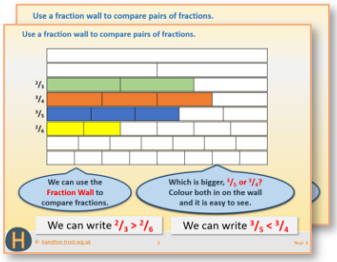
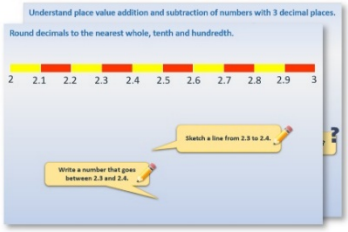
Week 9, Day 5
Reflections

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

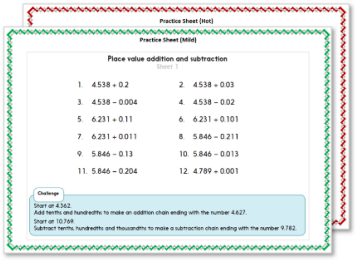
1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.



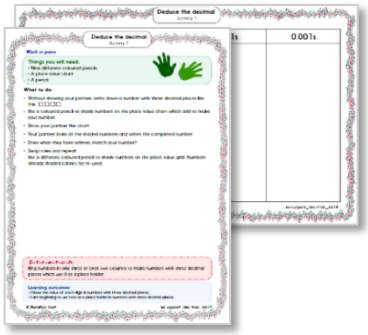
OR start by carefully reading through the **Learning Reminders**.



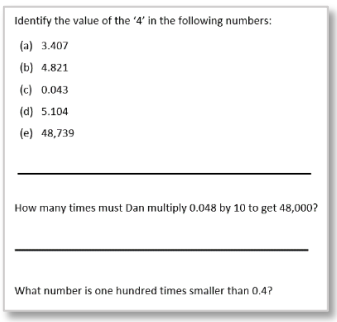
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.



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!



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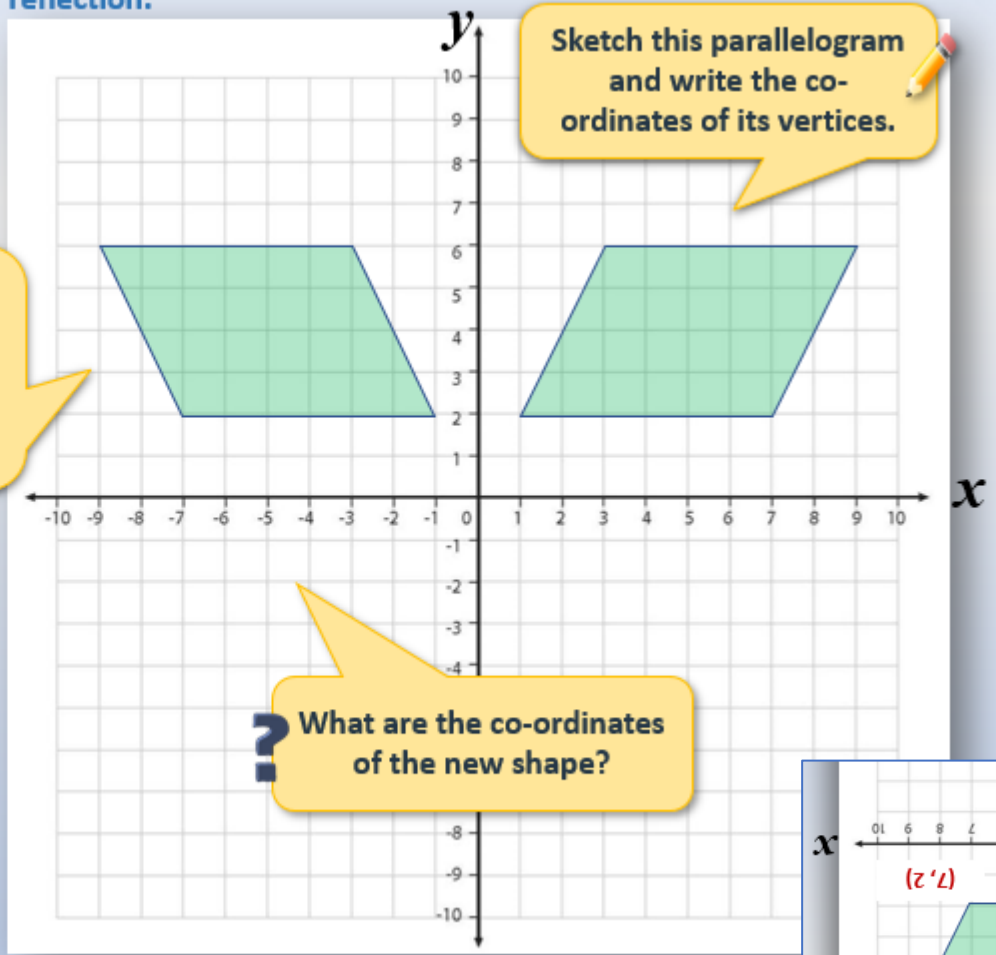
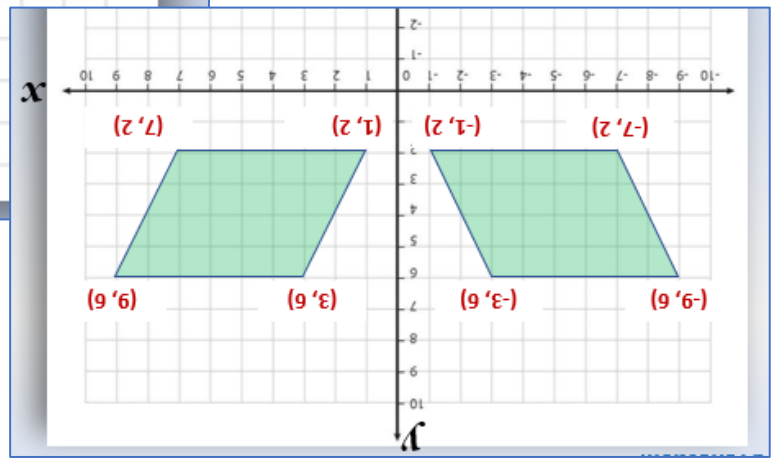
Learning Reminders

Work out new co-ordinates after a reflection.





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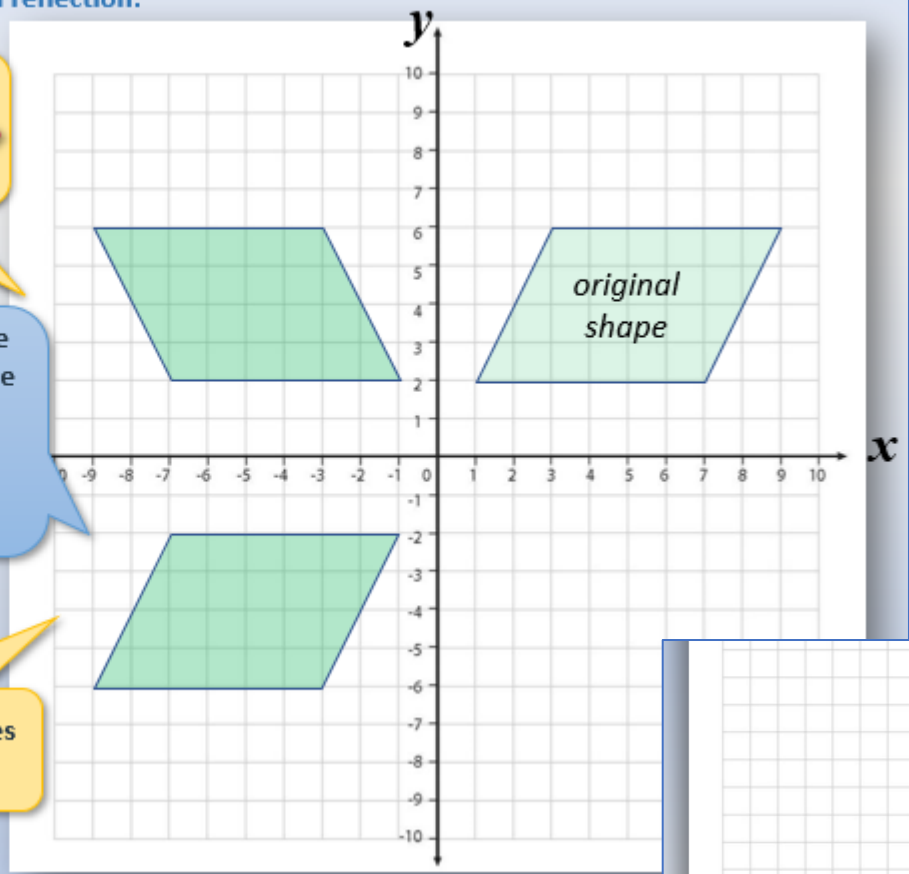
Learning Reminders

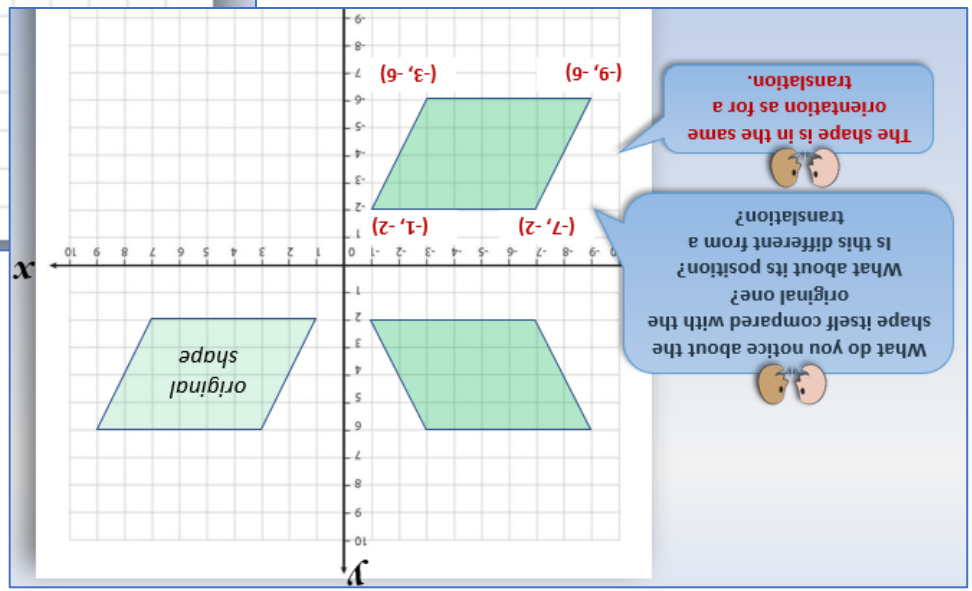
Work out new co-ordinates after a reflection.

Now reflect this new shape in the x-axis.

What do you notice about the shape itself compared with the original one?
What about its position?
Is this different from a translation?

What are the co-ordinates of the new shape?





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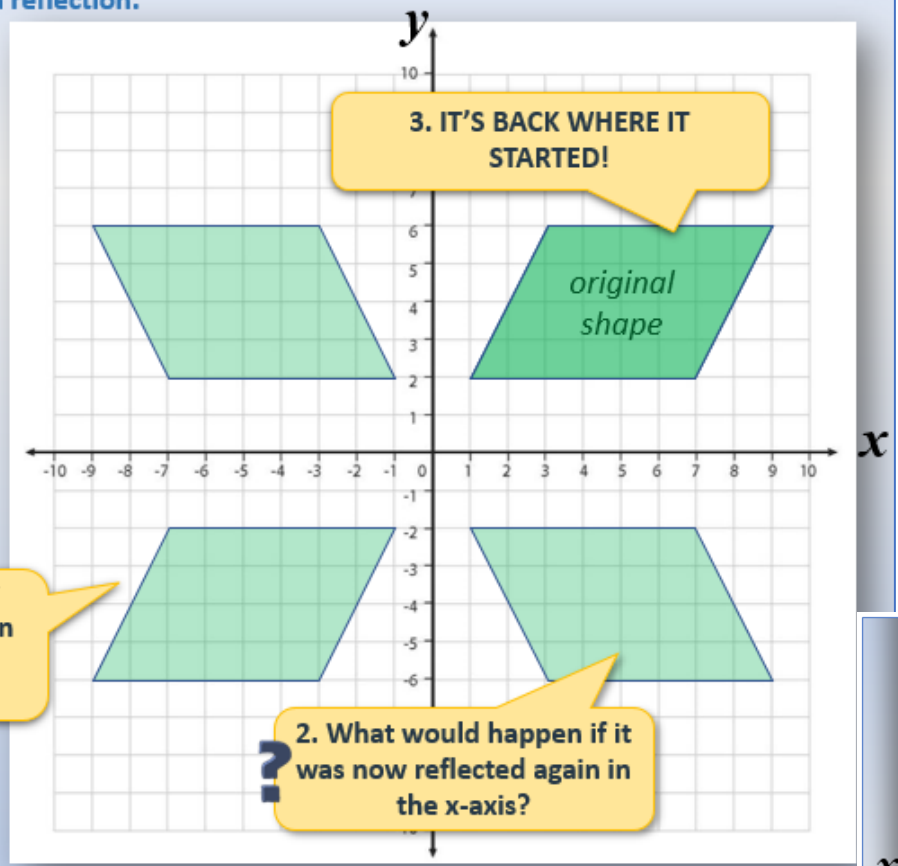
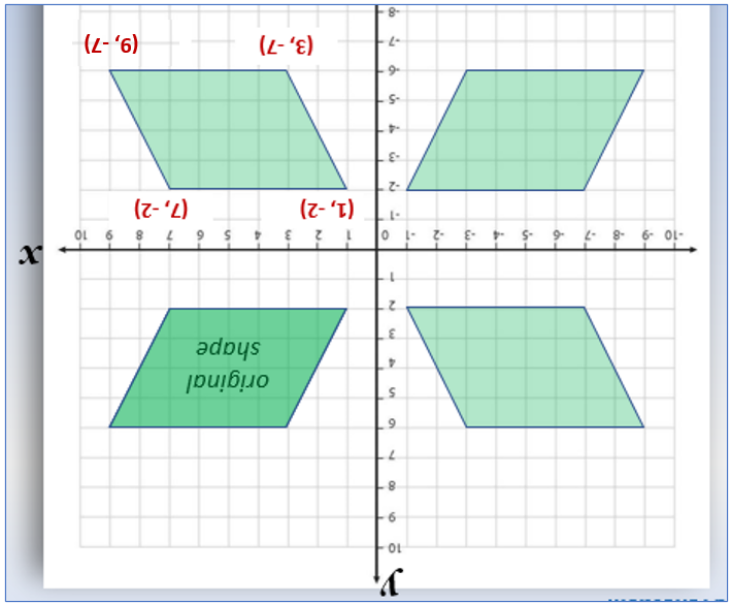
Learning Reminders

Work out new co-ordinates after a reflection.





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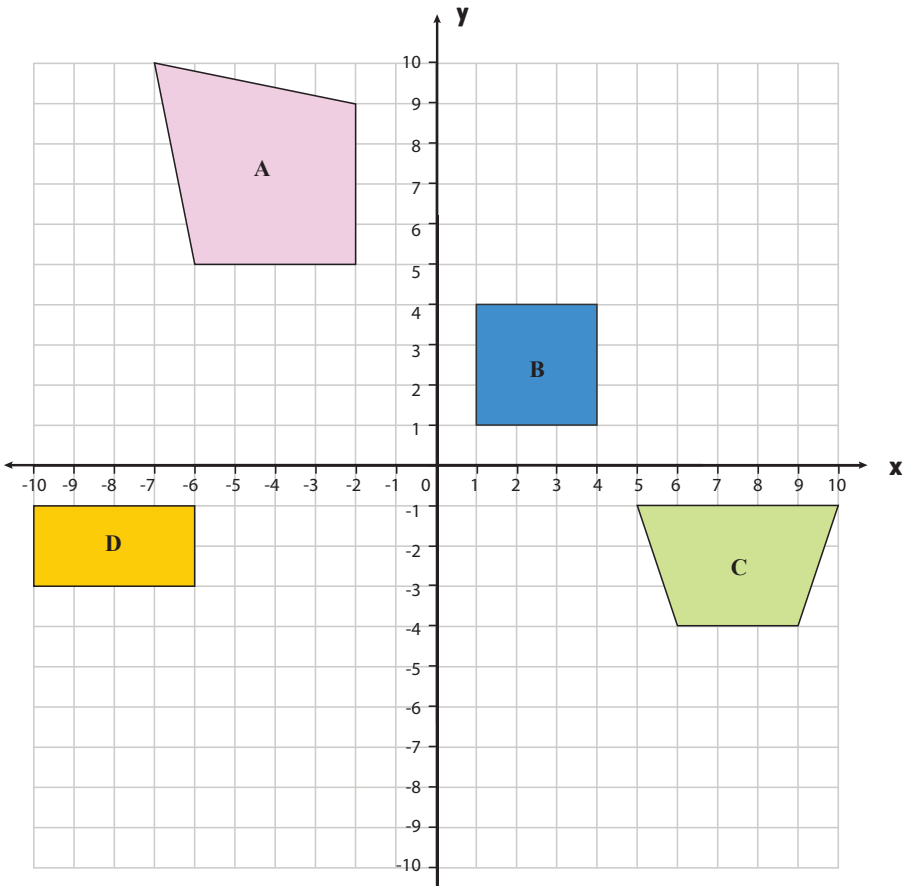
Practice Sheet Mild

Reflected quadrilaterals



Look at each quadrilateral and write its name.
Write its co-ordinates.

1. Reflect shapes A then B in the y-axis. Write the co-ordinates of the reflected shapes.
2. Reflect shapes C then D in the x-axis. Write the co-ordinates of the reflected shapes.

Challenge

Draw a quadrilateral with no right angles and no parallel sides.
Write its co-ordinates.
Write the co-ordinates the shape will have after being reflected in the y-axis.
Reflect the shape in the y-axis.
Were your co-ordinates correct?

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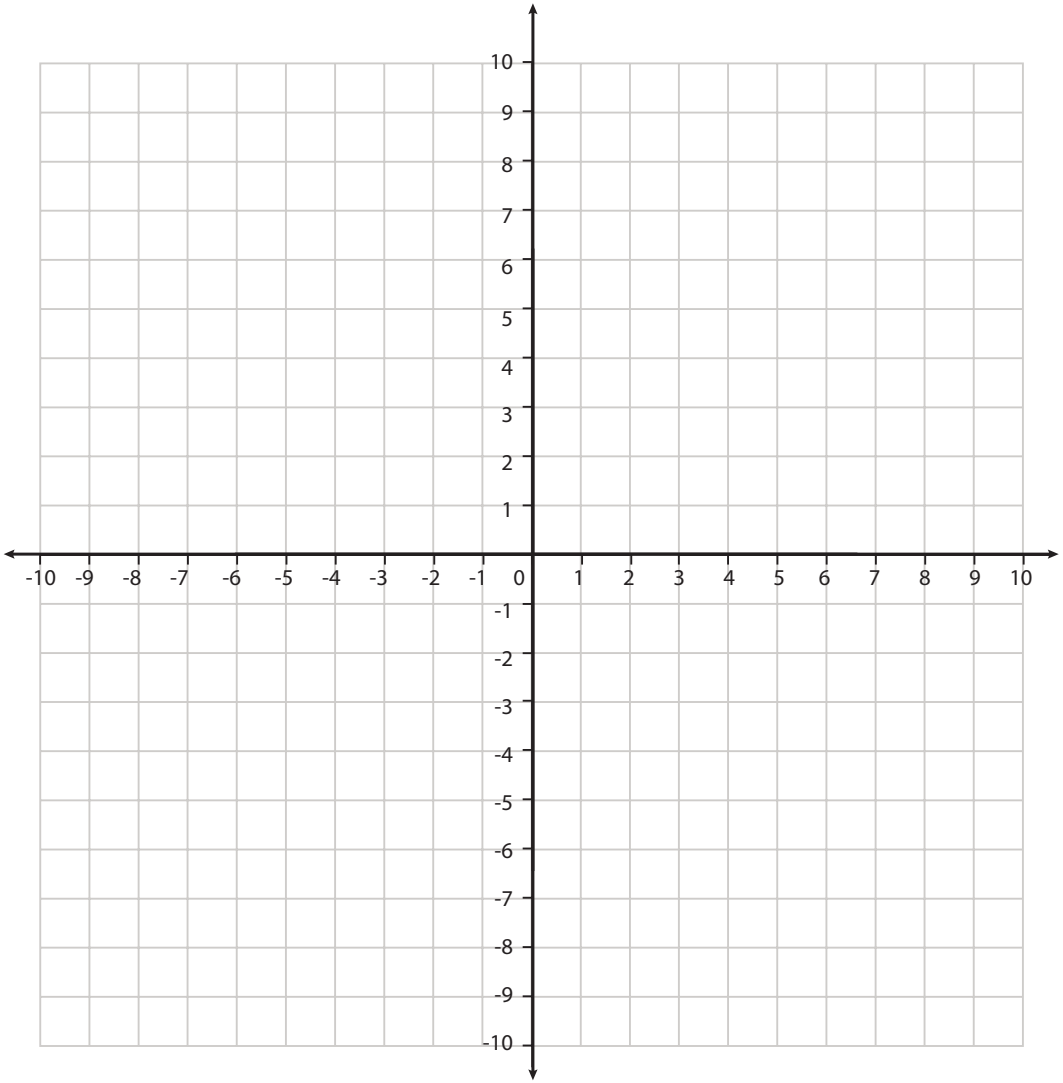
Practice Sheet Hot

Reflecting quadrilaterals

Plot each quadrilateral and its image. Write down the co-ordinates of the vertices of the image.



Shape	Co-ordinates of vertices	Reflected in	Co-ordinates of vertices of image
Square	A (-7, 2) B (-5, 2) C (-7, 0) D (-5, 0)	x-axis	A (,) B (,) C (,) D (,)
Rectangle	E (-9, 9) F (-4, 9) G (-9, 7) H (-4, 7)	y-axis	E (,) F (,) G (,) H (,)
Rhombus	I (-4, 2) J (-2, 3) K (-2, 1) L (0, 2)	x-axis then y-axis	I (,) J (,) K (,) L (,)
Parallelogram	M (-5, 4) N (-4, 6) O (-2, 4) P (-1, 6)	y-axis then x-axis	M (,) N (,) O (,) P (,)
Trapezium	Q (-9, 3) R (-8, 6) S (-7, 6) T (-6, 3)	x-axis then y-axis	Q (,) R (,) S (,) T (,)
Kite	U (-3, 8) V (-2, 9) W(-2, 6) X (-1, 8)	y-axis then x-axis	U (,) V (,) W (,) X (,)

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Practice Sheets Answers

Reflected quadrilaterals (mild)

A Quadrilateral
(-2, 5), (-2, 9), (-6, 5) (-7, 10)
Reflection in y-axis: (2, 5), (2, 9), (6, 5), (7, 10)

B Square
(1, 1), (1, 4), (4, 1), (4, 4)
Reflection in y-axis: (-1, 1), (-1, 4), (-4, 1), (-4, 4)

C Trapezium
(5, -1), (10, -1), (6, -4), (9, -4)
Reflection in x-axis: (5, 1), (10, 1), (6, 4), (9, 4)

D Rectangle
(-6, -1), (-6, -3), (-10, -1), (-10, -3)
Reflection in x-axis: (-6, 1), (-6, 3), (-10, 1), (-10, 3)

Reflecting quadrilaterals (hot)

Shape	Co-ordinates of vertices	Reflected in	Co-ordinates of vertices of image
Square	A (-7, 2) B (-5, 2) C (-7, 0) D (-5, 0)	x-axis	A (-7, -2) B (-5, -2) C (-7, 0) D (-5, 0)
Rectangle	E (-9, 9) F (-4, 9) G (-9, 7) H (-4, 7)	y-axis	E (9, 9) F (4, 9) G (9, 7) H (4, 7)
Rhombus	I (-4, 2) J (-2, 3) K (-2, 1) L (0, 2)	x-axis then y-axis	I (4, -2) J (2, -3) K (2, -1) L (0, -2)
Parallelogram	M (-5, 4) N (-4, 6) O (-2, 4) P (-1, 6)	y-axis then x-axis	M (5, -4) N (4, -6) O (2, -4) P (1, -6)
Trapezium	Q (-9, 3) R (-8, 6) S (-7, 6) T (-6, 3)	x-axis then y-axis	Q (9, -3) R (8, -6) S (7, -6) T (6, -3)

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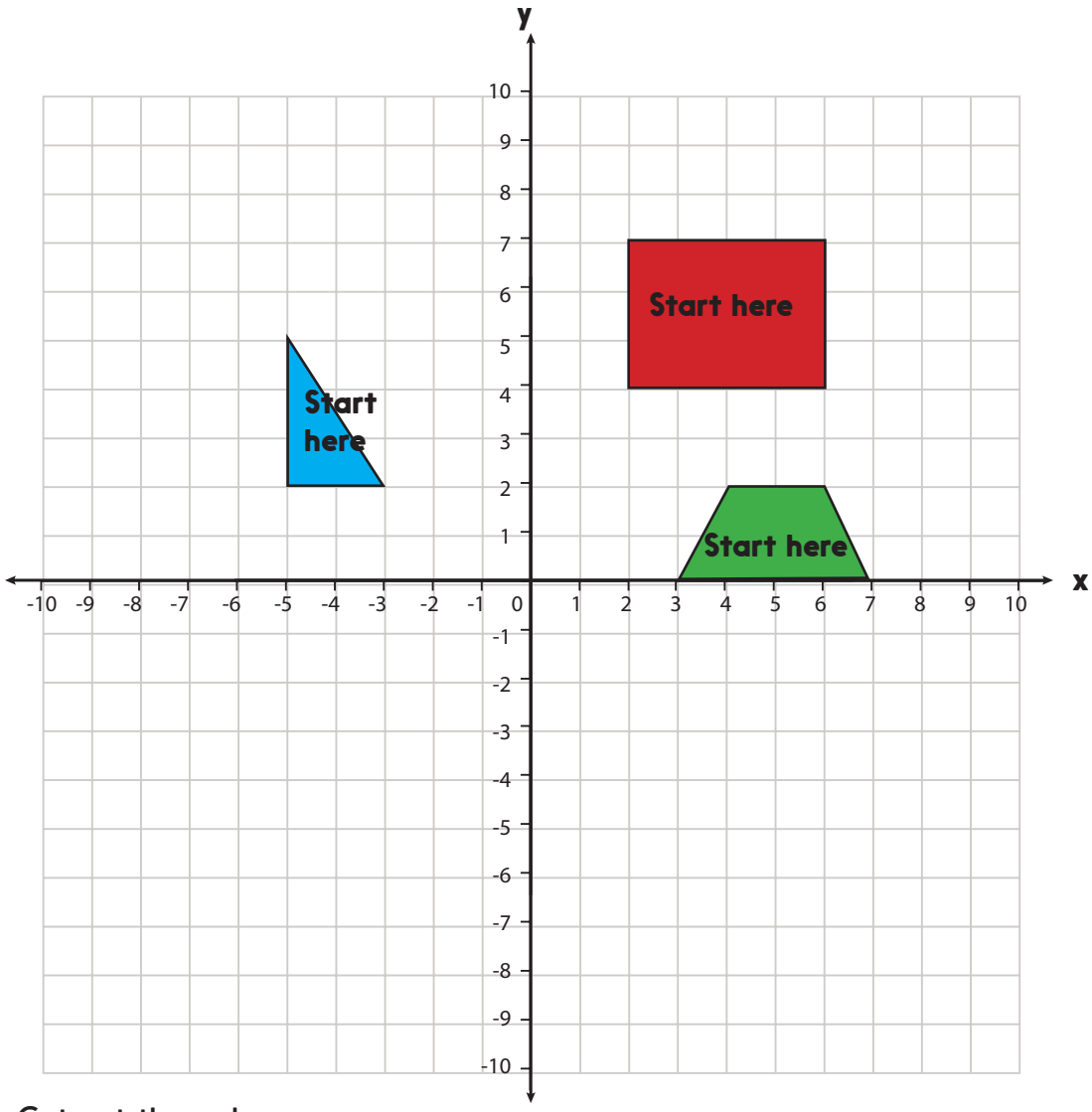
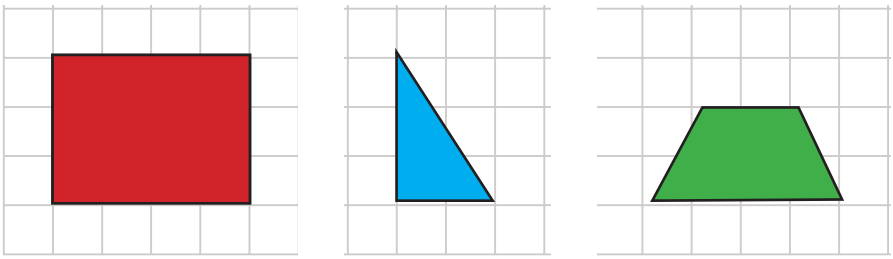
A Bit Stuck?
Time to reflect



- Cut out these shapes.



- Place the rectangle on the starting position in the co-ordinates grid.
- Write the co-ordinates of the four vertices.
- Reflect the rectangle in the y-axis. Make sure you turn it over as you do so. Write the new co-ordinates. The x co-ordinates will have changed but not the y coordinates.
- Move the rectangle back to the start.
- Reflect the rectangle in the x-axis. Write the new co-ordinates. Describe what happens to the co-ordinates this time...
- Repeat for the triangle and trapezium.

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Check your understanding

Questions

A rectangle is reflected in the x-axis.
Its co-ordinates are now: (2, -1), (7, -1), (2, -6) and (7, -6). Draw it in its original position.

A triangle is reflected in the y-axis.
Its co-ordinates are now: (2, 0) (5, 2) and (3, 7). Draw it in its original position.

(0,0) (5,0) (5,5) (0,5) is a shape.
When it is reflected in the y-axis, two pairs of co-ordinates do not change. Why not?
Sketch it to explain.

Fold here to hide answers

Check your understanding

Answers

A rectangle is reflected in the x-axis.
Its co-ordinates are now: (2, -1), (7, -1), (2, -6) and (7, -6).
Draw it in its original position.
(2, 1), (7, 1), (2, 6) and (7, 6). Originally it must have been in the first quadrant. The x values are unaffected by the reflection.

A triangle is reflected in the y-axis. Its co-ordinates are now: (2,0) (5,2) and (3,7).
Draw it in its original position.

(-2, 0) (-5, 2) and (-3, 7). Originally it must have been in the 2nd quadrant (on the left of the y-axis above the x-axis). The y- values are unchanged by the reflection.

(0,0) (5,0) (5,5) (0,5) is a shape.
When it is reflected in the y-axis, two pairs of co-ordinates do not change. Why not? (0,0) and (0,5) do not move as they are located on the y-axis itself.
Sketch it to explain. As before, look for accurately plotted shapes.

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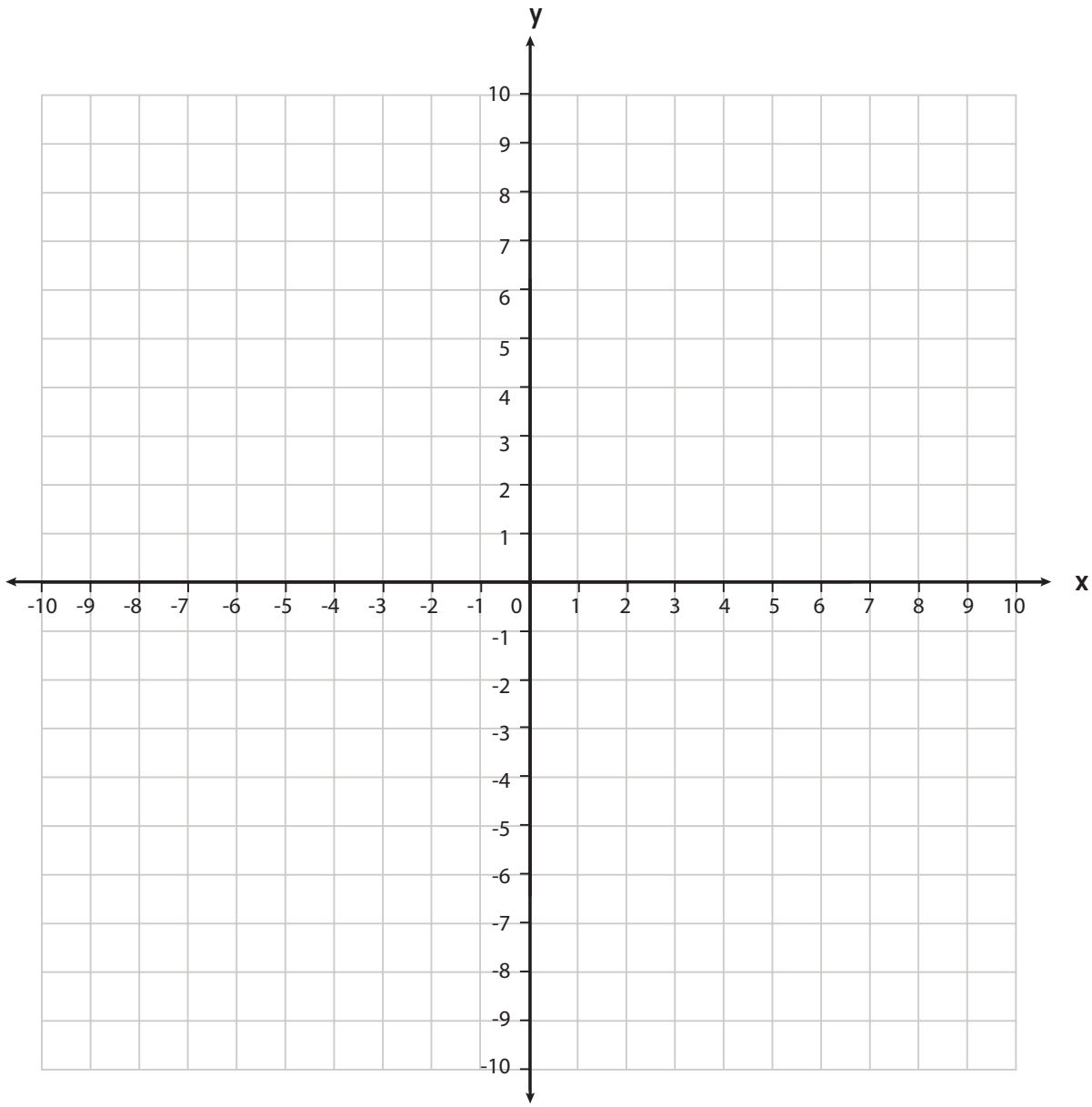

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