

Movement & Position

Question Paper

Level	GCSE
Subject	Physics
Exam Board	Edexcel IGCSE
Module	Double Award (Paper 1P)
Topic	Force & Motion
Sub-Topic	Movement & Position
Booklet	Question Paper

Time Allowed: 65 minutes

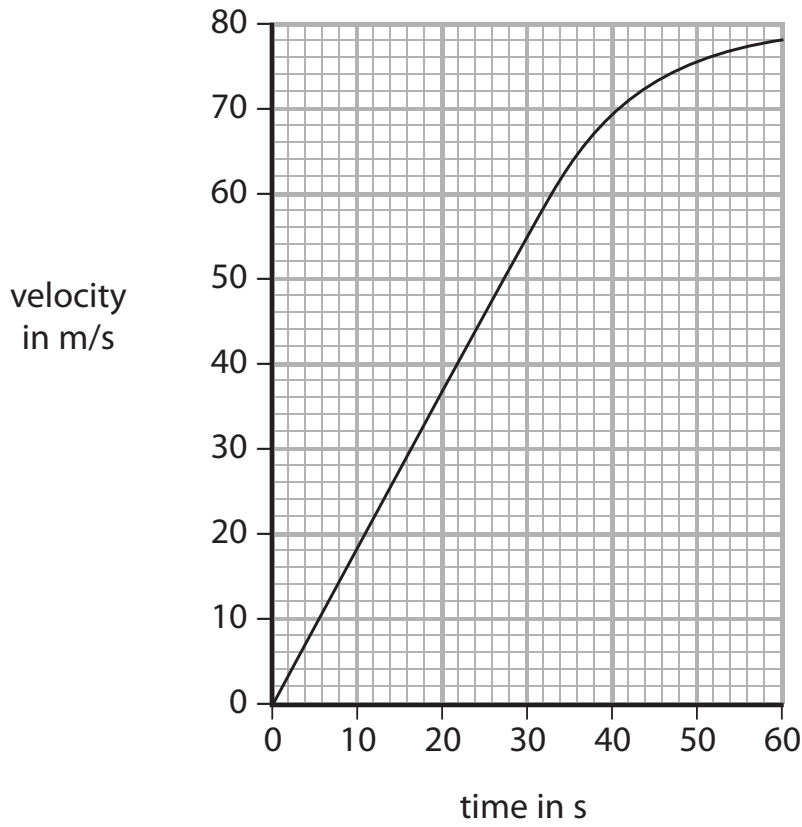
Score: /54

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1. The graph shows how the velocity of an aircraft changes as it accelerates along a runway.



(a) Use the graph to find the average acceleration of the aircraft.

(3)

Acceleration = m/s²

(b) Explain why the acceleration is not constant, even though the engines produce a constant force.

(3)

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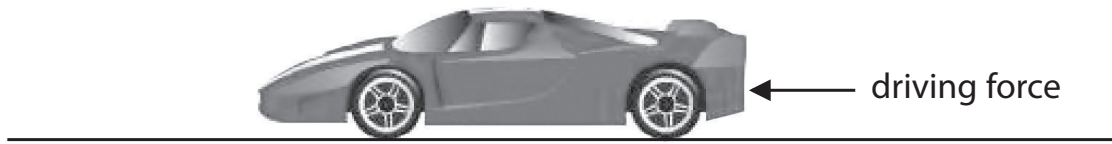
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(Total for Question 1 = 6 marks)

2. The diagram shows the driving force on a sports car as it moves along a race track.



(a) Name **two** forces that oppose the driving force.

(2)

1

2

(b) The car has a mass of 1400 kg.

The acceleration of the car is 5.5 m/s^2 .

(i) State the equation linking force, mass and acceleration.

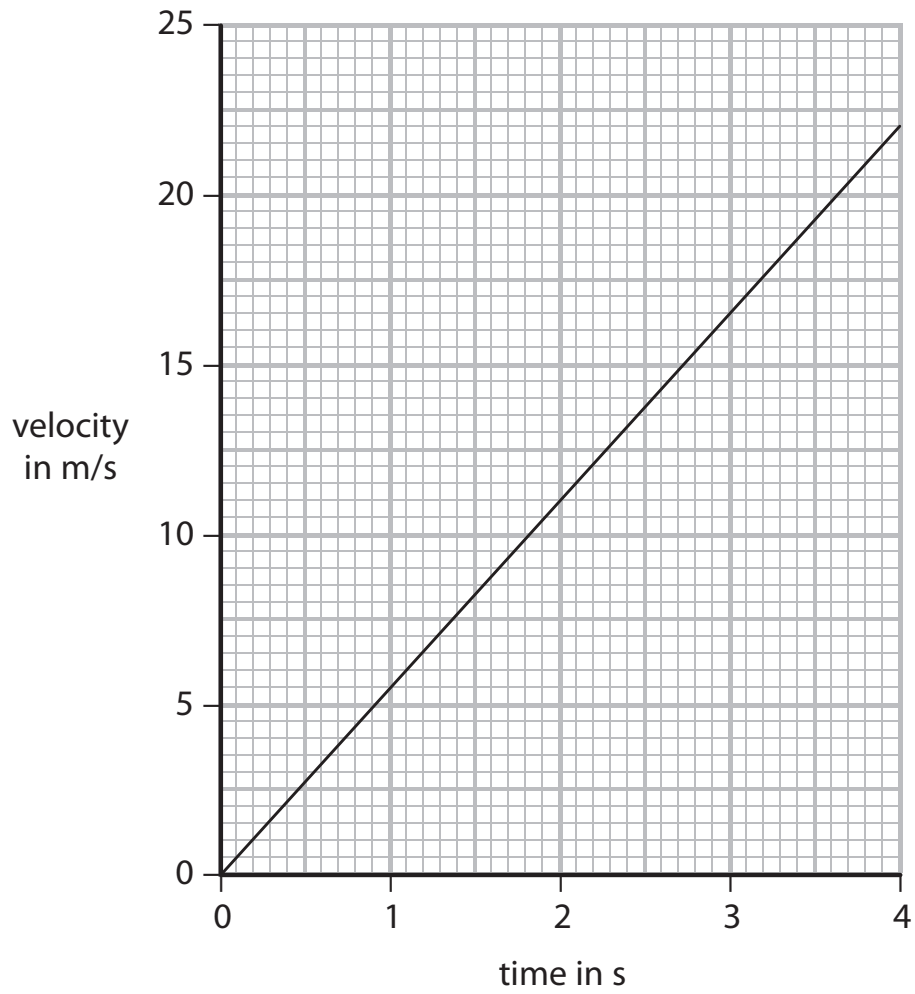
(1)

(ii) Calculate the force causing this acceleration.

(2)

Force = N

(c) Graph 1 shows how the velocity of the car changes with time.



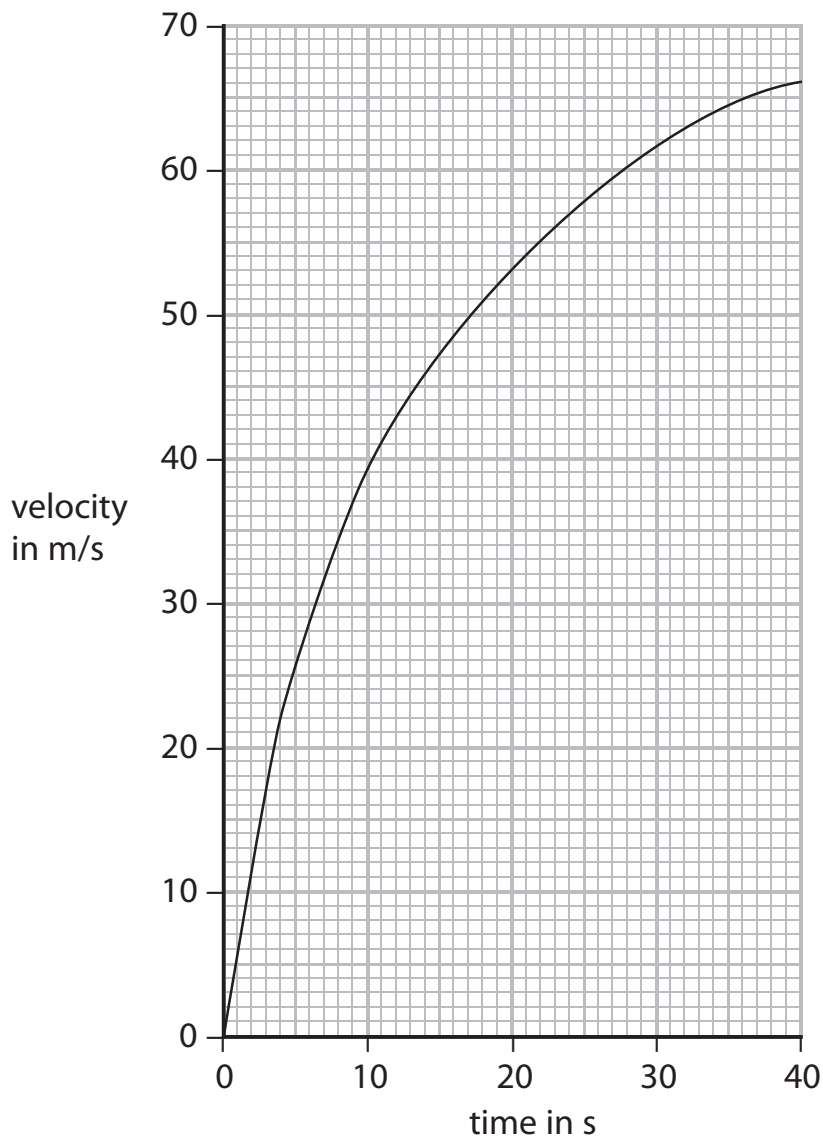
Graph 1

Calculate the distance that the car travels in the first four seconds.

(3)

Distance = m

(d) As the car travels further along the track, its acceleration changes as shown in graph 2.



Graph 2

(i) Which feature of graph 2 shows that the acceleration changes?

(1)

(ii) The acceleration changes even though the driving force does **not** change.

Suggest **two** possible reasons for this change in acceleration.

(2)

1.....

2.....

(Total for Question 2 = 11 marks)

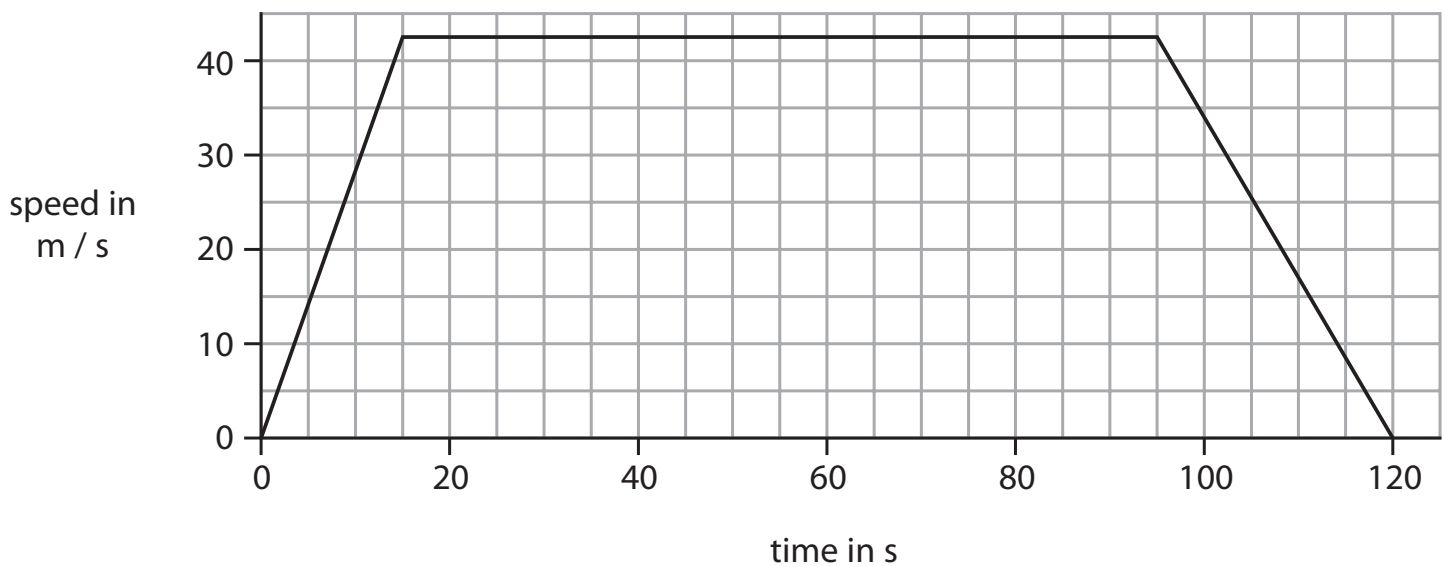
4. An aeroplane takes two minutes to travel the short distance between airports on two islands.



The graph shows how the speed of the aeroplane changes as it

- takes off
- flies across the sea
- lands on the other island

When it is flying across the sea, the aeroplane travels at a constant speed.



(a) Use the graph to answer the following questions.

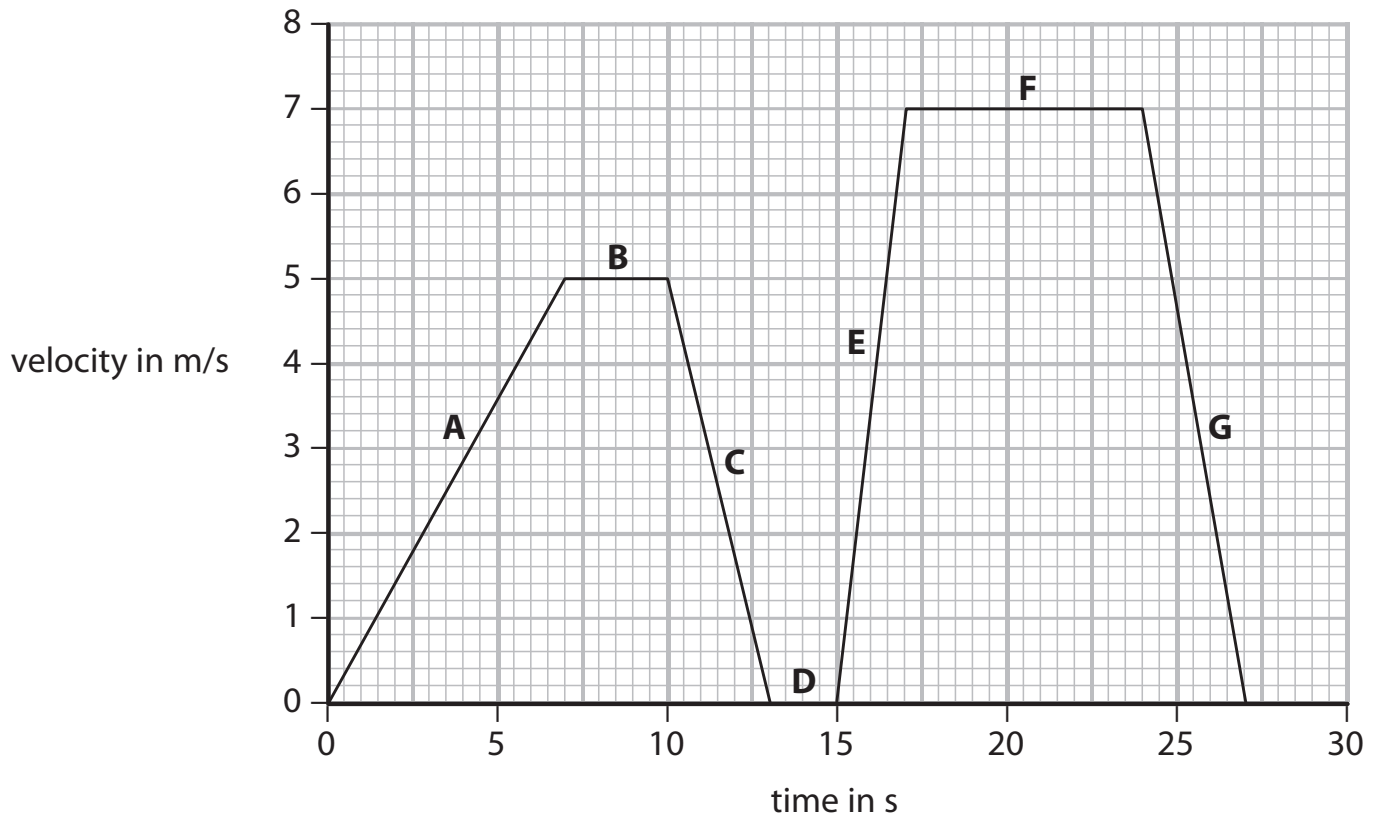
- (i) State the value of the constant speed.

(1)

speed m/s

5. A student cycles to school.

The graph shows the stages A to G of the journey.



(a) Describe the motion of the student during stages B and D.

(2)

Stage	Description
B	
D	

(b) State how the graph shows that the acceleration for stage E is greater than the acceleration for stage A.

(1)

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(c) Calculate the distance that the student travels in the last 10 s of the journey.

(4)

distance = m

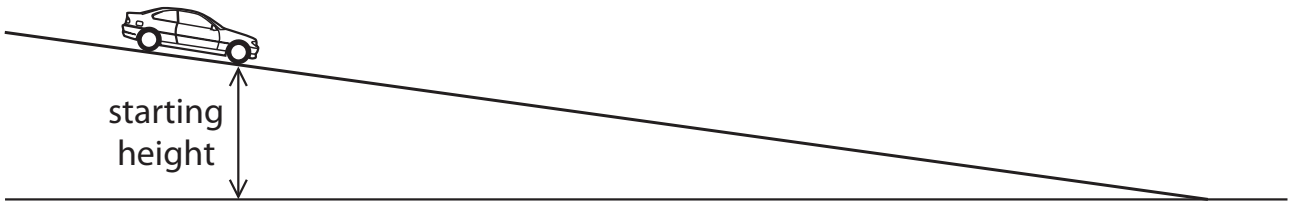
(d) The total distance travelled is 106.5 m.

Show that the average speed of the journey is about 4 m/s.

(3)

(Total for Question 5 = 10 marks)

6. A student investigates the motion of a toy car as it moves freely down a slope.



The student wants to find the link between the starting height of the car and the speed of the car at the bottom of the slope.

(a) (i) State the independent variable in this investigation.

(1)

(ii) Suggest a link between the starting height of the car and its speed at the bottom of the slope.

(1)

(b) Describe how the student should measure the starting height of the car.

(2)

(d) The student repeats the experiment using the same equipment and the same starting height.

She finds out that the time taken for the car to move down the slope is not exactly the same for each experiment.

Suggest three reasons why the student gets different results when she repeats the experiment.

(3)

1.....

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2.....

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3.....

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(Total for Question 6 = 12 marks)
