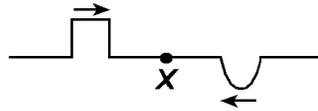


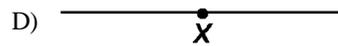
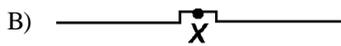
Name: _____

11.4 Wave Interactions Regents Worksheet

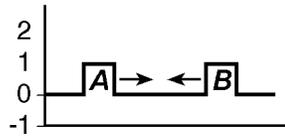
1) The diagram below shows two pulses traveling toward each other in a uniform medium.



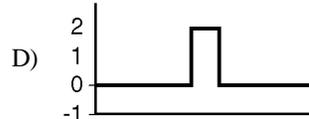
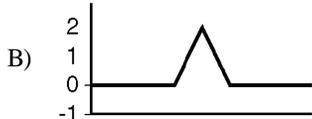
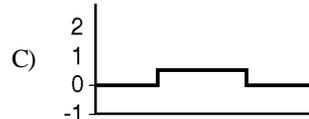
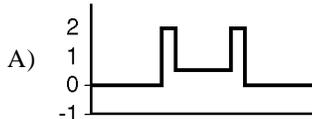
Which diagram *best* represents the medium when the pulses meet at point X?



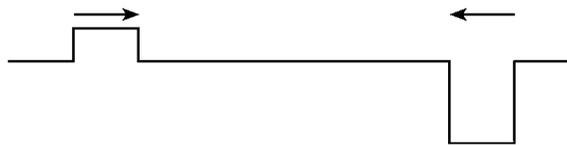
2) The diagram below shows two pulses, A and B, approaching each other in a uniform medium.



Which diagram *best* represents the superposition of the two pulses?



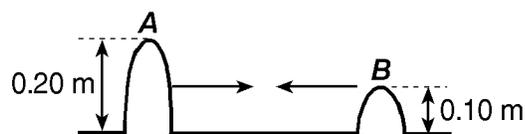
3) The diagram below represents two pulses approaching each other.



Which diagram *best* represents the resultant pulse at the instant the pulses are passing through each other?



- 8) The diagram below shows two pulses approaching each other from opposite directions in the same medium. Pulse A has an amplitude of 0.20 meter and pulse B has an amplitude of 0.10 meter.

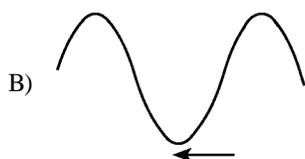
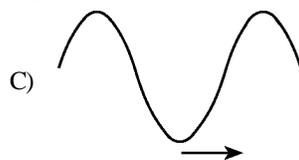


After the pulses have passed through each other, what will be the amplitude of each of the two pulses?

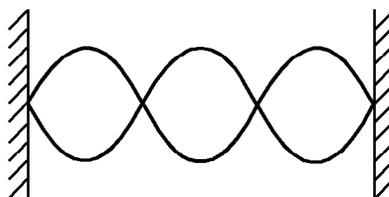
- A) $A = 0.15$ m; $B = 0.15$ m
 B) $A = 0.30$ m; $B = 0.30$ m
 C) $A = 0.10$ m; $B = 0.20$ m
 D) $A = 0.20$ m; $B = 0.10$ m
- 9) The diagram below represents a wave moving toward the right side of this page.



Which wave shown below could produce a standing wave with the original wave?



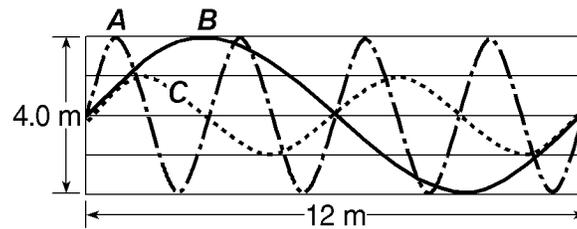
- 10) The superposition of two waves traveling in the same medium produces a standing wave pattern if the two waves have
- A) the same frequency, the same amplitude, and travel in opposite directions
 B) the same frequency, the same amplitude, and travel in the same direction
 C) the same frequency, different amplitudes, and travel in opposite directions
 D) the same frequency, different amplitudes, and travel in the same direction
- 11) How many nodes are represented in the standing wave diagram below?



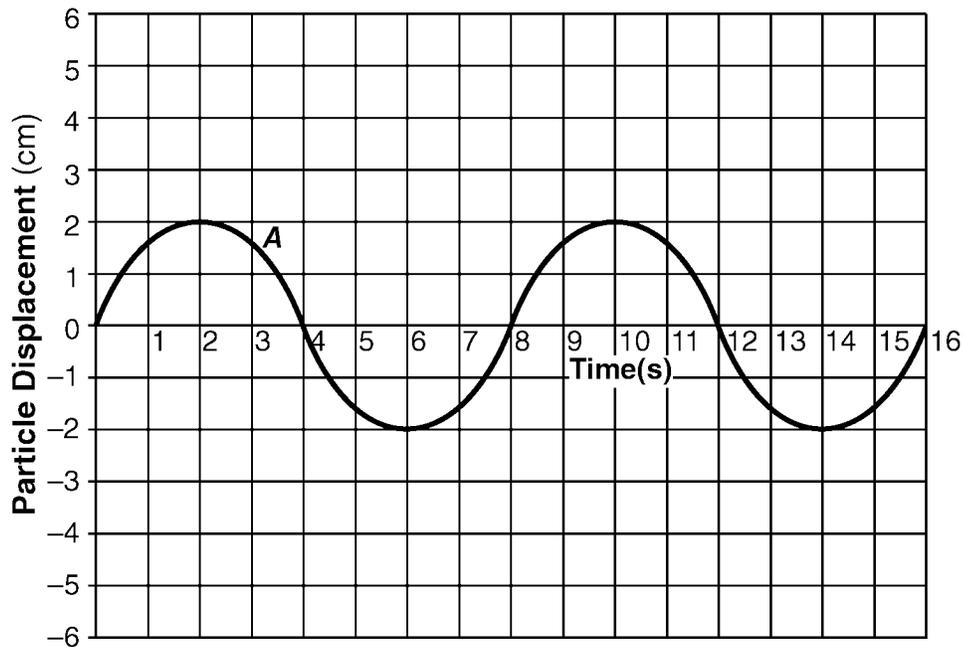
- A) 1
 B) 6
 C) 3
 D) 4
- 12) Two waves traveling in the same medium and having the same wavelength (λ) interfere to create a standing wave. What is the distance between *two* consecutive nodes on this standing wave?
- A) $\frac{\lambda}{2}$
 B) λ
 C) $\frac{\lambda}{4}$
 D) $\frac{3\lambda}{4}$

Questions 13 through 15 refer to the following:

Three waves, *A*, *B*, and *C*, travel 12 meters in 2.0 seconds through the same medium as shown in the diagram below.

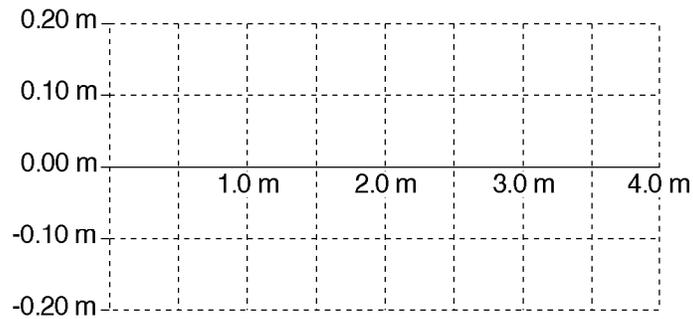


- 13) What is the amplitude of wave *C* in the given diagram?
- 14) What is the period of wave *A* in the given diagram?
- 15) What is the speed of wave *B* in the given diagram?
- 16) The diagram below represents a transverse wave, *A*, traveling through a uniform medium. On the diagram, draw a wave traveling through the same medium as wave *A* with twice the amplitude and twice the frequency of wave *A*.



Questions 17 and 18 refer to the following:

A periodic transverse wave has an amplitude of 0.20 meter and a wavelength of 3.0 meters.



17) On the grid provided, draw at least *one* cycle of this periodic wave.

18) If the frequency of the described wave is 12 Hz, what is its speed?

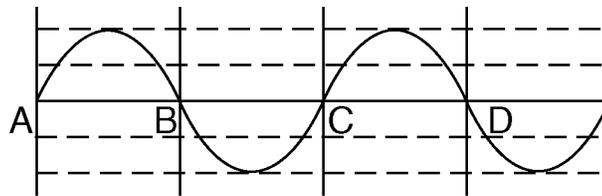
A) 4.0 m/s

B) 0.25 m/s

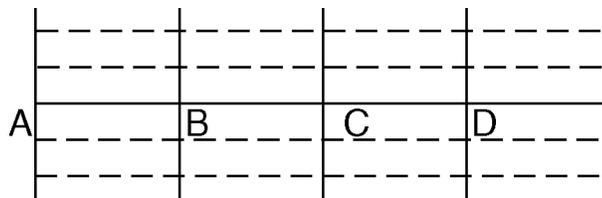
C) 12 m/s

D) 36 m/s

19) The diagram below represents a transverse wave moving along a string.

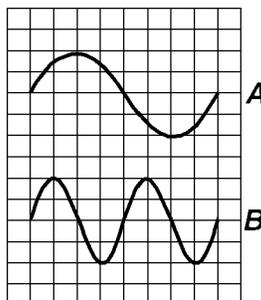


On the diagram below, draw a transverse wave that would produce complete destructive interference when superimposed with the original wave.

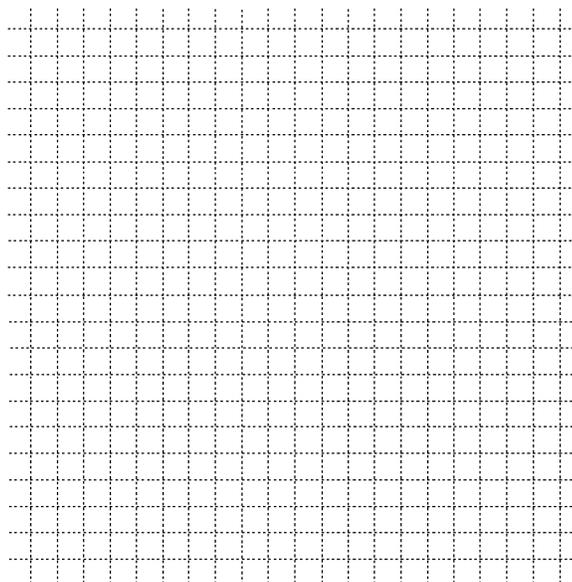


Questions 20 through 22 refer to the following:

Two waves, *A* and *B*, pass through the same medium at the same time.



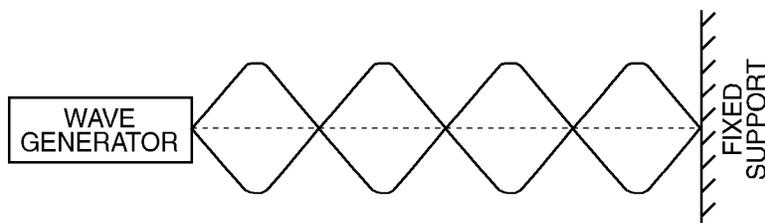
- 20) Sketch the wave pattern produced when the two waves shown interfere.



- 21) Name a wave characteristic that is the same for *both* wave *A* and wave *B* shown in the diagram.
- 22) Name a wave characteristic that is different for wave *A* and wave *B* shown in the diagram.

Questions 23 through 26 refer to the following:

A wave generator having a constant frequency of 15 hertz produces a standing wave pattern in a stretched string.



- 23) Using a ruler, measure the amplitude of the wave shown. Record the value to the nearest tenth of a centimeter.
- 24) Using a ruler, measure the wavelength of the wave shown. Record the value to the nearest tenth of a centimeter.
- 25) State what would happen to the wavelength of the wave shown if the frequency of the wave were increased.
- 26) How many antinodes are shown in the diagram?