GET BETTER AT PHYSICS · MARK SCHEME

# Astronomical Distances: tiered multiple choice

Edexcel IAL Physics · Unit 5 (WPH15) · Specification points 165–166 · 5 questions · 5 marks

1 mark per correct letter

Worked reasoning for every question

**How students did** = from Pearson examiner reports, where available

## Answer key

| Q1 | Q2 | Q3 | Q4 | Q5 |
|---|---|---|---|---|
| C | A | D | C | A |

## Easy

Questions 1–4

**1** **C**

What astronomers need for trigonometric parallax · Edexcel IAL January 2025 · Unit 5 · Q5

Parallax uses the Earth's orbit as a baseline: the star's apparent shift is measured six months apart, from opposite sides of the orbit. To turn the angle into a distance you need the radius of that orbit, the Sun–Earth distance.

**How students did:** Examiners reported that more than 70% of students got this right in January 2025.

**2** **A**

What must be known to use stellar parallax · Edexcel IAL October 2023 · Unit 5 · Q2

The parallax angle is turned into a distance using trigonometry with the radius of the Earth's orbit (the Earth–Sun distance) as the baseline. Intensity, luminosity and the Hubble constant are used in other distance methods.

**How students did:** Examiners reported that at least 60% of students got this right in October 2023.

**3** **D**

Measuring the distance to a nearby star · Edexcel IAL June 2024 · Unit 5 · Q2

Trigonometric parallax is used for nearby stars: their apparent shift against the distant background over six months gives the distance. Doppler shift and Hubble's law are for distant galaxies.

**4** **C**

Distance from parallax angle · Edexcel IAL June 2023 · Unit 5 · Q3

For small angles, distance $\propto$ 1/parallax angle. Star X has twice the parallax angle, so it is half as far away: Y is twice as far from Earth as X.

# Medium

Question 5

**5** **A**

How stellar parallax works · Edexcel IAL January 2024 · Unit 5 · Q2

The position of a nearby star is measured against the background of much more distant stars, which appear fixed. Parallax works only for relatively near stars, and the effect is smallest, not greatest, for distant stars.

**How students did:** In January 2024, just under half of students got this right.

**End of mark scheme.** Answers from Pearson's published mark schemes; explanations written for this pack. Pearson Edexcel material is © Pearson Education Ltd. More free packs and 1-to-1 tuition: **www.getbetteratphysics.co.uk**

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