

Discussion Problems

Step 3: Move on a Grid

National Curriculum Objectives:

Mathematics Year 4: (4P2) [Describe movements between positions as translations of a given unit to the left/right and up/down](#)

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 4 Position and Direction](#) resources.

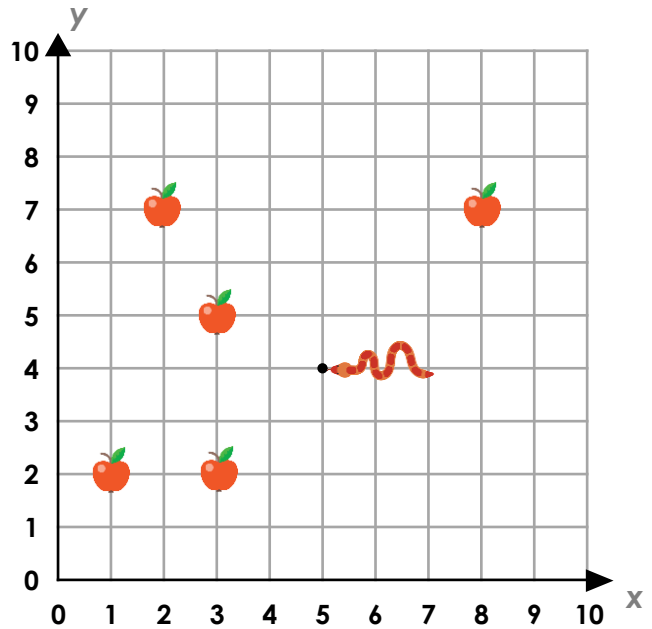
Did you like this resource? Don't forget to [review](#) it on our website.

Move on a Grid

1. A snake travels on a grid to reach each apple. He grows by one square each time he moves and he must move horizontally before he can move vertically. Investigate whether it is possible to eat every apple in less than 25 moves where he doesn't cross himself. Identify the coordinates of each apple.

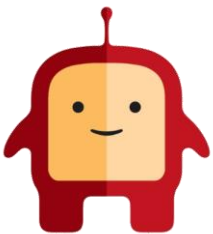
A sixth apple is added at (6, 1). Can it be done in 25 moves or less?

What is the shortest route the snake could take?



DP

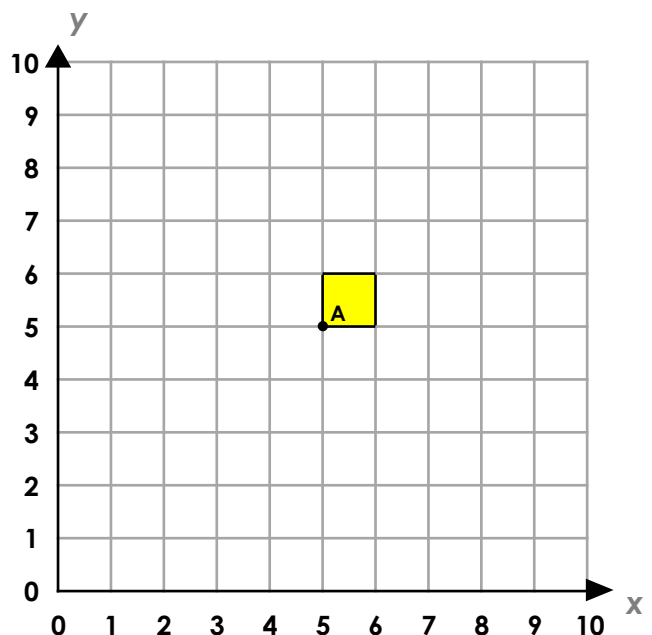
2. Dom has translated his shape into the position below.



I translated my shape by less than 4 moves. This is where it ended up.

Explore the different possible starting positions for Dom's shape.

Explore the possible positions in which Dom could have started if he translated the shape in 4 moves but moved horizontally and vertically?



DP

Move on a Grid

1. A snake travels on a grid to reach each apple. He grows by one square each time he moves and he must move horizontally before he can move vertically. Investigate whether it is possible to eat every apple in less than 25 moves where he doesn't cross himself. Identify the coordinates of each apple.

Various possible answers, for example:
see route on right.

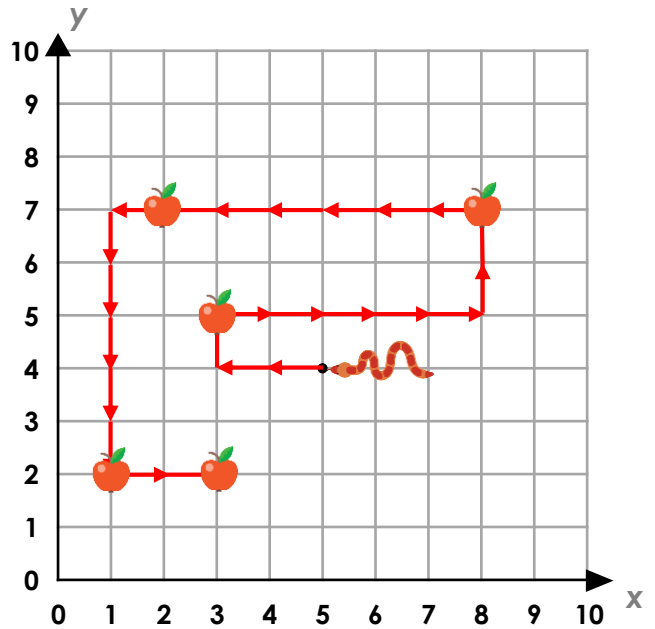
Apples collected from:

(3, 5); (8, 7); (2, 7); (1, 2); (3, 2).

A sixth apple is added at (6, 1). Can it be done in 25 moves or less?

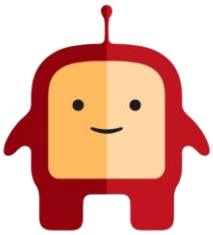
What is the shortest route the snake could take?

It cannot be done in 25 moves. The shortest possible route he could do it in is 28 moves.



DP

2. Dom has translated his shape into the position below.



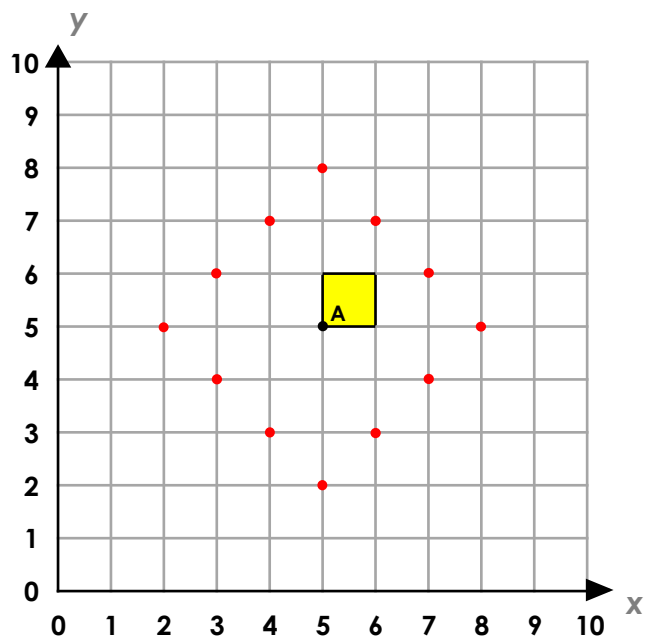
I translated my shape by less than 4 moves. This is where it ended up.

Explore the different possible starting positions for Dom's shape.

Any answer within the dotted area.

Explore the possible positions in which Dom could have started if he translated the shape in 4 moves but moved horizontally and vertically?

Various possible answers, for example:
(3, 3), (6, 2), (7, 7)



DP