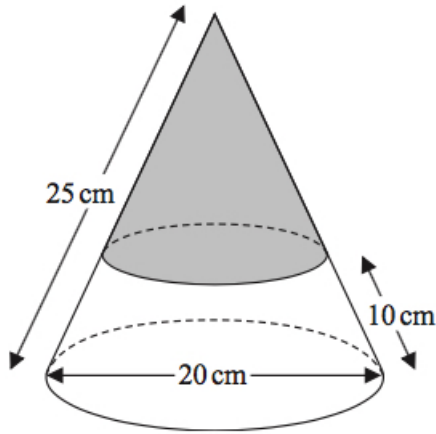


Dr Oliver Mathematics
Worked Examples
Curved Surface Area 1

From: Edexcel 2020 June Paper 2H (Calculator)

1. The diagram represents a solid cone.

(4)



The cone has a base diameter of 20 cm and a slant height of 25 cm.

A circle is drawn around the surface of the cone at a slant height of 10 cm above the base.

The curved surface of the cone above the circle is painted grey.

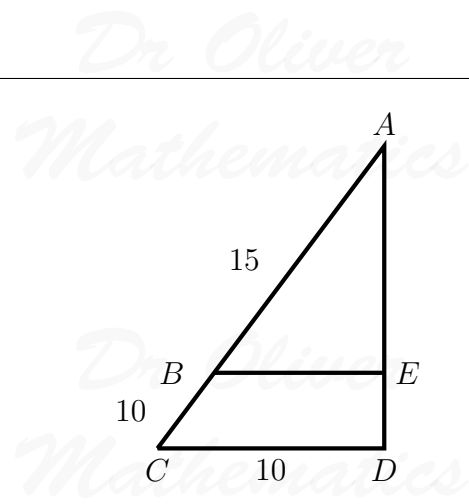
Work out the area of the curved surface of the cone that is not painted grey.

Give your answer as a multiple of π .

You must show all your working.

Solution

We take a cross-section:



We have similar figures:

$$\begin{aligned}\frac{BE}{BA} &= \frac{CD}{CA} \Rightarrow \frac{BE}{15} = \frac{10}{10 + 15} \\ &\Rightarrow BE = \frac{10 \times 15}{25} \\ &\Rightarrow BE = 6 \text{ cm.}\end{aligned}$$

Hence,

$$\begin{aligned}\text{not painted grey} &= \text{whole cone} - \text{painted grey} \\ &= (\pi \times 25 \times 10) - (\pi \times 15 \times 6) \\ &= 250\pi - 90\pi \\ &= \underline{160\pi}.\end{aligned}$$

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