

$$\frac{dr}{dt} = 0.2 \text{ ms}^{-1}$$

$$\frac{dV}{dt} = \frac{dV}{dr} \cdot \frac{dr}{dt}$$

$$\frac{dA}{dt} = \frac{dA}{dr} \cdot \frac{dr}{dt}$$

$$V = \frac{4}{3} \pi r^3$$

$$\frac{dV}{dr} = 4\pi r^2$$

$$A = 4\pi r^2 \quad \frac{dA}{dr} = 8\pi r$$

$$\frac{dV}{dt} = \frac{dV}{dr} \cdot \frac{dr}{dt}$$

$$= 4\pi r^2 \cdot 0.2 \text{ ms}^{-1}$$

$$= 0.8\pi r^2$$

$$= 0.8 \text{ ms}^{-1} \pi (1.6)^2 \text{ m}^2$$

$$= 6 \text{ m}^3 \text{ s}^{-1}$$

$$\frac{dA}{dt} = \frac{dA}{dr} \cdot \frac{dr}{dt}$$

$$= 8\pi r \cdot 0.2 \text{ ms}^{-1}$$

$$= 1.6\pi r$$

$$= 1.6 \text{ ms}^{-1} \pi \times 1.6 \text{ m}$$

$$= 8 \times 10^1 \text{ m}^2 \text{ s}^{-1}$$