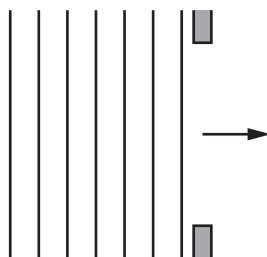


- 27 In an experiment, water waves in a ripple tank are incident on a gap, as shown.



Some diffraction of the water waves is observed.

Which change to the experiment would provide a better demonstration of diffraction?

- A Increase the amplitude of the waves.
  - B Increase the frequency of the waves.
  - C Increase the wavelength of the waves.
  - D Increase the width of the gap.
- 28 Light of wavelength  $\lambda$  is emitted from two point sources R and S and falls onto a distant screen.



At point P on the screen, the light intensity is zero.

What could explain the zero intensity at P?

- A Light from the two sources is emitted  $180^\circ$  out of phase and the path difference to P is  $\frac{1}{2}\lambda$ .
  - B Light from the two sources is emitted in phase and the path difference to P is  $\lambda$ .
  - C Light from the two sources is emitted  $90^\circ$  out of phase and the path difference to P is  $\lambda$ .
  - D Light from the two sources is emitted in phase and the path difference to P is  $\frac{1}{2}\lambda$ .
- 29 A beam of red light of wavelength 720 nm is incident normally on a diffraction grating and produces a diffraction pattern on a screen placed parallel to the grating.

The beam of red light is replaced with a beam of electromagnetic radiation of wavelength X, which is incident normally on the same diffraction grating.

The third-order maximum for the electromagnetic radiation of wavelength X is at the same position on the screen as the second-order maximum for the red light.

What is wavelength X?

- A 480 nm
- B 540 nm
- C 960 nm
- D 1100 nm