

A plastic gutter is designed to catch water at the edge of a roof.

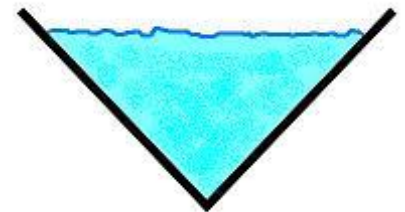
Manufacturers need to minimise the amount of material used to make their product while maximising the volume of water that can be drained.

What is the optimal cross-section for a gutter?

You might want to start by investigating gutters with a rectangular cross-section. Choose a fixed length for the cross section and vary the length of the base of the gutter. How does the area of the cross section change?



Using the same length, investigate triangular cross-sections. Vary the angle. How does the area of the cross section change?



Finally, **use the same length** and investigate cross-sections made from circular arcs. Vary the angle that defines the arc. How does the area of the cross section change?

