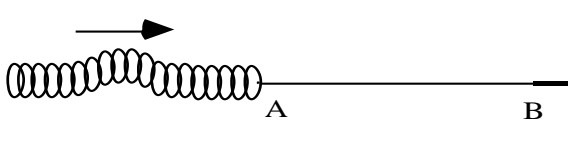# PHYSICS 11 WAVES WORKSHEET 2

Refer to your notes and Chapters 14-15 of the text to answer the following questions.

1. In the following figure, a pulse is sent along a spring. The spring is attached to a light thread that is attached to the wall.


    After the pulse reaches point **A**, is the pulse that reflects back **erect** or **inverted**? Explain how you know. How about point **B**?

2. As water waves approach a beach, their wavelengths become shorter; why?

3. For each diagram below, sketch in the reflected pulse created.

    a)

   fixed
    end

    b)

    free
    end
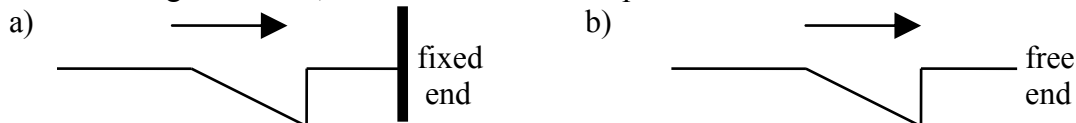
4. Wave pulses move towards each other from opposite directions as illustrated. Sketch the resultant shape of the medium when the two pulses are superimposed in the center.

    a)

    b)

    c)
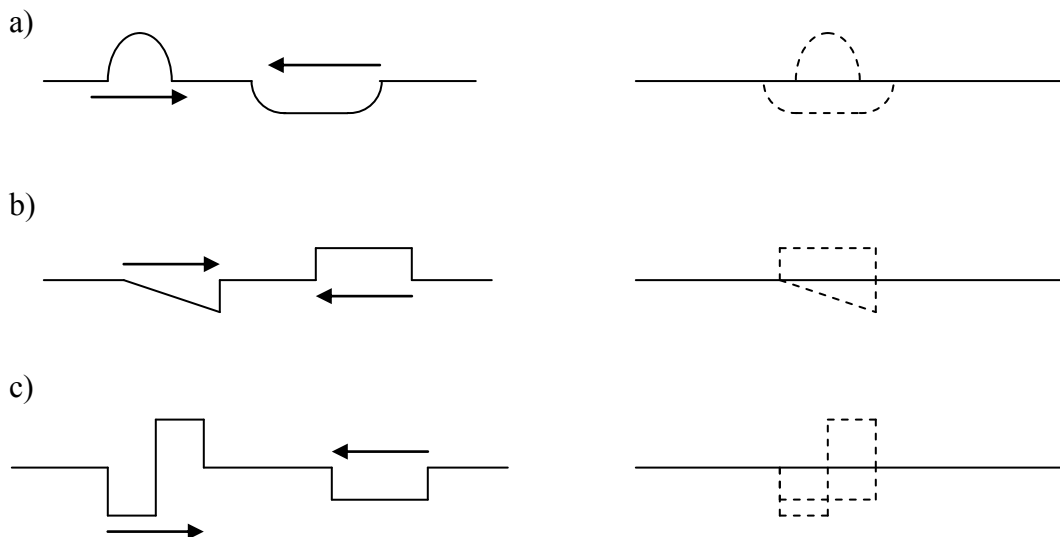
5. A standing wave interference pattern is produced in a rope by a vibrator with a frequency of 28 Hz. If the wavelength of the waves is 20 cm, what is the distance between successive nodes?

6.   The distance between the second and fifth nodes in a standing wave is 60 cm.
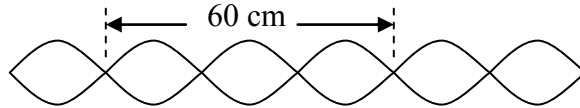

        a) What is the wavelength of the waves?
        b) What is the speed of the waves, if the source has a frequency of 25 Hz?

7.   Standing waves are set up in a string by a source vibrating at 100 Hz. Seven nodes,
        similar to the pattern shown in question 3, are counted in a distance of 63 cm.
        a) What is the wavelength of the waves traveling in the string?
        b) What is the speed of these waves?

8.   Waves traveling along a string have a wavelength of 2.4 m. When the waves reach the fixed
        end of the string, they are reflected. How far from the end are the first two antinodes?

9.   Accurately draw in the resulting waves for each of the diagrams shown:
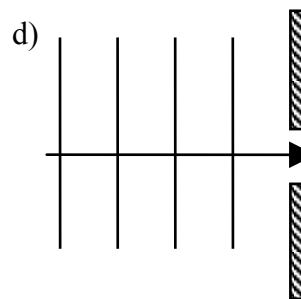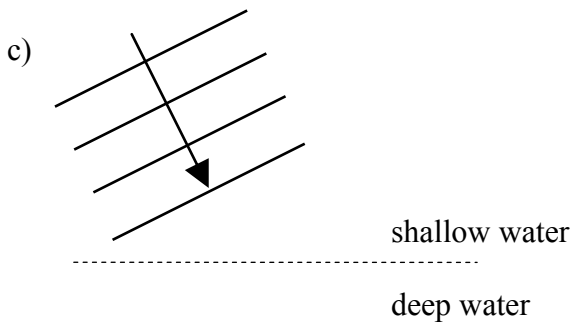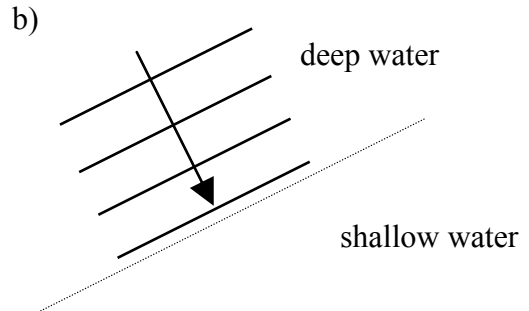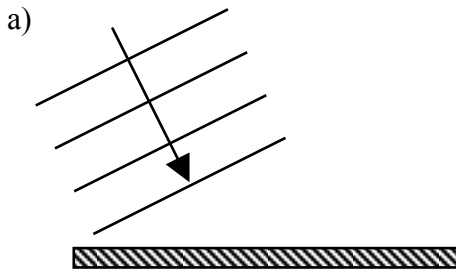
10.   The speed of water waves is 30 cm/s in deep water and 15 cm/s in shallow water. If the
        wavelength in deep water is 1.0 cm, what is the wavelength in shallow water?

11.   Sound waves in cold air have a speed of 320 m/s and a wavelength of 3.0 m. If the
        wavelength of these waves increases to 3.6 m in warm air, what is their new speed?

1. erect; inverted   2. **v** decreases as water depth decreases   3. a) ⌐‾‾‾╲___ b) ‾╲╱‾
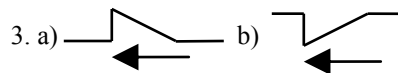
4. see notes   5. 10 cm   6. a) 40 cm b) 10 m/s   7. a) 21 cm b) 21 m/s   8. 0.6 m, 1.8 m   9. refer to notes
10. 0.50 cm   11. 384 m/s