

Discussion Problems

Step 5: Translation with Coordinates

National Curriculum Objectives:

Mathematics Year 5: (5P2) [Identify, describe and represent the position of a shape following a reflection 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.

Translation with Coordinates

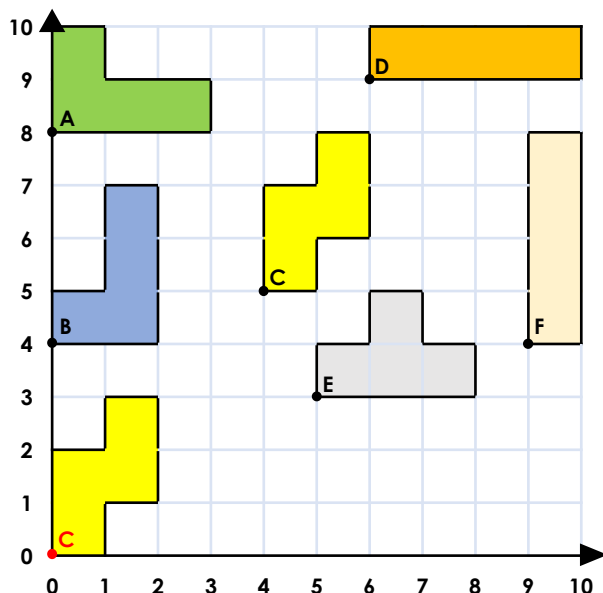
1. Sean is trying to create a solid line using the grid below by moving the shapes shown.

He has moved Point C from (4,5) to (0,0) by translating it 4 left and 5 down.

Investigate what other translations he would need to make with the other points in order to create a solid line. You can not translate Point C again or rotate any shape.

What are the coordinates of his translated points?

Find as many solutions as you can.



DP

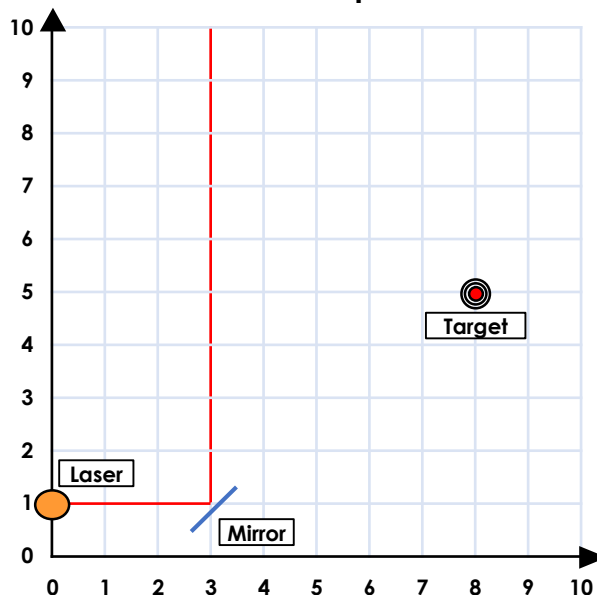
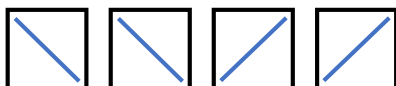
2. Chantelle is trying to place some mirrors on the grid below in order to reflect the laser beam to the target on the grid. The laser starts at (0,1) and is pointing horizontally. She has 4 mirrors in total which are shown below but one has already been used.

Investigate where Chantelle could place the other mirrors in order to reach the target. You must use at least three mirrors in total and can not rotate any of the mirrors.

Plot out the journey of the laser using coordinates. The first two steps have been done for you.

Journey of the laser:
(0,1); (1,1); (2,1); (3,1); (3,2) ...

Mirrors:



DP

Translation with Coordinates

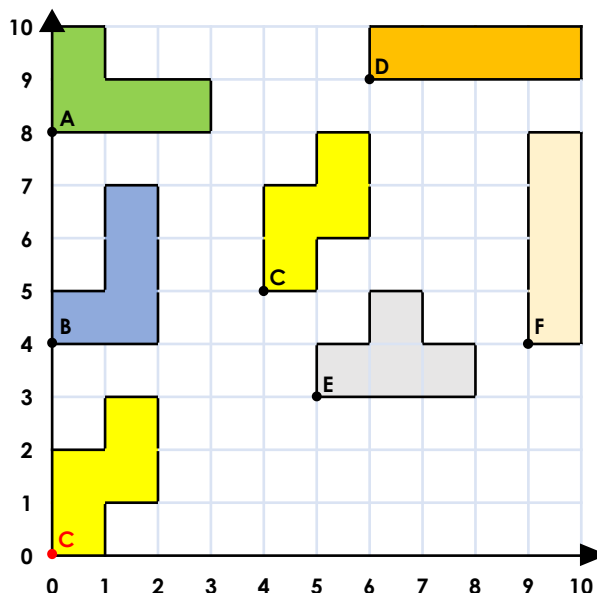
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Journey of the laser:

(0,1); (1,1); (2,1); (3,1); (3,2) ...

Various possible answers including:

Journey of the laser:

(0,1); (1,1); (2,1); (3,1); (3,2); (3,3); (3,4); (3,5); (3,6); (4,6); (5,6); (6,6); (7,6); (8,6); (8,5)

Mirrors:

