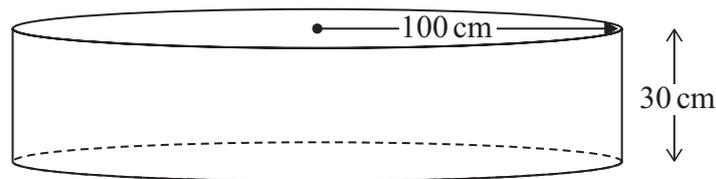


1 A paddling pool is in the shape of a cylinder.



The pool has radius 100 cm.

The pool has depth 30 cm.

The pool is empty.

It is then filled with water at a rate of  $250 \text{ cm}^3$  per second.

Work out the number of minutes it takes to fill the pool completely.

Give your answer correct to the nearest minute.

You must show all your working.

$$\begin{aligned} \text{Volume of pool} &= \pi r^2 h \rightarrow \text{same as a cylinder} \\ &= \pi \times (100)^2 \times (30) \quad r=100, h=30 \\ &= 300\,000 \pi \text{ cm}^3 \quad (1) \end{aligned}$$

$$\text{Rate} = 250 \text{ cm}^3/\text{s}$$

$$\text{Rate} = \frac{\text{Volume}}{\text{Time}}$$

$$250 = \frac{300\,000 \pi}{\text{Time}}$$

$$\text{Time} = \frac{300\,000 \pi}{250}$$

$$= 3769.9 \dots \text{ seconds} \quad (1)$$

$$= 3769.9 \dots \div 60 \quad (1)$$

$$= 62.83 \dots \text{ minutes}$$

$$\approx 63 \text{ minutes}$$

$$1 \text{ minute} = 60 \text{ seconds}$$

$$63 \quad (1) \dots \text{ minutes}$$

(Total for Question 1 is 4 marks)

↑  
nearest minutes