Waves Introduction

1. A very happy dog wags its tail 36 times in 12 seconds.

a. How many wags in 6.0 seconds?

b. How many wags in 24 seconds?

c. How many wags in 4.0 seconds

d. How many wags in 1.0 second?

e. How many wags in one minute?

f. What is the frequency in Hertz?

g. What is the frequency in rpm?

h. What is the period of the wag?

2. A slightly sad dog wags its tail 8.0 times in 16 seconds.

a. How many wags in 8.0 seconds?

b. How many wags in 32 seconds?

c. How many wags in 4.0 seconds

d. How many wags in 1.0 second?

e. How many wags in one minute?

f. What is the frequency in Hertz?

g. What is the frequency in rpm?

h. What is the period of the wag?

3. A car’s engine spins 400.0 times in 6.0s.

a. How many times will the engine spin in 18.0s?

b. How many times will the engine spin in 3.0s?

c. How many times will the engine spin in 12.0?

d. How many times will the engine spin in 1.0s?

e. How many times will the engine spin in 60.0s?

f. What is the frequency in Hertz?

g. What is the frequency in rpm?

h. What is the period of the spinning?

4. The blades on an electric fan spin 100.0 times in 20.0s.

a. How many times do the blades spin in 10.0s?

b. How many times do the blades spin in 40.0s?

c. How many times do the blades spin in 3.0s?

d. How many times do the blades spin in 45s?

e. How many times will the engine spin in 1.0s?

f. How many times will the engine spin in 60.0s?

g. What is the frequency in Hertz?

h. What is the frequency in rpm?

i. What is the period of the spinning?

5. A hummingbird flaps its wings 540 times in 9.0s.

a. How many times does the bird flap its wings in one second?

b. How many times does the bird flap its wings in one minute?

c. What is the frequency of the flapping in Hertz?

d. What is the frequency of the flapping in rpm?

e. What is the period of the flapping?

6. The hammer on a bell strikes 680times in 3.0s.

a. What is the frequency of the hammer in Hertz and in rpm?

b. What is the period of the hammer?

7. A guitar string vibrates with a frequency of 440Hz.

a. How many vibrations occur in 1.0s?

b. How many vibrations occur in 15s?

c. What is the period of the vibration?

d. How much time is required for a single vibration?

e. How much time would be required for 100 vibrations?

8. Consider the diagram below of a wave traveling to the left.

A

ν

9.0cm

B

The wave carries energy 730m in 4.0s. Point A vibrates from top to bottom in 0.00020s.

a. What is the speed of propagation?

b. What is the amplitude of the oscillation?

c. What is the period of the oscillation?

d. What is the frequency of the oscillation?

e. What is the wavelength of the wave?

f. How far does point A travel as it vibrates from top to bottom?

g. How far does point A travel in one period?

9. What type of wave is shown in question 7?

10. A travelling longitudinal wave has a wavelength of 43.00cm. The wave carries energy 4.00m in 0.250s. A single particle has a range of motion of 6.00cm.

a. What is the speed of propagation?

b. What is the frequency of the wave?

c. What is the period of the wave?

d. How far does the wave propagate in one period?

e. How far does the wave propagate in 1.00s?

f. How far will a single particle travel in one period?

11. A transverse wave traveling in a string has wavelength of 2.00m and a frequency of 104.0Hz. In one period a point on the string vibrates through a total distance of 0.40cm.

a. What is the speed of propagation?

b. What is the frequency in rpm?

c. what is the amplitude of the vibration?

12. A wave has a wavelength of 0.44m and a speed of 640m/s. The amplitude of the wave is 3.00mm.

A. How far does the energy carried by the wave travel in one period?

B. How far does the energy carried by the wave travel in 1.0 second?

C. How far does a point in the medium travel in one period?

D. How far does a point in the medium travel in 1.0s?