

GCSE Physics B (Twenty First Century Science)

J259/01 Breadth in Physics (Foundation Tier)

Question Set 16

Multiple Choice Questions

- A solar flare is an explosion on the surface of the Sun.
- (a) Solar flares release huge amounts of radiation, including visible light and X-rays.
 - (i) Which statement is true?
 - Tick (\checkmark) one box.

Visible light is ionising radiation.

Visible light has a higher frequency than X-rays.

X-rays have a shorter wavelength than visible light.

X-rays are longitudinal waves.

(ii) Why can humans see visible light but not X-rays?

Tick (\checkmark) one box.

Our eyes can detect only a small range of frequencies.

X-rays cannot travel through space towards the Earth.

Our eyes cannot detect electromagnetic waves.

X-rays are absorbed by the atmosphere of the Sun.

(b) The speed of visible light in empty space is 300 000 km/s.

The distance from the Sun to the Earth is 150 000 000 km.

Speed can be calculated using the equation: speed = distance ÷ time

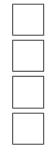
(i) Which is the correct way to calculate the **time** for visible light from a solar flare to reach the Earth?

Put a (ring) around the correct calculation.

| 150 000 000 | 300 000 | | |
|-------------|-------------|-----------------------|-----|
| 300 000 | 150 000 000 | 300 000 × 150 000 000 | [1] |



[1]





1

(ii) When do the X-rays from the solar flare reach the Earth?

Tick (✔) **one** box.

| After the visible light. | | |
|--|-----|-----|
| At the same time as the solar flare happens. | | |
| At the same time as the visible light. | | |
| Before the visible light. | | [1] |
| Explain your answer to (b)(ii). | [1] | |

Total Marks for Question Set 16: 5

(iii)



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