

## Speed Frequency and Wavelength Worksheet 1

This worksheet is designed to give you some practice using the general wave equation:  $v = \lambda f$ . You'll be expected to use this equation correctly on the upcoming chapter test, sound lab and TAACB test.

1. What is the  $v$  if  $\lambda = 8$  m and  $f = 20$  Hz?
2. What is the  $\lambda$  if  $v = 50$  m/s and  $f = 25$  Hz?
3. What is the  $f$  if  $v = 50$  m/s and  $\lambda = 10$  m?
4. What is the  $v$  if  $\lambda = 1$  m and  $f = 340$  Hz?
5. What is the  $\lambda$  if  $v = 100$  m/s and  $f = 3$  Hz?
6. What is the  $f$  if  $v = 100$  m/s and  $\lambda = 3$  m?
7. What is the  $v$  if  $\lambda = 3$  m and  $f = 10$  Hz?
8. What is the  $\lambda$  if  $v = 340$  m/s and  $f = 100$  Hz?
9. What is the  $f$  if  $v = 340$  m/s and  $\lambda = 20$  m?
10. Joe the whistle maker knows that the maximum volume for a whistle will occur if the length of the whistle is exactly  $\frac{1}{4}$  of the wavelength. If Joe must make a whistle that plays at a pitch of 300-Hz, how long will the whistle be?
11. How long is the wavelength of KAJA radio whose broadcast frequency is 87.5 MHz? ( $1 \text{ MHz} = 1,000,000 \text{ Hz}$  and  $v = 300,000,000 \text{ m/s}$ )
12. Using the velocity of sound at 340 m/s and given the frequencies of a piano scale, compute the wavelengths of that scale.

Note	Frequency	Wavelength	Note	Frequency	Wavelength
C <sub>1</sub>	261.5		C <sub>6</sub>	1024	
D <sub>1</sub>	293.5		D <sub>6</sub>	1468	
E <sub>1</sub>	329.5		E <sub>6</sub>	1975	
F <sub>1</sub>	349.2		F <sub>6</sub>	2615	

13. What is the relationship of the frequencies of notes C<sub>1</sub> and C<sub>6</sub>?
14. What is the relationship of the wavelengths of notes C<sub>1</sub> and C<sub>6</sub>?
15. What happened to the wavelength as the frequency increased between notes C<sub>1</sub> and C<sub>6</sub>?