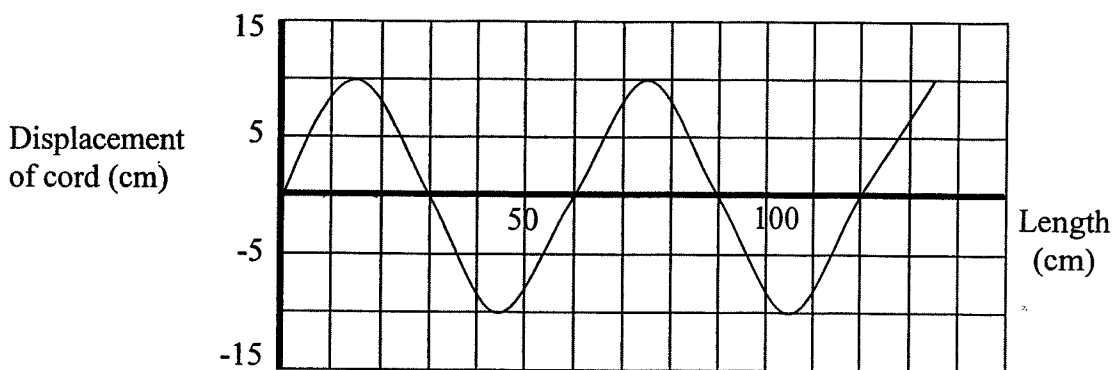


Waves Worksheet 2

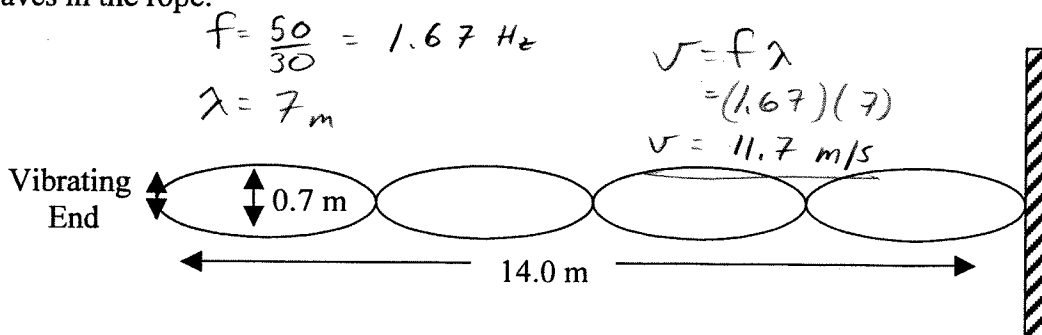
1. The diagram below shows part of a rubber cord along which a wave is traveling.



- a) For this wave determine
- i) its amplitude 10 cm
 - ii) its wavelength 60 cm
- b) The period of the wave is 0.20 s . What is the speed of the wave? (2 marks)

$$f = \frac{1}{T} = \frac{1}{0.2} = 5\text{ Hz} \quad v = f\lambda = 5(.6) = 3\text{ m/s}$$

2. In an experiment to find the speed of waves in a rope, a standing wave pattern is established as shown. The vibrating end makes 50 vibrations in 30 seconds. Calculate the speed of the waves in the rope.



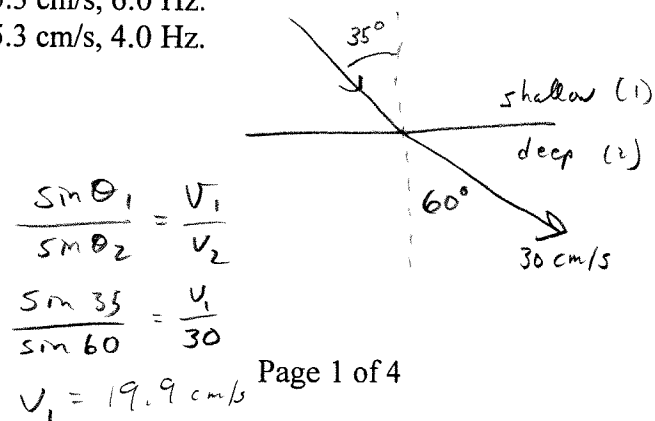
3. Periodic waves of frequency 6.0 Hz , pass from a shallow section of water to a deep section of water. The angle of incidence in the shallow water is 35° and the angle of refraction in the deep water is 60° . IF the speed of the waves in the deep water is 30 cm/s , the speed and frequency of the waves in the shallow section is

A) $19.9\text{ cm/s}, 6.0\text{ Hz}$.

B) $45.3\text{ cm/s}, 6.0\text{ Hz}$.

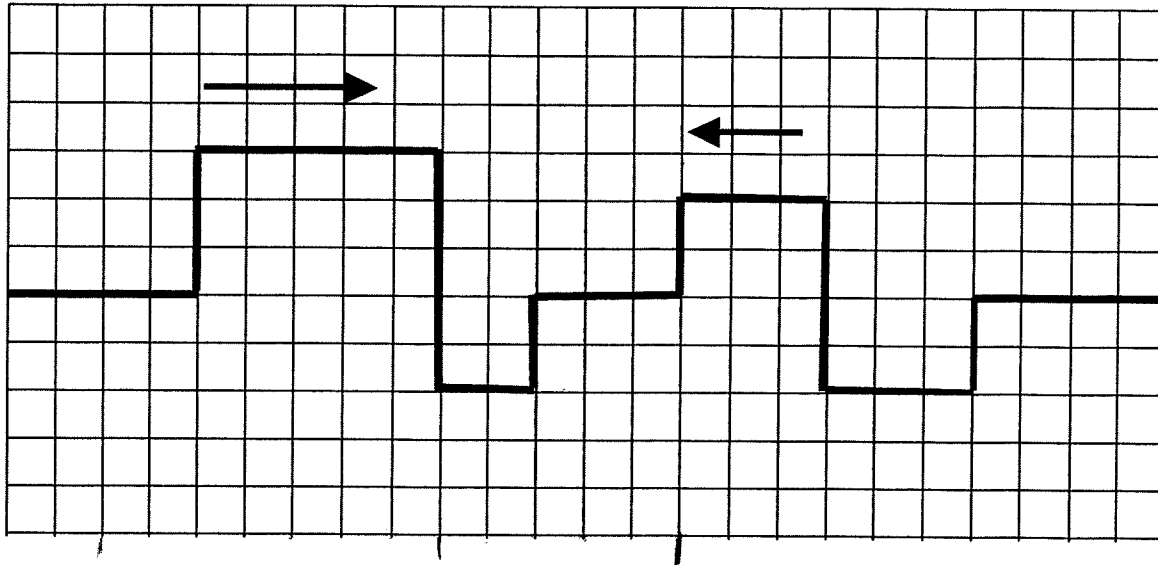
C) $19.9\text{ cm/s}, 4.0\text{ Hz}$.

D) $45.3\text{ cm/s}, 4.0\text{ Hz}$.

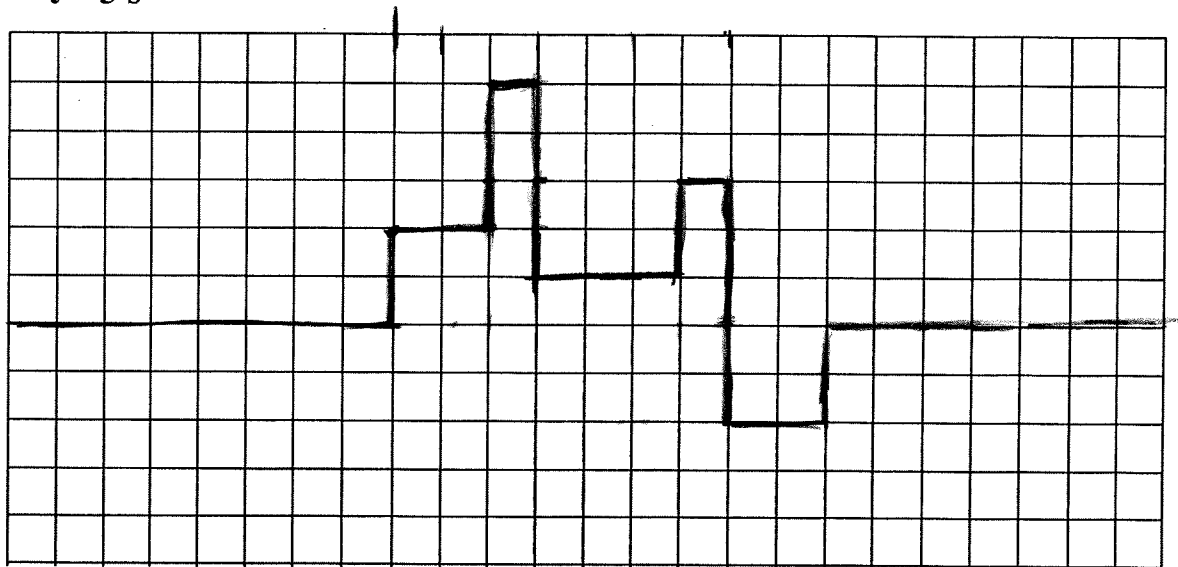


4. The waves shown below are moving toward each other at a rate of 2 spaces per second. Sketch the resultant wave interference pattern at the indicated time. (2 marks)

$t = 0 \text{ s}$



$t = 3 \text{ s}$



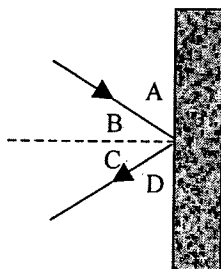
5. The following diagram shows a pulse moving to the right from one medium to another.



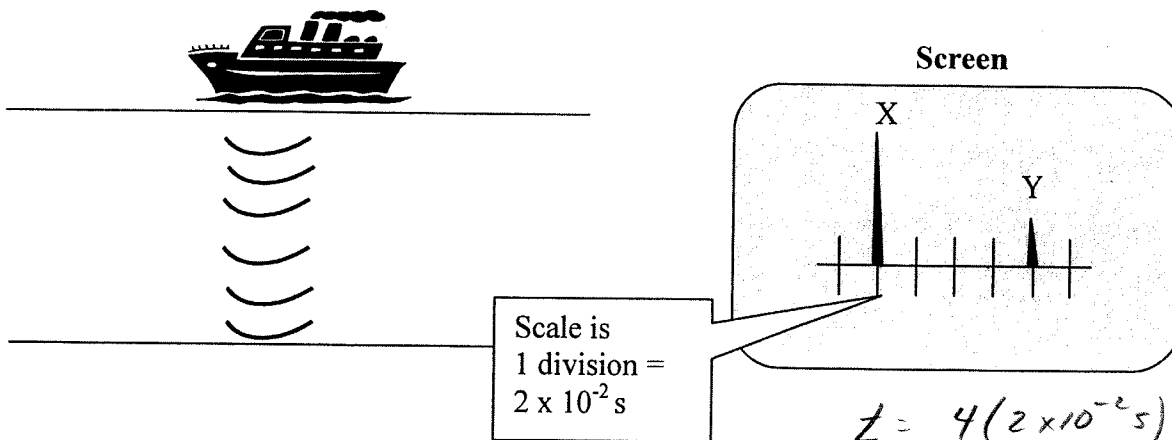
Sketch a diagram representing the view of the pulse after it reaches the boundary between the two different mediums.

6. Consider the diagram below. The angles (A, B, C, or D) that represent the angles of incidence and the angle of reflection respectively are?

- A) A and B
- B) B and C
- C) A and C
- D) B and D



8. A yacht sends an ultrasonic sonar pulse from a transmitter on its keel downwards towards the sea bed. The outgoing pulse (X) and the reflected pulse (Y) as detected on the ship are displayed on a screen. The speed of sound in seawater was 1520 m/s.



Calculate the depth of the water from the bottom of the boat.

- A) 25 m
- C) 61 m

- B) 46 m
- D) 120 m

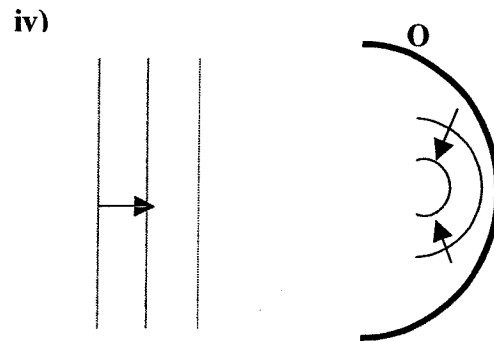
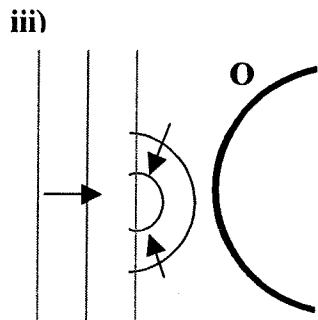
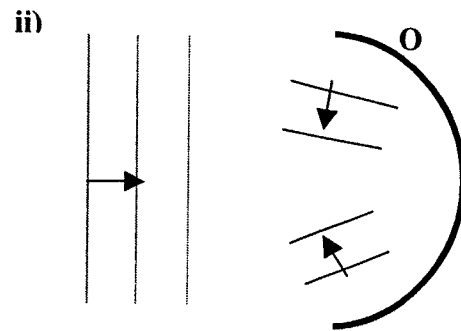
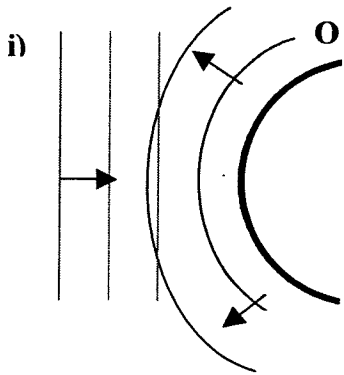
$$t = 4(2 \times 10^{-2} \text{ s})$$

$$= 0.08 \text{ s} \quad \text{time down} = 0.04 \text{ s}$$

$$v = \frac{d}{t}$$

$$1520 = \frac{d}{0.04}$$

7. Plane water waves in a ripple tank are reflected from parabolic reflector (O) in the water:
 (Light lines are incident waves and dark lines are reflected waves.)



Which of the diagrams above shows the correctly reflected waves?

- A) i) and ii)
- C) i) and iv)

- B) ii) and iii)
- D) ii) and iv)