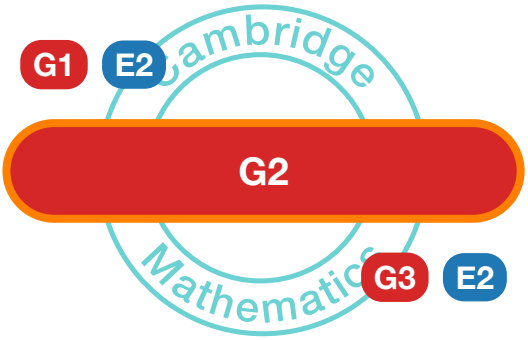

What is the connection between algebra and geometry, and how can we exploit it?

Key Questions

1. What do we mean by *Cartesian coordinates*?
2. How can we describe circles and lines (in two dimensions) algebraically?
3. How can we consider parallel and perpendicular lines using algebra?
4. How can we use algebra to find the intersections of geometric objects?

Resources

- Introductory problem - Straight lines
- Introductory problem - Parallel and Perpendicular Lines
- Exposition - The equation of a circle
- Problem inviting multiple approaches or representations - Finding circles
- Carefully designed set of problems - Equations of circles
- Carefully designed set of problems - Matching circles and equations
- Problem requiring decisions - Olympic rings
- Fluency exercises - Diamond collector
- Lucky dip - Parabella
- The bigger picture - Cartesian coordinates

Pervasive Ideas

- Multiple representations
- Linearity
- History of maths