# Designing a Tin Can

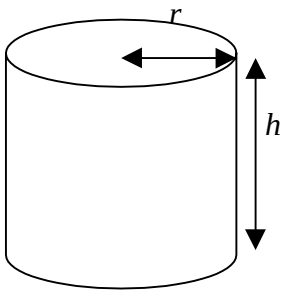
You have been asked to design a tin can that will contain **500ml** of a product.
You need to design the can using the **least amount** of material possible.

The following questions have been designed as a starting point for this investigation:

1. A suggested shape for the can is a cylinder. By considering other shapes, comment on why a cylinder is most appropriate.

2. If the can is cylindrical, with a height $h$ and radius $r$, show that the surface area $S$ can be written in the form

$$S = 2\pi r^2 + \frac{1000}{r}$$



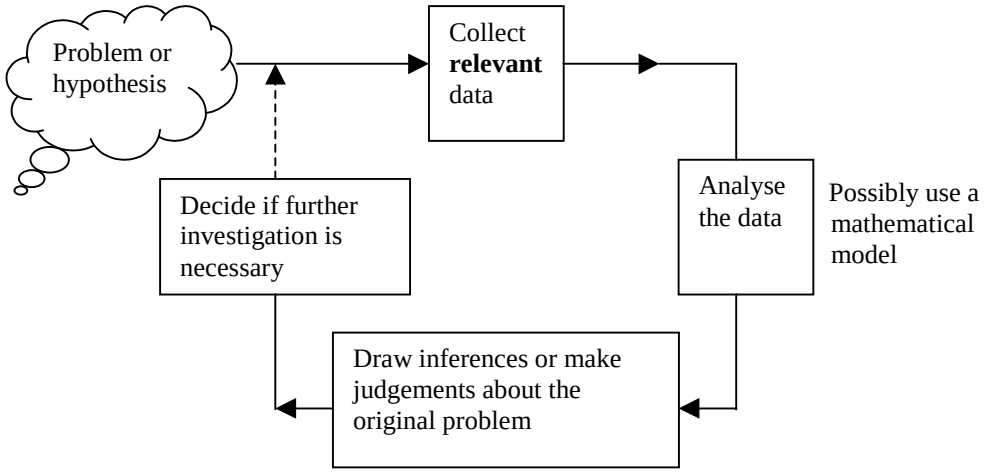

3. Investigate what happens to the Surface area $S$ as the radius $r$ changes.

4. Present your findings using an appropriate chart, graph or diagram.

5. Comment on your findings, relating them to the original problem set.

6. How else could you have solved this problem? Show your method.

**Now write up your work.**




**Further investigation:** Use the internet to investigate the cost of producing your tin can. Attach copies of any source materials you have used.