FREE REVISION PACK

Work & Energy

Pearson Edexcel International Advanced Level Physics · Unit 1 (WPH11) · Specification points 17–20

Easy | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Work done by a force at an angle	Edexcel IAL June 2023 · Unit 1 · Q2	1 mark
2	Easy	What the gain in GPE equals	Edexcel IAL October 2023 · Unit 1 · Q5	1 mark
3	Easy	What the area under a graph represents	Edexcel IAL October 2019 · Unit 1 · Q4	1 mark
4	Easy	Energy changes as a spring pushes up a mass	Edexcel IAL January 2023 · Unit 1 · Q3	1 mark
5	Easy	Speed after sliding down a frictionless slope	Edexcel IAL June 2023 · Unit 1 · Q8	1 mark

Key ideas to have ready

- Work done = force × distance moved in the direction of the force: $W = Fs\cos\theta$.
- $E_k = \frac{1}{2}mv^2$; $\Delta E_{grav} = mg\Delta h$.
- Energy is conserved: e.g. GPE lost = KE gained (+ work done against resistive forces).
- Gain in GPE = work done against gravity.

How to use this pack

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

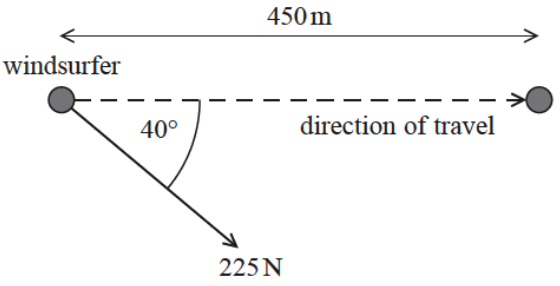
Definitions and one-step ideas. Most students get these right.

Questions 1–5

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

Edexcel IAL June 2023 · Unit 1 · Q2

1 The wind exerts a force of 225 N on a windsurfer. The windsurfer moves a distance of 450 m at an angle of 40° to the wind, as shown.



Which of the following expressions gives the work done, in joules, on the windsurfer?

☒ **A** 225×450

☒ **B** $225 \times 450 \times \cos 40°$

☒ **C** $225 \times 450 \times \sin 40°$

☒ **D** $225 \times 450 \times \tan 40°$

Edexcel IAL October 2023 · Unit 1 · Q5

2 A helicopter moves vertically upwards with an increasing speed.

Which of the following describes the increase in gravitational potential energy of the helicopter?

☒ **A** The work done on the helicopter by the force of gravity.

☒ **B** The total work done by the helicopter as it moves upwards.

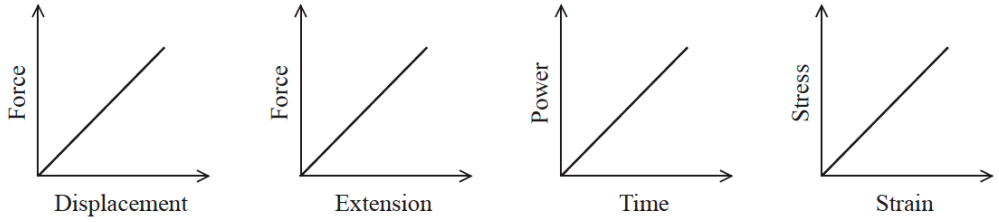
☒ **C** The work done by the helicopter against the force of gravity.

☒ **D** The work done by the helicopter to increase speed.

Edexcel IAL October 2019 · Unit 1 · Q4

3 The area under each of the following graphs represents a physical quantity.

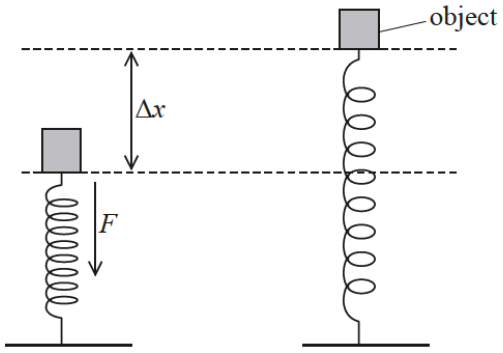
For which graph is the area under the graph **not** equal to work done?



☒ **A** ☒ **B** ☒ **C** ☒ **D**

Edexcel IAL January 2023 · Unit 1 · Q3

4 An object of mass m is resting on top of a spring. The spring is compressed a further distance Δx by a vertical force F. The force is removed and the spring returns to its original length as shown.



When Δx becomes zero the object has a vertical speed v.

Which of the following equations describes the energy transfer as the spring returns to its original length?

☒ **A** $\frac{1}{2}F\Delta x = \frac{1}{2}mv^2 - mg\Delta x$

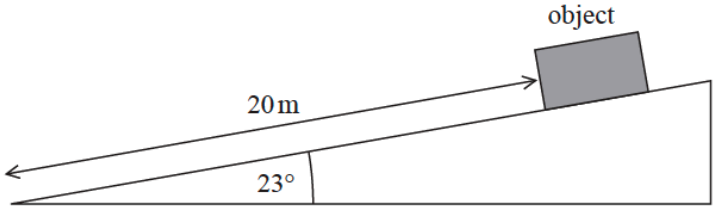
☒ **B** $\frac{1}{2}F\Delta x = \frac{1}{2}mv^2 + mg\Delta x$

☒ **C** $F\Delta x = \frac{1}{2}mv^2 - mg\Delta x$

☒ **D** $F\Delta x = \frac{1}{2}mv^2 + mg\Delta x$

Edexcel IAL June 2023 · Unit 1 · Q8

5 An object accelerates from rest down a frictionless slope. The object moves a distance of 20 m. The slope is at an angle of 23° to the horizontal, as shown.



Which of the following gives the final speed of the object in $m\,s^{-1}$?

☒ **A** $\sqrt{2 \times 9.81 \times 20 \times \cos 23°}$

☒ **B** $\sqrt{0.5 \times 9.81 \times 20 \times \cos 23°}$

☒ **C** $\sqrt{2 \times 9.81 \times 20 \times \sin 23°}$

☒ **D** $\sqrt{0.5 \times 9.81 \times 20 \times \sin 23°}$

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