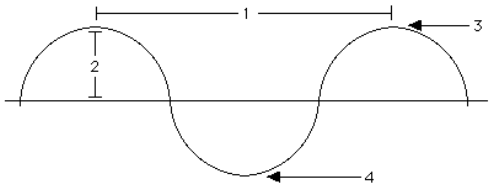
**Physics 11** **Wave and Sound Assignment** **Name**_____

**Mark:**_____/__

1. Label this transvers wave.




1) _____

2) _____

3) _____

4)_____

2. A wave hits the beach every 5.0 seconds, and the waves seem to be about 15m apart.
a) What is the speed of these wave
b) what is the frequency of the waves?

v _____

f _____

3. A hummingbird beats its wings 200 times every second. What is the period? What is the frequency?

T _____

f _____

4. Two slinkies are tied together. A wave in the first slinky travels with a velocity 4.0 m/s and wavelength of 1.5 m. After transmission the velocity in the second slinky is 7.0 m/s. Determine the wavelength in the second slinky.

λ _____

5. Determine the speed of sound in 30° C air and if it has a frequency of 251 Hz. Determine the wavelength (λ).

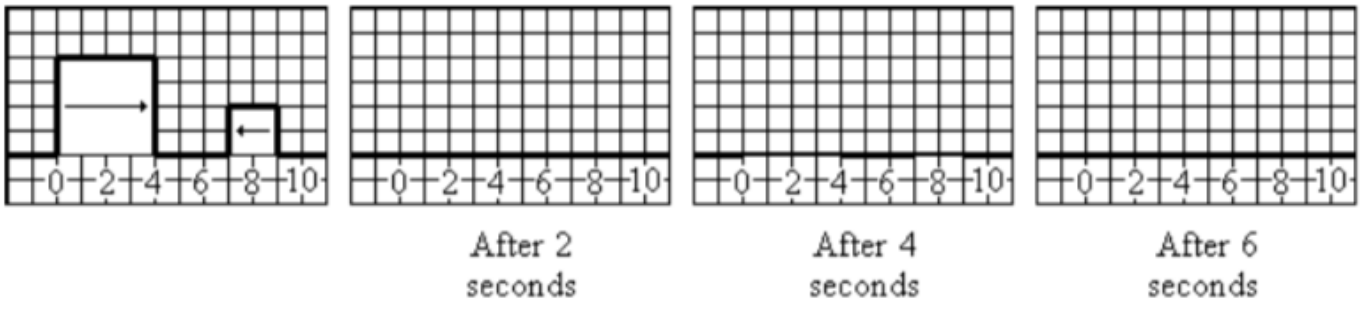
Speed of sound _____

λ _____

6. Underwater, the wavelength of sound increases to 5.90 meters. Use the information from Q5 to determine the velocity of sound under water.

velocity _____

7. The two pulses below are approaching each other a 1 square per second. Draw their **superposition** after…..




8.

a) Movement of a particle on a transverse wave is_____ to the direction of the wave.

b) This quality remains constant when a wave travels to a new medium.

**a)** _____

**b)** _____

| | | |
|---|---|---|
| | c) Frequency is the number of _____ per second<br>d) When a positive pulse collide with a negative pulse, they form _____ interference<br>e) Sound is a type of this mechanical wave (Transverse or Longitudinal?)<br>f) A wave travels from a rope to a light string, its reflection is _____<br>g) Speed of sound in air is depended on _____ | **c)** _____<br>**d)** _____<br>**e)** _____<br>**f)** _____<br>**g)** _____ |
| 9. | A standing wave is created by a 12-meter rope (hint: 2 fixed end), the speed of the wave is measured to be 36 m/s<br>a) draw the standing wave patterns for the 1st and 3rd harmonic in the space below<br>b) Calculate the wavelengths of both of the waves in (a)<br>c) Determine the frequencies of both waves<br>λ1) _____<br>λ2) _____<br>f1) _____<br>f2)_____ | |
| 10. | a) label the nodes and antinodes on the diagram:<br>b) What is its wavelength if the distance between nodes is 2 m?<br>c) If the person is shaking her hand up-and-down 12 times per second, what is the wave velocity?<br>  <br>λ _____<br>Speed _____ | |
| 11. | Two tuning forks are sounded together. One tuning fork has a frequency of 256 Hz. An observer hears 15 beats in 5 seconds. What are the possible frequencies of the other tuning fork?<br>f _____ | |
| 12. | Sketch the wave patterns associated with the 2nd harmonic of a flute (open-open) that is 52 cm cm long. What frequencies would these waves have if the flute was played at 17.0 °C?<br>f _____ | |
| 13. | While standing near a railroad crossing, a person hears a distant train horn. According to the train's engineer, the frequency emitted by the horn is 440 Hz. The train is traveling at 20.0 m/s and the speed of sound is 346 m/s.<br>a) What would be the frequency of the train's horn if the train were at rest?<br>b) What is the adjusted frequency that reaches the bystander as the train approaches the crossing?<br>c) What is the adjusted frequency that reaches the bystander once the train has passed the crossing?<br>f _____<br>f _____<br>f _____ | |