Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 2_Motion and Forces

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

Figure 5 shows a trolley at the top of a slope.

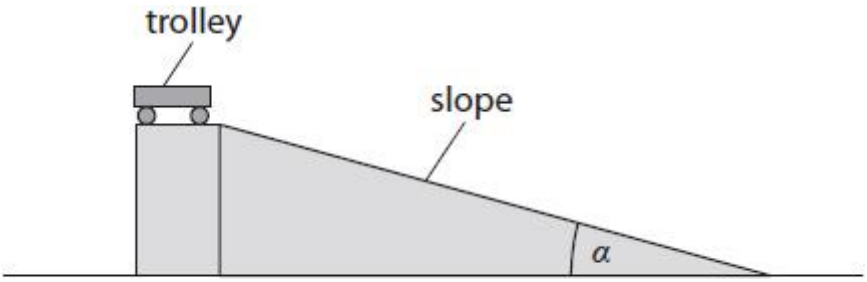

Figure 5

A student gently pushes the trolley until it just starts to roll down the slope.

The student measures the time it takes for the trolley to roll down the slope.

The student repeats this for different values of the angle *α*.

Figure 6 is a graph of the student's results.

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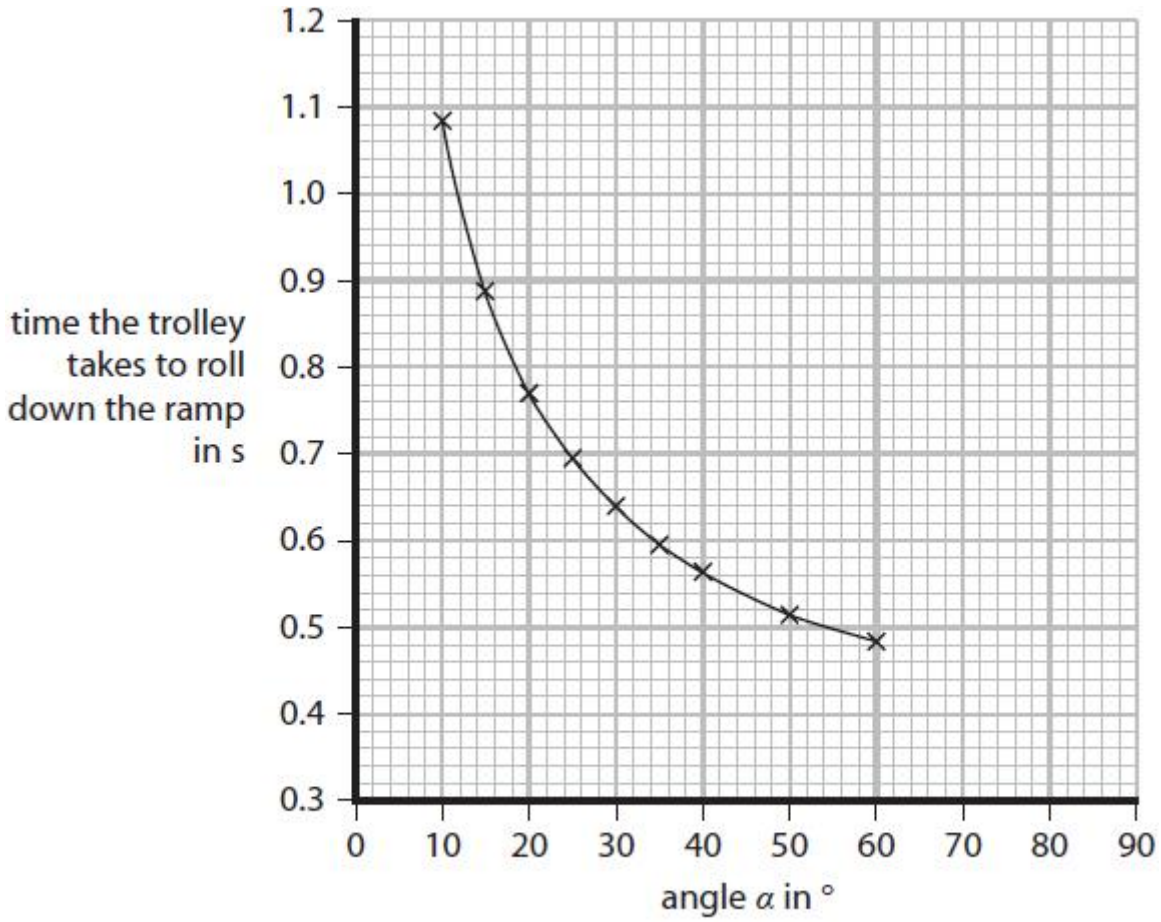

Figure 6

(i) Use the graph in Figure 6 to find the time the trolley takes to roll down the ramp when the angle $\alpha = 45°$.

(1)

time = ... s

(ii) Use the graph in Figure 6 to estimate the time the trolley takes to roll down the ramp when the angle $\alpha = 80°$.

Show your working on the graph.

(2)

time = ... s

(iii) The student had a choice of how to measure the time the trolley takes to roll down the ramp.

1. Use a hand-held stopwatch.
2. Use light gates at the top and bottom of the slope.

The student chose to use the light gates.

Explain why this was the correct choice.

You should refer to the data on the time axis of Figure 6 in your answer.

(2)

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(Total for question = 5 marks)

Q2.

A toy car has a mass of 0.10 kg.
The toy car accelerates at 2.0 m/s^2.

Calculate the force producing this acceleration.
State the unit.

Use the equation

$F = m \times a$

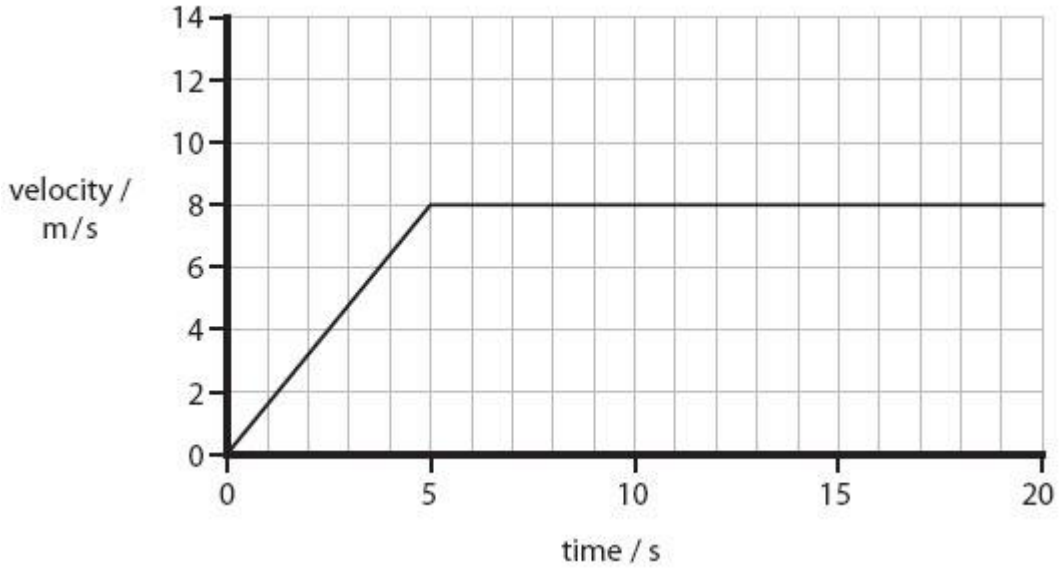
(3)

force = ... unit = ...

(Total for question = 3 marks)

Q3.

(a) Here is the velocity-time graph for a car for the first 20 s of a journey.



(i) Calculate the change in velocity of the car during the first 5 s.

(1)

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(ii) Calculate the acceleration of the car during the first 5 s.

(2)

acceleration = ...m/s^2

(iii) State the size of the resultant force between 10 s and 15 s

(1)

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(b) The mass of a car is 1200 kg.

Calculate the resultant force on the car required to produce an acceleration of 0.8 m/s^2.

(2)

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*(c) A car, travelling at 20 m/s, with just the driver inside takes 70 m to stop in an emergency. The same car is then fully loaded with luggage and passengers as well as the driver.

Explain why it will take a different distance to stop in an emergency from the same speed.

(6)

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(Total for Question = 12 marks)

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