

Why use this resource?

This resource encourages students to consider how many points are required to define a circle. They will work with the graphical and algebraic representations of circles.

Preparation

Mini whiteboards can be useful to encourage students to sketch ideas.

Possible approach

The warm-up to this resource can be used separately to the main problem.

Students might begin by considering the first question in the warm-up. Students should be encouraged to sketch what the circle might look like and asked to label key values.

It may be effective to ask students to consider the “always, sometimes, never” questions in small groups so that they are continually having to communicate and justify their ideas and potential solutions.

Students could continue to work in these small groups as they look at the main problem. They could be guided to think about just one set of three coordinates at a time, trying to find as many different ways of identifying the circle as they can before moving to the next set.

Key questions

Warm-up

- Where is the centre of the circle?
- Can you sketch a circle that passes through the specified points? Can you sketch another one?
- How do you know that you have considered all of the possibilities.

Main problem

- Can you sketch a circle that passes through the specified points?

Possible support

Use mini whiteboards to encourage sketching.

Use [Desmos](#) to encourage students to check, and possibly adapt, their answers.

A version of this resource has been featured on the [NRICH website](#). You might like to look at some students' solutions that have been submitted there.