FREE REVISION PACK

Astronomical Distances

Pearson Edexcel International Advanced Level Physics · Unit 5 (WPH15) · Specification points 165–166

Easy | Medium | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	What astronomers need for trigonometric parallax	Edexcel IAL January 2025 · Unit 5 · Q5	1 mark
2	Easy	What must be known to use stellar parallax	Edexcel IAL October 2023 · Unit 5 · Q2	1 mark
3	Easy	Measuring the distance to a nearby star	Edexcel IAL June 2024 · Unit 5 · Q2	1 mark
4	Easy	Distance from parallax angle	Edexcel IAL June 2023 · Unit 5 · Q3	1 mark
5	Medium	How stellar parallax works	Edexcel IAL January 2024 · Unit 5 · Q2	1 mark

Key ideas to have ready

- Trigonometric parallax: nearby stars, measured six months apart against distant stars.
- The baseline is the radius of the Earth's orbit (the Earth–Sun distance).
- Distance ∝ 1/parallax angle.
- Standard candles (known luminosity) are used for greater distances.

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.

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1 Astronomers use trigonometric parallax to determine the distances to stars.

Which of the following must the astronomers know?

- ☒ **A** The distance between the Sun and a nearby star
- ☒ **B** The diameter of the Sun
- ☒ **C** The distance between the Sun and the Earth
- ☒ **D** The diameter of the Earth

Edexcel IAL October 2023 · Unit 5 · Q2

2 Astronomers use stellar parallax to determine the distances to nearby stars.

Which of the following must be known to use stellar parallax?

- ☒ **A** distance between the Earth and the Sun
- ☒ **B** intensity of radiation received from the star
- ☒ **C** luminosity of the Sun
- ☒ **D** value of the Hubble constant

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3 Which of the following can be used to determine the distance to a nearby star?

- ☒ **A** Doppler shift
- ☒ **B** Hertzsprung–Russell diagram
- ☒ **C** Hubble's law
- ☒ **D** Trigonometric parallax

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4 The distances to stars can be determined using trigonometric parallax.

Star X has twice the parallax angle of Star Y.

Which of the following statements is correct?

- ☒ **A** The distance of Star X from Earth is twice the distance of Star Y from Earth.
- ☒ **B** The distance of Star X from Earth is four times the distance of Star Y from Earth.
- ☒ **C** The distance of Star Y from Earth is twice the distance of Star X from Earth.
- ☒ **D** The distance of Star Y from Earth is four times the distance of Star X from Earth.

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

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5 Astronomers can use stellar parallax to determine the distances to stars.

Which of the following statements is correct?

- ☒ **A** Measurements are made against more distant stars.
- ☒ **B** Stellar parallax can only be used for distant stars.
- ☒ **C** The luminosity of the star must be constant.
- ☒ **D** The parallax effect is greatest for the most distant stars.

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