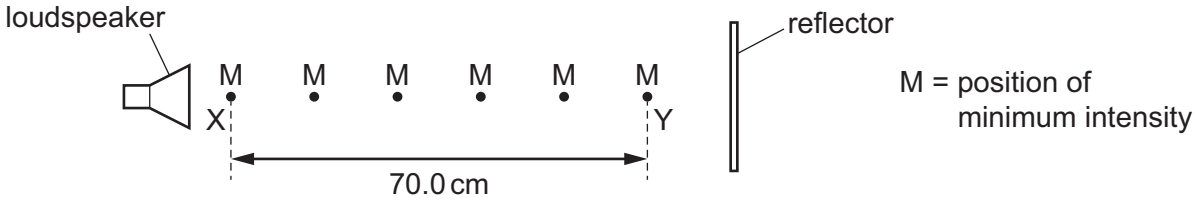
24 A sound wave from a loudspeaker is reflected back along its original path by a reflector.

A microphone is initially at point X where the sound intensity is a minimum, as shown.



The microphone is moved towards the reflector and passes through four more intensity minima until reaching a fifth minimum at point Y. The distance XY is 70.0 cm.

What is the wavelength of the sound?

A 11.7 cm **B** 14.0 cm **C** 23.3 cm **D** 28.0 cm

25 A train travels in a straight line at a constant speed of 30 m s^{-1}. The train's horn continuously emits sound of frequency 2400 Hz.

A stationary observer stands next to the train track. The train approaches the stationary observer, passes him and then moves away.

The speed of sound is 340 m s^{-1}.

What is the maximum difference in the frequencies of the sound heard by the stationary observer?

A 190 Hz **B** 230 Hz **C** 430 Hz **D** 460 Hz

26 Electromagnetic waves of frequency 30 THz are in a vacuum.

In which region of the electromagnetic spectrum are the waves?

A infrared

B microwave

C ultraviolet

D visible light