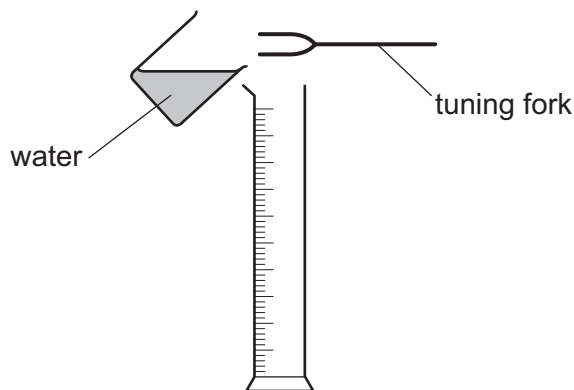


- 23** A police car travels at a velocity of 30.0 m s^{-1} directly towards a stationary observer. The horn of the car emits sound of frequency 2000 Hz . The speed of sound is 340 m s^{-1} .

What is the frequency of the sound heard by the observer?

- A** 1840 Hz **B** 2000 Hz **C** 2180 Hz **D** 2190 Hz

- 24** A vibrating tuning fork is held over a measuring cylinder, as shown.



Water is then gradually poured into the measuring cylinder. A much louder sound is first heard when the water level is 2.9 cm above the base of the measuring cylinder. A second much louder sound is heard when the water level reaches a height of 67.3 cm above the base.

The speed of sound in air is 330 m s^{-1} .

What is the frequency of the tuning fork?

- A** 128 Hz **B** 256 Hz **C** 512 Hz **D** 1024 Hz

- 25** A water wave in a ripple tank is diffracted as it passes through a gap in a barrier.

Which two factors affect the angle of diffraction of the wave?

- A** the amplitude and frequency of the incident wave
B the amplitude of the incident wave and the width of the gap
C the wavelength and amplitude of the incident wave
D the wavelength of the incident wave and the width of the gap

- 26** A double-slit interference pattern using red light of wavelength $7.0 \times 10^{-7} \text{ m}$ has a fringe spacing of 3.5 mm .

Which fringe spacing would be observed for the same arrangement of apparatus but using blue light of wavelength $4.5 \times 10^{-7} \text{ m}$?

- A** 2.3 mm **B** 3.5 mm **C** 5.4 mm **D** 9.0 mm