FREE REVISION PACK

Intensity

Pearson Edexcel International Advanced Level Physics · Unit 2 (WPH12) · Specification points 44

Easy | Medium | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Definition of intensity	Edexcel IAL October 2024 · Unit 2 · Q1	1 mark
2	Easy	Efficiency of a solar panel	Edexcel IAL October 2019 · Unit 2 · Q7	1 mark
3	Easy	Power of the Sun from intensity	Edexcel IAL June 2022 · Unit 2 · Q3	1 mark
4	Easy	Intensity at twice the distance	Edexcel IAL January 2024 · Unit 2 · Q8	1 mark
5	Medium	Intensity of sunlight at two distances	Edexcel IAL June 2023 · Unit 2 · Q9	1 mark

Key ideas to have ready

- Intensity $I = P/A$: power per unit area (W m^{-2}).
- For a point source, $I = P/(4\pi r^2)$, so $I \propto 1/r^2$.
- Doubling the distance quarters the intensity.
- Power received by a surface = intensity × area.

How to use this pack

1. The questions are grouped into levels (Easy and Medium). Work through them in order, and check your answers at the end of each level before moving on.
2. Every question is multiple choice with one correct answer. Write down your working anyway; that is how you find mistakes.
3. The separate mark scheme uses the same numbers and explains every answer.

Levels are based on how students did in Pearson's examiner reports where that information exists, plus our own difficulty rating. *About 1.5 minutes per question.

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Easy

Definitions and one-step ideas. Most students get these right.

Questions 1–4

Choose **one** answer for each question and put a cross in the box next to it.

Edexcel IAL October 2024 · Unit 2 · Q1

1 Which of the following describes light intensity?

- ☒ **A** The energy of light incident on a surface per unit area
- ☒ **B** The power of light incident on a surface per unit area
- ☒ **C** The total energy output of a light source
- ☒ **D** The total power output of a light source

Edexcel IAL October 2019 · Unit 2 · Q7

2 Solar panels are devices that use sunlight as a source of energy to generate electricity. A solar panel has a surface area of $1.54\,m^2$. The intensity of radiation incident on the Earth's surface is $1050\,W\,m^{-2}$. The manufacturer states that the maximum output power of the solar panel is 250 W.

Which of the following could be used to calculate the maximum efficiency of the solar panel?

- ☒ **A** $\frac{250 \times 1.54}{1050}$
- ☒ **B** $\frac{1050}{250 \times 1.54}$
- ☒ **C** $\frac{1050 \times 1.54}{250}$
- ☒ **D** $\frac{250}{1050 \times 1.54}$

Edexcel IAL June 2022 · Unit 2 · Q3

3 When the distance between the Sun and the planet Mercury is 4.60×10^{10} m, the intensity of solar radiation at the surface of Mercury is $1.45 \times 10^{4}\,W\,m^{-2}$.

Which of the following expressions gives the power of the Sun?

- ☒ **A** $(1.45 \times 10^4)\,(\pi)\,(4.60 \times 10^{10})^2$
- ☒ **B** $(1.45 \times 10^4)\,(4\pi)\,(4.60 \times 10^{10})^2$
- ☒ **C** $\frac{(1.45 \times 10^4)}{(\pi)(4.60 \times 10^{10})^2}$
- ☒ **D** $\frac{(1.45 \times 10^4)}{(4\pi)(4.60 \times 10^{10})^2}$

Edexcel IAL January 2024 · Unit 2 · Q8

4 At a distance d from a point source of light, the light intensity is I.

Which of the following expressions gives the light intensity at a distance $2d$ from the source?

☒ **A** $\frac{I}{2}$

☒ **B** $\frac{I}{4}$

☒ **C** $\frac{I}{2\pi d^2}$

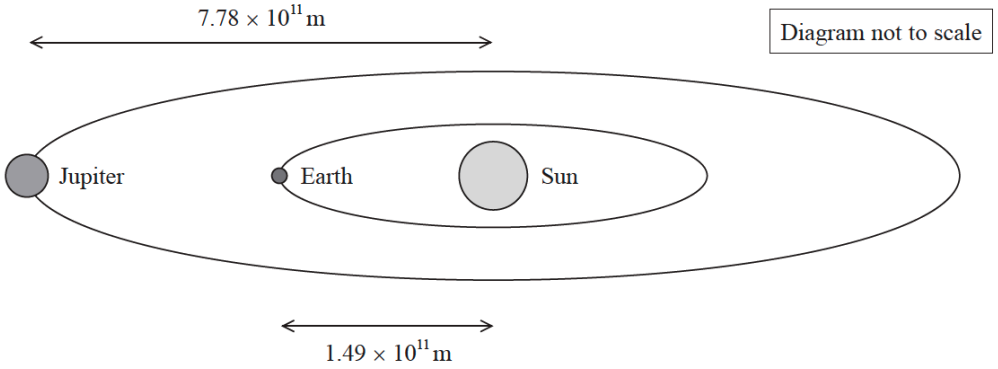
☒ **D** $\frac{I}{4\pi d^2}$

Medium Two or three steps. Roughly a third to a half of students get these right. **Question 5**

Edexcel IAL June 2023 · Unit 2 · Q9

5 Earth and Jupiter orbit the Sun, as shown.

The distance from Earth to the Sun is 1.49×10^{11} m.
The distance from Jupiter to the Sun is 7.78×10^{11} m.



The intensity of sunlight at Jupiter is I_J.

Which of the following can be used to calculate the intensity of the sunlight at Earth?

☐ **A** $I_J \times \frac{(7.78 \times 10^{11})^2}{(1.49 \times 10^{11})^2}$

☐ **B** $I_J \times 4\pi \times \frac{(7.78 \times 10^{11})^2}{(1.49 \times 10^{11})^2}$

☐ **C** $I_J \times \frac{7.78 \times 10^{11}}{1.49 \times 10^{11}}$

☐ **D** $I_J \times 4\pi \times \frac{7.78 \times 10^{11}}{1.49 \times 10^{11}}$

End of questions. Check your answers with the matching mark scheme. More free packs and 1-to-1 tuition:
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