

A tuning fork has a frequency of  $128\text{Hz}$ .  
If the tips of the fork move with an amplitude of  $1.25\text{mm}$ , find

- 1) maximum speed
- 2) maximum acceleration

$$f = 128\text{Hz}$$

$$\omega = 2\pi f$$

$$A = 1.25\text{mm} = 1.25 \times 10^{-3}\text{m}$$

$$1) \quad v_{\max} = A\omega = 1.25 \times 10^{-3}\text{m} (2\pi \cdot 128\text{Hz})$$

$$= \cancel{1.05 \text{ m/s}} \quad \boxed{1.01 \text{ m/s}}$$

$$2) \quad a_{\max} = A\omega^2 = 1.25 \times 10^{-3}\text{m} (2\pi \cdot 128\text{Hz})^2$$

$$= \boxed{809 \text{ m/s}^2}$$