4. Giovanni believes there is a relationship between the mass of a car, m kg, and its fuel consumption, c miles per gallon (mpg).
For a sample of 25 cars, he obtains the following summary statistic.

$$\sum (c - \overline{c})^2 = 394$$

(a) Find the standard deviation of the fuel consumption of the 25 cars.

(1)

Using m as the explanatory variable, Giovanni creates the linear regression model

$$c = a + bm$$

where a and b are constants.

Using his model, he concludes that, on average

- the fuel consumption is 3.5 mpg lower for each additional 500 kg of mass
- the fuel consumption of a car with a mass of 1700 kg is 20 mpg

(b) (i) Find the value of b

(2)

(ii) Find the value of a

(2)