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

← driving force

(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.

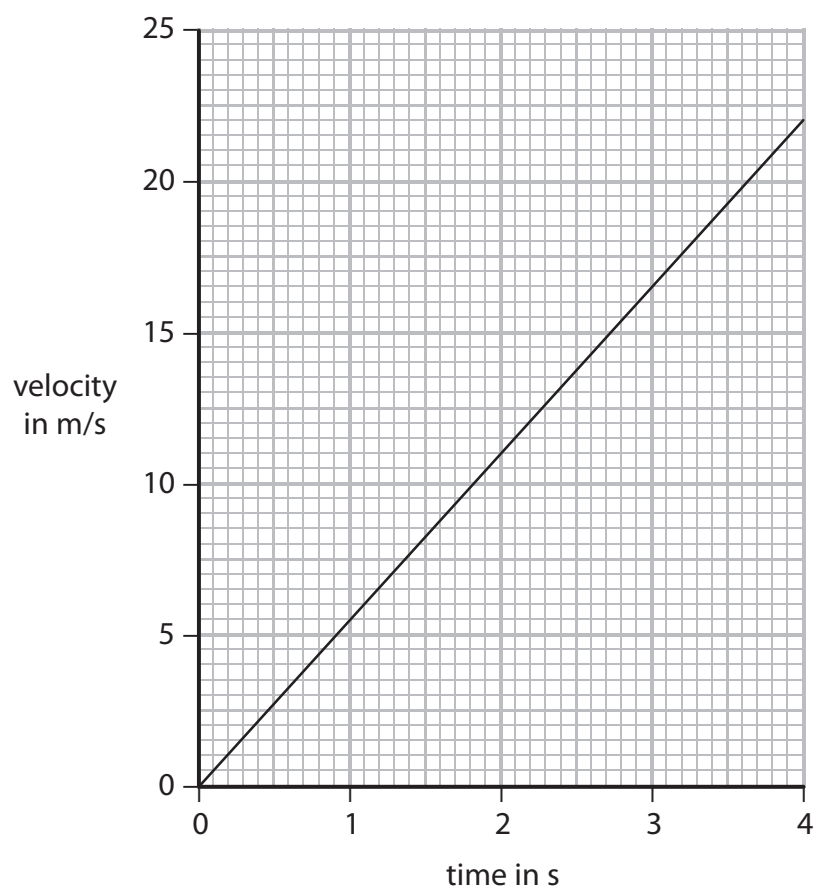(i) State the equation linking force, mass and acceleration.

(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**

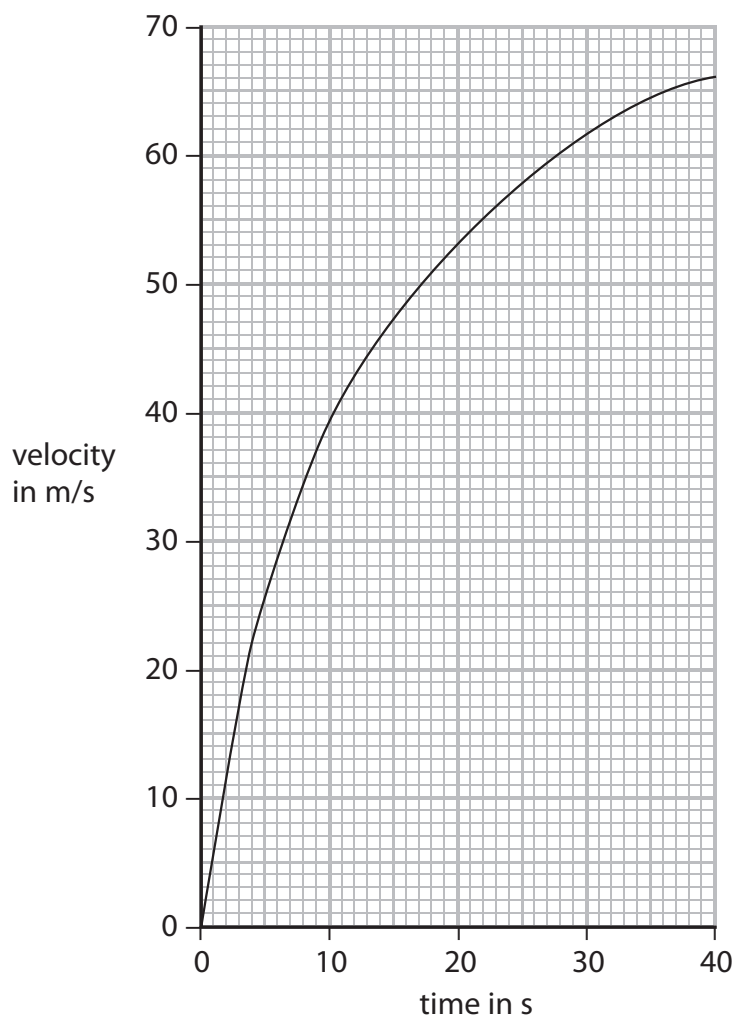Calculate the distance that the car travels in the first four seconds.

(3)

Distance = ... m

QUESTION 16 CONTINUES ON THE NEXT PAGE

(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 16 = 11 marks)

TOTAL FOR PAPER = 120 MARKS

P 4 1 5 4 2 A 0 3 6 3 6