.

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



2 Use Resource 15: 9 x 9 coordinate grids. Draw a picture by joining these coordinates in order.

(2, 8) → (8, 2) → (3, 2) → (2, 1) →
(1, 1) → (1, 2) → (2, 3) → (2, 8)

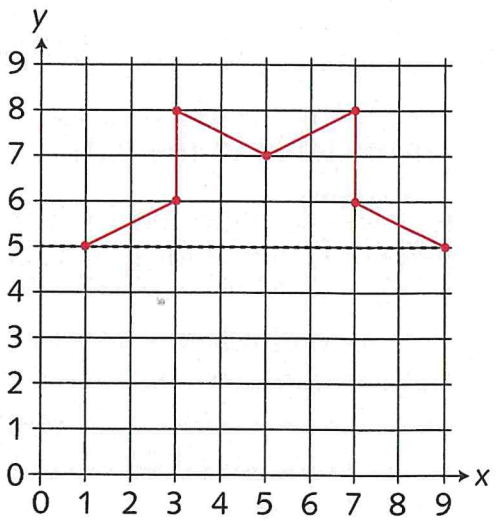
You will need:
- Resource 15: 9 x 9 coordinate grids
- ruler

Challenge 3

1 This picture shows half of a symmetrical star.

a Copy and complete the star

b Write the coordinates for each new point



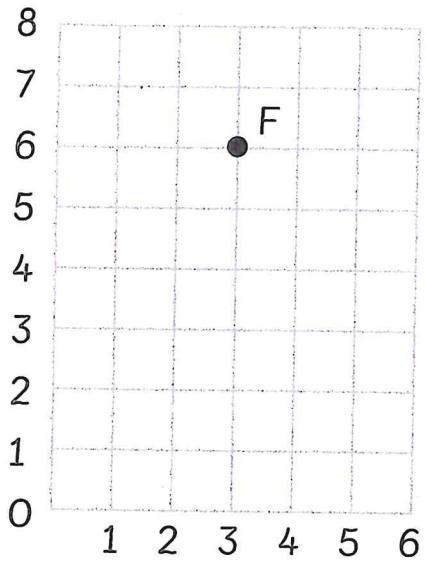
Tuesday 9/2/21

Describing Position

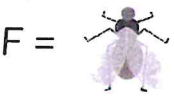
Lesson 2

In Focus

Charles invents a way to describe the position of the fly.



F =



F is at (3,6).

What does the 3 refer to?

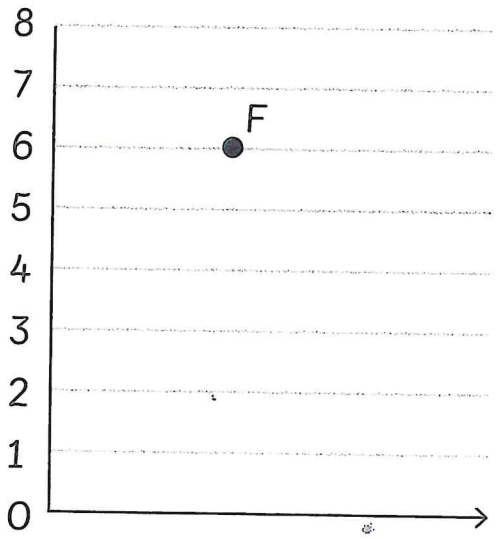
What does the 6 refer to?

Explain Charles' method. What does (3,6) mean?

Let's Learn

1

These numbers show the distance from the x-axis.



F is 6 units from the x-axis.

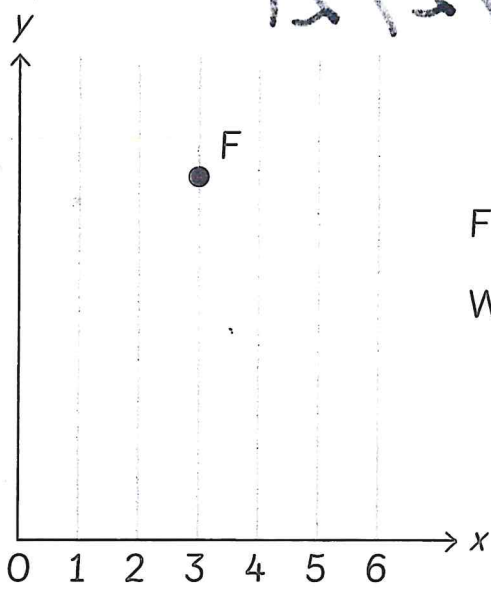
We write F = (, 6)

We call this line the x-axis.

Tuesday 9/3/21

2

We call this line the y-axis.



F is 3 units from the y-axis.

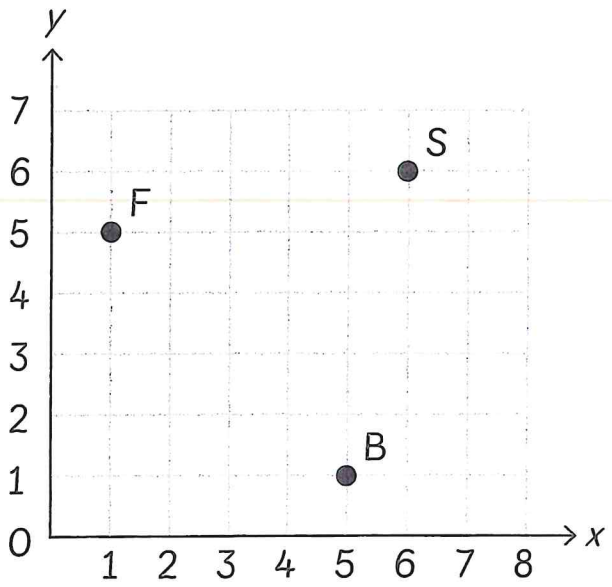
We write F = (3, ____)

We call (3,6) the **coordinates** of the point F.

These numbers show the distance from the y-axis.

Guided Practice

1 Using coordinates, describe the positions of a bee, B; a spider, S; and a fly, F.



B is at (____ , ____).

B is ____ unit from the x-axis.

B is ____ units from the y-axis.

S is at (____ , ____).

S is ____ units from the x-axis.

S is ____ units from the y-axis.

F is at (____ , ____).

F is ____ units from the x-axis.

F is ____ unit from the y-axis.

A moth, M, is at (3,4). Is it closest to B, to S or to F?

2 A quadrilateral has vertices P, Q, R and S.

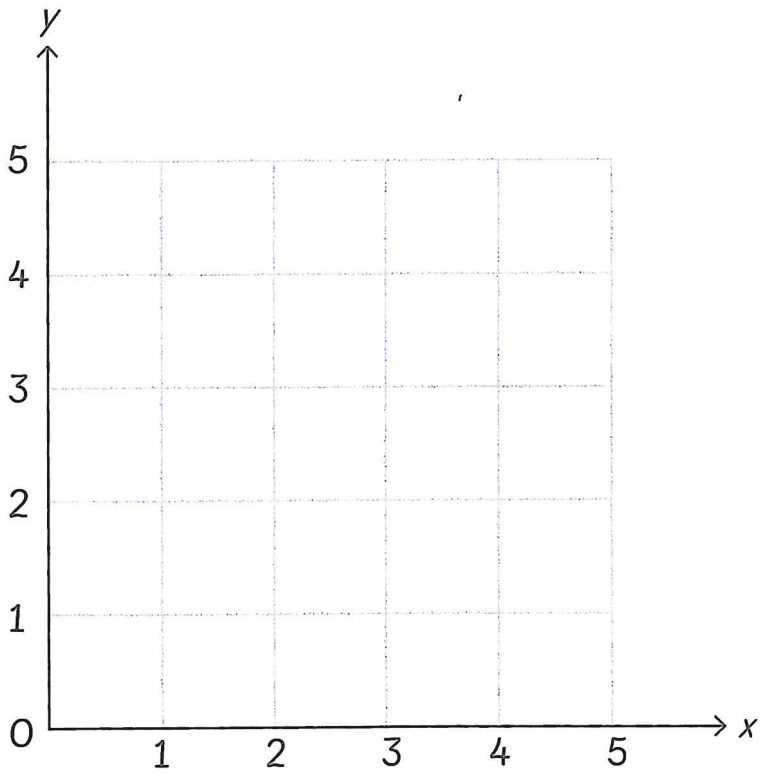
P is at (1,5)

Q is at (5,5)

R is at (5,1)

S is at (3,1)

What type of quadrilateral is PQRS?



Draw PQRS on the grid.

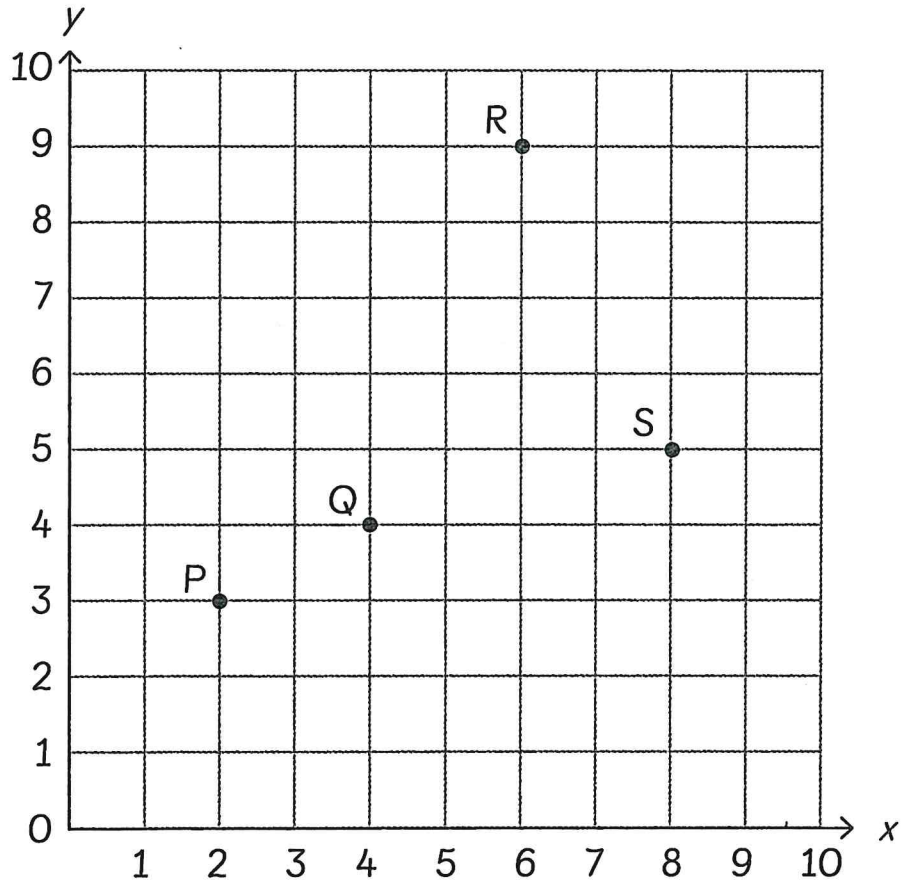
Complete Worksheet **2** – Page **155 - 158**

Name: _____ Class: _____ Date: _____

Worksheet 2

Describing Position

1 Describe the positions of the points using coordinates.



(a) Point P is ☐ units from the *y*-axis.

Point P is ☐ units from the *x*-axis.

Point P is at (☐ , ☐).

(b) Point Q is ☐ units from the y-axis.

Point Q is ☐ units from the x-axis.

Point Q is at (☐ , ☐).

(c) Point R is ☐ units from the y-axis.

Point R is ☐ units from the x-axis.

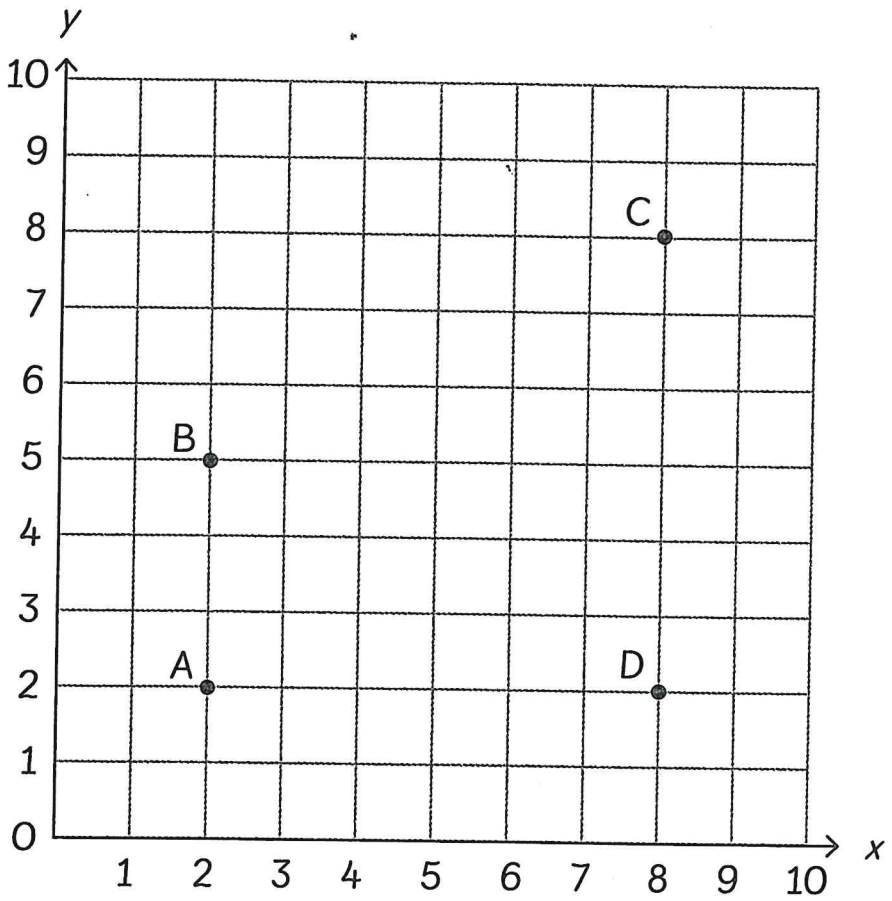
Point R is at (☐ , ☐).

(d) Point S is ☐ units from the y-axis.

Point S is ☐ units from the x-axis.

Point S is at (☐ , ☐).

2 A, B, C and D are the vertices of a quadrilateral. Describe the positions of the vertices using coordinates.



(a) Point A is ☐ units from the *y*-axis.

Point A is ☐ units from the *x*-axis.

Point A is at (☐ , ☐).

(b) Point B is ☐ units from the *y*-axis.

Point B is ☐ units from the *x*-axis.

Point B is at (☐ , ☐).

(c) Point C is ☐ units from the y-axis.

Point C is ☐ units from the x-axis.

Point C is at (☐ , ☐).

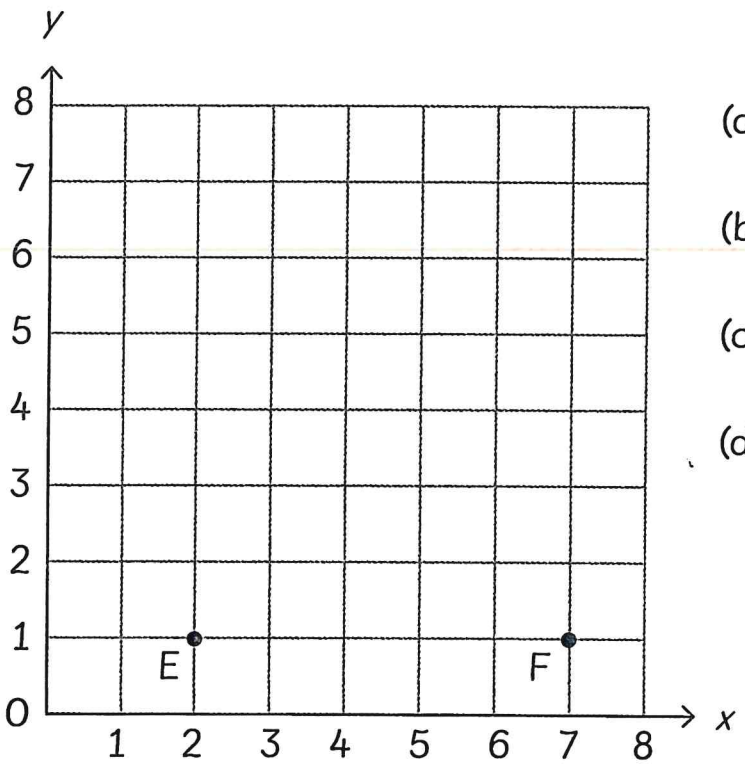
(d) Point D is ☐ units from the y-axis.

Point D is ☐ units from the x-axis.

Point D is at (☐ , ☐).

(e) What kind of quadrilateral is ABCD? ☐

3 Plot the other two vertices of square EFGH and name all the vertices using coordinates.



(a) Point E is at (☐ , ☐)

(b) Point F is at (☐ , ☐)

(c) Point G is at (☐ , ☐)

(d) Point H is at (☐ , ☐)

Constellation coordinates

lot specified points and join them to make a 2-D shape

ges 3

Use Resource 15: 9 x 9 coordinate grids. Plot and label these points to find the six stars in Constellation Hex.

A (5, 9) **B** (9, 9) **C** (9, 5)

D (5, 0) **E** (1, 1) **F** (0, 5)

You will need:
- Resource 15: 9 x 9 coordinate grids
- red pencil
- ruler

ge

1 a Draw straight lines joining the stars in order: **A** to **B**, **B** to **C** and so on back to **A**.

b Name the 2-D shape you make.

2 a Draw two straight lines joining stars **A** to **C** and **B** to **E**.

b A black hole lies at the intersection of these lines. Write its coordinates as: **BH** (,)

3 Use your red pencil to draw straight lines joining the stars:

a **A** → **C** → **E** → **A** b **B** → **D** → **F** → **B**

c Name the shape enclosed by the red lines.

4 a Find the intersection of the lines joining stars **A** to **D** and **F** to **C**.

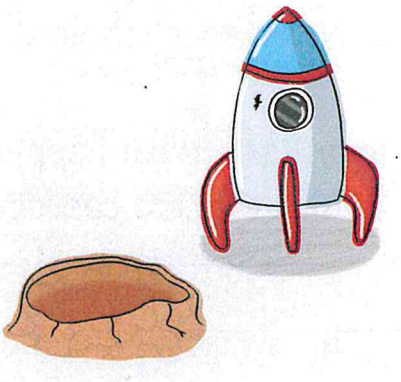
b Move 3 squares left and 2 squares up. This is where a supernova lies.

c Write the coordinates of the supernova as: **S** (,)

ge

1 A comet is travelling in a straight line from star **D** to star **F**. What might its coordinates be?

2 Investigate what happens to Constellation Hex when you double both coordinates of each star.



Wednesday 10/2/21

Plotting Points

Lesson 3

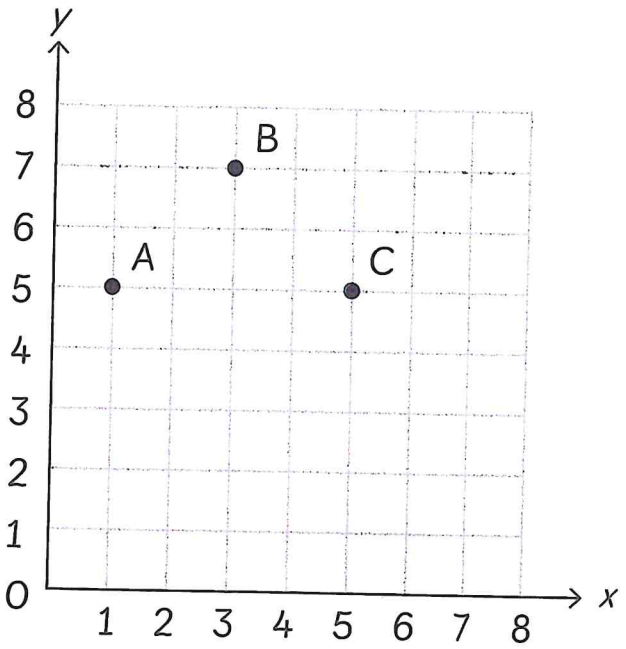
In Focus

Elliott has plotted three points.

Where should D be in order for ABCD to be a square?

Could ABCD be a quadrilateral with one line of symmetry?

Could ABCD be a rectangle?

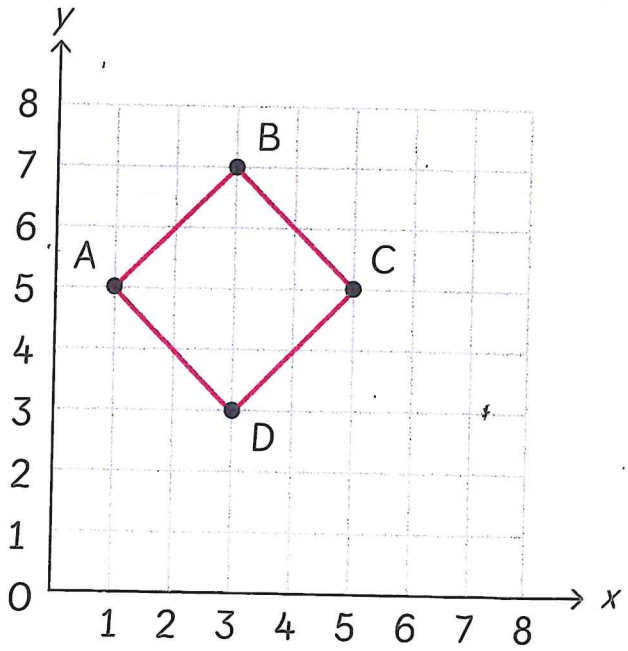


What if ABCD is a trapezium?

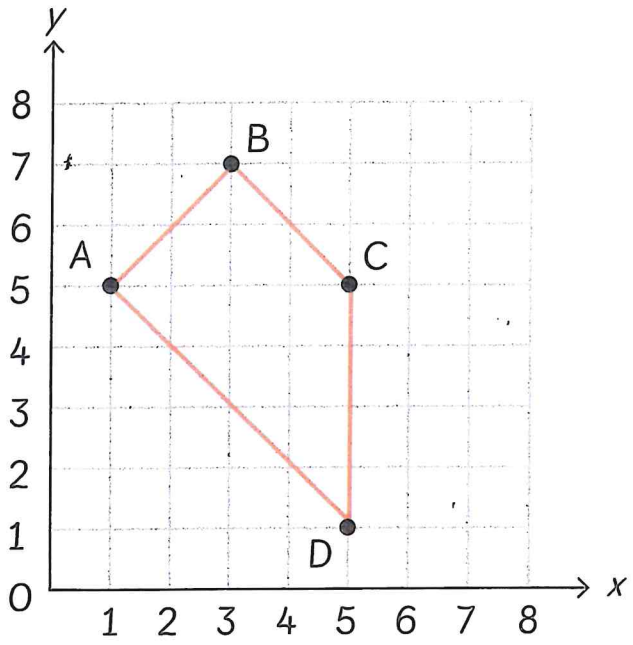
Let's Learn

1 ABCD is a square.

D is at (3,3).

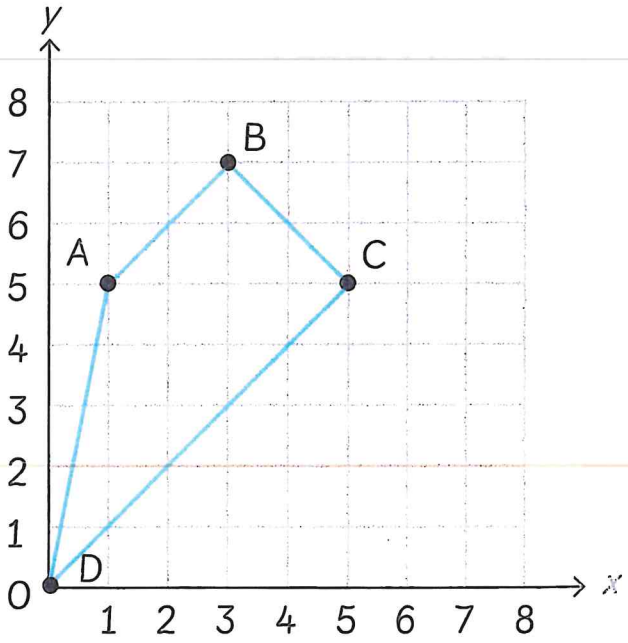


2 ABCD is a trapezium.



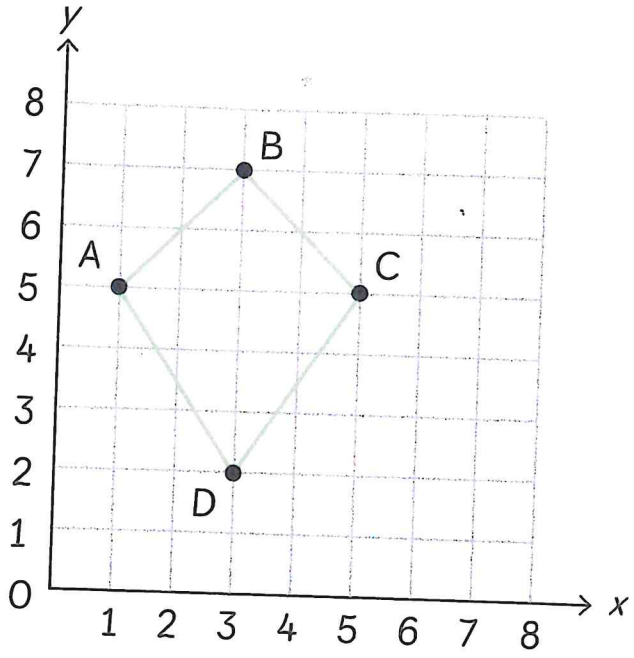
D is at (5 , ☐).

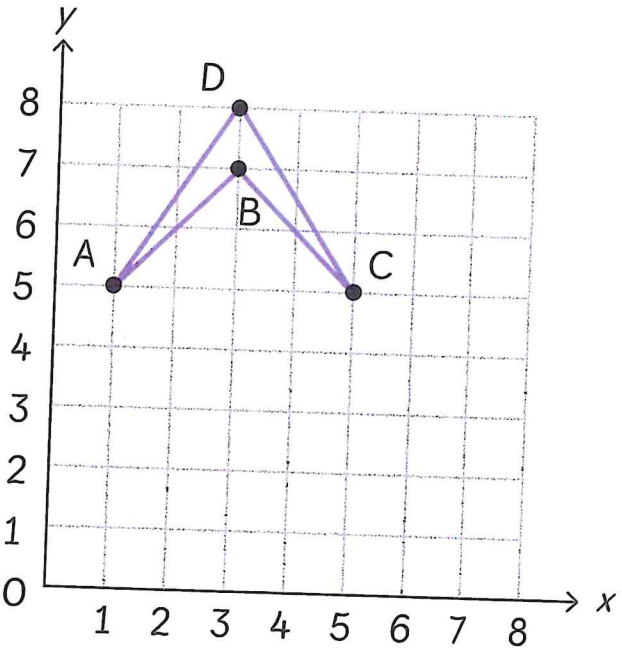
D is at (0,0).

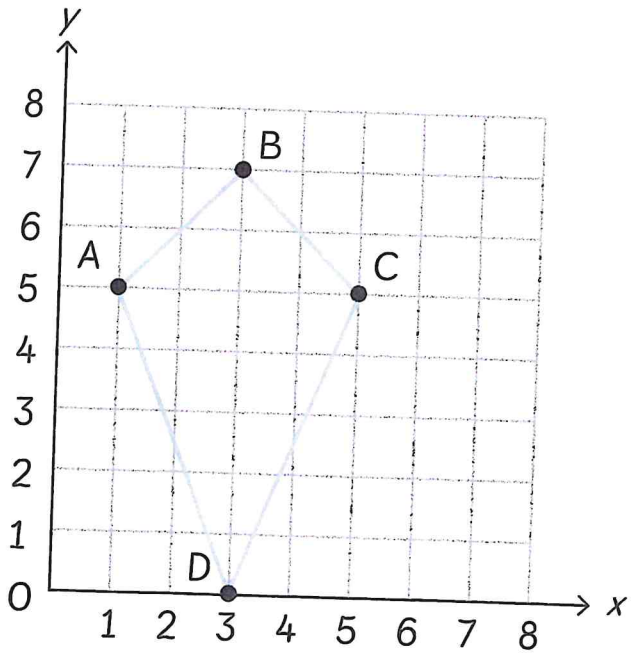


Are there other ways to make ABCD a trapezium?

3 ABCD has one line of symmetry.

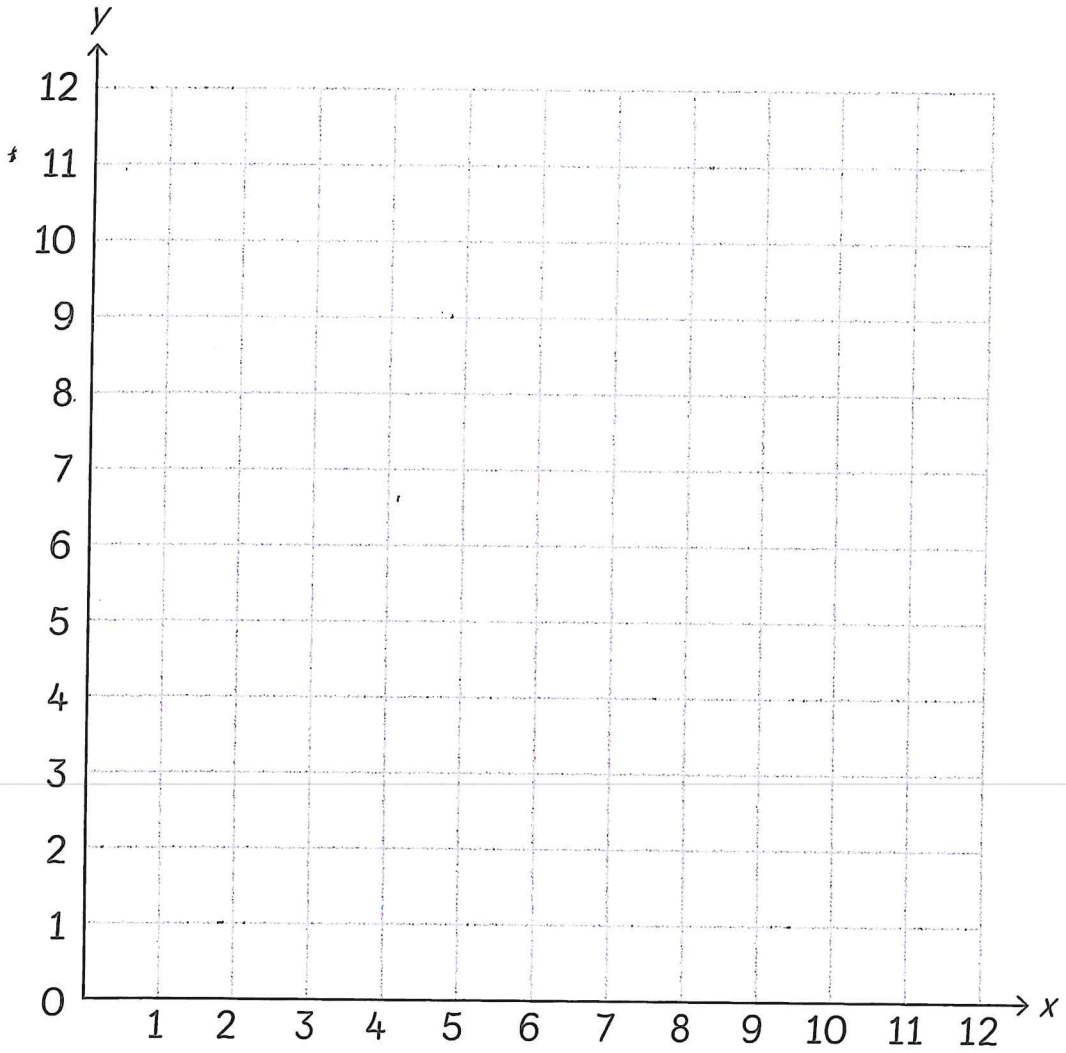






D is at (▭ , ▭).

Guided Practice



Draw each quadrilateral.

(a) ABCD A (1,2), B (2,3), C (3,2), D (2,1)

(b) EFGH E (1,5), F (3,5), G (4,6), H (2,6)

(c) JKLM J (4,10), K (6,9), L (4,8), M (2,9)

(d) PQRS P (5,3), Q (9,3), R (7,5), S (7,1)

(e) TUVW T (8,6), U (9,7), V (11,5), W (10,4)

What kind of quadrilateral is each of these?

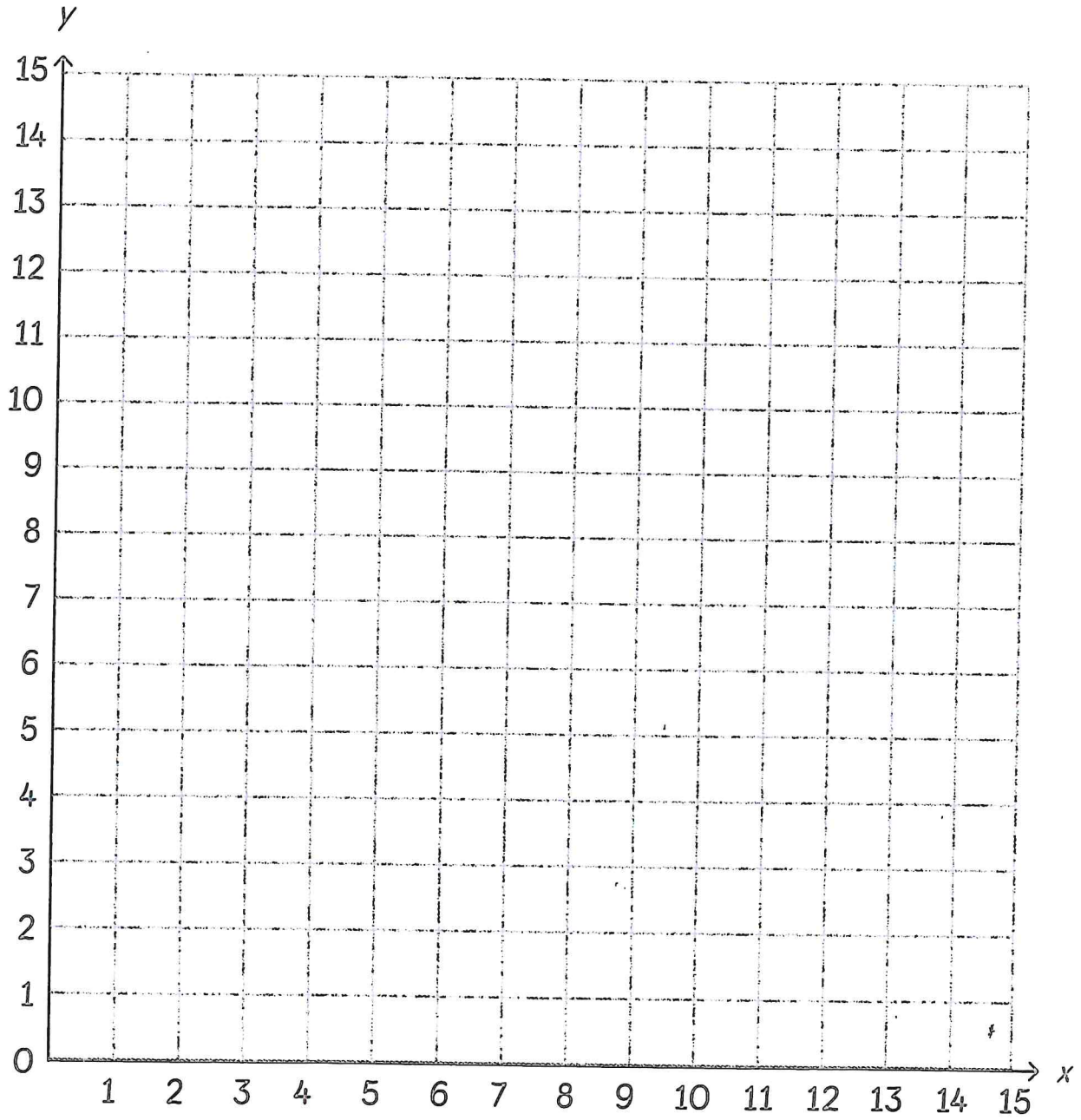
Complete Worksheet **3** – Page **159 - 160**

Name: _____ Class: _____ Date: _____

Worksheet 3

Plotting Points

1 Plot the vertices of each figure given on the next page, and name the shape.



(a) Figure ABC

A (1,1), B (5,1), C (4,5)

Figure ABC is a ☐.

(b) Figure DEFG

D (2,10), E (11,10), F (11,7), G (2,7)

Figure DEFG is a ☐.

(c) Figure HIJK

H (3,15), I (5,15), J (8,11), K(3,11)

Figure HIJK is a ☐.

(d) Figure LMNO

L (10,15), M (14,14), N (11,11), O (14,10)

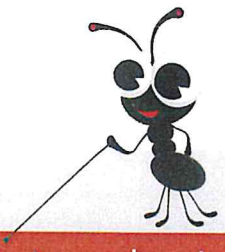
Figure LMNO is a ☐.

(e) Figure PQRS

P (6,3), Q (10,5), R (14,3), S (10,1)

Figure PQRS is a ☐.

Coordinates of shapes

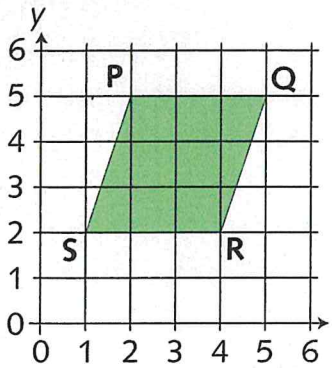


Use coordinates to describe the position of a point on a grid in the first quadrant

Challenge 1

Write the coordinates of:

a parallelogram **PQRS**



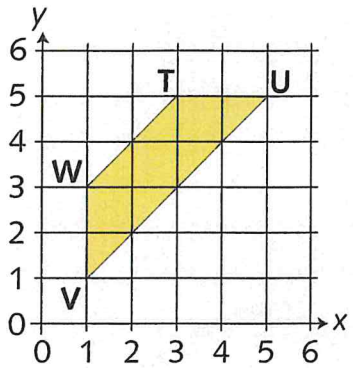
P (2, 5)

Q (,)

R (,)

S (,)

b trapezium **TUVW**



T (3,)

U (,)

V (,)

W (,)

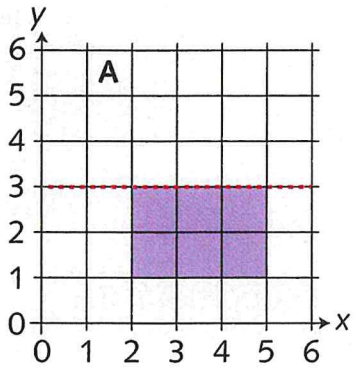
Challenge 2

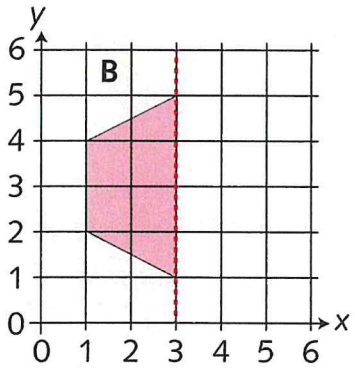
1 For each half shape below:

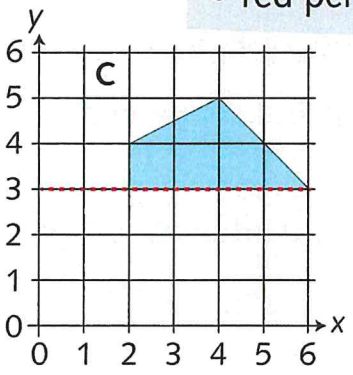
a copy it on to a 6 x 6 coordinate grid

b reflect the shape in the dotted red line of symmetry

You will need:
- Resource 14: 6 × 6 coordinate grids
- ruler
- red pencil







2 Name each whole shape and write its coordinates.

Challenge 3

Investigate what happens to shapes **PQRS** and **TUVW** from Challenge 1 when you:

a add three to both the *x*- and *y*-coordinates

b swap over the numbers for the *x*- and *y*-coordinates

You will need:
- 1 cm squared paper

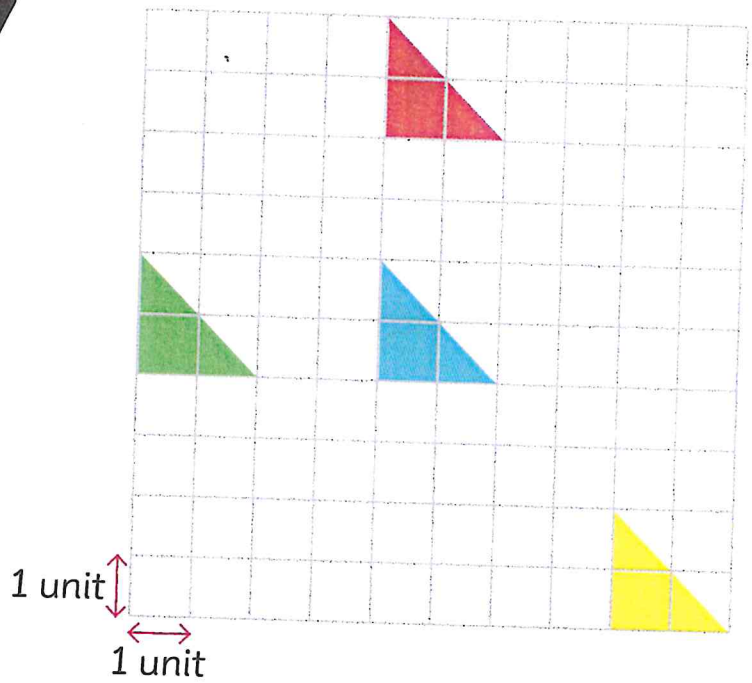
or
- Coordinates tool

Thursday 11/2/21

Describing Movements

Lesson 4

In Focus

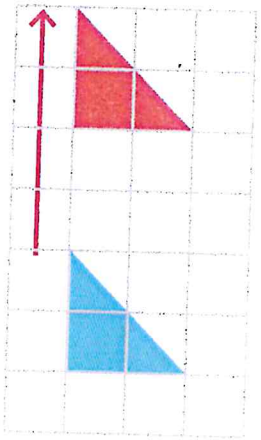


Describe how  can move into each of the three positions.

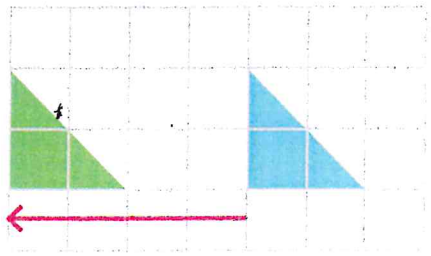
Let's Learn

1 Describe  's movement into the position shown by  .

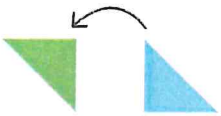
It moves up by 4 units.



2 Describe this movement.



It does not turn.



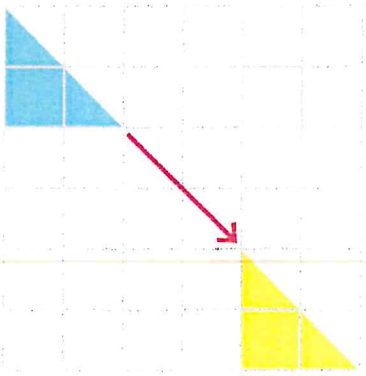
It does not flip.

This movement is called a **translation**.

We say that  translates.

 translates 4 units to the left.

3 Describe this movement.

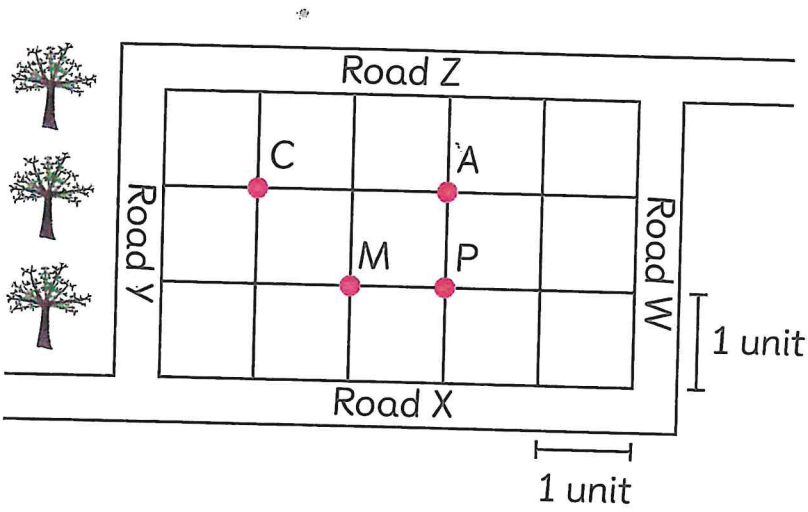


First  translates 4 units to the right.

Then it translates 4 units downwards.

Guided Practice

1



C  Cathedral

A  Ancient Ruins

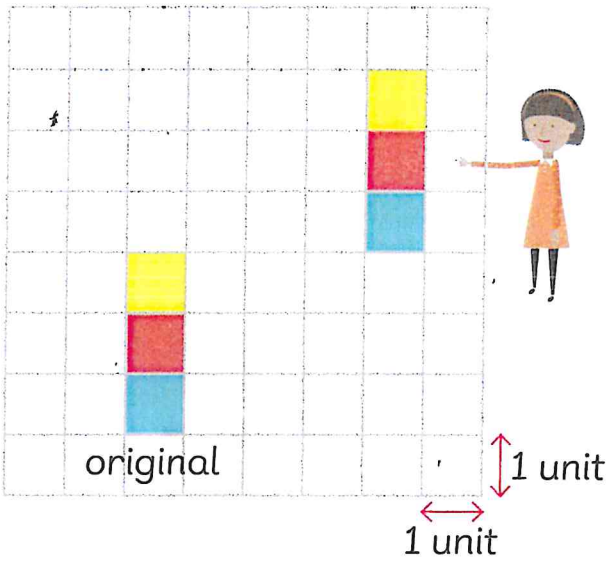
P  Palace

M  Museum

Describe the translation that can get a person from one place to another.

From	To
Cathedral	Ancient Ruins
Palace	Ancient Ruins
Palace	Museum
Cathedral	Palace
Museum	Ancient Ruins

2 The diagram shows the original position of  .



Describe how  moves so that the red square ends up here.

Show where  ends up after each translation is finished.

(a)  moves up by 3 units.

(b)  moves to the right by 4 units.

(c)  moves to the left by 2 units.

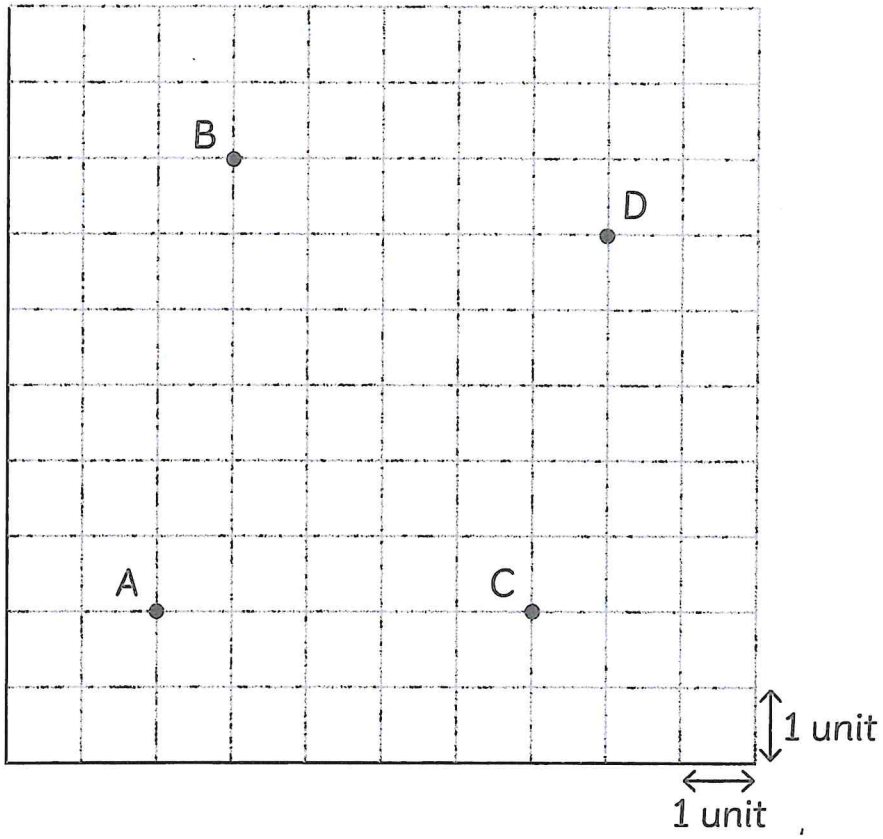
Complete Worksheet **4** – Page **161 – 163**

Name: _____ Class: _____ Date: _____

Worksheet 4

Describing Movements

1 Some points are drawn on a square grid.



Describe these movements.

(a) From Point A to Point B:

A translates ☐ unit to the right then ☐ units upwards.

(b) From Point B to Point C:

☐

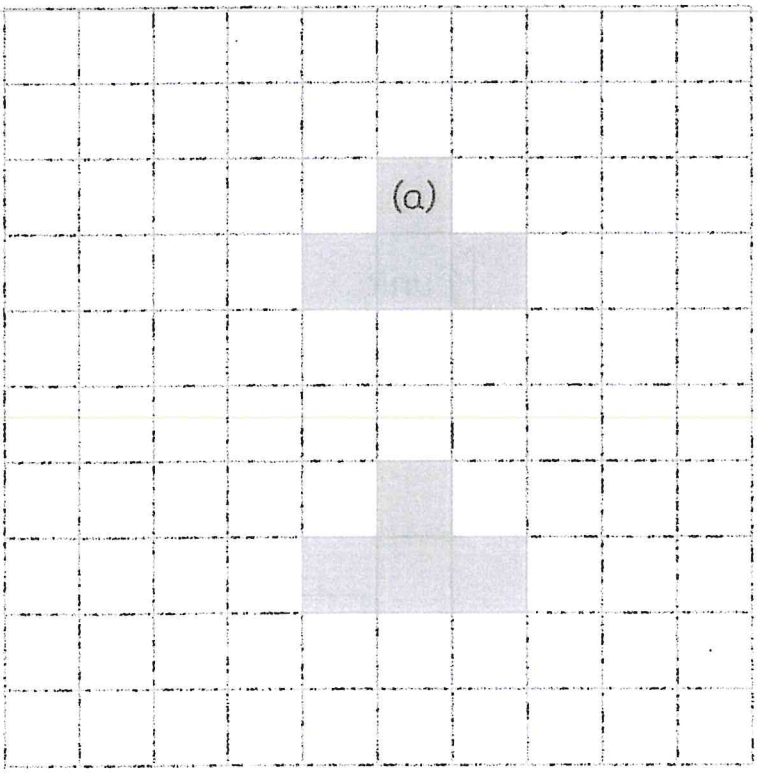
(c) From Point D to Point A:

(d) From Point D to Point B:

(e) Point A translates 4 units to the right and 5 units upwards to Point P. Plot Point P on the grid.

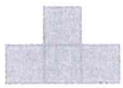
2 Show where  ends up at the end of each translation.

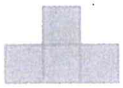
The first translation is done for you.

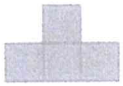


(a)  moves up by 4 units.

(b)  moves down by 2 units.

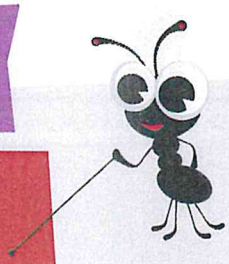
(c)  moves to the left by 4 units.

(d)  moves to the right by 3 units.

(e)  moves to the right by 2 units and then moves up by 6 units.

Translating a 2-D shape

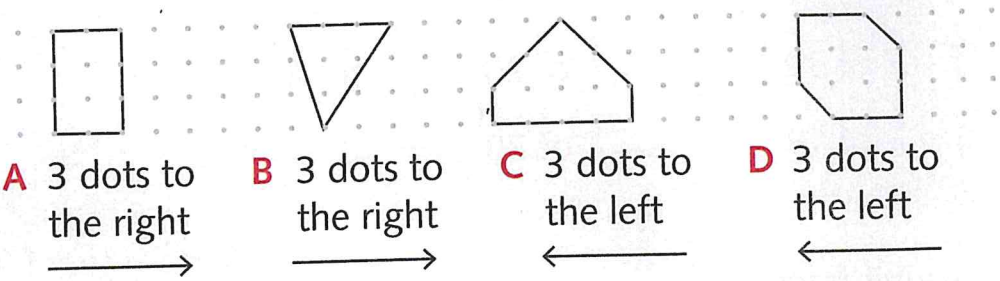
Recognise where a shape will be after a translation



You will need:
- squared dot paper
- ruler

Challenges 1,2

Copy each shape A–D below on to squared dot paper. Translate each shape twice as follows:



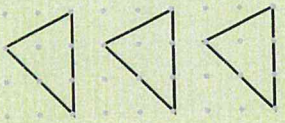
A 3 dots to the right →

B 3 dots to the right →

C 3 dots to the left ←

D 3 dots to the left ←

Example



3 dots to the right →

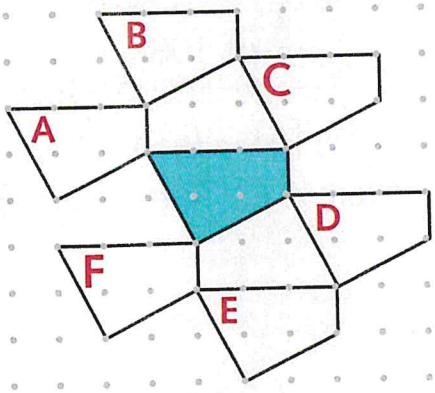
Challenges 2,3

1 Translate each shape above twice as follows:

a shapes A and B – 3 dots up

b shapes C and D – 3 dots down

2 Write the instructions to translate the blue quadrilateral to the new positions A–F. The first one has been done for you.



Example

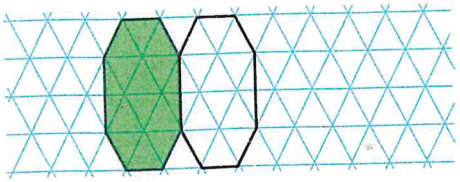
A: 3 dots to the left then 1 dot up.

Challenge 3

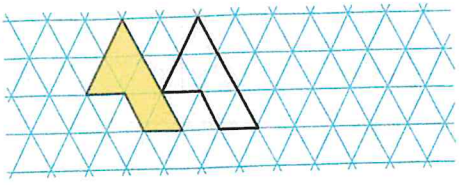
Make patterns by translating the coloured shape:

- to the right and to the left
- up and down, then to the right and to the left.

a



b



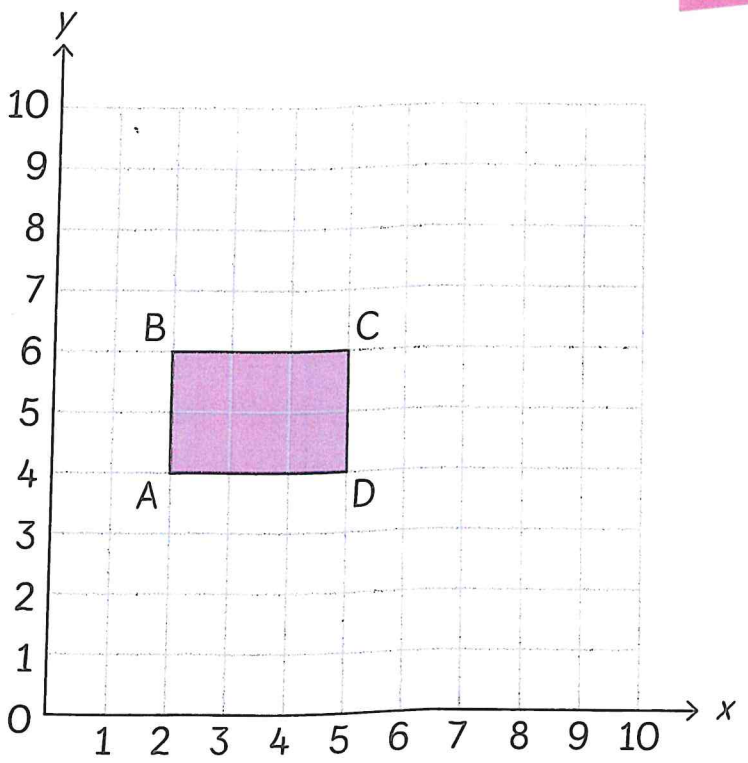
You will need:
- triangular grid paper
- coloured pencils
- ruler

Friday 12/2/21

Describing Movements

Lesson 5

In Focus



How can we move rectangle ABCD so that one of its vertices ends up at (7,8)?

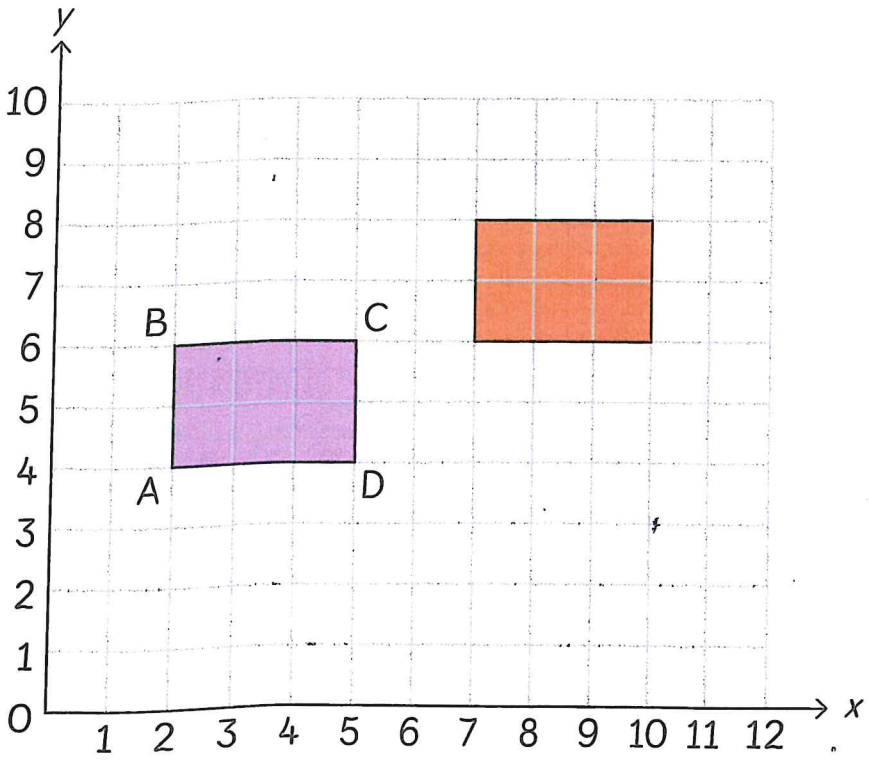
Let's Learn

1

Move it up 2 units and then 5 units to the right.

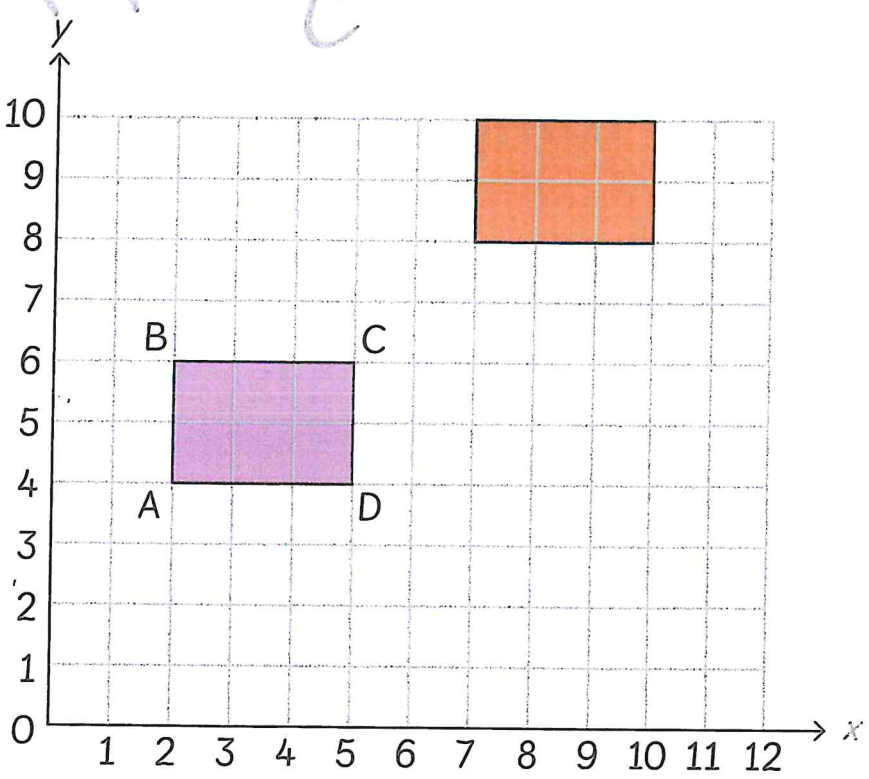
Translate it 5 units to the right and then 2 units upwards.

Who is correct?

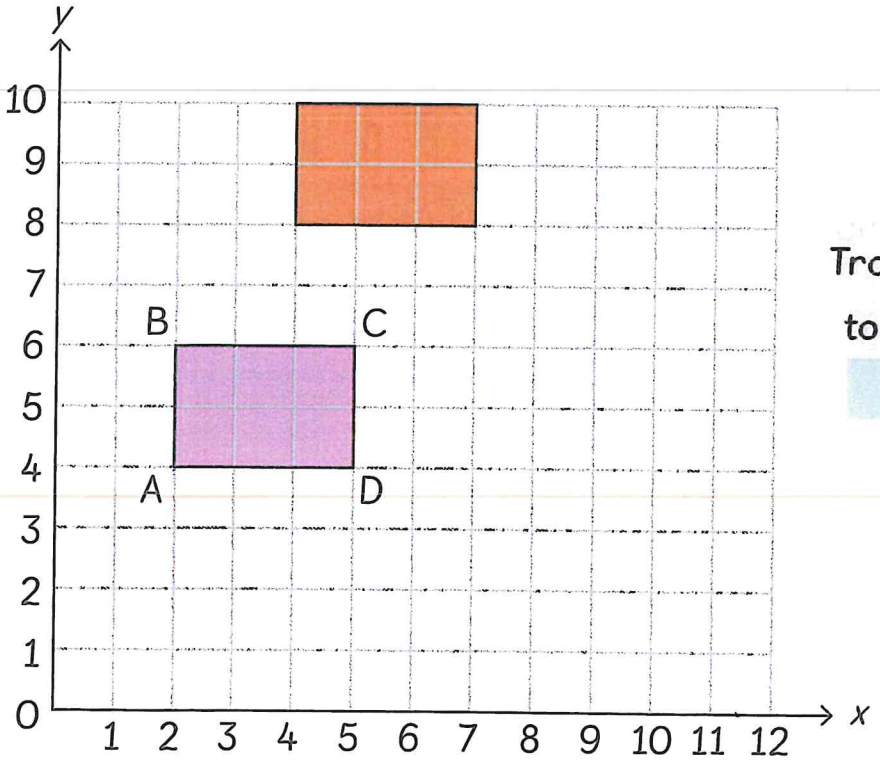


2

Translate it 4 units upwards and then 5 units to the right.

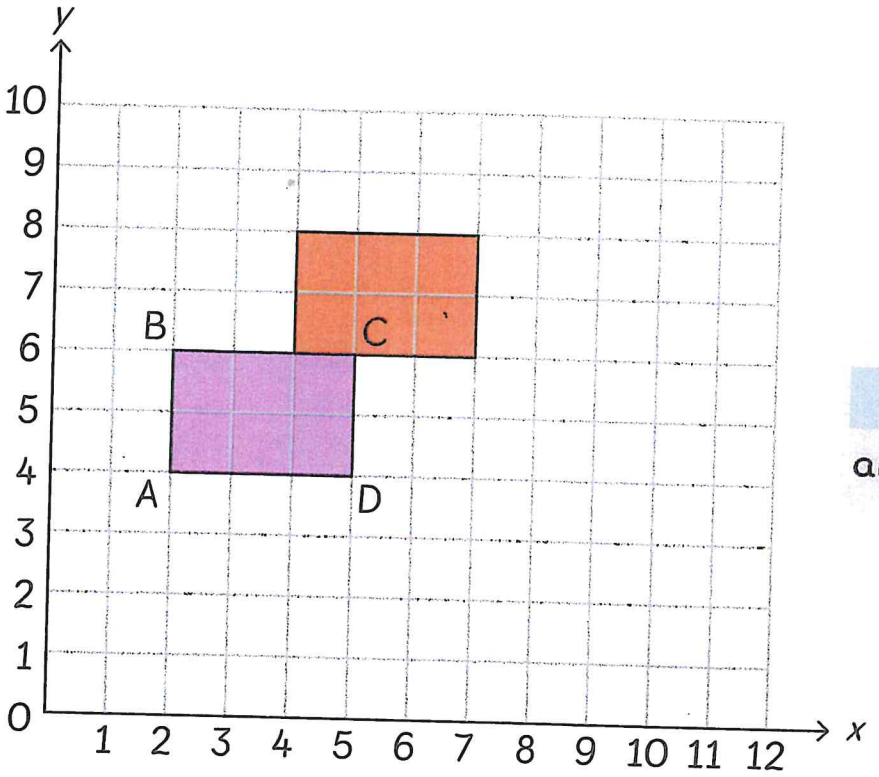


3



Translate it ____ units to the right and then ____ units upwards.

4



Translate it ____ units upwards and then ____ units to the right.

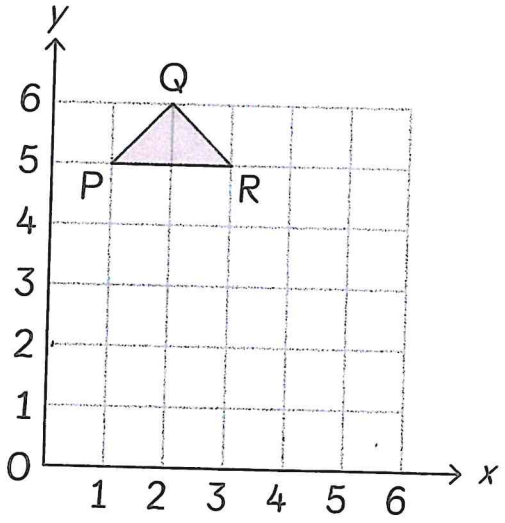
Guided Practice

Describe the translation that results in:

(a) P being at (3,2).

(b) Q being at (3,2).

(c) R being at (3,2).

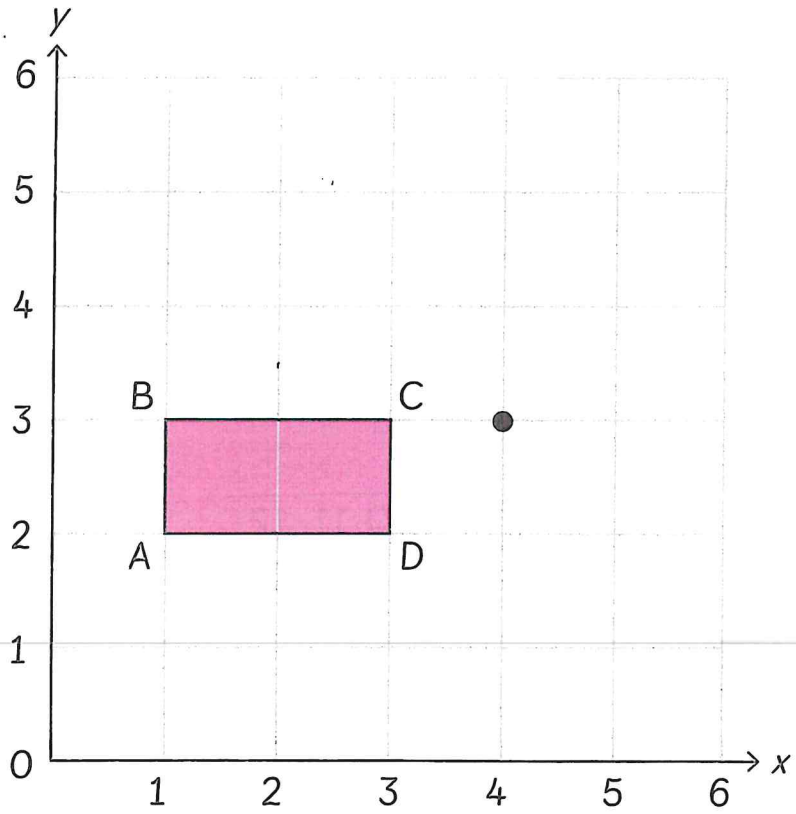


What are the coordinates of the other vertices?

Complete Worksheet **5** – Page **164 - 165**

Mind Workout

How can we move rectangle ABCD so that one of its vertices ends up at (4,3)?



I translate the rectangle.

I turn the rectangle by one right angle.

I reflect the rectangle in a line of symmetry.

Show where the rectangle ends up in each case.

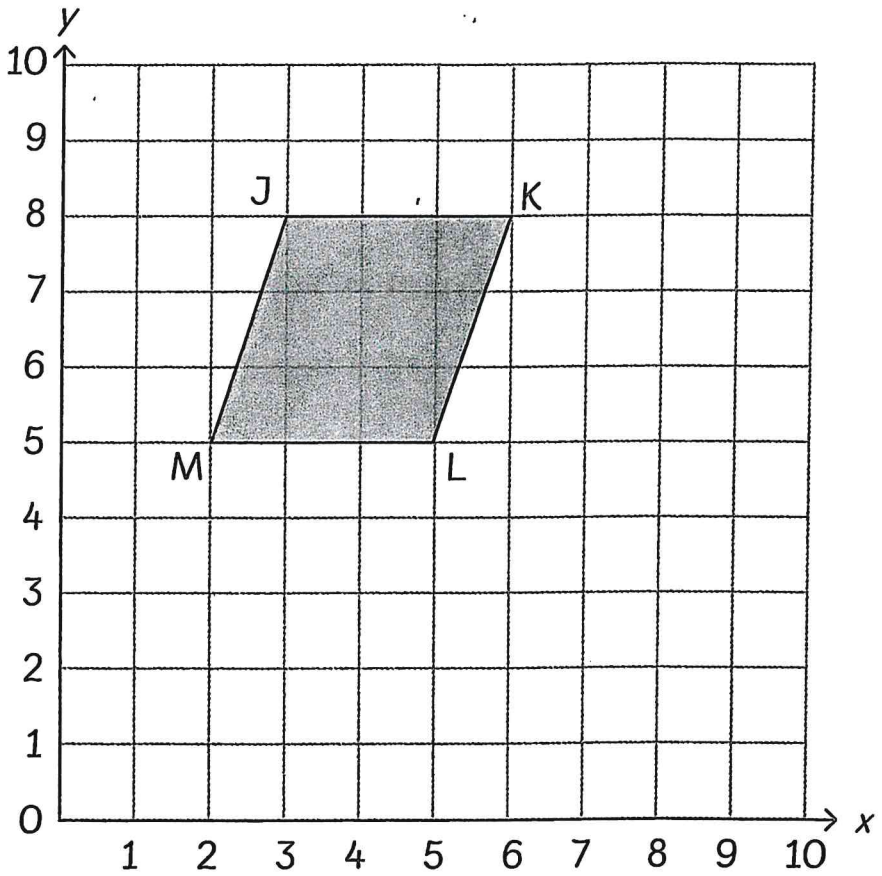
State the coordinates of A after the move.

Name: _____ Class: _____ Date: _____

Worksheet 5

Describing Movements

1 A parallelogram is drawn on a square grid.



Describe the translation of parallelogram JKLM that results in:

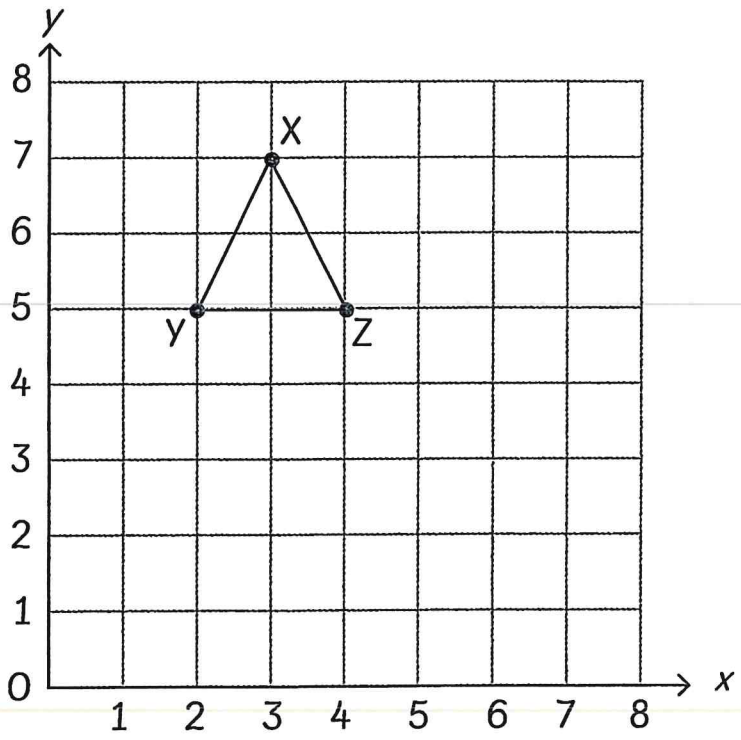
(a) Point J moving to (4,7):

(b) Point K moving to (10,4):

(c) Point L moving to (10,0):

(d) Point M moving to (5,2):

2 A triangle is drawn on a square grid.



Describe two different translations which move the triangle XYZ so that one of its vertices ends up at (6,3).

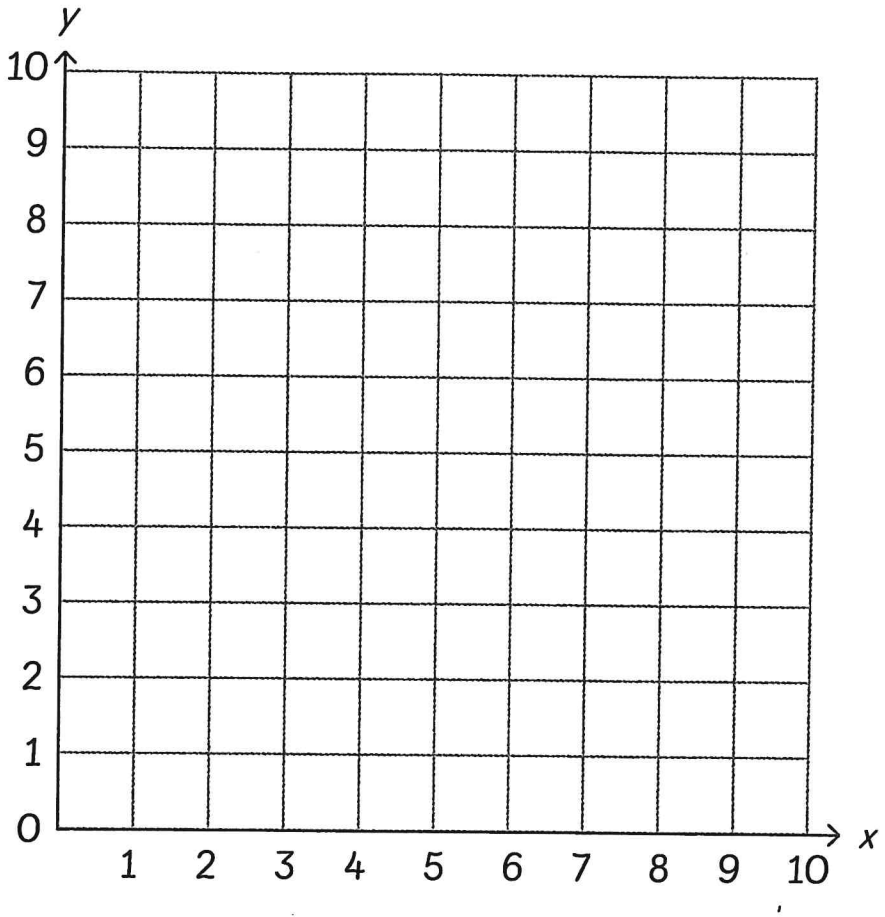
(a)

(b)

Name: _____ Class: _____ Date: _____

Review 13

1 Plot the points and describe the shape formed by each set of coordinates.



(a) Figure ABC

A (3,6), B (4,9), C (5,6)

Figure ABC is a [ ].

(b) Figure DEFG

D (6,6), E (8,10), F (10,10), G (8,6)

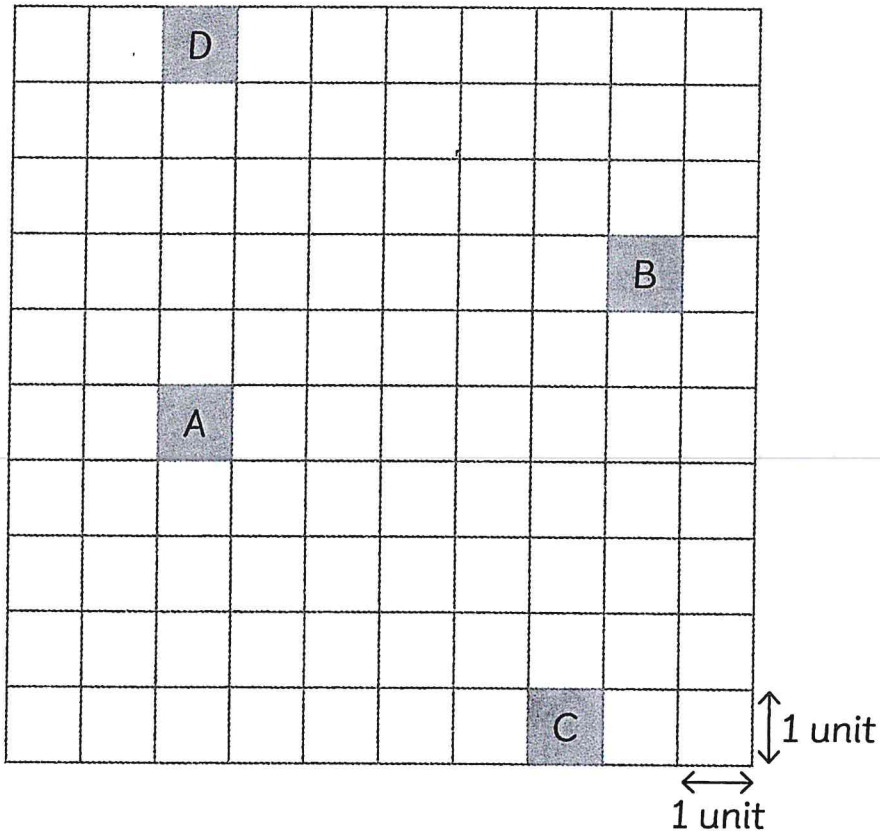
Figure DEFG is a [ ].

(c) Figure HIJK

H (2,0), I (0,4), J (6,4), K (6,0)

Figure HIJK is a ☐.

2 Describe the translations taking A to each of the positions B, C, D.



(a) From A to B:

☐

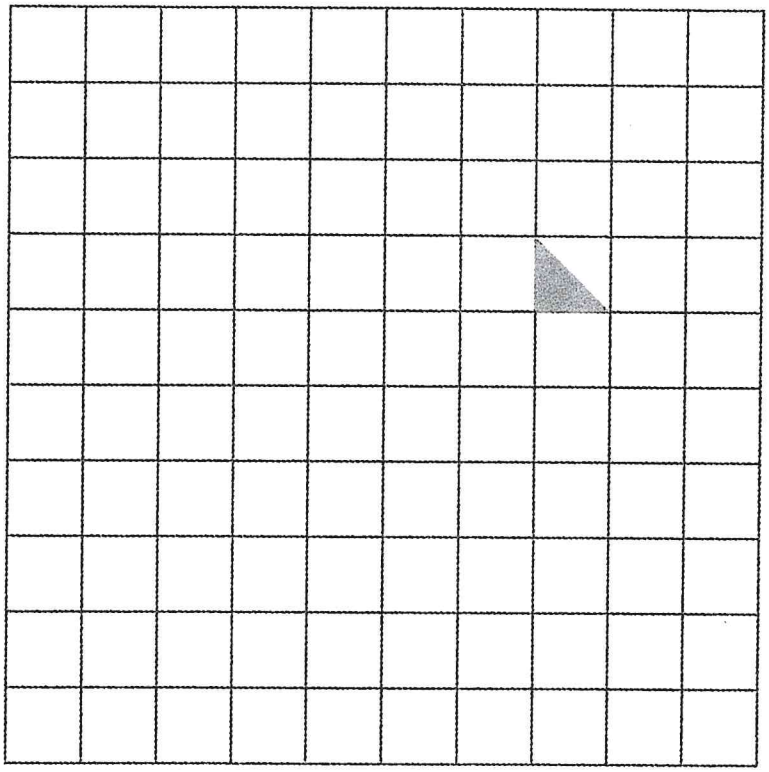
(b) From A to C:

☐

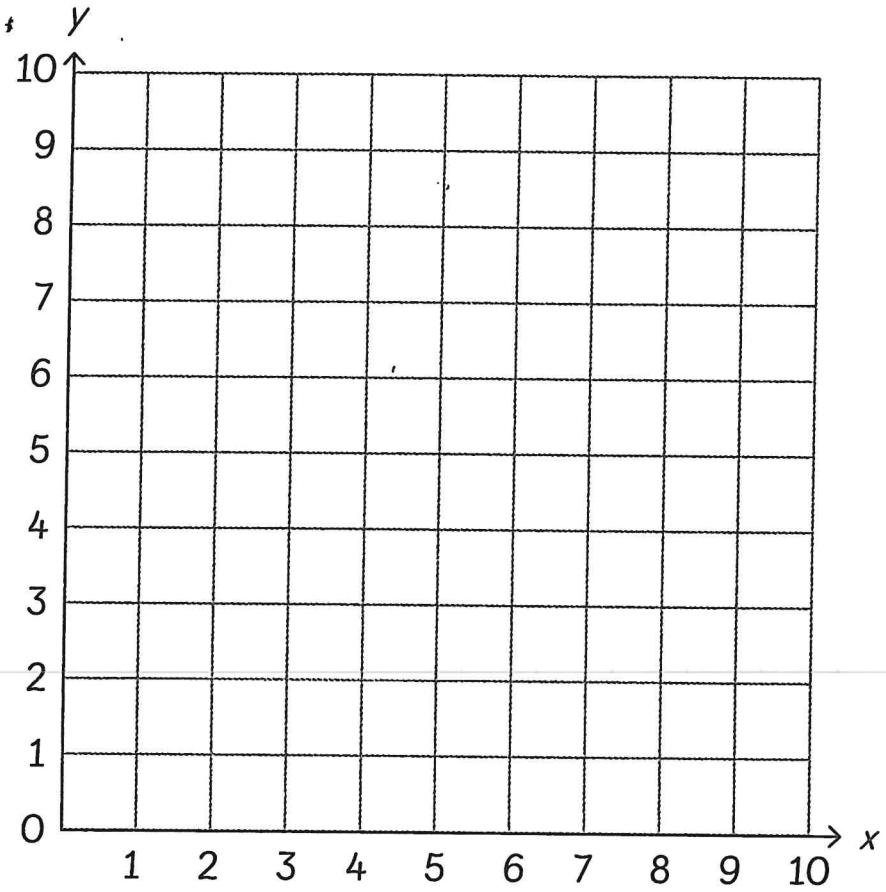
(c) From A to D:

3  translates 7 units to the left and then 6 units downwards.

Draw to show the new position of  on the grid.



4 WXYZ is a parallelogram. The vertices W, X and Y are given by:
W (1, 1) X (3, 6) Y (10, 6)



Plot the vertices W, X, Y and name the coordinates of Z.

Z is at ☐.

Mind Workout

Date: _____

Draw a parallelogram EFGH on the square grid which has the same area as the trapezium ABCD.