Section C

- The marks achieved in this section account for **25%** of your final exam result.
- All answers must be given to 3 significant figures unless stated otherwise in the question.
- All working must be clearly shown.

> **Instructions:**
>
> This section has **four** questions. Answer **all** questions in this section.

Question 1

The table shows the number of injuries in the work place grouped by type and gender in 2011.

Injury	Male	Female
Wound	7051	4647
Fracture	4512	1416
Sprain	10025	3126
Internal	340	1117
Other	5190	3112

a) How many injuries in total were there in 2011? *(1 mark)*

b) What percentage of *Female* injuries were classified as *Internal*? *(3 marks)*

c) What percentage of *Wound* injuries were from *Males*? *(3 marks)*

d) What percentage of **all** injuries were classified as *Sprain*? *(3 marks)*

e) The number of female employees included in the data was 1.803 million. What percentage of these were injured? *(3 marks)*

f) The overall injury rate for male employees was 28.6 per thousand. How many male employees were included in the data? (Give your answer to the nearest whole number) *(4 marks)*

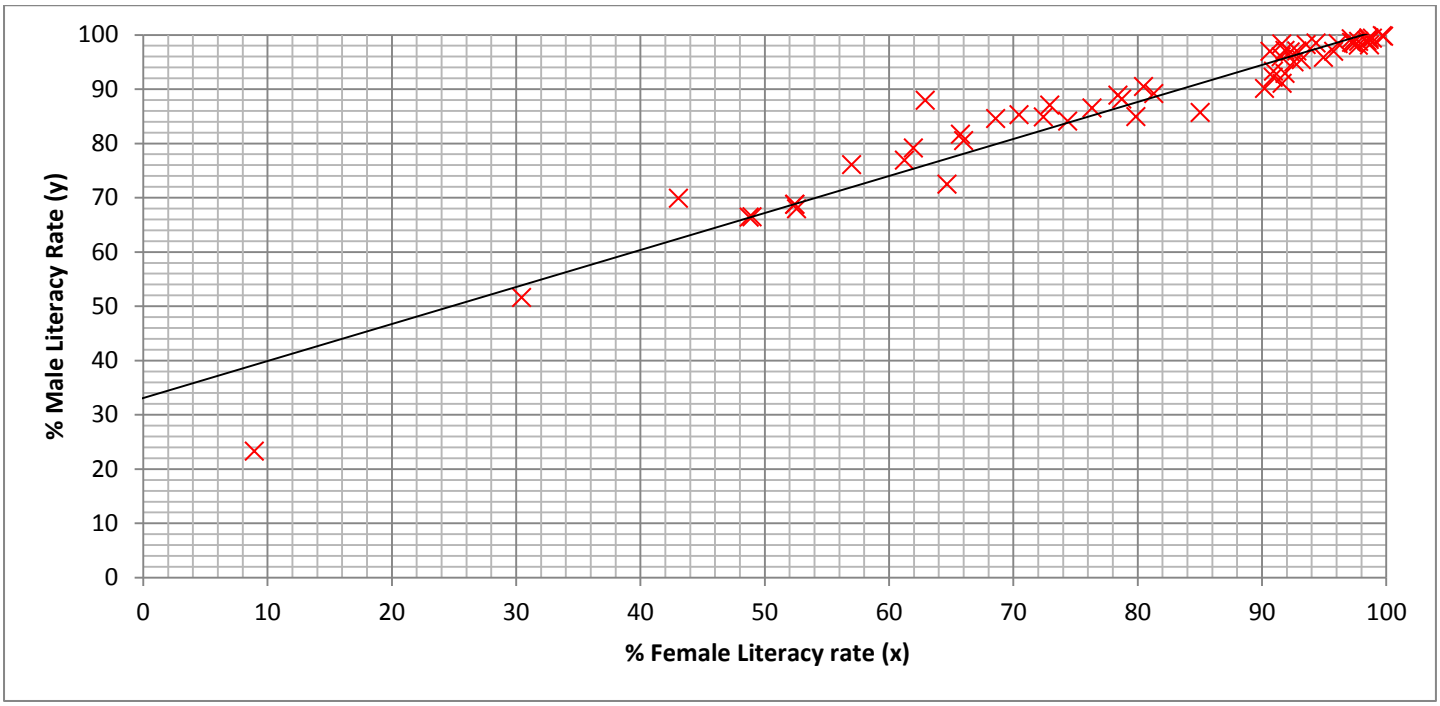
g) The total number of injuries showed a 5% decrease from 2010. How many people were injured in 2010? (Give your answer to the nearest whole number) *(4 marks)*

h) If this 5% decrease each year continued what would be the expected number of injuries in 2016? (Give your final answer to the nearest whole number) *(4 marks)*

Total 25 marks.

Question 2

The scatter graph below shows a relationship between male and female literacy rates.



a) It is believed that the line of best fit as shown has an equation of the form:

$$y = mx + c$$

Use the graph to find *m* and *c* to 2 significant figures. Show all your working carefully.

(5 marks)

b) **Use your answer to a)** to find:

i. the expected Male literacy rate (*y*) for a Female literacy rate (*x*) of 60% *(2 marks)*

ii. the expected Female literacy rate (*x*) for a Male literacy rate (*y*) of 60% *(4 marks)*

c) If the line of best fit was $y = x$ what could you say about male and female literacy rates? *(1 mark)*

d) Using algebra find x where the line in your answer to a) meets $y = x$ *(4 marks)*

Total 16 marks.

Question 3

This question concerns a loan of £17000 to buy a car where the loan is taken over 5 years.

a) From **Arby Bank** you would pay £309.88 each month over 5 years.

   i. How much would you pay altogether? (Give your answer to the nearest £0.01) ***(2 marks)***

   ii. What percentage interest would you have paid overall? ***(3 marks)***

b) From **Bass Bank** you would pay nothing for 2 months and then £310.62 each month. How much would you pay altogether? (Give your answer to the nearest £0.01) ***(2 marks)***

c) From **Carly Bank** you pay a 9.5 % deposit and the remainder owing has 6% interest added before calculating an equal monthly payment rounded to the nearest £0.01.

   i. What is the monthly payment? ***(8 marks)***

   ii. What percentage interest would you have paid overall? ***(7 marks)***

Total 22 marks.

Question 4

a) At a cinema sitting in Standard seats costs £10.50 for an adult ticket and £8.25 for a student ticket. If ***a*** is the number of adults and ***s*** the number of students find

i. a formula for ***c*** the total cost in £ in terms of ***a*** and ***s***. ***(3 marks)***

ii. a formula for the number of adult tickets ***a*** when the total cost of tickets is £99.75 giving your answer in the form ***s = ma + c*** where ***m*** and ***s*** are fractions in their lowest terms. ***(8 marks)***

iii. *hence* find ***a*** and ***s*** ***(4 marks)***

b) In Premier seating it costs £108.50 for 4 adults and 6 students.

i. If ***x*** is the cost of adult tickets and ***y*** the cost of student tickets show that

$$8x + 12y = n$$

where ***n*** is an integer to be determined ***(6 marks)***

ii. 2 of the students forgot their student ID so have to pay adult prices making a total cost of £113.

Form a second equation in ***x*** and ***y***

in the form ***px + qy = n***

where ***n, p*** an d ***q*** are integers to be determined

Use an algebraic method to find the cost of adult and student tickets in Premier seating.

(16 marks)

Total 37 marks.