FREE REVISION PACK

Motion Graphs

Pearson Edexcel International Advanced Level Physics · Unit 1 (WPH11) · Specification points 2–3

Easy | Hard | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Area under an acceleration–time graph	Edexcel IAL January 2025 · Unit 1 · Q5	1 mark
2	Easy	Distance from a velocity–time graph	Edexcel IAL January 2025 · Unit 1 · Q8	1 mark
3	Easy	Displacement–time graph for constant acceleration	Edexcel IAL June 2025 · Unit 1 · Q6	1 mark
4	Easy	Displacement–time graph from an acceleration–time graph	Edexcel IAL October 2025 · Unit 1 · Q9	1 mark
5	Hard	Acceleration of a rocket after the fuel runs out	Edexcel IAL June 2019 · Unit 1 · Q8	1 mark

Key ideas to have ready

- Gradient of displacement–time = velocity; gradient of velocity–time = acceleration.
- Area under velocity–time = displacement; area under acceleration–time = change in velocity.
- Constant acceleration: straight v–t line, curved (parabolic) s–t graph.
- Areas below the time axis count as negative displacement.

How to use this pack

1. The questions are grouped into levels (Easy and Hard). 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

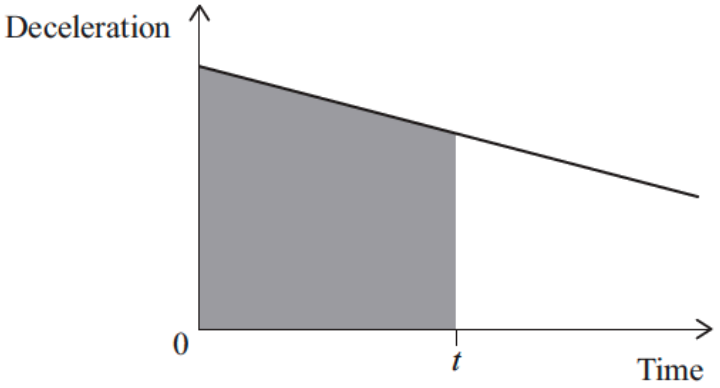
Definitions and one-step ideas. Most students get these right.

Questions 1–4

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

Edexcel IAL January 2025 · Unit 1 · Q5

1 An aeroplane lands on a runway at time 0 and then decelerates.
The graph shows how the deceleration of the aeroplane varies with time.



Which of the following does the shaded area on the graph represent?

☒ **A** The displacement of the aeroplane at time t.

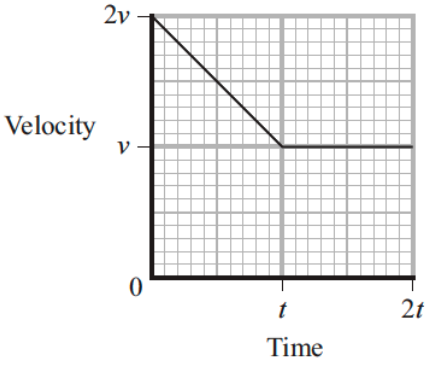
☒ **B** The change in displacement of the aeroplane during time t.

☒ **C** The velocity of the aeroplane at time t.

☒ **D** The change in velocity of the aeroplane during time t.

Edexcel IAL January 2025 · Unit 1 · Q8

2 The velocity-time graph for a train journey is shown.



Which of the following expressions gives the distance travelled by the train in time $2t$?

☒ **A** $4vt$

☒ **B** $5vt$

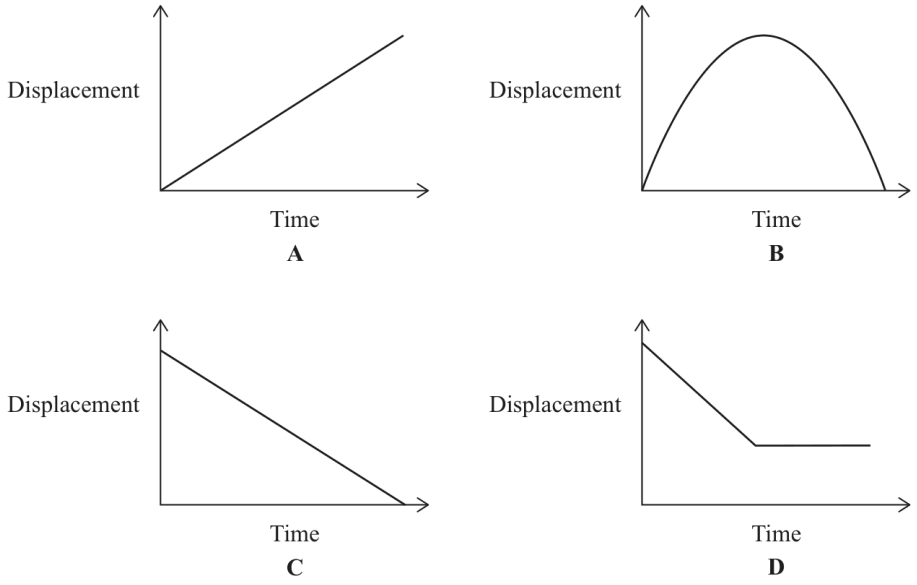
☒ **C** $\frac{3vt}{2}$

☒ **D** $\frac{5vt}{2}$

Edexcel IAL June 2025 · Unit 1 · Q6

3 An object has a constant non-zero acceleration.

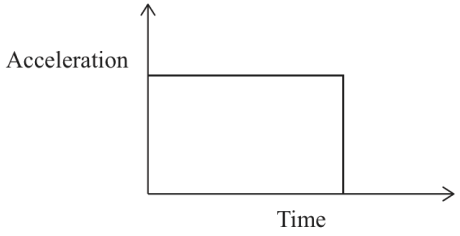
Which of the following displacement-time graphs could represent the motion of the object?



- ☒ **A**
- ☒ **B**
- ☒ **C**
- ☒ **D**

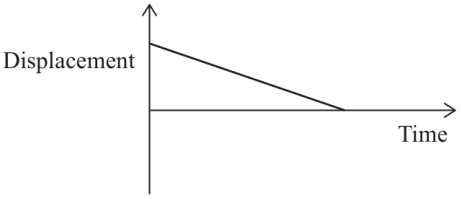
Edexcel IAL October 2025 · Unit 1 · Q9

4 The acceleration-time graph for the motion of an object is shown.

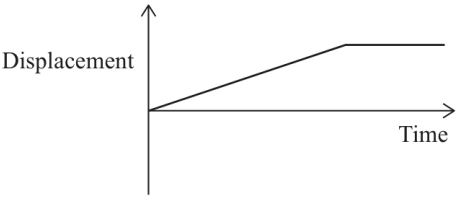


Which of the following could be the displacement-time graph for the motion of the object?

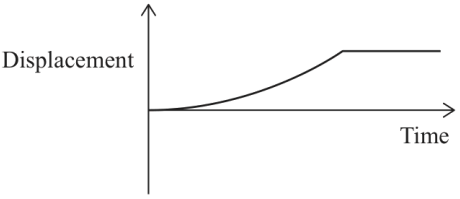
☒ **A**



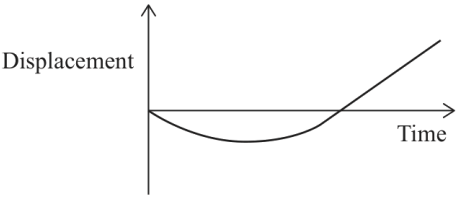
☒ **B**



☒ **C**



☒ **D**

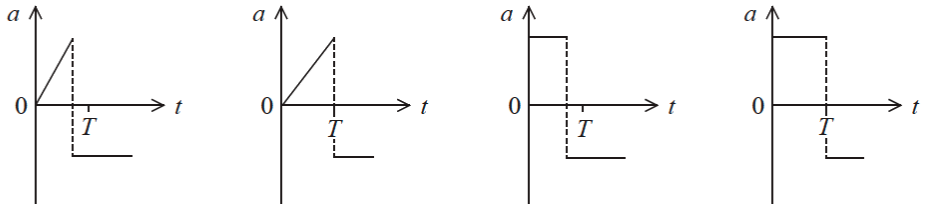


Hard Several steps, often with a trap built in. Fewer than 3 in 10 students get these right. **Question 5**

Edexcel IAL June 2019 · Unit 1 · Q8

5 A model rocket is launched and moves vertically upwards while still burning fuel to give a constant upwards thrust. The fuel runs out, and the rocket reaches the maximum height at time T before falling back to the ground.

Which of the following graphs could show how the acceleration a of the rocket varies with time t, if the decrease in mass as the fuel burns is neglected?



☒ **A** ☒ **B** ☒ **C** ☒ **D**

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