

6

The speed of a deepwater wave with a wavelength λ is given by $v = \sqrt{\frac{g\lambda}{2\pi}}$.

Find the speed and frequency of such a wave given $\lambda = 4.5\text{ m}$

$$v = \sqrt{\frac{9.81 \text{ m/s}^2 (4.5 \text{ m})}{2\pi}} = 2.65 \text{ m/s}$$

$$\boxed{2.7 \text{ m/s}}$$

$$v = f\lambda$$

$$f = \frac{v}{\lambda} = \frac{2.65 \text{ m/s}}{4.5 \text{ m}} = 5.89 \text{ E-1 Hz}$$

$$\boxed{0.59 \text{ Hz}}$$