

Reasoning and Problem Solving

Position and Direction Consolidation – Year 6

National Curriculum Objectives

Mathematics Year 6: [Describe positions on the full coordinate grid \(all four quadrants\)](#)

Mathematics Year 6: [Draw and translate simple shapes on the coordinate plane, and reflect them in the axes](#)

About This Resource

This resource is aimed at Year 6 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Autumn Block 4 – Geometry: Position and Direction.

The questions are based on a selection of the same ‘small steps’ that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Coordinates in the first quadrant

Coordinate in four quadrants

Translations

Reflections

More [Year 6 Position and Direction](#) resources.

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



WE'RE HIRING!

Playground Engineers

The local council are looking for children to help plan the redevelopment of a major parkland. The area has fallen into disrepair and is posing a risk to the health and safety of those using it.

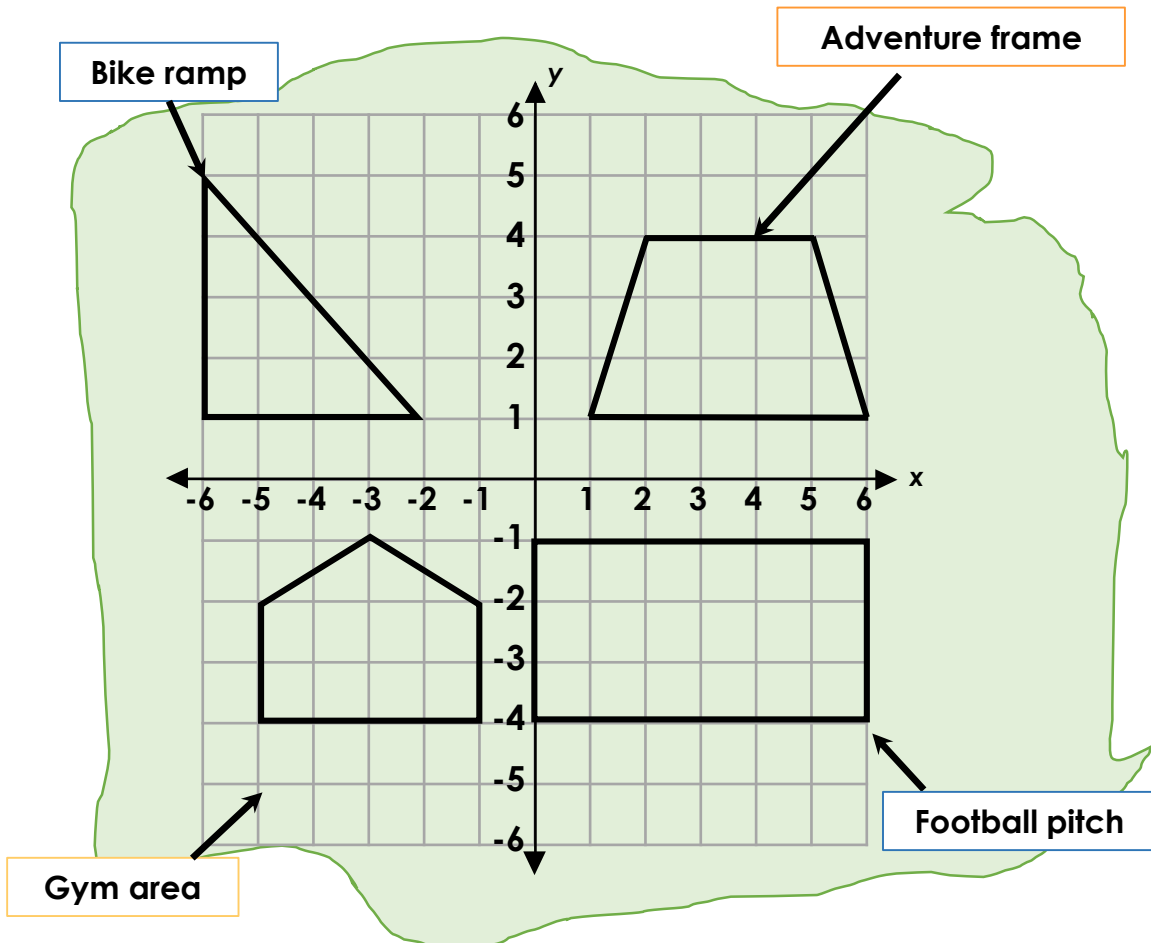
Have you got what it takes to plan and create an inspiring playground?
The council want to hear from you!

Show your planning credentials by completing the job application pack below.

Here is the map of the playground space.

The areas have been labelled and a grid has been placed over to help with planning.

You will need this to answer questions in the pack below.



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1. Write the co-ordinates for the vertices of each piece of large equipment.



Bike ramp

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Adventure frame

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Gym area

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Football pitch

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The council have now reviewed the waterworks and electric services to the area and have realised the bike ramp will run across a large water main. The bike ramp will need to move to avoid crossing the pipe.

The section of pipe which crosses the area runs from $(0, 6)$ to $(-6, 6)$, so you will need to move the bike ramp.

Translate the ramp so that the pipe is free from the ramp and easy to access. The ramp must be 2 squares away from the pipe.

2. Write the new coordinates for the ramp.

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Your email is down, you can't send the new plan and the builder needs to get to work. Can you write instructions to describe the translation of the bike ramp? Your assistant will read these to the builder on the phone.

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3. The council have had a change of plans and would like to swap the football pitch and the adventure frame to avoid balls hitting people in the park. Reflect the two pieces of equipment and write their new co ordinates below.



Adventure frame

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Football pitch

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What do you notice about your new coordinates? Compare them to your previous answers:

The council have had a complaint about the plans from a local resident, they feel the bike ramps are too close to their garden and create an eyesore. They would be happier if they were further away.

4. The ramps will need to be moved further away, and so will be swapped with the gym area. Using the new coordinates of the bike ramp from Q2, reflect them across the x axis. What are the new coordinates for the two structures?



Bike ramp

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Gym area

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Will the gym area interfere with the pipe mentioned earlier?

Congratulations! YOU GOT THE JOB!

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The coordinates for each question can be written in any order.

1. Bike ramp	$(-6, 5)$	$(-2, 1)$	$(-6, 1)$		
Adventure frame	$(1, 1)$	$(2, 4)$	$(5, 4)$	$(6, 1)$	
Gym area	$(-5, -4)$	$(-5, -2)$	$(-3, -1)$	$(-1, -2)$	$(-1, -4)$
Football pitch	$(0, -1)$	$(6, -1)$	$(6, -4)$	$(0, -4)$	

2. $(-6, 4)$ $(-6, 0)$ $(-2, 0)$
Translate the bike ramp 1 square down.

3. Adventure frame	$(-1, 1)$	$(6, -1)$	$(5, -4)$	$(2, -4)$
Football pitch	$(0, 1)$	$(0, 4)$	$(6, 1)$	$(6, 4)$

Only the y axis coordinates change. The negative values become positive, the positive values become negative.

4. Bike ramp	$(-6, -4)$	$(-6, 0)$	$(-2, 0)$		
Gym area	$(-5, 4)$	$(-1, 4)$	$(-1, 2)$	$(-3, 1)$	$(-5, 2)$

No, the gym area will not interfere with the pipe as it is two squares away, and this was the required distance stated in question 2.