Funnel

A plastic funnel is used to pour liquids through narrow apertures.

Have you ever tried pouring a drink from a glass back into a bottle?

Imagine a funnel as a complete cone. What shape cone would use the least amount of plastic to manufacture a funnel containing a set volume?

You don't need a specified volume, but it may help to ask what shape cone would hold a litre of liquid using the least amount of plastic.

Turn the sheet upside down for more help.

Turn the sheet upside down to read the hints in this box

As an example of how you might begin, take one litre as the volume.

How many cubic centimetres is that ?

If the radius was 1 cm, 2 cm, 3 cm, etc. what would the height be each time?

And how long would the 'slope length' be in each case?

How do you calculate the curved surface area using those things?

When was the curved surface area least?

Can you refine your answer with more precise values tried for the radius length?

Could a spreadsheet help with the repeated calculation?