

Waves

Period (T)  $T = \frac{\text{time}}{\text{cycles}}$  (units  $\Rightarrow$  s)

frequency (f)  $f = \frac{\text{cycles}}{\text{time}}$  (units  $\Rightarrow$  Hz or  $s^{-1}$  or  $1/s$ )

NOTE that period and frequency are reciprocals of one and other

$$T = \frac{1}{f} \text{ and } f = \frac{1}{T}$$

Wave speed:

$$v = \lambda f \quad \text{or} \quad v = \frac{\Delta d}{\Delta t}$$

\* depends only on the properties of the medium.

p350/8

$$\lambda = 523 \text{ m}$$

$$v = 4.60 \text{ km/s}$$

a)  $f = ?$

b)  $v = 7.50 \text{ km/s}, \lambda = ?$

c) assumption?

a)  $v = \lambda f$

$$f = \frac{v}{\lambda}$$

$$f = \frac{4.60 \times 10^3 \text{ m/s}}{523 \text{ m}}$$

$$f = 8.80 \text{ Hz}$$

b)  $v = \lambda f$

$$\lambda = \frac{v}{f}$$

$$\lambda = \frac{7.50 \times 10^3 \text{ m/s}}{8.80 \text{ Hz}}$$

$$\lambda = 853 \text{ m}$$

c) assumption....

f stays the same