

Q1.

(Chap 13 Pg 360 - 364)

a) State what type of data each of the following are using the terms numerical, categorical, discrete, continuous, ordinal, nominal. Explain your answer in each case:

- i) The number of cars sold by a garage last month
- ii) The blood types of the pupils in your class
- iii) The length of time taken to complete a crossword
- iv) The sizes of T-shirts worn by a group if they are S, M, L, XL

b) i) List two different methods of obtaining primary data.

ii) Describe an advantage and a disadvantage of each of the methods mentioned in part (i)

c) Describe briefly one way you could obtain a simple random sample of students from your school.

Q2.

(Chap 13 Pg 366/369/377/378)

a) A 6th year Maths class get the following results in a class test: 25, 36, 76, 55, 76, 83, 34, 50, 73, 41, 52, 47, 71, 76, 65, 44, 53, 82, 41. Draw a Stem and Leaf diagram to represent the data.

b) A class was surveyed and asked how many people they had in their families. The results are shown below. Draw a Pie Chart to represent the data below.

No. Of People in Family	3	4	5	6	7
No. Of Students	6	8	9	4	3

c) The amount of time spent studying during the week, in minutes, was measured for a particular 6th year group. The results are shown below.

Time Studying in Mins	0 - 60	60 - 120	120 - 180	180 - 240	240 - 300
No. Of Students	9	12	18	15	6

i) Draw a histogram of the data.

ii) Describe the shape of the distribution.

d) The heights (in centimetres) and weights (in kilograms) of 8 adults were as follows:

Height (cm)	157	181	203	214	197	178	162	210
Weight (kg)	59	84	81	100	92	77	61	105

i) Plot the results on a scatter graph.

ii) Describe the correlation, in the context of the question.

Q3.

(Chap 14 Pg 391/397)

a) Write down the mean, mode and median of the following sets of data.

i) 2.4, 3.1, 2.5, 3.1, 1.8, 3.4, 2.7

ii) 23, 45, 10, 52, 24, 13, 52, 4

Ans: Mean = 2.71, Med = 2.7

Ans: Mean = 27.88, Med = 23.5

b) For the set of data 9, 11, 11, 15, 17, 18, 94, which two measures of centre (i.e. mean, mode or median) would you choose to best describe the numbers? Explain why you would use the measures of centre chosen.

Q4.

(Chap 14 Pg 393)

The amount of time spent studying during the week, in minutes, was measured for a particular 6th year group. The results are shown below.

Time Studying in Mins	0 - 60	60 - 120	120 - 180	180 - 240	240 - 300
No. Of Students	9	12	18	15	6

i) Using mid-interval values, estimate the mean time taken to study per week. Ans: 147mins

ii) What is the maximum number of students who could have spent more than 3.5 hours studying? Ans: 21 students

Q5.

(Chap 14 Pg 401/402)

Here are the times, in minutes, for a bus journey: 15, 7, 9, 12, 9, 19, 6, 11, 9, 16, 8

i) Find the range of these times.

Ans: Range = 13

ii) Find the lower quartile, the upper quartile and the interquartile range.

Ans: LQ = 8, UQ = 15, IQ Range = 7

Q6.

(Chap 14 Pg 404/405)

The number of pets in 20 different households is shown in the table below.

No. of Pets	0	1	2	3	4
Frequency	2	4	8	4	2

Calculate the standard deviation using your calculator.

Ans = 1.09

Q7.

(Chap 14 Pg 408/409)

The mean result in a class of 30 6th year students was 65% and the standard deviation of the group was 2.5%. The results were normally distributed.

i) What range of results does 68% of the class lie?

Ans: 62.5% - 67.5%

ii) What percentage of the class will be within 2 standard deviations either side of the mean?

Ans: 95%

iii) How many students could you expect to be 1 standard deviation above the mean? Ans: 10

Q8. A company wishes to guess how many of its employees would be interested in investing in it. They take a random sample of 50 employees and 12 of them say they would be interested. Construct a 95% confidence interval for the proportion of the population, p , that would be willing to invest. (Chap 14 Pg 415)

Ans: $9.8\% < p < 38.1\%$

Q9. A school is trying to decide whether to put Applied Maths on the school timetable for Senior Cycle, or not. They take a random survey of 120 students and ask them if they would be interested in taking it as a subject for the Leaving Cert. Out of the 120, 35 say they would take it. Construct a 95% confidence interval for the proportion of the school would take it as an option. (Chap 14 Pg 415)

Ans: $20\% < p < 38\%$

Q10. A local newspaper claims that support for the government is at 43%. A rival newspaper wishes to investigate their claim and surveys 500 of its readers. Out of the sample, 202 of them are in support of the government. Is there sufficient evidence to support the newspaper's claim? (Chap 14 Pg 416/417)

Ans: Yes, there is.

Q11. A report in the news claims that 82% of households are happy with the service provided by their refuse collection company. An independent commission is set up to investigate the claim and 1000 people are randomly surveyed. Of the 1000 sampled, 778 say they are happy with the service provided. Is there sufficient evidence to support the claim on the news? (Chap 14 Pg 416/417)

Ans: No, there isn't.

Past Exam Questions:

Q12. 2019 Paper 2 Q1

A business has 28 employees.
Their ages, in years, are given below.

32 41 57 64 19 21 35
18 43 54 63 65 33 22
39 58 18 42 20 34 21
49 33 55 34 57 43 63

1								
2								
3								
4								
5								
6								
KEY: 1 9 = 19 years of age.								

(a) Complete the stem-and-leaf diagram, showing the ages of all 28 employees.

(b) Find the percentage of employees who are older than 40 years of age. Ans: 50%

Q13. 2018 Paper 2 Q7

The table below shows the total rainfall, in millimetres, and the total sunshine, in hours, at Valentia, County Kerry, during the month of June from 2001 to 2010.

Total rainfall and total sunshine at Valentia in June										
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Rainfall (mm)	72	133	155	101	94	47	149	134	94	84
Total Sunshine (hours)	169	124	180	173	173	239	159	168	228	205

(Source: Met Éireann)

(a) Based on the data in the table above write down:

- (i) the range of the rainfall data _____
- (ii) the year with the highest June rainfall _____
- (iii) the year with the least June sunshine _____

Ans: 108mm

(b) Based on the data in the table, write down the year with the best June weather and give a reason for your answer.

(c) Write the **rainfall data** in increasing order and hence find the median of the rainfall. Ans: 97.5mm

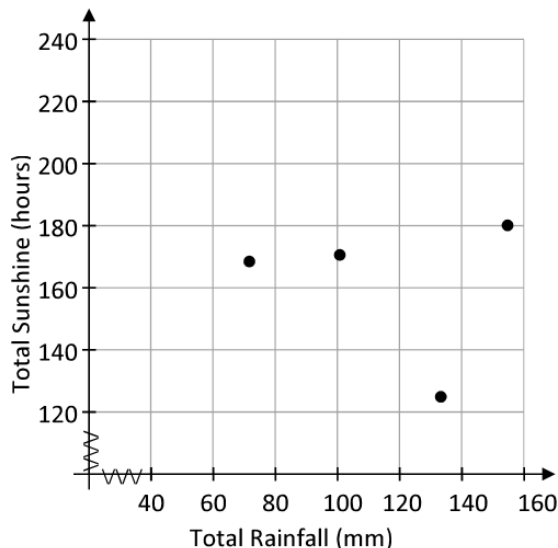
(d) (i) Find the mean number of **sunshine hours** for June in Valentia between 2001 and 2010. Ans: 181.8hrs

(ii) For what years was the **sunshine data** within 5% of the mean number of sunshine hours in Valentia? Ans: 2003 - 2005

(e) Find the standard deviation of the **rainfall data**, in mm, correct to 1 decimal place. Ans: 33.5

(f) Part of a scatterplot of the data in the table is shown below. The first four data points are plotted.

(i) Complete the scatterplot.



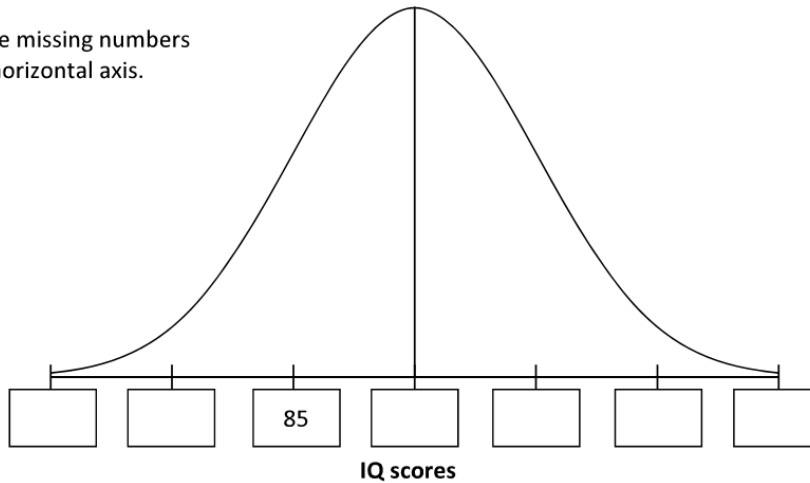
(ii) One of the numbers in the table on the right is the correlation coefficient for the data above, correct to 1 decimal place. Based on the scatterplot, select the number that you think most accurately reflects this data. Explain your choice.

	Tick one box
0.6	<input type="checkbox"/>
0.1	<input type="checkbox"/>
-0.1	<input type="checkbox"/>
-0.6	<input type="checkbox"/>

Q14. 2017 Paper 2 Q5

(a) In a survey, the IQ scores of 1200 people were recorded. The mean score was 100 points and the standard deviation was 15 points. Assuming that IQ scores are normally distributed, the data are shown on the diagram below.

(i) Fill in the missing numbers on the horizontal axis.



Check worked solutions for figures

(ii) A person is chosen at random from those surveyed. Use the Empirical Rule to find the probability that this person has an IQ score between 70 and 130 points.

Ans: 95%

(iii) Use the Empirical Rule to find the approximate number of people surveyed with an IQ score of between 85 and 115 points.

Ans: 816

Q15. 2017 Paper 2 Q9

In the days following the UK referendum, a survey was conducted in Ireland on attitudes towards a British exit from the European Union.

(i) 1200 people were surveyed. Find the margin of error of this survey. Write your answer as a percentage. Give your answer correct to the nearest percent.

Ans: 3%

(ii) In the Irish survey 578 of the 1200 surveyed agreed that a UK exit would have a negative effect on the Irish economy. Use your answer to **part c(i)** above to create a 95% confidence interval for the proportion of the Irish population who agreed that a UK exit would have a negative effect on the Irish economy.

Ans: $45% < P < 51%$

(iii) After the survey, a political party claimed that 53% of the Irish population believed that the decision of the UK to leave the EU would have a negative effect on the Irish economy. Use your answer to **part c(ii)** above to conduct a hypothesis test, at the 5% level of significance, to test the party's claim. Give your conclusion in the context of the question.

Ans: Claim is false