

SAMPLE PAPER 6: PAPER 1

QUESTION 9 (50 MARKS)

Question 9 (a)

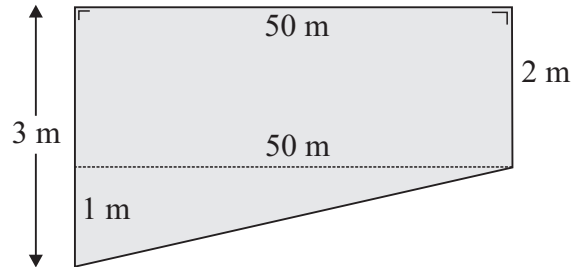
$$\tan A = \frac{1}{50} \Rightarrow A = \tan^{-1}\left(\frac{1}{50}\right) = 1.146^\circ$$

Question 9 (b)

Surface area: Area = $25 \times 50 = 1250 \text{ m}^2$

Question 9 (c)

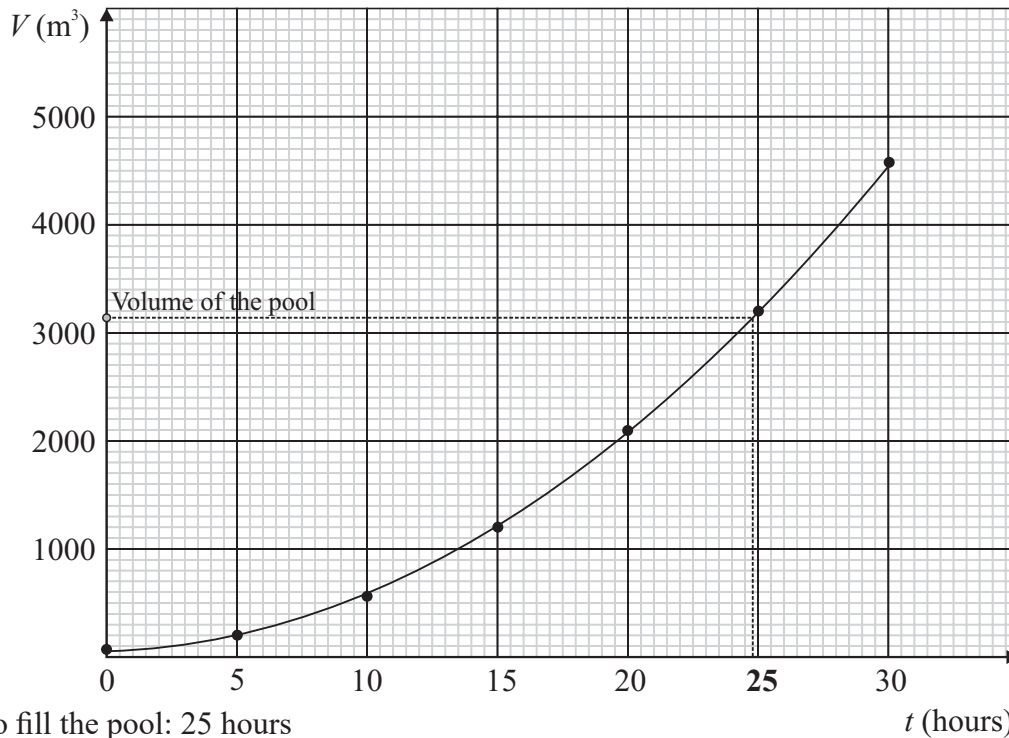
Volume = Area of the side of pool \times Width of pool
 $= (50 \times 2 + \frac{1}{2} \times 50 \times 1) \times 25 = 3125 \text{ m}^3$



Question 9 (d)

t (h)	0	5	10	15	20	25	30
V (m^3)	80	205	580	1205	2080	3205	4580

Question 9 (e)



Time to fill the pool: 25 hours

Question 9 (f)

$$V = 80 + 5t^2$$

$$\frac{dV}{dt} = 10t$$

(i) $\left(\frac{dV}{dt}\right)_{t=6} = 10(6) = 60 \text{ m}^3 \text{ h}^{-1}$

(ii) $\left(\frac{dV}{dt}\right)_{t=16} = 10(16) = 160 \text{ m}^3 \text{ h}^{-1}$

Question 9 (g)

$$t = 12 : V = 80 + 5(12)^2 = 800 \text{ m}^3$$

$$\% \text{ filled} = \frac{800}{3125} \times 100\% = 25.6\%$$

$$\text{Volume to be filled} = 3125 - 800 = 2325 \text{ m}^3$$

$$\text{Time} = \frac{2325}{85} = 1641 \text{ minutes}$$