

**Problem 1.3** A harmonic wave traveling along a string is generated by an oscillator that completes 180 vibrations per minute. If it is observed that a given crest, or maximum, travels 300 cm in 10 s, what is the wavelength?

**Solution:**

$$f = \frac{180}{60} = 3 \text{ Hz.}$$

$$u_p = \frac{300 \text{ cm}}{10 \text{ s}} = 0.3 \text{ m/s.}$$

$$\lambda = \frac{u_p}{f} = \frac{0.3}{3} = 0.1 \text{ m} = 10 \text{ cm.}$$

---