Belt

Teacher notes

Why use this resource?

This resource brings together a range of geometric and algebraic ideas associated with circles. It is an excellent example of a problem where students are likely to get stuck at some point but encouraging collaboration in small groups can help them to build resilience.

Possible approach

To begin, students could be asked to sketch the diagram for themselves, labelling any known lengths. It can be informative to give students a little thinking time before asking them to make a conjecture about the length of the belt. These ideas can be discussed and taken further as students attempt to formally solve the problem.

Key questions

- How do we split the belt into sections for which the lengths can be calculated?
- Where is the belt touching the welding rods?

Possible support

Students could be asked to think about a concrete example, substituting in some numbers to give them some intuition about the problem.

Possible extension

Students could consider what would happen if there were a third cylindrical welding rod.

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