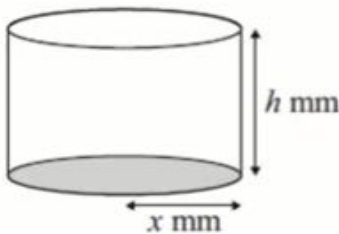




Air maths tuition

Interact, engage and perform

Optimisation | Past Paper Question | C2 Edexcel June 2012 Q8(a)(b)



A manufacturer produces pain relieving tablets. Each tablet is in the shape of a solid circular cylinder with base radius x mm and height h mm, as shown.

Given that the volume of each tablet has to be 60 mm^3 ,

(a) express h in terms of x , (1)

$$V = \pi r^2 h \Rightarrow 60 = \pi x^2 h \Rightarrow h = \frac{60}{\pi x^2}$$

(b) show that the surface area, $A \text{ mm}^2$, of a tablet is given by $A = 2\pi x^2 + \frac{120}{x}$ (3)

$$\begin{aligned} A &= \pi x^2 + \pi x^2 + 2\pi x h \\ &= 2\pi x^2 + 2\pi x \left(\frac{60}{\pi x^2} \right) \end{aligned}$$

$$= 2\pi x^2 + \frac{120}{x}$$



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