Discussion Problems
Step 3: Reflection with Coordinates

National Curriculum Objectives:

Mathematics Year 5: (5P2) Identify, describe and represent the position of a shape following a refection or translation, using the appropriate language, and know that the shape has not changed

About this resource:

This resource has been designed for pupils who understand the concepts within this step. It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

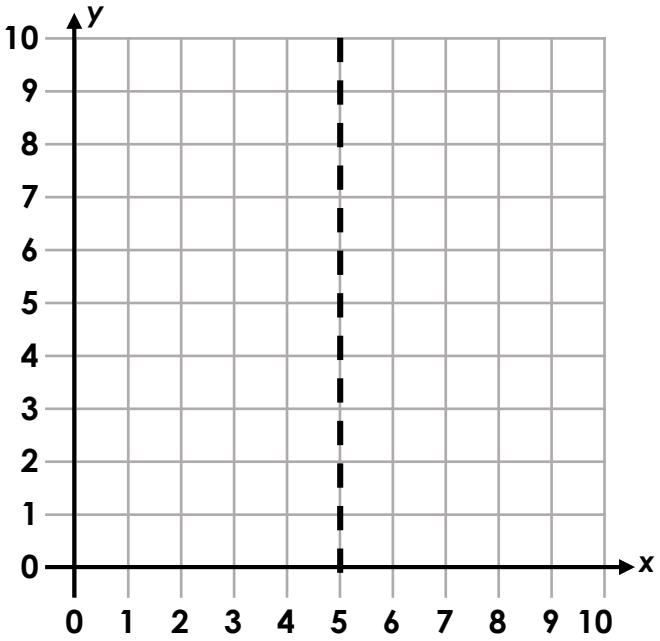
More Year 5 Position and Direction resources.

Did you like this resource? Don't forget to review it on our website.

Reflection with Coordinates

1. Matt is creating an irregular polygon in the grid below.

I have plotted (1, 2) (1, 8) (4, 7) and still need to plot one more on the left hand side of the grid.

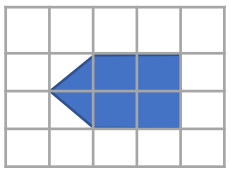


Investigate what irregular polygon he could create by reflecting his coordinates on the line of symmetry. What are the missing coordinates to complete his polygon?
Is there more than one possibility?

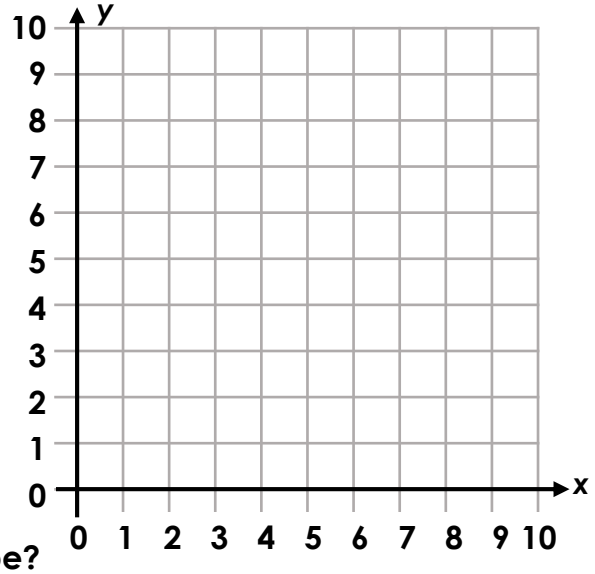
DP

2. Charlie says, "I can reflect my shape both up and down on a grid at the same time, by using two mirror lines."

Explore whether this is possible, using the shape Charlie has chosen, on the grid below.



Charlie's shape



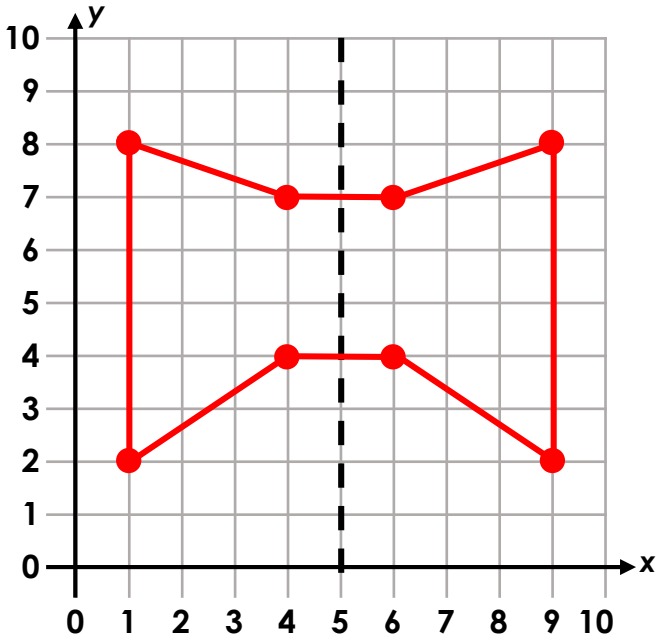
What are the coordinates of your original shape?
What are the coordinates of your new shapes once they are reflected?

DP

Reflection with Coordinates

1. Matt is creating an irregular polygon in the grid below.

I have plotted (1, 2) (1, 8) (4, 7) and still need to plot one more on the left hand side of the grid.



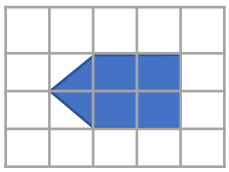
Investigate what irregular polygon he could create by reflecting his coordinates on the line of symmetry. What are the missing coordinates to complete his polygon?
Is there more than one possibility?

Various possible answers, for example: Missing coordinate: (4, 4)
Reflected coordinates: (6, 4) (9, 2) (9, 8) (6, 7) (See grid above)

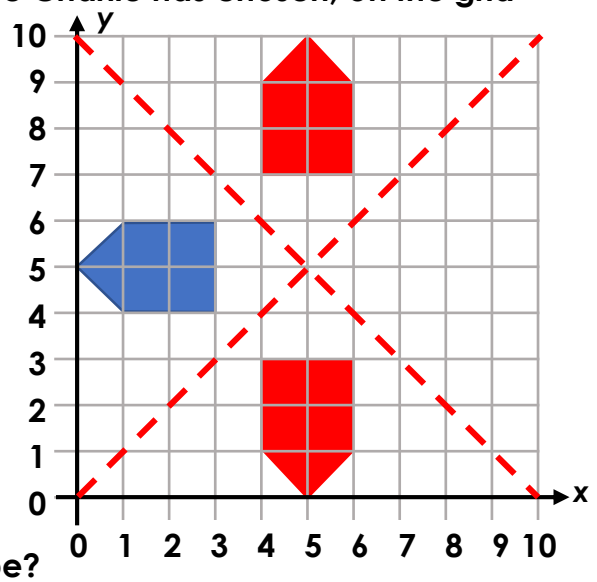
DP

2. Charlie says, "I can reflect my shape both up and down on a grid at the same time, by using two mirror lines."

Explore whether this is possible, using the shape Charlie has chosen, on the grid below.



Charlie's shape



What are the coordinates of your original shape?
What are the coordinates of your new shapes once they are reflected?

Yes this is possible when using two diagonal mirror lines (see grid above).
Various possible answers: Coordinates of original shapes: (1, 4) (0, 5) (1, 6) (3, 6) (3, 4)
Reflected coordinates: (4, 7) (4, 9) (5, 10) (6, 9) (6, 7); (4, 1) (4, 3) (6, 3) (6, 1) (5, 0)

DP