|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name: | solutions | | | |  |
| Description: pact jpg1 | **Year 11 Essentials**  **Practical Application 3, 2015**  **Topic – Statistical Investigation** | | | | 50  = % |
| **Weighting:** | | *13% of the semester* | **Time allowed:** | *120 minutes* | |

Census At School, run by the Australian Bureau of Statistics since 2006, has gathered data from many thousands of Australian school students in that time. We are going to use this data to answer a question about Australian students.

***Do Year 11 students do more homework than Year 9 students?***

The number of hours spent doing homework each week is displayed below.

**Year 9 students:** 1, 3, 3, 5, 1, 0, 0, 1, 2, 2, 2, 2 , 0 , 1, 2, 3, 4, 3, 3, 0

**Year 11 students:** 1, 4, 2, 5, 6, 7, 6, 7, 4, 0, 1, 2, 4, 8, 19, 3, 5, 3, 2, 4

**1. (3 marks)**

Construct a frequency table to display the data.

|  |  |  |
| --- | --- | --- |
| **No of hours** | **Year 9** | **Year 11** |
| 0 | 4 | 1 |
| 1 | 4 | 2 |
| 2 | 5 | 3 |
| 3 | 5 | 2 |
| 4 | 1 | 4 |
| 5 | 1 | 2 |
| 6 |  | 2 |
| 7 |  | 2 |
| 8 |  | 1 |
| More than 8 |  | 1 |
| Total | 20 | 20 |

**√ √ √**

**2. (3 marks)**

Carefully examine the data to check for any outliers. That is, are there values that you don’t feel are possible? Highlight any such values, then for each of them, explain why you feel it is a problem.

**19 is an outlier**  **√ It is quite a bit higher than any of the other values and will have an effect on the mean. √ √**

**3. (8 marks)**

Calculate appropriate measures of location (central tendency), showing all working.

**Year 9 Year 11**

**Mode 2 & 3 √ 4 √**

**Median 2 √ 4 √**

**Mean 1.9 √ √ 4.65 √ √**

**4. (3 marks)**

Give a brief summary of the information conveyed by the measures of location and spread in a small paragraph.

**√√√**

**5. (10 marks)**

Calculate a five number summary of each set of the data, showing all working.

**Year 9 Year 11**

**Min 0** **√** 0**√**

**Max 5√ 19√**

**Median 2√ 4√**

**Q1 1√ 2√**

**Q3 3√ 6√**

**6. (4 marks)**

Calculate the range and interquartile range for each set of data, showing working.

**Year 9 Year 11**

**Range 5√ 19√**

**IQR 2√ 4√**

**7. (3 marks)**

Choose a type of graph to display your data. Explain why you made this choice. You might be considering a box and whisker graph, histogram, column graph or stem and leaf display.

**√choice √√suitability**

**8. (8 marks)**

Draw your own graphs.

**√ title √labelled axis √√√each graph**

**9. (2 marks)**

Look back to the original question and decide what your data has told you about it.

**√√**

**10. (3 marks)**

Explain how your analysis of the data supports your conclusion

**√√√**

**11. (3 marks)**

What are the implications of your conclusion? Who could use this information, how might it help, what needs to change?