

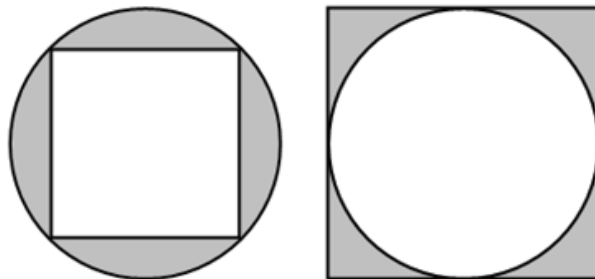
A square fits better into a circle than a circle fits into a square.

This prompt is suitable for students in years 10 and 11 and classes with high prior attainment in lower years.

The statement was originally the starting point for a piece of GCSE coursework. In the normal method of investigations, students would be expected to draw a number of diagrams of squares inscribed in circles and circles inscribed in squares. They would then calculate the percentage of the each shape covered by the inscribed shape and identify a general result, which they would be expected to prove for the highest grades.

As an inquiry, this statement is treated more openly and can lead in different directions. The initial questions or comments can focus on the measure of "fits better", which can be interpreted differently - as a percentage or fraction, for example. Students might choose to consider the part of the shape 'covered' or the part 'uncovered' in their calculations.

After the regulatory cards, some classes have decided to construct the inscribed shape accurately with a ruler and a pair of compasses. For others, the inquiry has continued with an inductive phase (as in the regular investigation) based on sketches of one or more diagrams, with many students commenting on the similarity of the diagrams. In a few cases, the inquiry has moved immediately to a deductive proof.



The inquiry can continue by modifying the prompt to include different pairs of shapes (equilateral triangle and circle, hexagon and circle, and so on). This can lead to a discussion of why some pairs are not permissible - that is, why one shape cannot be inscribed in another, such as an equilateral triangle inside a square.