

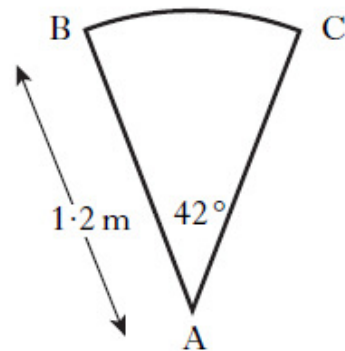
Non calculator:

Express  $\sqrt{40} + 4\sqrt{10} + \sqrt{90}$  as a surd in its simplest form.

**3**

Calculator:

A spiral staircase is being designed.



Each step is made from a sector of a circle as shown.

The radius is 1.2 metres.

Angle BAC is  $42^\circ$ .

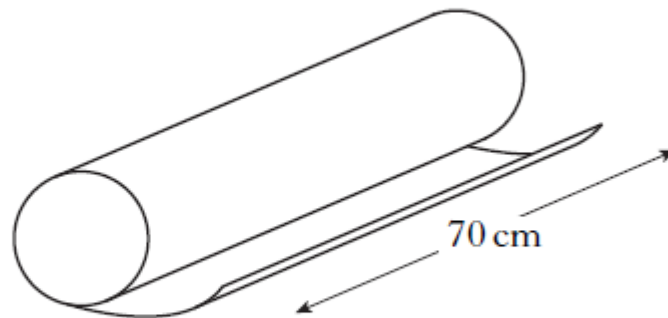
For the staircase to pass safety regulations, the arc BC must be at least 0.9 metres.

Will the staircase pass safety regulations?

**4**

Challenge Question (calculator):

Paper is wrapped round a cardboard cylinder **exactly** 3 times.  
The cylinder is 70 centimetres long.



The area of the paper is 3000 square centimetres.  
Calculate the diameter of the cylinder.