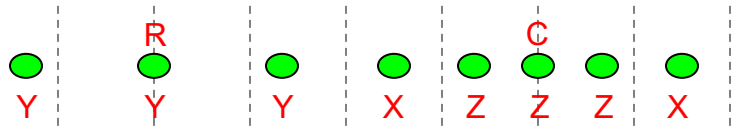
ANSWERS

1---5	6---10	11--14
DABDB	CBAAD	CCAD

15



16

(a) Frequency of dipper is the same as frequency of strobe light (20 Hz). /For every pulse of the strobe light the waves would have moved forward by exactly one wavelength and so appear to be in the same position

(b) Move slowly backwards

- Frequency of strobe > Frequency of waves
  Period of strobe < Period of waves
  In one period of the strobe the waves will have completed less than one period and so will have moved forward by less than one wavelength

(c) Experiment conducted in dim environment.
OR Detergent added (to reduce surface tension in order to have a sharp image formed).

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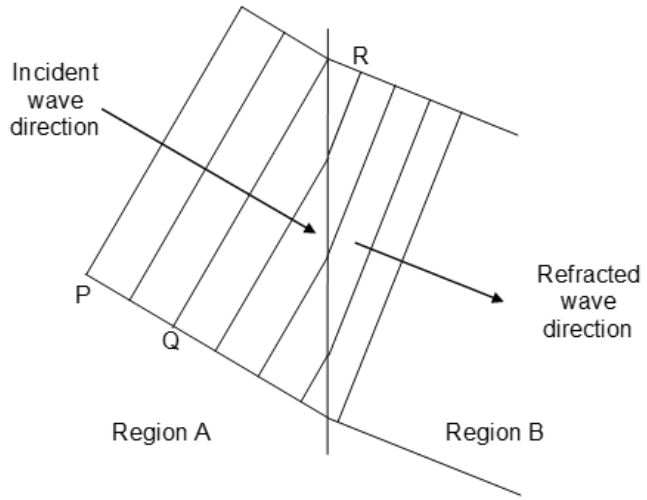
(a) Region A is deeper than region B. ('depth is different' is not acceptable)

(b) T = 1/f = 1/20 = 0.050 s

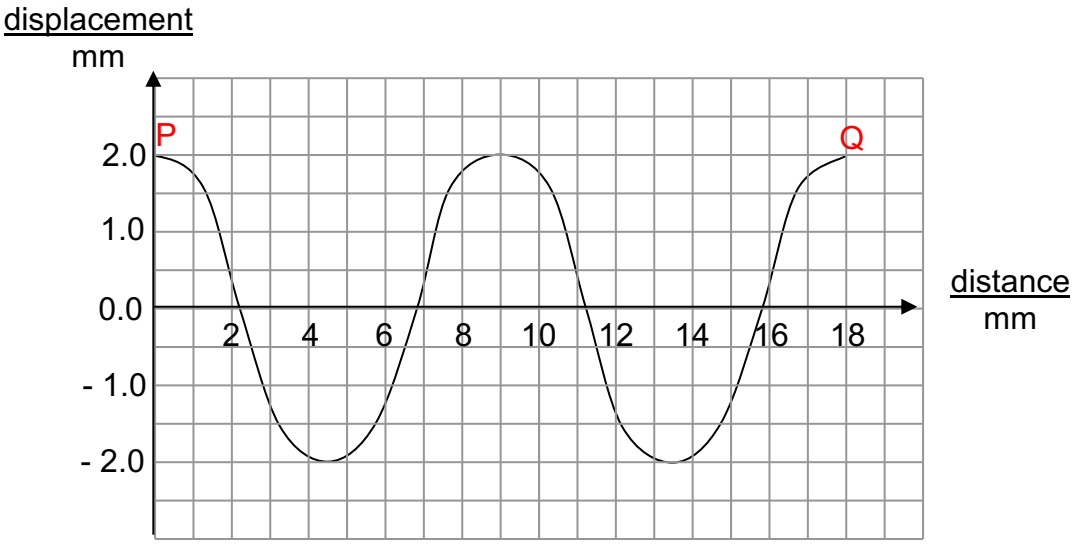
(c) v=f λ v = 20 x 0.7 = 14 cm/s. (0.7 cm is measured from diagram)

(d)



(e) 30° (measured from diagram)

(f) wavelength of 0.9 cm or 9 mm (measured from diagram)



18

(a) s = vt = 1500 x (0.032/2)

24 m

(b)

- Absorption of energy by surrounding water molecules as sound travels to and fro
- Absorption of sound energy during the time the impact of the sound.

OR

- The weakening signal is due to inverse square law.
- As sound travel the same amount of energy is spread out over a larger surface area.

Thus if the initial amount of energy send is E, the amount received after travelling x metres is $(1/x^2)E$

OR absorption of energy by surrounding water molecules as sound travels and also during the time of reflection of the echo.