

- 1 Toy cars are made in a factory.
 The toy cars are made for 15 hours each day.
 5 toy cars are made every 12 seconds.

For the toy cars made each day, the probability of a toy car being faulty is 0.002

Work out an estimate of the number of faulty toy cars that are made each day.

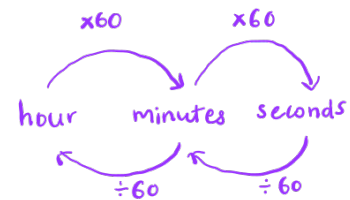
$$15 \text{ hours} \times 60 \times 60 = 54\,000 \text{ seconds} \quad (1)$$

$$\therefore 12 \text{ seconds} = 5 \text{ cars}$$

$$\therefore 54\,000 \text{ seconds} \div \frac{54\,000}{12} \times 5 = 22\,500 \text{ cars} \quad (1)$$

$$\therefore \text{Faulty car each day} : 0.002 \times 22\,500 \text{ cars} \quad (1)$$

$$= 45 \text{ faulty cars} \quad (1)$$



45

(Total for Question 1 is 4 marks)

2 The table shows the populations of five countries.

Country	Population
China	1.4×10^9
Germany	8.2×10^7
Sweden	9.9×10^6
Fiji	9.1×10^5
Malta	4.3×10^5

Given that

$$\text{population of Fiji} = \frac{1}{k} \times \text{population of Sweden}$$

(b) work out the value of k .

Give your answer correct to the nearest whole number.

$$\text{Fiji} = 9.1 \times 10^5$$

$$\text{Sweden} = 9.9 \times 10^6 = 99 \times 10^5$$

$$9.1 \times 10^5 = \frac{1}{k} \times 99 \times 10^5$$

$$k = \frac{99 \times 10^5}{9.1 \times 10^5} \quad (1)$$

$$= 11 \quad (1)$$

$$k = \frac{11}{(2)}$$

(Total for Question 2 is 2 marks)

3 Jethro has sat 5 tests.

Each test was marked out of 100 and Jethro's mean mark for the 5 tests is 74

Jethro has to sit one more test that is also to be marked out of 100

Jethro wants his mean mark for all 6 tests to be at least 77

Work out the least mark that Jethro needs to get for the last test.

Jethro's total marks for 5 tests :

$$74 \times 5 = 370 \quad (1)$$

To get mean marks of 77 or more :

$$\frac{370 + x}{6} = 77 \quad x = \text{mark for 6th test}$$

$$370 + x = 77 \times 6$$

$$370 + x = 462 \quad (1)$$

$$x = 462 - 370 = 92 \quad (1)$$

(Total for Question 3 is 3 marks)

92

- 4 On Wednesday, the price of 1 litre of petrol was £1.26
The price of petrol on Wednesday was 5% more than the price of petrol on the previous Monday.

Calculate the price of 30 litres of petrol on the previous Monday.

Let the price of 1 litre petrol on Monday = x

$$x + \frac{5}{100} x = 1.26$$

$$1.05 x = 1.26$$

$$x = \frac{1.26}{1.05}$$

$$= 1.2 \text{ (1)}$$

Price of 30 litres of petrol on Monday :

$$1.2 \times 30 = 36 \text{ (1)}$$

£ 36

(Total for Question 4 is 3 marks)

- 5 The table gives information about the population and the total amount of money, in dollars, spent on healthcare for two countries in 2016

Country	Total population	Total spent on healthcare (\$)
Austria	8.7×10^6	4.2×10^{10}
Luxembourg	6.3×10^5	3.7×10^9

Work out how much more was spent **per person** on healthcare in Luxembourg than in Austria.

Give your answer correct to the nearest whole number.

$$\text{Austria: } \frac{4.2 \times 10^{10}}{8.7 \times 10^6} = 4827.58 \dots$$

①

$$\text{Luxembourg: } \frac{3.7 \times 10^9}{6.3 \times 10^5} = 5873.01 \dots$$

$$5873.01 \dots - 4827.58 \dots = 1045.42 \dots$$

①

$$\approx 1045$$

①

1045

..... dollars

(Total for Question 5 is 3 marks)