

- 22** A source of sound waves is moving at a constant speed directly towards a stationary observer.

The sound waves have a speed of 340 ms^{-1} and a frequency of 480 Hz . The observer hears sound waves of frequency 650 Hz .

What is the speed of the source?

- A** 89 ms^{-1} **B** 120 ms^{-1} **C** 250 ms^{-1} **D** 340 ms^{-1}

- 23** A student is investigating two electromagnetic waves, X and Y, in a vacuum.

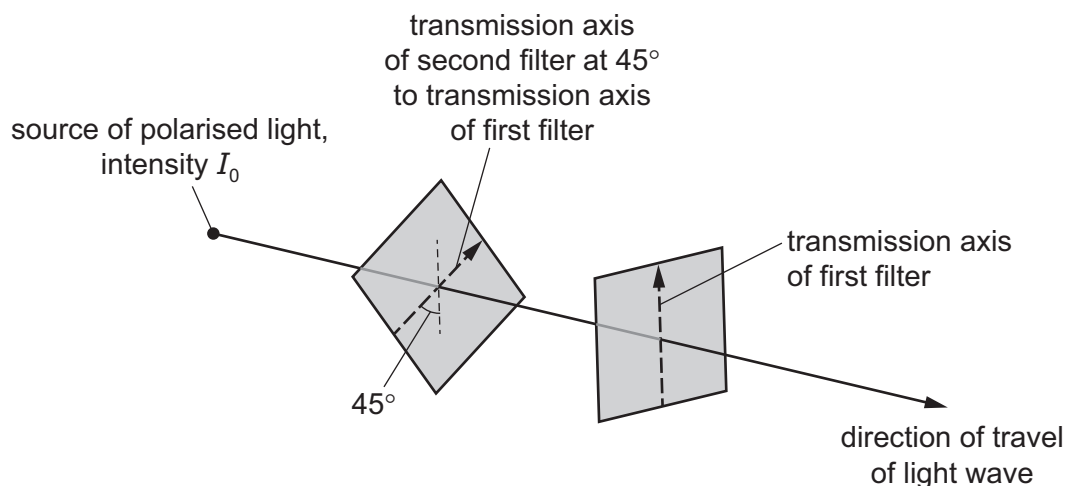
Wave X has a wavelength of $5.2 \times 10^{-7} \text{ m}$. Wave Y has a frequency of 9.4 GHz .

Which principal regions of the electromagnetic spectrum contain waves X and Y?

	X	Y
A	radio wave	ultraviolet
B	ultraviolet	visible
C	visible	microwave
D	microwave	radio wave

- 24** A plane polarised light wave of intensity I_0 is incident normally on a polarising filter. The initial intensity of the transmitted wave is 0.

A second polarising filter is then inserted between the source and the first filter. Its transmission axis is at 45° to the transmission axis of the first filter, as shown.



What is the intensity of the transmitted wave from the filter combination?

- A** 0 **B** $\frac{I_0}{8}$ **C** $\frac{I_0}{4}$ **D** $\frac{I_0}{2}$