 Name: ______________________________

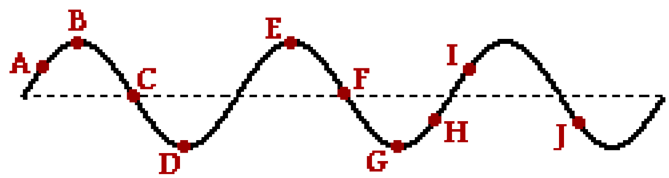
Describing Waves

Read from **Lesson 2** of the **Waves** chapter at **The Physics Classroom:**

http://www.physicsclassroom.com/Class/waves/u10l2a.html
http://www.physicsclassroom.com/Class/waves/u10l2b.html
http://www.physicsclassroom.com/Class/waves/u10l2c.html
http://www.physicsclassroom.com/Class/waves/u10l2d.html

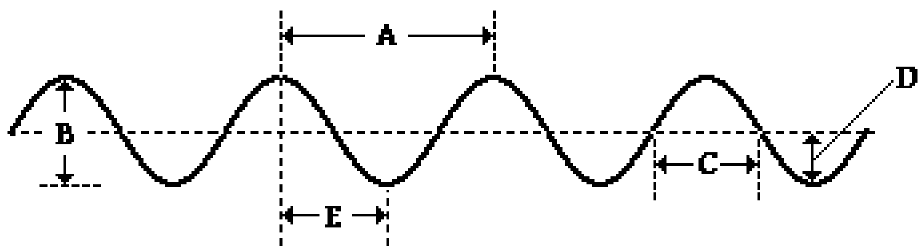
MOP Connection: Waves: sublevels 2 and 3

1. A wave is introduced into a medium and a snapshot of the medium at a particular instant in time is shown at the right. Several positions along the medium are labeled. Categorize the positions as either crests or troughs.

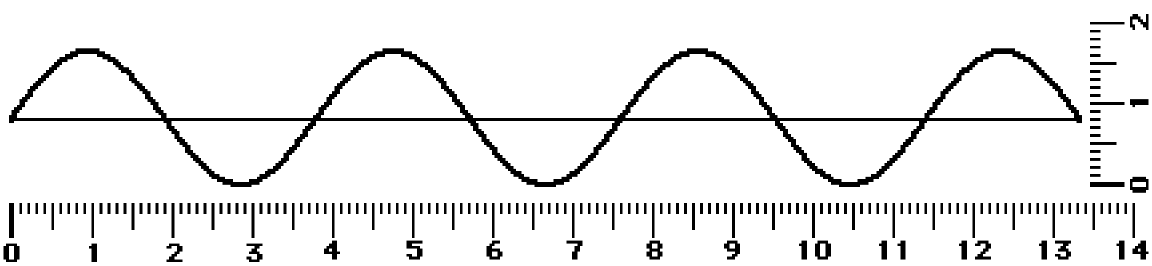


Crests: _______________ Troughs: _______________ Neither: _______________

2. The wavelength of the wave in the diagram below is given by letter ______ and the amplitude of the wave in the diagram below is given by letter _____.



3. A sine curve that represents a transverse wave is drawn below. Use the centimeter ruler to measure the wavelength and amplitude of the wave (show units).

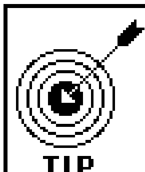


a. Wavelength = __________ b. Amplitude = ______________

4. The number of cycles of a periodic wave per unit time is called the wave's ___________.

5. Any repeated and periodic motion can be described by a frequency. For instance, the frequency of rotation of a second hand on a clock is _______.
a. 1/60 Hz b. 1/12 Hz c. 1/2 Hz d. 1 Hz e. 60 Hz

6. A pendulum makes 40 vibrations in 20 seconds. Calculate its period?



Throughout this unit, internalize the meaning of terms such as period, frequency, wavelength and speed. Utilize the meaning of these terms to answer conceptual questions; avoid *formula fixation*.

7. Olive Udadi accompanies her father to the park for an afternoon of fun. While there, she hops on the swing and begins a motion characterized by a complete back-and-forth cycle every 5.0 seconds. This statement provides info about the child's _____.
   a. speed b. frequency c. period

8. The frequency of Olive's periodic motion (in #7) is _____.
   a. 0.20 Hz b. 0.40 Hz c. 2.5 Hz d. 5.0 Hz

9. A period of 5.0 seconds corresponds to a frequency of _____ Hz.
   a. 0.20 b. 0.50 c. 0.020 d. 0.050 e. 0.0020

10. The period of a 261-Hertz sound wave is ________________.

11. As the frequency of a wave increases, the period of the wave ___________.
    a. decreases b. increases c. remains the same

12. The speed of a wave refers to
    a. how often it vibrates to and fro.
    b. how high it vibrates.
    c. how much time it takes to vibrate to and fro.
    d. how far a given point (e.g., a crest) on the wave travels per unit of time.

13. Write the two equations that can be used to determine the speed of a wave.

14. Mac and Tosh are resting on top of the water near the end of the pool when Mac creates a surface wave. The wave travels the length of the pool and back in 25 seconds. The pool is 25 meters long. Determine the speed of the wave. **PSYW**

15. A fisherman uses a sonic ranger to determine the depth of a lake. The sound waves travel at 1210 m/s through the water and require 0.020 seconds to travel to the lake's bottom and back to the boat. How deep is the lake? **PSYW**

16. The water waves below are traveling with a speed of 3.0 m/s and splashing periodically against the Wilbert's perch. Each adjacent crest is 6.0 meters apart and splashes Wilbert's feet upon reaching his perch. How much time passes between each successive drenching? ____________ Answer and explain using complete sentences or a calculation.