White Rose Maths
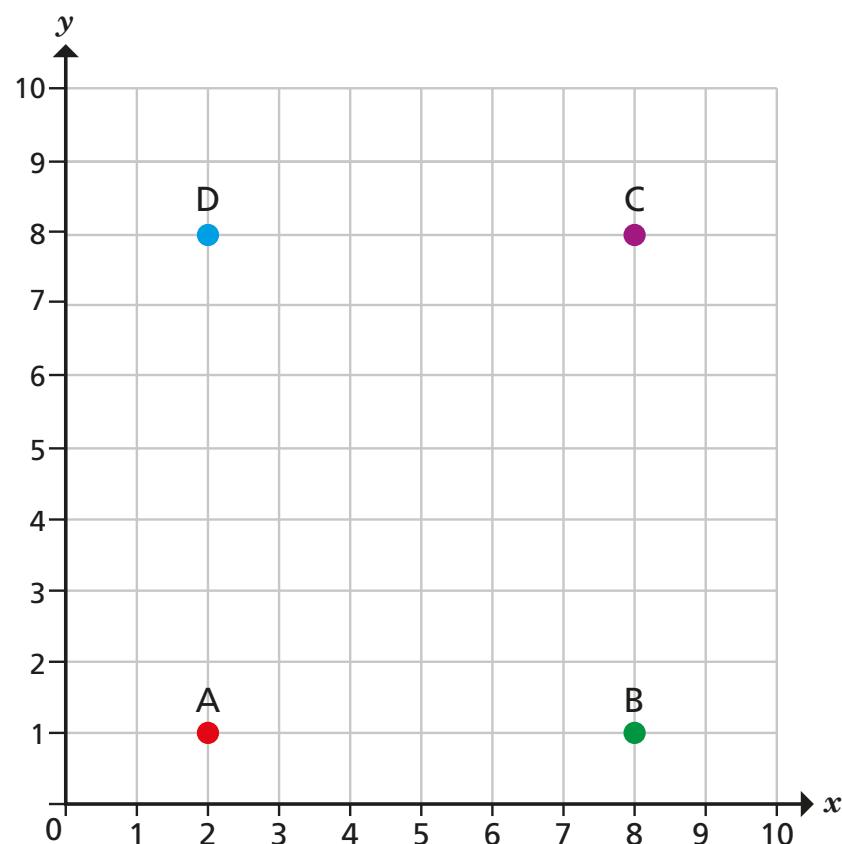
1

a) Write the coordinates of the points A, B, C and D.

A (2 , 1)   C (8 , 8)

B (8 , 1)   D (2 , 8)

b) Draw lines to join the points A to D to form a rectangle.

c) Write the coordinates of 4 different points in each column of the table.   Various answers.
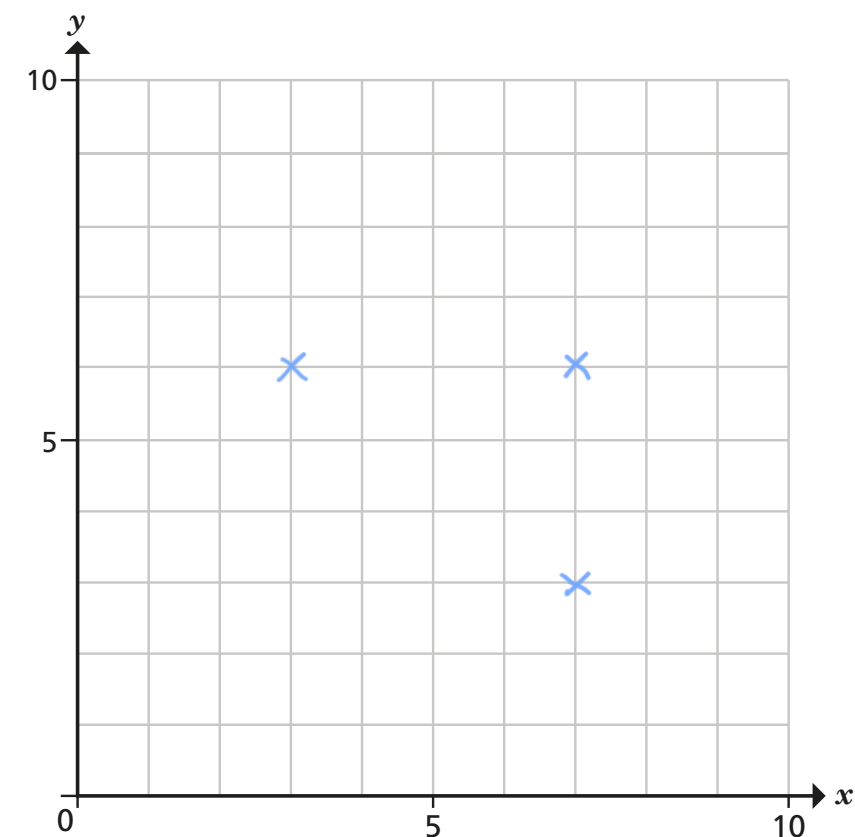
Inside the rectangle	Outside the rectangle	On the perimeter of the rectangle
(5, 3)		

2 Here are coordinates for three vertices of a rectangle.

(3, 6)   (7, 3)   (7, 6)

a) Plot the coordinates.

b) Write the coordinates of the fourth vertex.

(3 , 3)

3 Here are coordinates for two vertices of a square.

(5, 2)   (5, 6)

What could the coordinates of the other two vertices be?

Give two possible solutions.

(9 , 2) and (9 , 6)

(1 , 2) and (1 , 6)

4 **a)** Write a set of coordinates that would join to make a right-angled triangle.

(1,14)   (4,14)   (1,11)

b) Write a set of coordinates that would join to make a pentagon.

(4,10)   (3,9)   (5,9)   (3,7)   (5,7)

c) Write a set of coordinates that would join to make a trapezium.

(4,1)   (2,2)   (2,4)   (4,5)

**d)** Plot your points from parts a), b) and c) to check you are correct.
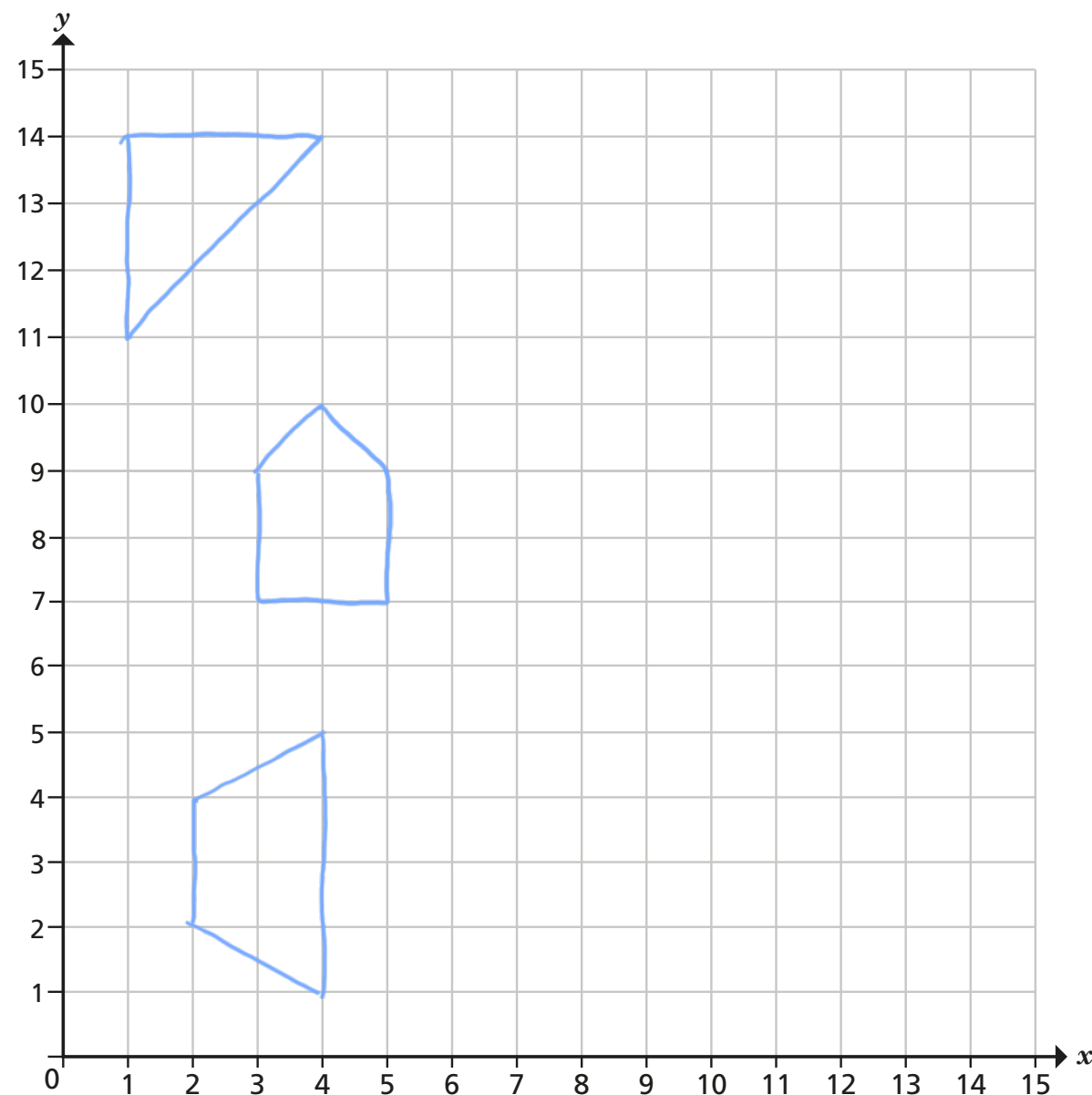
Compare shapes with a partner.

What is the same? What is different?

5 Complete the coordinate for the isosceles triangle.

(25 , 75)

(10, 25)   (40, 25)
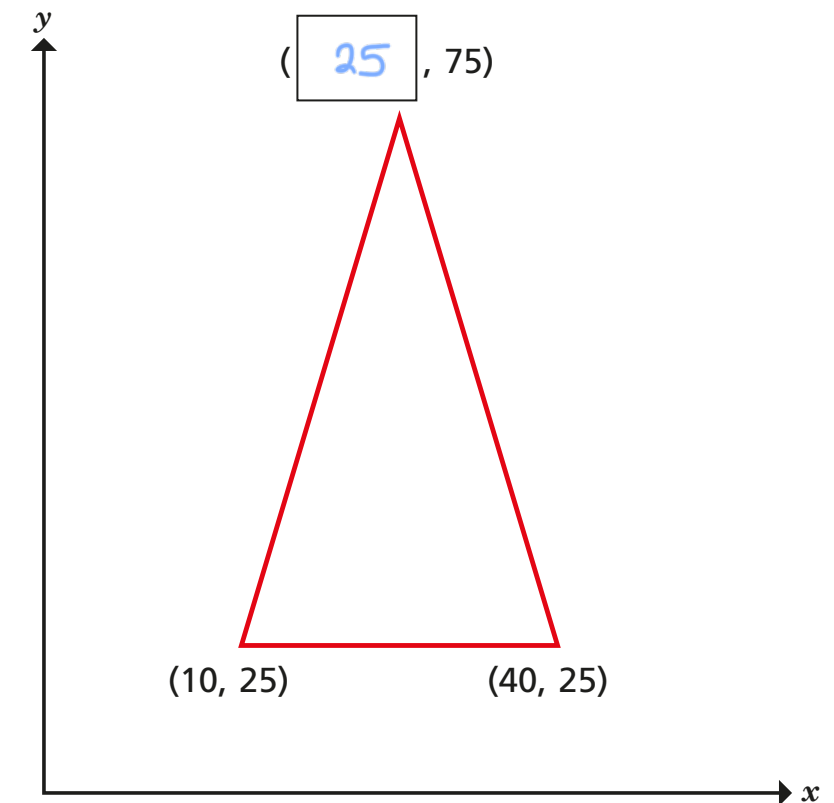
6 Eva has drawn an F on a coordinate grid. One point is labelled.

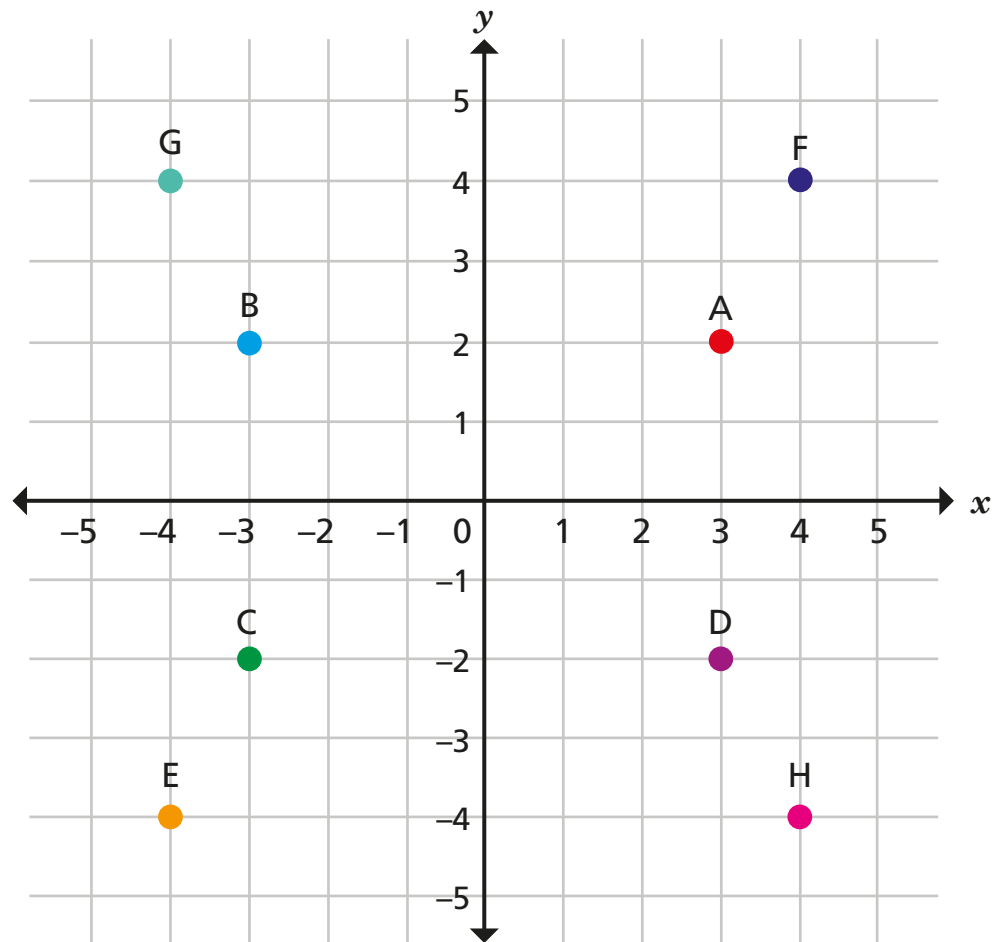Suggest possible values for the other points and label them on the diagram. Various answer e.g.

(12,21)   (15, 21)

(12, 18)   (15, 18)

(12,15)
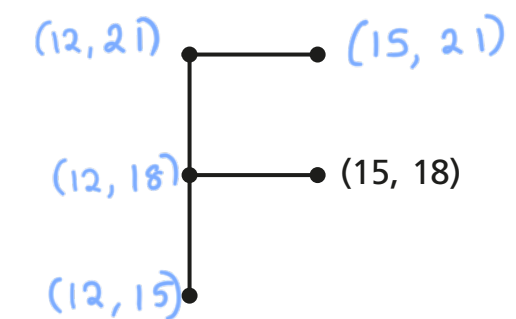
Compare answers with a partner.

Is there more than one possible set of answers?

1

Write the coordinates of points A to H.

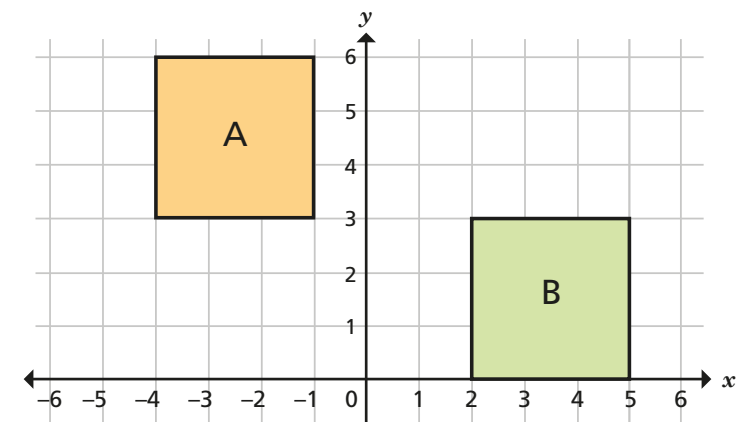A (3 , 2)   E (⁻4 , -4)

B (-3 , 2)   F (4 , 4)

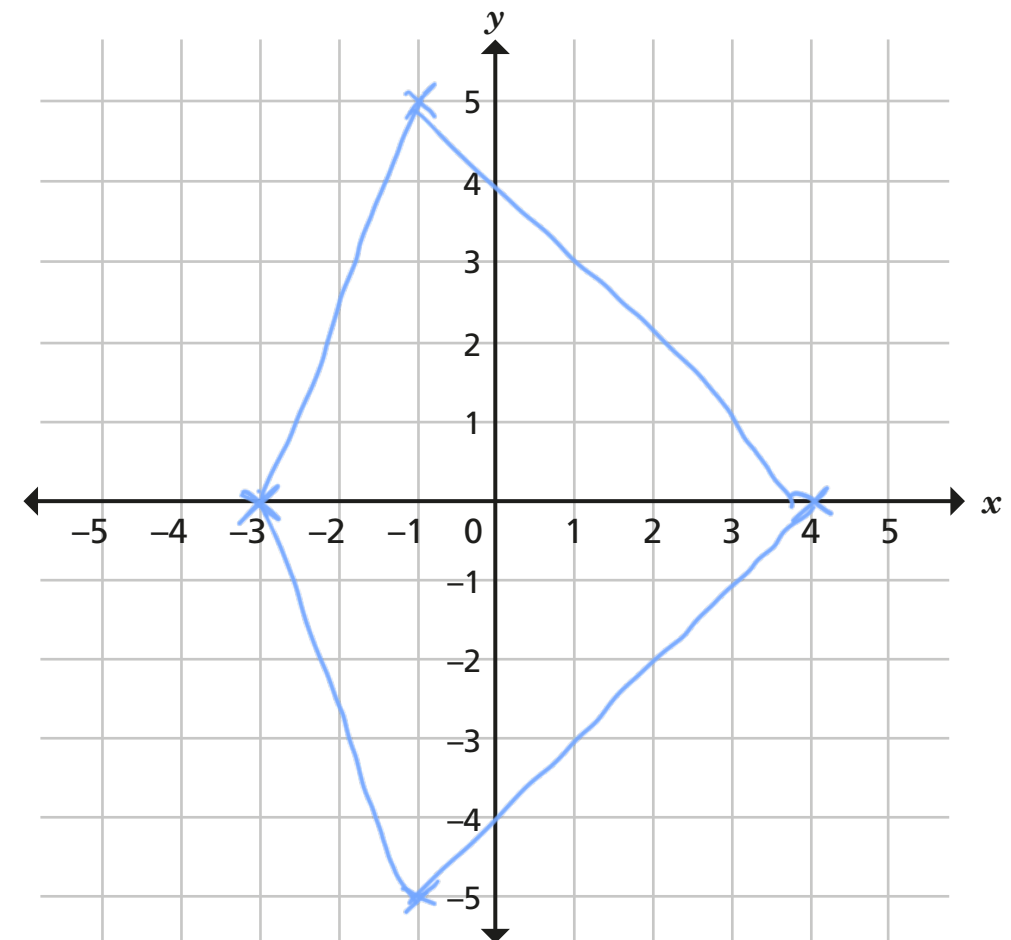C (-3 , -2)   G (-4 , 4)

D (3 , -2)   H (4 , -4)

2

Write the coordinates for each vertex of each square.

square A = (-4,6) (-1,6) (-1,3) (-4,3)

square B = (2,3) (5,3) (2,0) (5,0)

3

a) Plot these coordinates.
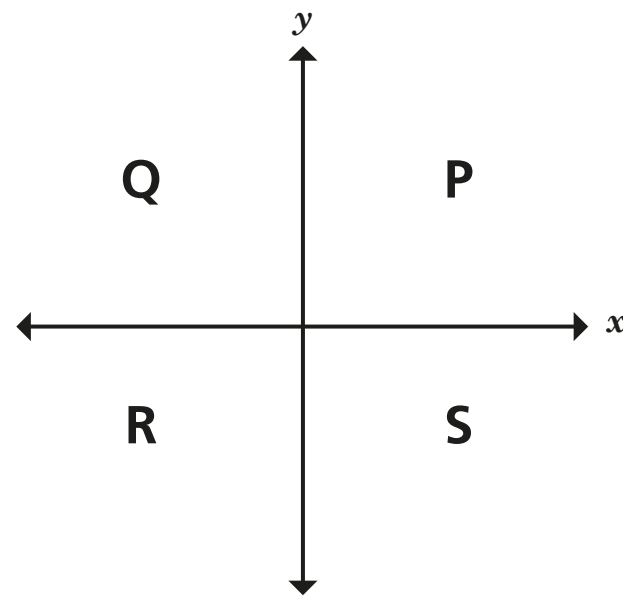
(–3, 0)   (4, 0)   (–1, 5)   (–1, –5)

b) Join the points you have plotted to form a quadrilateral.

c) Complete the sentence to describe the shape you have drawn.

This quadrilateral is a _kite_

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4

Q   P

R   S

Various answers.

a) Write coordinates for 4 possible points in each quadrant.

Quadrant P		Quadrant R	
(2 , 4) (71 , 60)		(-4 , -11) (-1 , -1)	
(3 , 1) (5 , 17)		(-19 , -27) (-8 , -9)	
Quadrant Q		**Quadrant S**	
(-7 , 11) (-4 , 1)		(2 , -5) (30 , -4)	
(-5 , 21) (-100 , 2)		(17 , -12) (6 , -1)	

b) Write 4 different coordinates that are not in any single quadrant.

(3 , 0)   (0 , 0)

(0 , 4)   (-7 , 0)

What do you notice?

5
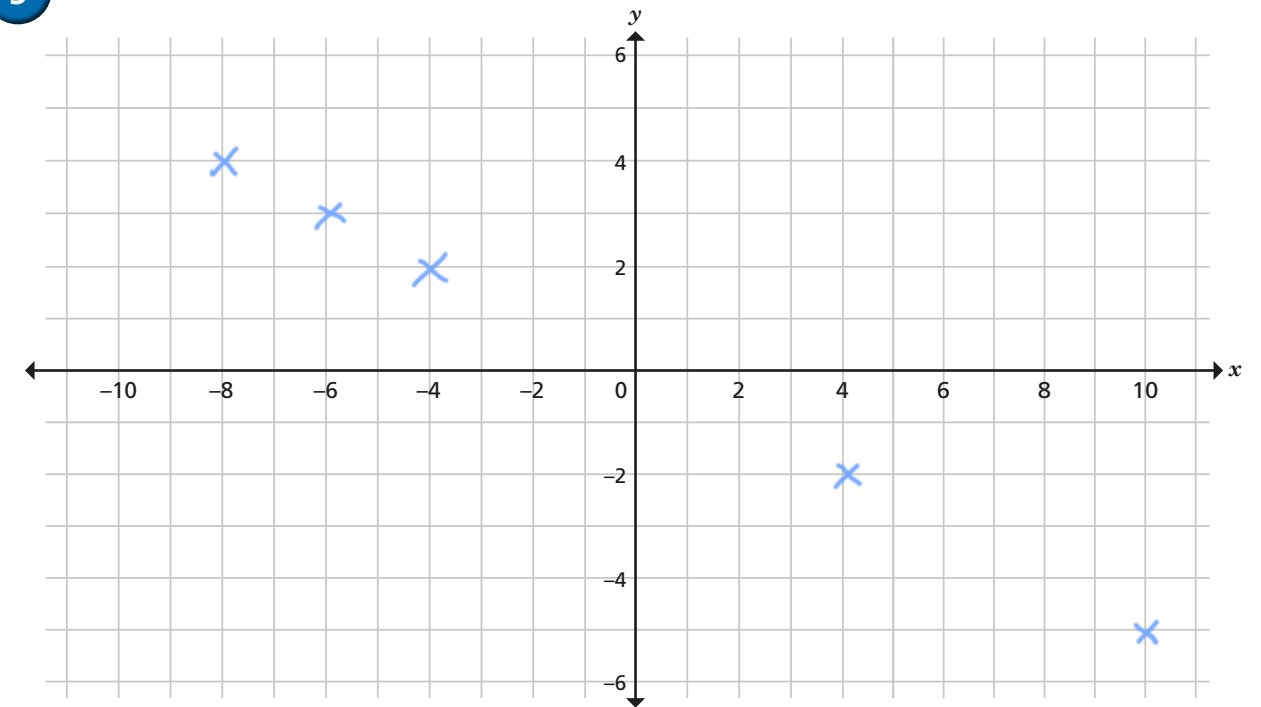
a) Plot these coordinates.

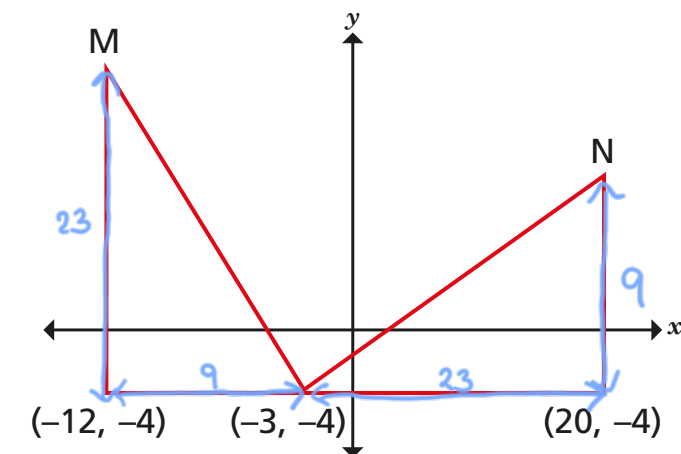(–8, 4)   (4, –2)   (10, –5)   (–4, 2)   (–6, 3)

b) Write three other coordinates that would be in the same line.

(-2, 1)   (0, 0)   (2, -1)

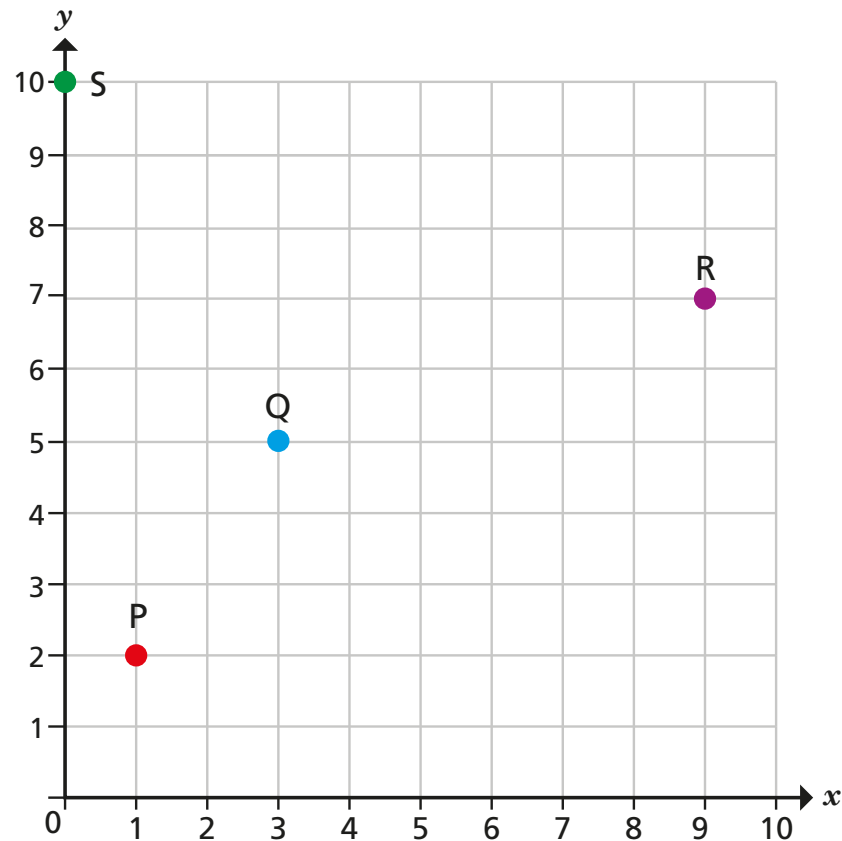**6**   The diagram shows two identical triangles.

M

N

23

9

(–12, –4)   (–3, –4)   (20, –4)

9   23

Write the coordinates of points M and N.

M (-12 , 19)   N (20 , 5)

Translations

1

Describe the translations.

a) From P to Q is [2] right and [3] up

b) From Q to R is [6] right and [2] up

c) From R to S is [9] left and [3] up

d) From S to P is [1] _right_ and [8] _down_

e) From Q to P is [2] _left_ and [3] _down_

f) From R to Q is [6] _left_ and [2] _down_

g) From S to R is [9] _right_ and [3] _down_

h) From P to S is [1] _left_ and [8] _up_

2
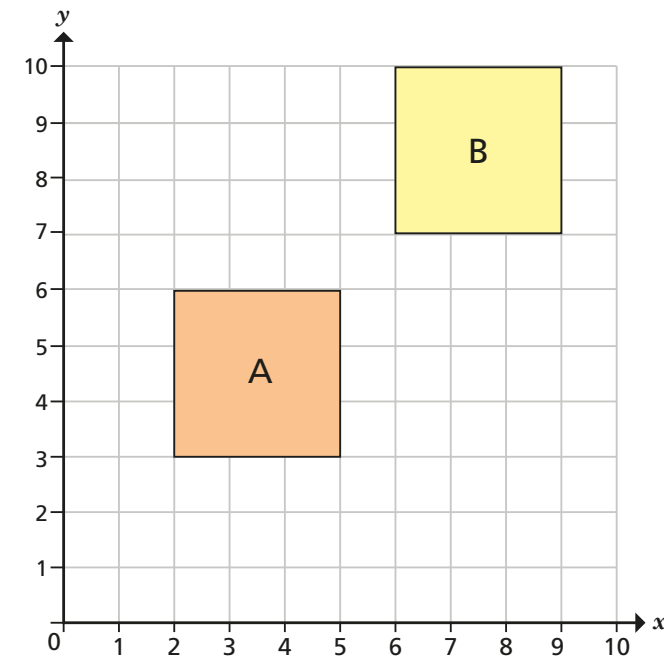
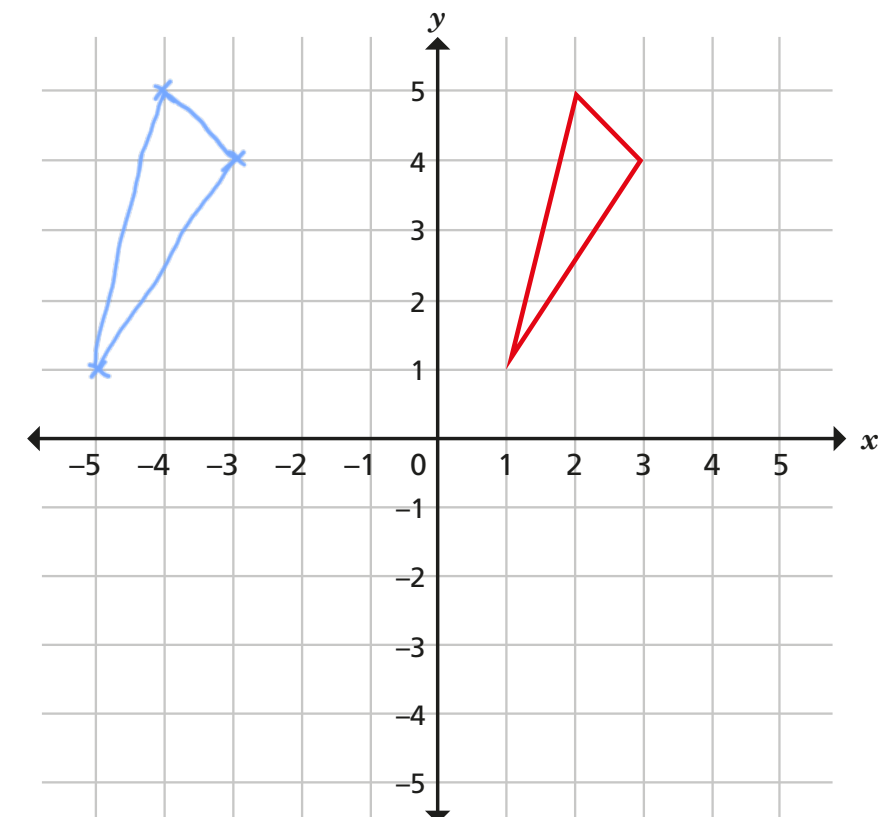The translation from A to B is 1 right and 1 up.
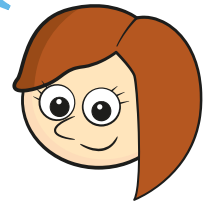
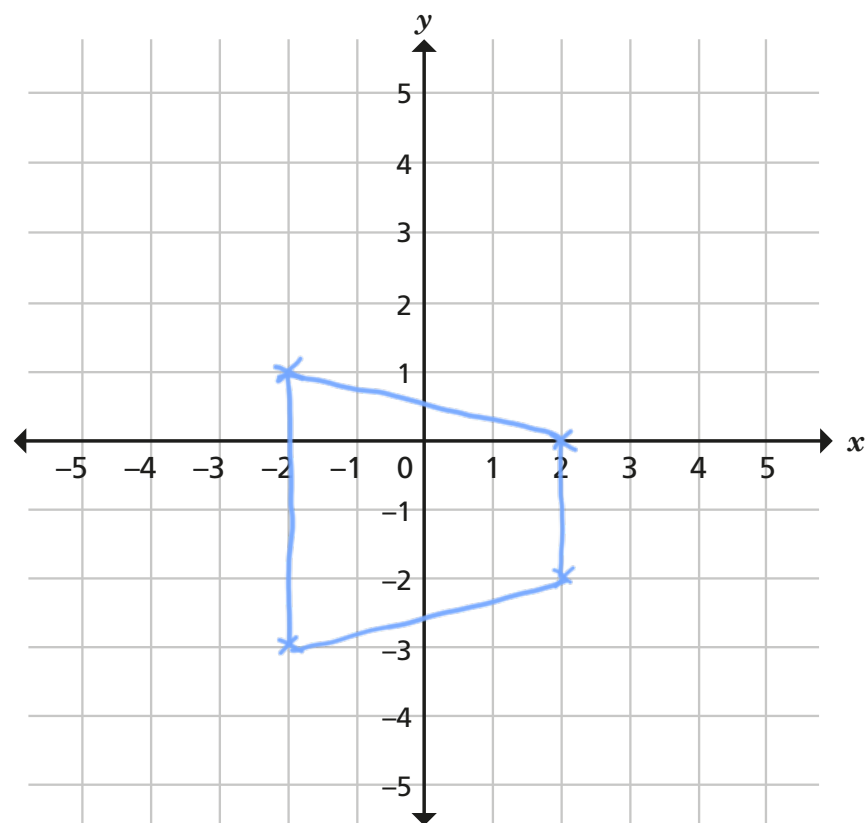Do you agree with Rosie? _No_

Explain your answer.

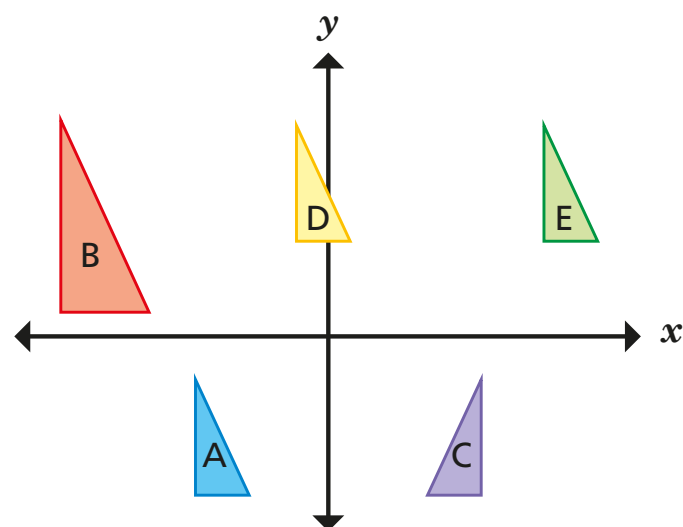_She has looked at the corners closest to each other not the corresponding corners on each shape._

3 Translate the triangle 6 left.

4 These coordinates form a quadrilateral: (–5, 5), (–5, 1), (–1, 4), (–1, 2)

It is translated 3 right and 4 down.

Draw the quadrilateral on the grid in its **new** position.

5

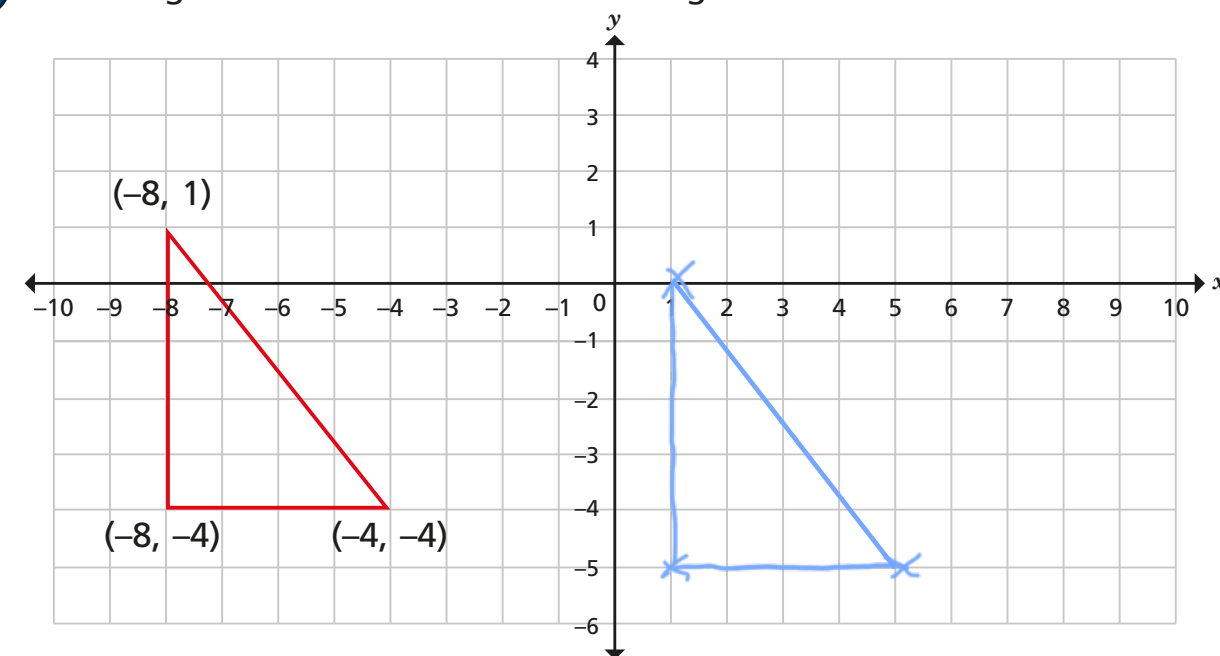Which triangles are translations of each other?
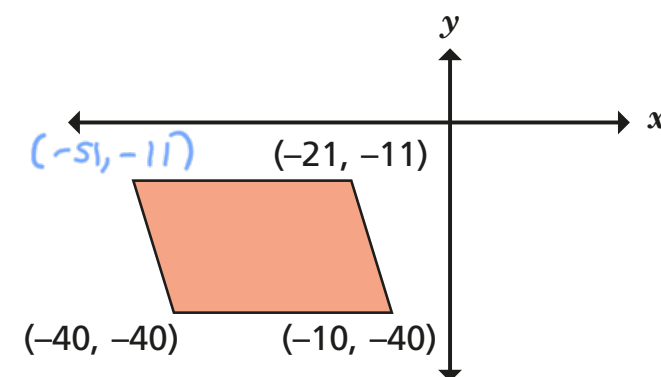
_____A, D and E_____

Explain why the others are not translations.

6 A triangle is drawn on the coordinate grid.

(–8, 1)

(–8, –4)   (–4, –4)

a) Translate the triangle 9 right and 1 down.

b) Tick the correct box for each coordinate.

Point	Inside the new triangle	Outside the new triangle	On the perimeter of the new triangle
(0, 0)		✓	
(4, –5)			✓
(2, –1)		✓✓	
(–6, –3)	✓	✓	
(3, –4)	✓		

7

(–51, –11)   (–21, –11)

(–40, –40)   (–10, –40)

This parallelogram has been translated 50 left and 25 down.

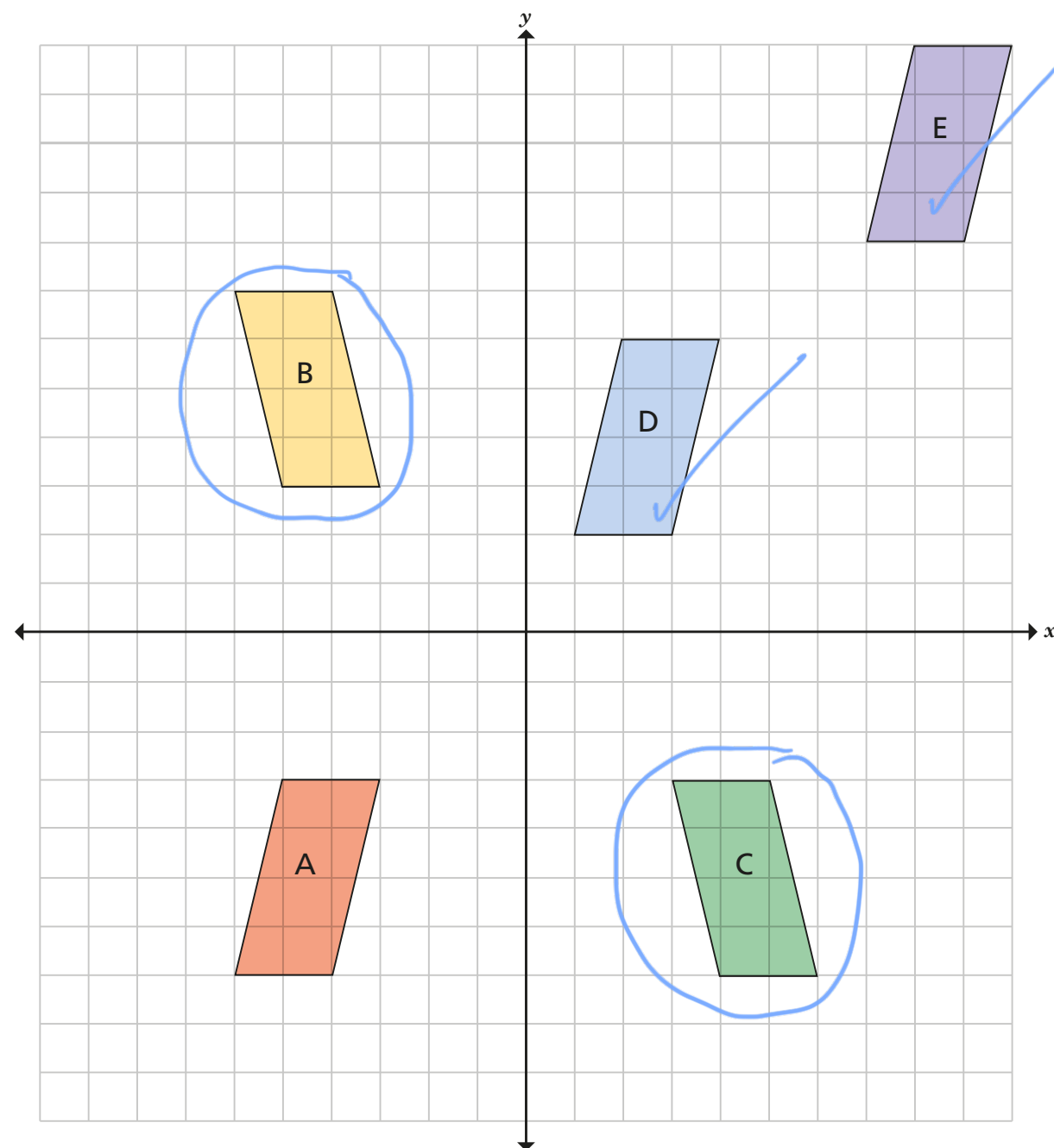What were the coordinates of **all four** vertices before it was translated?
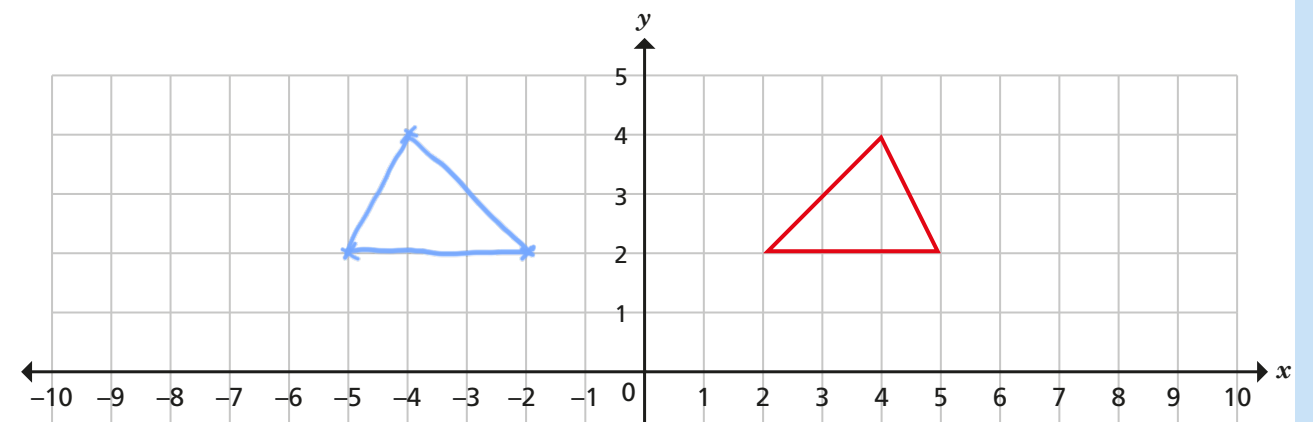
_(–1, 14)   (29, 14)   (10, –15)   (40, –15)_

Reflections

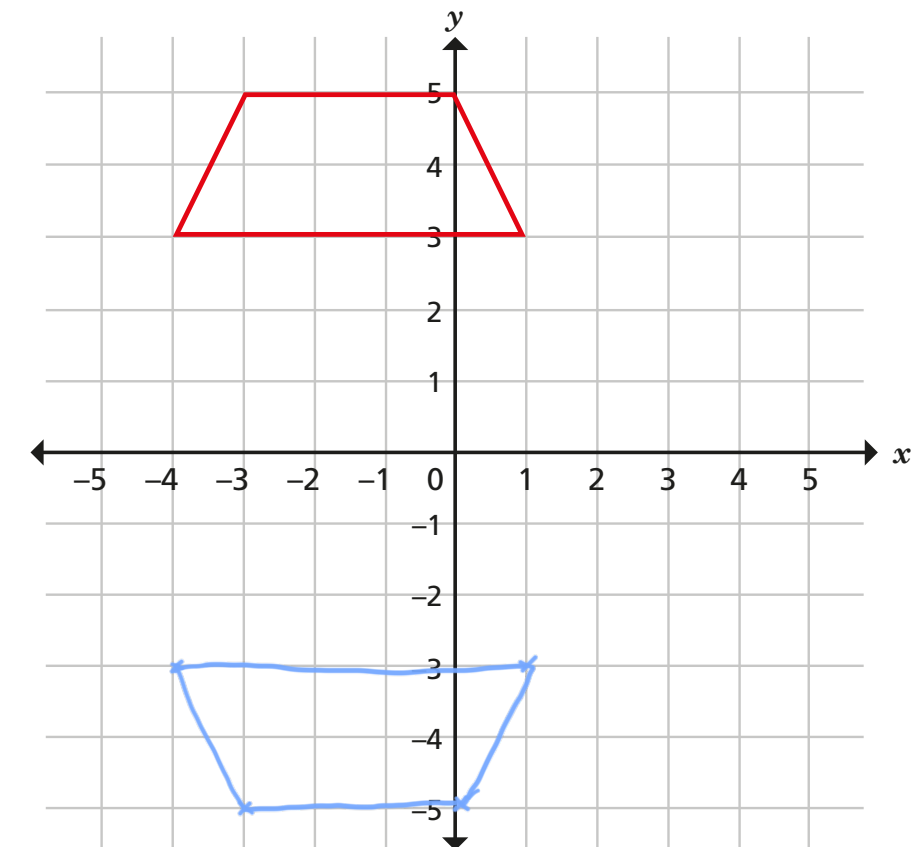**1** Five parallelograms are shown on the coordinate grid.

a) Tick the shapes that are translations of shape A.

b) Circle the shapes that are reflections of shape A.

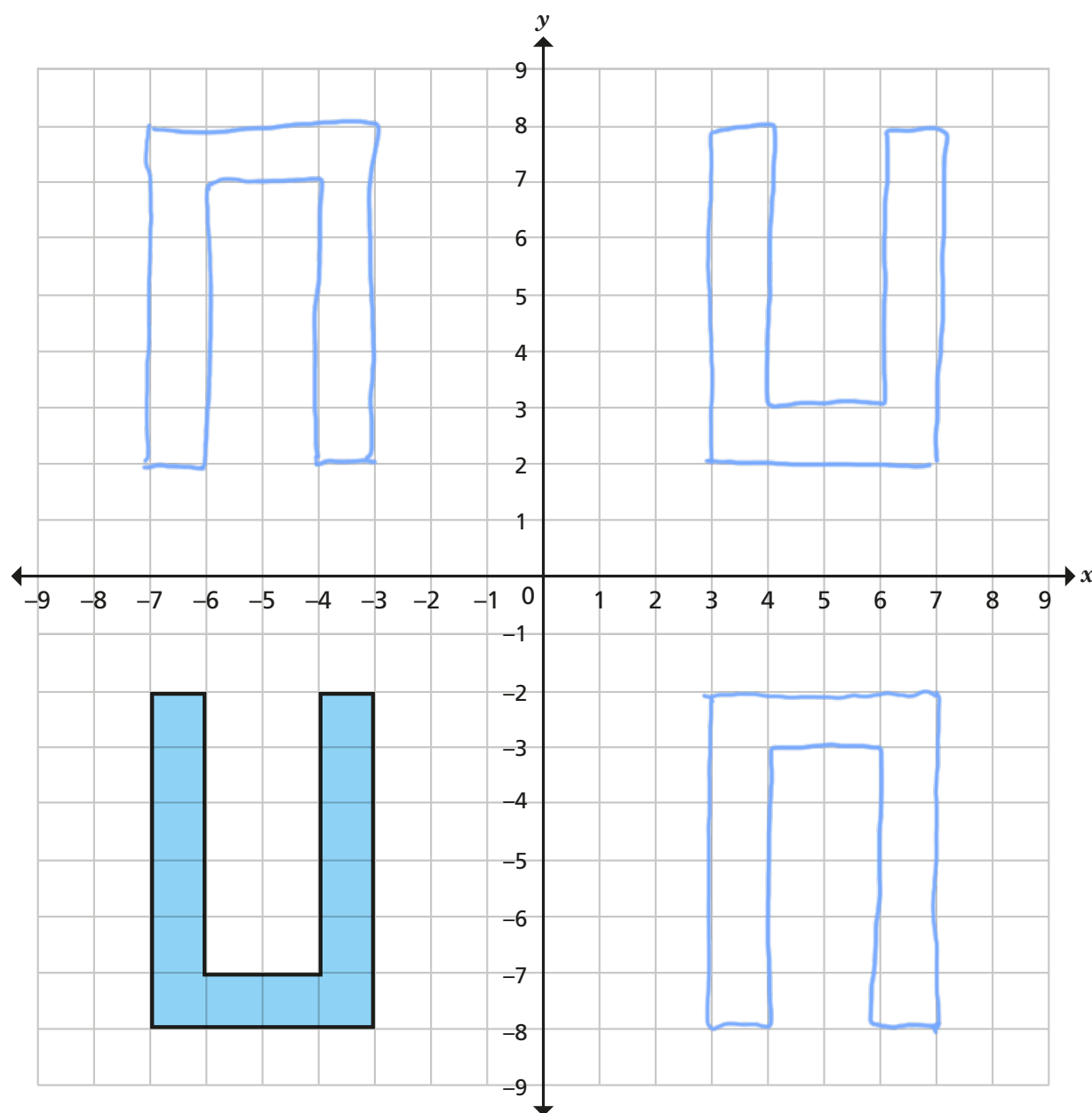**2** Reflect the triangle in the y-axis.

3

**a)** What is the name of the shape plotted on the grid?

Trapezium

b) Reflect the shape in the x-axis.

4 An octagon is shown on the coordinate grid.

a) Reflect the shape in the x-axis.

b) Translate the new shape 10 right and 10 down.

c) Reflect the new shape in the x-axis.

d) What do you notice?

e) Create a similar question for your partner to complete.

5 The shape is reflected in the line marked L.

(−20, 15)   (−5, 15)

(−20, 10)   (−5, 10)
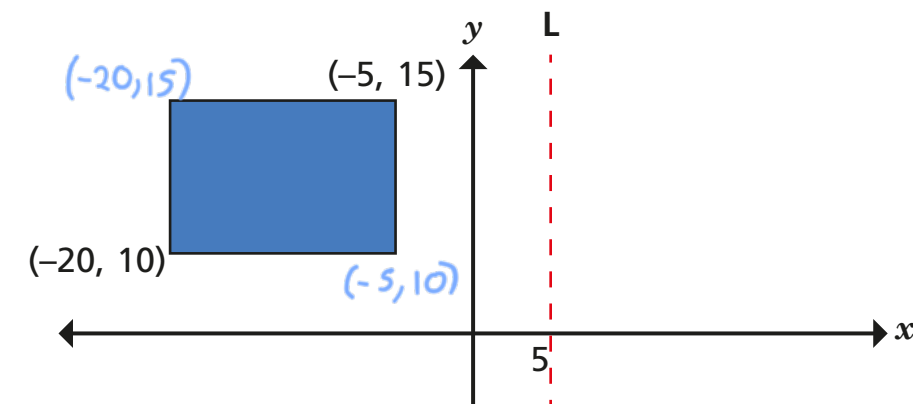
Work out the coordinates of the new vertices.

The new vertices are at

(15 , 10)   (15 , 15)   (30 , 10)   (30 , 15)

6 The isosceles triangle has been reflected in the line marked L.

Work out the missing values.

(☆, 40)

(●, ▲)

(−30, 10)

30

L

(■, ♥)

(−55, ✿)

(−30, −60)

30

☆ = -30

● = -55

▲ = 25

■ = -30

♥ = -30

✿ = -45