**Assignment 1 (Statistics)**

**Due Date: Sep 18, 2025 before 11:59pm Mark: \_\_\_\_\_\_\_\_ /35**

**Name (*Last, First*): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

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|  |
| --- |
| * *For full marks, provide detailed solutions in the spaces provided****.*** * ***Use statistical software only for Questions 5a, 5c and 6.*** * *Late assignments submitted within 24 hours after the due date will be penalized by 25%. After 24 hours, no assignments will be accepted* |

**Q1**.A professor recorded the number of minutes a group of engineering students spent solving an online quiz. The data is organized in the stem-and-leaf plot below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 0 | 8 | 9 |  |
| 2 | 6 | 6 | 8 |  |
| 3 | 0 | 1 | 5 | 8 |
| 4 | 1 | 7 |  |  |

**Solve by hand (without the use of software) and include full solutions.**  **[5 marks]**

3|2 means 32 minutes

Find:

a) The median

b) The mode

c) The mean

**Q2**.A software engineering professor recorded the **time (in minutes)** it took for 12 students to debug a medium-complexity piece of code. The times are shown below:

15, 18, 22, 25, 25, 28, 30, 32, 34, 36, 40, 42, 44, 48, 50

1. Find the standard deviation for the data
2. Find the range

c) Find the 35th percentile

**Solve by hand (without the use of software) and include full solutions.**

**[5 marks]**

**Q3**. A software company tracked the number of bugs fixed per week by 15 developers. The results are shown below:

12, 15, 18, 20, 21, 22, 23, 24, 25, 25, 26, 28, 30, 45, 70

1. What is the interquartile range? **[3 marks]**
2. Are there any outliers in the data? Perform all necessary calculations to justify your answer. Use the method involving the interquartile range to identify the outliers (specify if they are mild or severe). **[3 marks]**

**Solve by hand (without the use of software) and include full solutions.**

**Q4**. At a college, the amount of time students spend on a **final test** follows a normal distribution with a mean of 85 minutes and a standard deviation of 15 minutes.

Find:

a) The z – score for a time of 105 minutes. **[2 marks]**

b) What is the time positioned 1.5 standard deviations below the mean? **[2 marks]**

**Solve by hand (without the use of software) and include full solutions.**

**Q5**.A group of environmental science students collected data on the average global temperature anomaly (in °C) for different years. The results are shown below:

|  |  |
| --- | --- |
| **Year** | **Temperature Anomaly (°C)** |
| 2008 | 0.49 |
| 2010 | 0.62 |
| 2012 | 0.58 |
| 2014 | 0.69 |
| 2016 | 0.87 |
| 2018 | 0.92 |

a) Draw a scatter plot for the data (***using Statistical software***);

**[2 marks]**

b) Find the equation of the line of best fit. Round off the coefficients to two decimal places. **Solve by hand (without the use of software) and include full solutions.**

**[5 marks]**

c) Redo question b) ***by using Statistical software (include the output here***).

**[2 marks]**

d) Use the regression equation to predict the temperature anomaly in the year **2025.** **[2 marks]**

**Q6**. **Using statistical software,** create a histogram and generate descriptive statistics (at least 3 measures of central tendency, 2 measures of dispersion and all quartiles) for the following data set, representing the weights (in lbs) for packages delivered during one business day by a courier service. ***Include the output here.***

7.4 4.7 4.9 5.5 9.2 6.4 6.7 6.8 6.7 9.3 12.7 3.8 11.2 11.2 11.5 14.3 15.2

[**4 marks]**