

1. A wave has a period of 0.05 s. What is its frequency?

$$f = \frac{1}{T} = \frac{1}{0.05 \text{ s}} = 20 \text{ Hz}$$

2. Sven's favourite radio station broadcasts on a carrier wave frequency of 1200 kHz. What is the wavelength of the carrier waves?

$$v = \lambda f \therefore \lambda = \frac{v}{f} = \frac{3 \times 10^8 \text{ m/s}}{1200000 \text{ Hz}} = 250 \text{ m}$$

3. What type of interference results in two waves adding to produce a node?

DESTRUCTIVE

4. If the frequency of the waves in a two-source interference is decreased, what happens to the spacing between the nodal lines?

INCREASES.

5. Water waves are moving toward a sea wall at an angle of 15° . What will be the angle of the reflected waves?

15°

6. When a wave is transmitted through a boundary and thus refracted, not all of the energy is transmitted across the boundary. What happens to the rest of the energy?

IT IS REFLECTED OR ABSORBED.

7. The velocity of waves in medium A is 10 cm/s. The velocity in medium B is 15 cm/s. What happens to the frequency of waves moving from medium A to medium B?

FREQUENCY STAYS THE SAME

8. A water wave passes from shallow water into deep water. Describe (using the terms *increases*, *decreases*, or *stays the same*) how the wave changes in terms of

- a) its frequency - SAME
 b) its wavelength - INCREASES
 c) its speed - INCREASES.

9. A wave has a speed of 10 cm/s and a wavelength of 0.05 cm. What is its frequency?

$$v = \lambda f \therefore f = \frac{v}{\lambda} = \frac{10 \text{ cm/s}}{0.05 \text{ cm}} = 200 \text{ Hz}$$

10. When water waves enter the shallower water of the beach at an angle, do the waves become more parallel to the beach, or more perpendicular?

MORE PARALLEL

(WAVES SLOW \therefore BEND TOWARD THE NORMAL)

11. When waves meet in phase, will the interference be destructive or constructive?

CONSTRUCTIVE

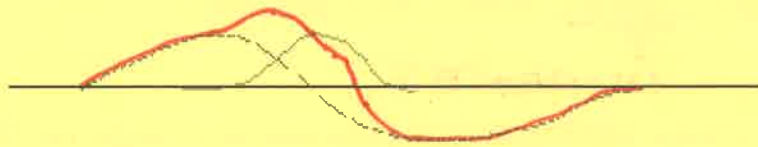
12. When waves curve around the sharp edge of a barrier, this phenomena is called:

DIFFRACTION

13. Which colour of light will be refracted more, red or violet?

VIOLET (BUT YOU CAN OMIT THIS FOR NOW)

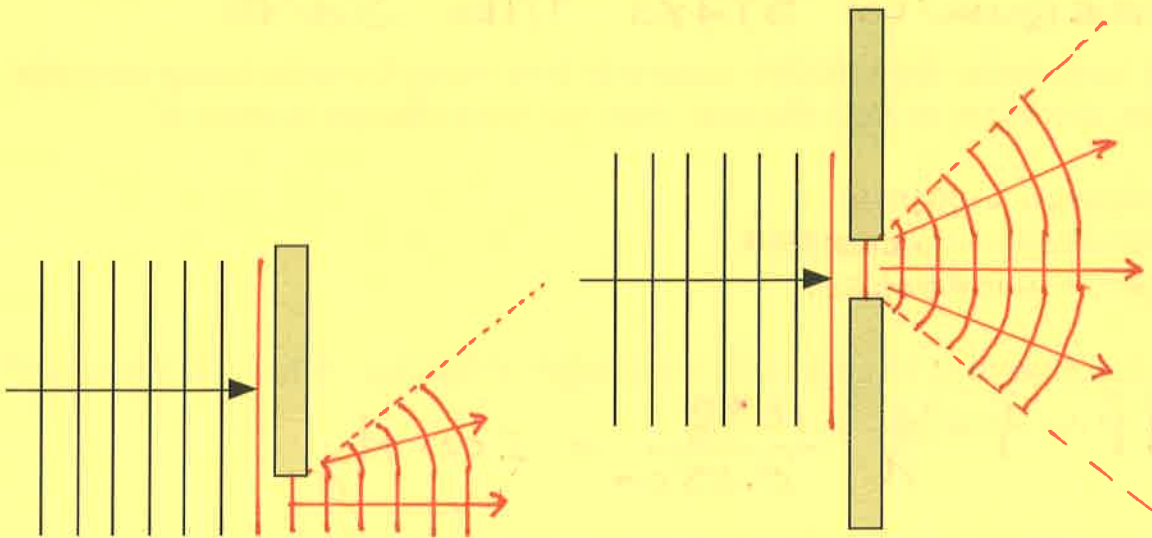
14. Sketch the result of the two waves below passing through one another, using the principle of superposition.



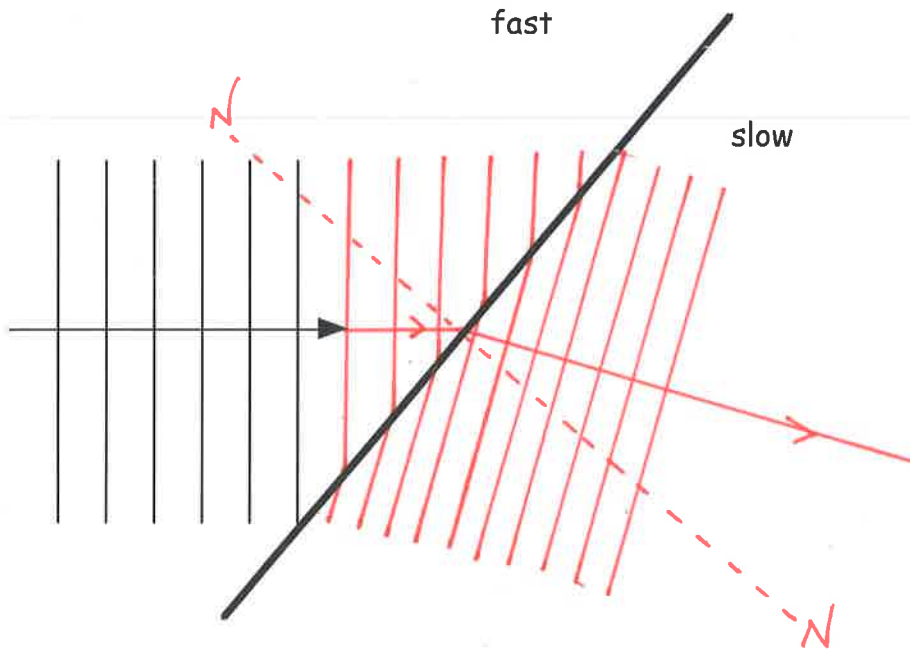
15. If Max runs away from you while screaming, will his voice be higher pitched, lower pitched, or the same pitch as if he were standing next to you and screaming in your ear?

LOWER

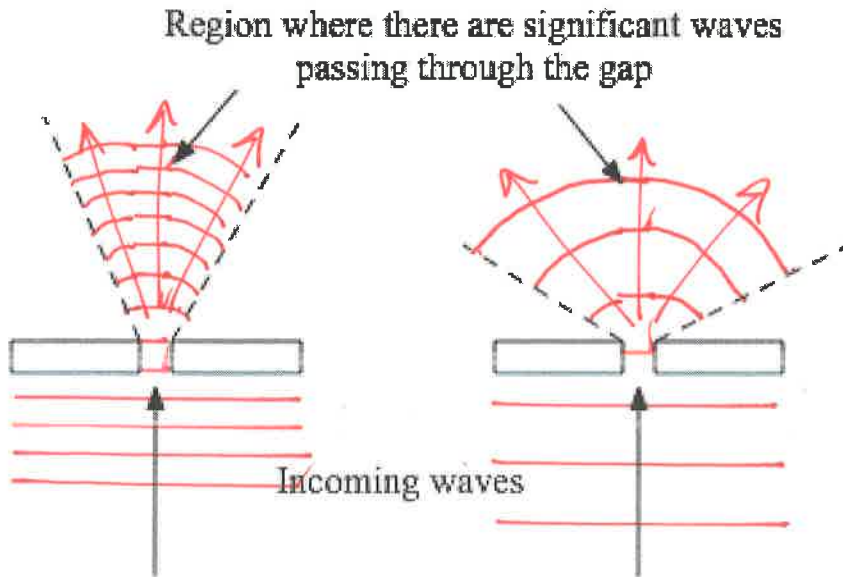
16. Draw the rest of the wave fronts as they pass the barriers below: (use a ruler where appropriate!)



17. Draw the rest of the wave fronts and the wave ray as the wave passes across the boundary between the two media.



18. In the diagram below, the area over which the waves passing through the gap are indicated. For which diagram would the waves have the shorter wavelength (left or right)?



* DIAGRAM NOT NEEDED.

SHORTER λ
LESS DIFF.

LONGER λ
MORE DIFF