



IBMYP Physics Sample Paper 3



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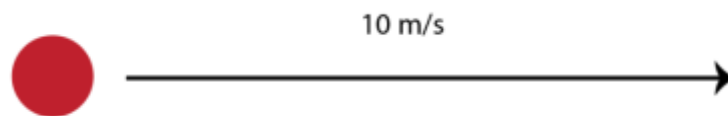
IB MYP Physics E Assessment Paper 3

Instructions

- The on-screen examination has not yet started.
- Your time will begin once you have clicked the Start button below. Do not click Start until instructed to do so.
- Before the examination begins you are given 5 minutes to become familiar with its structure. Please navigate around the examination, taking note of the length of each task and question. You have 2 hours to complete the examination.
- There are 10 separate questions in this examination. Each question may have sub-parts. Answer all the questions in the response boxes provided. The maximum mark for this examination is 100 marks.
- As you progress through the questions, your answers are automatically saved.
- When 2 hours has ended, you will no longer be able to answer any questions.

Question 1: 9 marks

1. An object is moving in a straight line with a constant velocity of 10 meters per second (m/s). It then undergoes acceleration at a constant rate for 6 seconds until it comes to a stop.



- a. Given that the object undergoes acceleration at a constant rate of 2 m/s^2 , calculate the object's change in velocity during the acceleration period. (2 marks)

Answer: Given that the object undergoes acceleration at a constant rate of 2 m/s^2

calculate the object's change in velocity during the acceleration period.

Change in velocity = Acceleration \times Time
Change in velocity = $(2 \text{ m/s}^2) \times (6 \text{ s}) = 12 \text{ m/s}$

- b. If the object's initial velocity before acceleration was 10 m/s, calculate its final velocity when it comes to a stop. (3 marks)

Answer:

Final velocity=Initial velocity+(Acceleration×Time)

Final velocity=10 m/s+(2 m/s²×6 s)=22 m/s

c. Explain why an object that undergoes uniform acceleration experiences a linear increase in its velocity with respect to time. (2 marks)

Answer: An object undergoing uniform acceleration experiences a linear increase in its velocity with respect to time because the acceleration remains constant. As time increases, the object gains equal increments in velocity over equal intervals of time, resulting in a straight-line relationship between velocity and time.

d. A different object experiences the same acceleration for twice the time. Compare the final velocities of the two objects. (2 marks)

Answer: For the first object:

Final velocity=10 m/s+(2 m/s²×6 s)=22 m/s

For the second object (with twice the time, 2×6s=12s):

Final velocity=10 m/s+(2 m/s²×12 s)=34 m/s

Therefore, the second object has a higher final velocity.

Question 2: 7 marks

2. A company is developing a new solar-powered electronic device that harnesses sunlight to generate electricity. The device has various applications, including charging smartphones and powering small electronics. The device consists of a solar panel and a battery.



a. Calculate the power generated by the solar panel when it receives 800 watts of sunlight per square meter. The solar panel has an efficiency of 18%. (3 marks)



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