

**Straight line graph modelling As level Edexcel Maths Past
Papers Questions**

01.

A tree was planted in the ground.

Its height, H metres, was measured t years after planting.

Exactly 3 years after planting, the height of the tree was 2.35 metres.

Exactly 6 years after planting, the height of the tree was 3.28 metres.

Using a linear model,

(a) find an equation linking H with t .

(3)

The height of the tree was approximately 140 cm when it was planted.

(b) Explain whether or not this fact supports the use of the linear model in part (a).

(2)

02.

In 1997 the average CO₂ emissions of new cars in the UK was 190 g/km.

In 2005 the average CO₂ emissions of new cars in the UK had fallen to 169 g/km.

Given A g/km is the average CO₂ emissions of new cars in the UK n years after 1997 and using a linear model,

(a) form an equation linking A with n .

(3)

In 2016 the average CO₂ emissions of new cars in the UK was 120 g/km.

(b) Comment on the suitability of your model in light of this information.

(3)

03.

The distance a particular car can travel in a journey starting with a full tank of fuel was investigated.

- From a full tank of fuel, 40 litres remained in the car's fuel tank after the car had travelled 80 km
- From a full tank of fuel, 25 litres remained in the car's fuel tank after the car had travelled 200 km

Using a **linear model**, with V litres being the volume of fuel remaining in the car's fuel tank and d km being the distance the car had travelled,

(a) find an equation linking V with d . (4)

Given that, on a particular journey

- the fuel tank of the car was initially full
- the car continued until it ran out of fuel

find, according to the model,

(b) (i) the initial volume of fuel that was in the fuel tank of the car,
(ii) the distance that the car travelled on this journey. (3)

In fact the car travelled 320 km on this journey.

(c) Evaluate the model in light of this information. (1)

04.

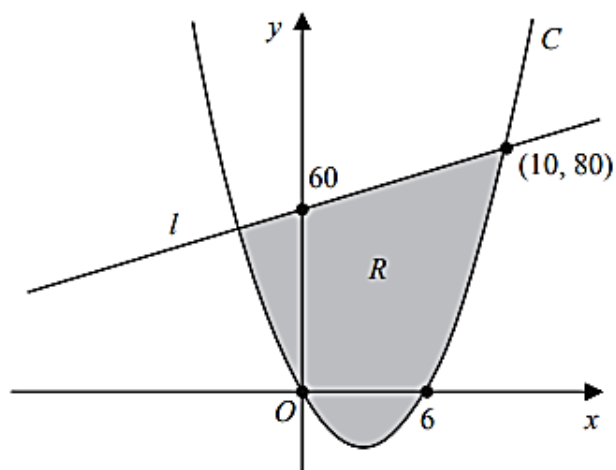


Figure 3

Figure 3 shows a sketch of a curve C and a straight line l .

Given that

- C has equation $y = f(x)$ where $f(x)$ is a quadratic expression in x
- C cuts the x -axis at 0 and 6
- l cuts the y -axis at 60 and intersects C at the point $(10, 80)$

use inequalities to define the region R shown shaded in Figure 3.

(5)