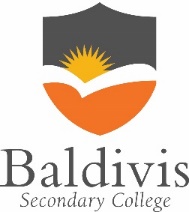
**Year 11 Essentials 2021**

**Investigation 4**

# Statistics

**Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time for the task: 2 lessons in class, 1 week at home

Resources needed – laptop or device, Maths book, calculator **Total Marks:** / 27

**Task weighting:** 10 %

**Due Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A student in class has suggested that males are better drivers than females. He went on to say that to be a good driver you need fast reflexes. This prompted some discussion with other students in the class saying the ability to concentrate was also very important.

The following data was collected from the 2013 Census at School survey. The data is a randomly generated sample of 60 students in years 11 and 12 who provided information on their reaction time using their dominant hand and their concentration activity.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Female | | |  | Male | | |
|  | **Reaction Time (sec)**  **(dominant hand)** | **Concentration**  **Activity (secs)** |  |  | **Reaction Time (sec)**  **(dominant hand)** | **Concentration**  **Activity (secs)** |
| 1 | 0.03 | 53 |  | 1 | 0.34 | 36 |
| 2 | 0.38 | 65 |  | 2 | 0.50 | 62 |
| 3 | 0.39 | 36 |  | 3 | 0.34 | 39 |
| 4 | 0.39 | 25 |  | 4 | 0.32 | 44 |
| 5 | 0.45 | 35 |  | 5 | 0.36 | 44 |
| 6 | 0.31 | 24 |  | 6 | 0.37 | 48 |
| 7 | 0.42 | 46 |  | 7 | 0.36 | 49 |
| 8 | 0.39 | 16 |  | 8 | 0.30 | 65 |
| 9 | 0.56 | 59 |  | 9 | 0.36 | 39 |
| 10 | 0.39 | 44 |  | 10 | 0.30 | 44 |
| 11 | 0.38 | 42 |  | 11 | 0.46 | 34 |
| 12 | 0.56 | 44 |  | 12 | 0.35 | 36 |
| 13 | 0.37 | 59 |  | 13 | 0.30 | 32 |
| 14 | 0.44 | 36 |  | 14 | 0.33 | 56 |
| 15 | 0.32 | 55 |  | 15 | 2.61 | 59 |
| 16 | 0.31 | 47 |  | 16 | 0.36 | 36 |
| 17 | 0.35 | 48 |  | 17 | 0.45 | 49 |
| 18 | 18.62 | 69 |  | 18 | 0.30 | 36 |
| 19 | 0.36 | 46 |  | 19 | 0.36 | 48 |
| 20 | 0.34 | 45 |  | 20 | 0.41 | 37 |
| 21 | 0.94 | 52 |  | 21 | 0.36 | 39 |
| 22 | 0.32 | 26 |  | 22 | 0.36 | 35 |
| 23 | 0.35 | 33 |  | 23 | 0.44 | 46 |
| 24 | 0.37 | 46 |  | 24 | 0.38 | 61 |
| 25 | 0.46 | 55 |  | 25 | 0.39 | 36 |
| 26 | 0.45 | 46 |  | 26 | 0.36 | 46 |
| 27 | 0.34 | 39 |  | 27 | 0.34 | no data |
| 28 | 0.32 | 27 |  | 28 | 0.15 | 36 |

#### Data presentation and interpretation

* + 1. display categorical data in tables and column graphs
    2. display numerical data as frequency distributions, dot plots, stem and leaf plots and histograms
    3. recognise and identify outliers
    4. compare the suitability of different methods of data presentation in real-world contexts

#### Summarising and interpreting data

* + 1. identify the mode and calculate other measures of central tendency, the arithmetic mean and the median, using technology when appropriate
    2. investigate the suitability of measures of central tendency in various real-world contexts
    3. investigate the effect of outliers on the mean and the median
    4. calculate and interpret quartiles
    5. use informal ways of describing spread, such as: spread out/dispersed, tightly packed, clusters, gaps, more/less dense regions, outliers
    6. interpret statistical measures of spread, such as: the range, interquartile range and standard deviation
    7. investigate real-world examples from the media illustrating inappropriate uses, of measures of central tendency and spread

#### Comparing data sets

* + 1. compare back to back stem plots for different data sets
    2. complete a five-number summary for different data sets
    3. construct and interpret box plots using a five-number summary
    4. compare the characteristics of the shape of histograms using symmetry, skewness and bimodality