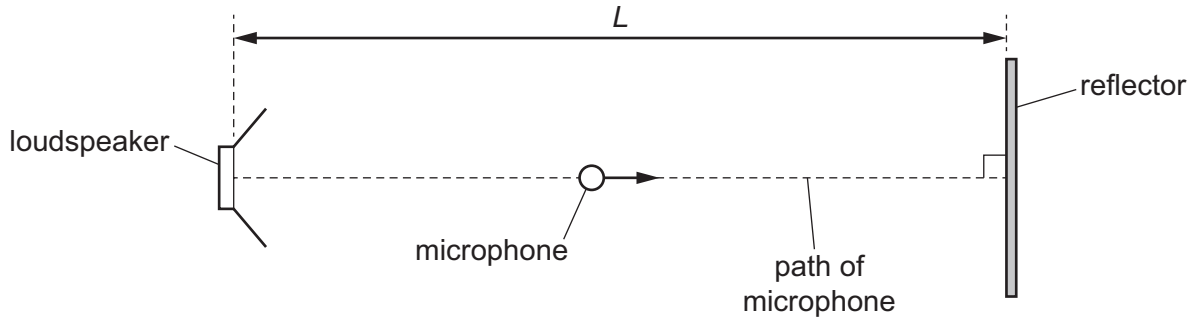
**23** A loudspeaker emitting a sound wave of a single frequency is placed a distance *L* from a reflecting surface, as shown.



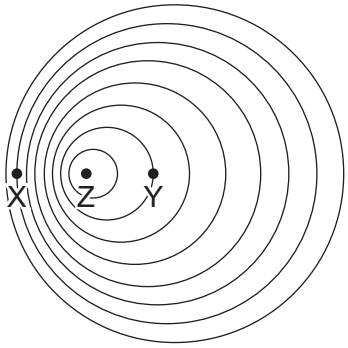

A stationary wave is formed with an antinode at the loudspeaker. A microphone is moved from the loudspeaker to the reflector.

Before the microphone reaches the reflector, it detects four points where the sound intensity is a minimum.

What is the wavelength of the sound wave?

**A** $\frac{2L}{9}$ **B** $\frac{2L}{8}$ **C** $\frac{4L}{9}$ **D** $\frac{4L}{8}$

**24** A source of sound of frequency *F* at point Z is moving at a steady speed. The pattern of the emitted wavefronts is shown.




Which row describes the frequencies of the sound heard by stationary observers at X and Y?

| | frequency heard at X | frequency heard at Y |
|---|---|---|
| **A** | $<F$ | $<F$ |
| **B** | $<F$ | $>F$ |
| **C** | $>F$ | $<F$ |
| **D** | $>F$ | $>F$ |