

Problem 2.10

Pressure waves travel through steel at about 6 km/s. What will be the wavelength of a wave corresponding to a D note ($\nu \approx 294$ Hz)?

Solution

The relationship between wavelength λ , frequency ν , and speed v for any wave is

$$\lambda\nu = v.$$

With the speed and the frequency, the wavelength can be calculated.

$$\lambda = \frac{v}{\nu} = \frac{6 \frac{\cancel{\text{km}}}{\text{s}} \times \frac{1000 \text{ m}}{1 \cancel{\text{km}}}}{294 \text{ Hz}} \approx 20 \text{ m}$$