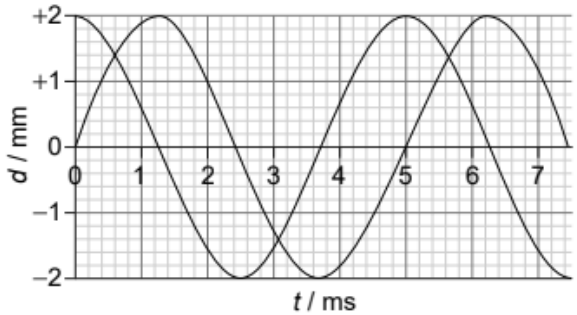
Name _____ Date _____

Honors Physics Waves WS #6H

Period _____ Mrs. Nadworny

Superposition

1. Two travelling waves are moving through a medium. The diagram shows, for a point in the medium, the variation with time t of the displacement d of each of the waves.



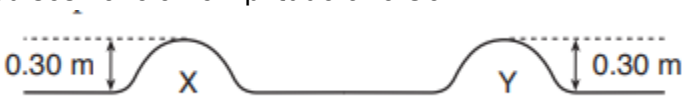
For the instant when t = 2.0ms, what is the phase difference between the waves and what is the resultant displacement of the waves?

	Phase difference	Resultant displacement / mm
A.	45°	–0.6
B.	90°	2.6
C.	45°	2.6
D.	90°	–0.6

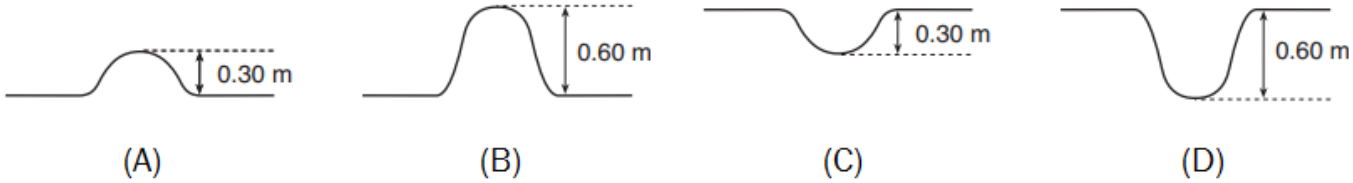
2. A travelling wave of period 5.0 ms travels along a stretched string at a speed of 40 meters per second. Two points on the string are 0.050m apart. What is the phase difference between the two points?

(A) 0 (B) π/2 (90°) (C) π (180°) (D) 2π (360°)

3. As represented in the diagram below, two wave pulses, X and Y, are traveling toward each other in a rope. Both wave pulses have an amplitude of 0.30 m.



Which diagram shows the pulse produced due to the superposition of pulse X and pulse Y?



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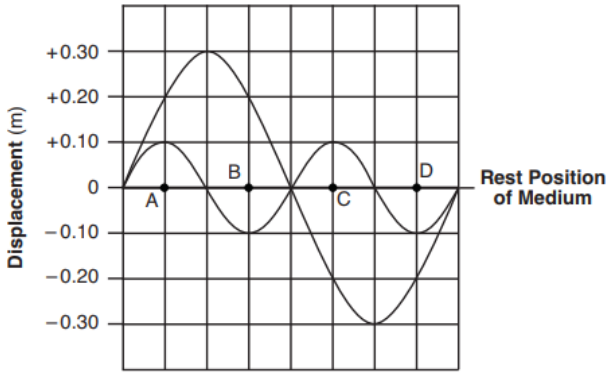
4. After two light waves have interfered in a vacuum, the two waves will be

   (A) changed in frequency
   (B) changed in velocity
   (C) changed in amplitude
   (D) unchanged

5. The diagram below shows two waves traveling in the same medium. Points A, B, C, and D are located along the rest position of the medium.



The waves interfere to produce a resultant wave. The superposition of the waves produces the greatest positive displacement of the medium from its rest position at point

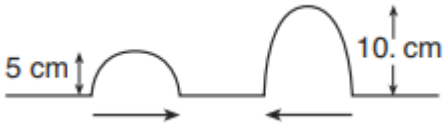
(A) (B) (C) (D)

6. Two pulses traveling in the same uniform medium approach each other, as shown in the diagram below. Which diagram best represents the superposition of the two pulses?

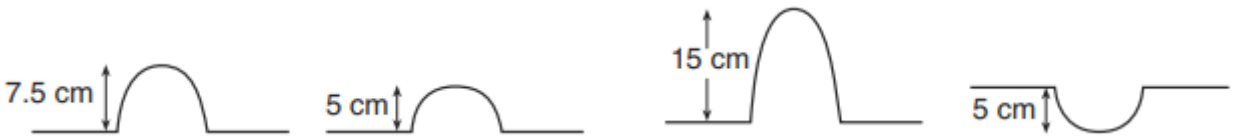
The diagram below shows two pulses approaching each other in a uniform medium. Which diagram best represents the superposition of the two pulses?

(A) (B) (C) (D)

7. The diagram below shows two pulses approaching each other in a uniform medium.



Which diagram best represents the superposition of the two pulses?



(A) (B) (C) (D)

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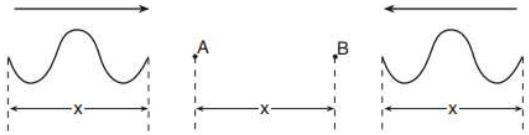
8. The diagram below shows two waves traveling toward each other at equal speed in a uniform medium.



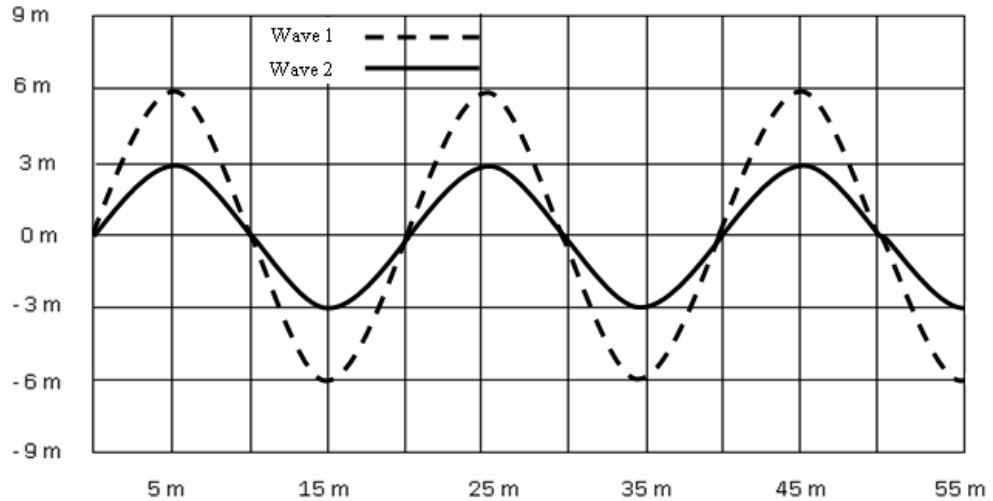
When both waves are in the region between points A and B, they will undergo

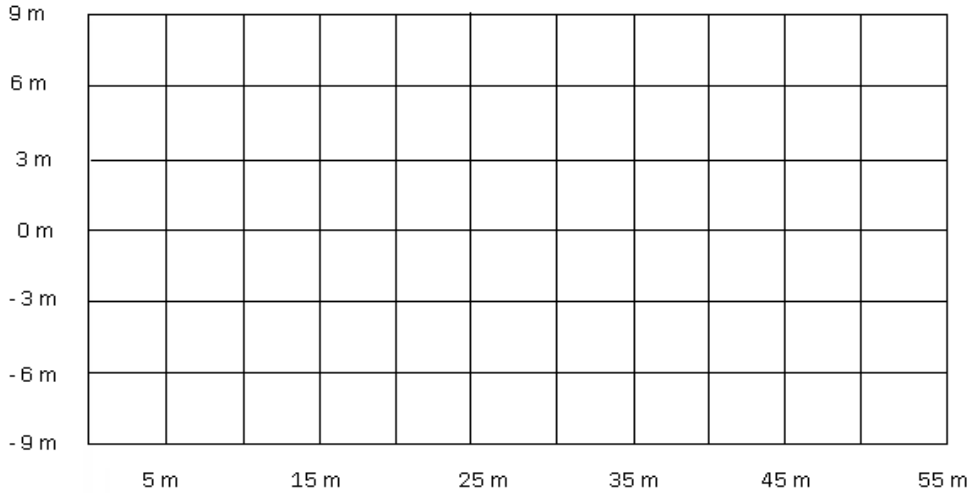
(A) diffraction (B) destructive interference (C) the Doppler effect (D) constructive interference

9. The effect produced when two or more sound waves pass through the same point simultaneously is called

(A) interference (B) refraction (C) diffraction (D) resonance

Each graph shows two waves traveling through the same medium at the same time. Draw the resulting wave below and then answer the questions.





10. What is the wavelength of wave 1 _____ wave 2 _____ Resultant wave _____

11. What is the amplitude of wave 1 _____ wave 2 _____ Resultant wave _____

12. What type of interference occurred? _____