Test - Statistical sampling and data

Year: Year 12 · Duration: 60 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Sampling

A college has 800 students: 300 in Year 12 and 500 in Year 13. A stratified sample of 80 is taken.

a. Find the number from each year. (2 marks)
b. Explain one advantage of stratified over opportunity sampling. (2 marks)

Question 2 (4 marks)

Question 2 – Mean and standard deviation

The table shows the number of goals scored in 20 matches.

Goals	0	1	2	3	4
Matches	3	6	7	3	1

a. Find the mean. (2 marks)
b. Find the standard deviation. (2 marks)

Question 3 (4 marks)

Question 3 – Outliers

$Q_1 = 14$, $Q_3 = 22$ for a data set with maximum 41 and minimum 3. Test for outliers using the 1.5 IQR rule.

Question 4 (4 marks)

Question 4 – Histogram

A histogram has a bar of width 5 and height 3.2 for the class 10-15 and a bar of width 10 and height 1.5 for 15-25. Find the frequency of each class and the total.

Question 5 (4 marks)

Question 5 – Problem: correlation and regression

The regression line of y (price in £) on x (age in years) for used laptops is $y = 620 - 85x$.

a. Interpret the gradient. (1 mark)
b. Estimate the price of a 3-year-old laptop. (1 mark)
c. Why can the line not be used for a 9-year-old laptop? (2 marks)