



Year 10 2009 Mathematics Active Data – Spreadsheet Assignment

Student Name: _____

Teacher's Name: _____

Date Due: Last mathematics lesson term 2 week 4

Outcomes:

- Demonstrate basic spreadsheet skills as they work with and modify files.
- DS4.1 A student uses statistical language.
- DS4.1 A student draws and uses stem-and-leaf plot in analysis of data.
- DS4.2 A student collects statistical data using a census or a sample, and analyse data using measures of location and range.
- DS5.2.1 A student determines the upper and lower quartiles for a set of collected data.
- DS5.2.1 A student constructs a box-and-whisker plot using the median, upper and lower quartiles and extreme values.
- DS5.2.1 A student comparing the relative merits of measures of spread: range, interquartile range.
- DS5.2.1 A student uses the central measures of tendency to describe and analysis data.
- DS5.2.1 A student uses statistical graphs to describe the shape of distribution.
- DS5.2.1 A student compares two sets of data.

Skills:

- Use cell address to locate cells.
- Insert and format text, numbers and formulae in cells.
- Select a range of cells.
- Use basic mathematical operations (+, -, *, /, ^) in their spreadsheet for simple formulae.
- Sort information according to desired criteria.
- Create appropriate charts based on spreadsheet data.

INSTRUCTIONS:

Before students start this assignment they need to ensure they have their student login for the DET portal: user name and password e.g. user name: john.smith3 password: *****

- Students need to perform 3 experiments to collect information while in class. If you are away on the day experiments are completed, see your teacher for a copy of the class results, **as these results must be used to complete the assignment.**
- The assignment is to use a spreadsheet interactive package found on the DET portal website. To find the spreadsheet package please follow the steps outlined below:
 - ❖ Go to school website: erskinparkhs.com.au
 - ❖ Log onto the **DET portal** link on left side of school home page this is where you need your user name and password
 - ❖ Click **I Agree** to the conditions of the DET portal
 - ❖ Select **TaLe** found in LEARN on the left side of the screen

- ❖ Once this page loads go to **TaLe home** found under the search box top middle of the page
 - ❖ Click on the puzzle **secondary**
 - ❖ Click on **Centre for Learning Innovation** on the right hand side of the page
 - ❖ Select **Mathematics stage 5** by clicking in the table
 - ❖ In the search box at the top of this page next to secondary type **active data** and search
 - ❖ Then click Active Data in the search results
 - ❖ The Active Data project page will be displayed. Giving a description of the project either use this program via the view access which will not save your information or download onto your computer to save work and come back to at a later time.
 - ❖ Once you open the program there will be a sector graph with different graphs listed on each sector. Choose one of the sectors which you need to complete and follow the instructions on each page.
- You need to complete three separate sectors of the graph:
- Box-and-whisker plots**
 - Stem-and-leaf graphs**
 - Back-to-back stem-and-leaf graphs**
- Refer to each section listed below for the requirements for each separate sector. Please ensure you read all the information on the pages prior to completing the task and review links as they have vital information about the graphs and terminology.
- All work needs to be handed in to your teacher on your own paper with the blue Assessment Task Notification Sheet attached to the front. Your answers will also include one page you must print or draw from the box-and-whisker plot sector.
- Please seek assistance from family members or your classroom teacher if you require help.

Section 1

Box-and-whisker plot – Become a box plotting consultant

In this task you are required to complete Step 1: Your training: Match box factories and Step 2: Task 2: Catch the ruler. **You may like to complete Task 1 and 3 as optional work.**

Step 1: Your Training: Match box factories

To complete this section of the training, read prompts on screen and follow the instructions. First go through the Intro then move onto the Take a sample. At the end of the training you need to print your screen or draw it including the graph and sample space. With this information answer the following questions. Please copy the questions onto your own paper and write your answers next to them.

1. What is the range of your data?
2. What is the mean of your data?
3. Explain the difference between your mean and median, using mathematical terminology from statistics.
4. What is the Interquartile Range (IQR) of your box-and-whisker plot?

5. Which is a better measure of spread range or IQR? Explain your conclusion.

Step 2: Task 2: Catch the ruler

To complete this section of the training, read prompts on screen and follow the instructions. In class you would have completed an experiment using a ruler to find the reaction length of students; this is where you will use this data collected to complete the spreadsheet. After completing the spreadsheet and graph, answer the questions on the right hand side of the page. Place cursor over the question to see it. Please write the question and answer on your own paper.

Section 2

Stem-and-leaf graph– Test your Visual Memory

In class you would have a table completed of times of how long it took for your class to match the 10 pairs. This is instead of doing the memory game on the internet (if you wish to use the net to play you can but please use the data collected in class). Follow the steps on this page to complete this section. The spreadsheet is in the link **Test your visual memory** in step 3. After completing the spreadsheet and graph, answer the questions on the right hand side of the page. Place cursor over the question to see it. Please write the question and answer on your own paper.

Section 3

Back-to-back Stem-and-leaf graph– How left are you?

In class you would have completed a table for the reaction time game from the Census At School Questionnaire: questions 11 and 12, of times of how long it took for your right and left hand to react to colour change. Follow the steps on this page to complete this section. The spreadsheet is in the link **Quick times** in step 3. After completing the spreadsheet and graph, answer the questions on the right hand side of the page. Place cursor over the question to see it. Please write the question and answer on your own paper.

Congratulations you have now finished the assignment. Please gather all the questions and answers you have completed also the graph and sample space from the box-and-whisker plot and attach it all to the blue Assessment Task Notification Sheet. Bring the assignment to class to hand in on the last lesson of Mathematics in Week 4 of term 2.

Marking Criteria

Section 1

Box-and-whisker plot – Become a box plotting consultant

Step 1: Your Training: Match box factories

Question No.	Criteria	Mark
Printout	Correct graph either drawn or printed from the sample space	1
	Incorrect graph either drawn or printed from the sample space	0
1	Correct range for sample space	1
	Incorrect range for sample space	0
2	Correct mean for sample space	1
	Incorrect mean for sample space	0
3	Correct differences between mean and median, using statistical language correctly	2
	Correct differences between mean and median, not using statistical language correctly	1
	Incorrect differences between mean and median, using or not using statistical language correctly	0
4	Correct IQR	1
	Incorrect IQR	0
5	Correct measure of spread, with sound explanation	2
	Correct measure of spread, with incorrect explanation or no explanation	1
	Incorrect measure of spread, with or without explanation	0
	Total	/8

Step 2: Task 2: Catch the ruler

Question No.	Criteria	Mark
1	Correct value for the highest reaction score	1
	Incorrect value for the highest reaction score	0
2	Correct value for the smallest reaction score	1
	Incorrect value for the smallest reaction score	0
3	Correct value for the lower quartile of the class and correct explanation of what the lower quartile represents in terms of reaction scores	2
	Incorrect value for the lower quartile of the class and correct explanation of what the lower quartile represents in terms of reaction scores	1
	Correct value for the lower quartile of the class and incorrect explanation of what the lower quartile represents in terms of reaction scores	1
	Incorrect value for the lower quartile of the class and incorrect explanation of what the lower quartile represents in terms of reaction scores	0
4	Correct value for the median and correct explanation of what the median	2

	represents in terms of reaction scores	
	Correct value for the median and incorrect explanation of what the median represents in terms of reaction scores	1
	Incorrect value for the median and correct explanation of what the median represents in terms of reaction scores	1
	Incorrect value for the median and incorrect explanation of what the median represents in terms of reaction scores	0
5	Correct value for the upper quartile of the class and correct explanation of what the upper quartile represents in terms of reaction scores	2
	Correct value for the upper quartile of the class and incorrect explanation of what the upper quartile represents in terms of reaction scores	1
	Incorrect value for the upper quartile of the class and correct explanation of what the upper quartile represents in terms of reaction scores	1
	Incorrect value for the upper quartile of the class and incorrect explanation of what the upper quartile represents in terms of reaction scores	0
6	Correct statement about the whiskers' lengths	1
	Incorrect statement about the whiskers' lengths	0
7	Correct mean of all reaction scores	1
	Incorrect mean of all reaction scores	0
8	Correct statement about why you would use the median instead of mean to explain reaction times	1
	Incorrect statement about why you would use the median instead of mean to explain reaction times	0
9	Correct value of the IQR and correct statement about what the IQR tells you about the consistency of the reaction scores.	2
	Correct value of the IQR and incorrect statement about what the IQR tells you about the consistency of the reaction scores.	1
	Incorrect value of the IQR and correct statement about what the IQR tells you about the consistency of the reaction scores.	1
	Incorrect value of the IQR and incorrect statement about what the IQR tells you about the consistency of the reaction scores.	0
10	Correct statement about the prediction of what would happen to the median reaction score of a group of drunk drivers	1
	Incorrect statement about the prediction of what would happen to the median reaction score of a group of drunk drivers	0
11	Stating the relative reaction score and correct statement about whether they fit within the IQR	1
	Stating the relative reaction score and incorrect statement about whether they fit within the IQR	0
	Total	/15

Section 2

Stem-and-leaf graph– Test you Visual Memory

Question No.	Criteria	Mark
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1	Correct statement about your location in the distribution	1
	Incorrect statement about your location in the distribution	0
2	Correct selection of what the distributions would look like	1
	Incorrect selection of what the distributions would look like	0
3	Correct explanation of what the skewness tells you about visual memory for your class	1
	Incorrect explanation of what the skewness tells you about visual memory for your class	0
4	Correct prediction of what type of scores the class would need to get a distribution more aligned to a normal curve (either numerical or explanation)	1
	Incorrect prediction of what type of scores the class would need to get a distribution more aligned to a normal curve (either numerical or explanation)	0
5	Three correct values for the mean, mode and median scores	3
	Two correct values for the mean, mode and median scores	2
	One correct value for the mean, mode and median scores	1
	No correct values for the mean, mode and median scores	0
6	Correct statement about the comparison of the mean and the median scores with statistical explanation	2
	Correct statement about the comparison of the mean and the median scores without statistical explanation	1
	Incorrect statement about the comparison of the mean and the median scores with or without statistical explanation	0
7	Two correct values for the mean and median scores and correct statement about why the median is sometimes a better representative score than the mean	3
	One correct value for the mean and median scores and correct statement about why the median is sometimes a better representative score than the mean	2
	Two correct values for the mean and median scores and incorrect statement about why the median is sometimes a better representative score than the mean	2
	One correct value for the mean and median scores and incorrect statement about why the median is sometimes a better representative score than the mean	1
	No correct values for the mean or median scores and correct statement about why the median is sometimes a better representative score than the mean	1
	No correct values for the mean or median scores and incorrect statement about why the median is sometimes a better representative score than the mean	0
8	Statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing at least one advantage and at least one disadvantage of using a stem-and-leaf plot over a histogram for this memory game	3
	Statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing no advantage and at least one disadvantage of using a stem-and-leaf plot over a histogram for this memory game	2
	Statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing at least one advantage and no disadvantage of using a stem-and-leaf plot over a histogram for this memory game	2
	No statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing at least one advantage and at least one	2

	disadvantage of using a stem-and-leaf plot over a histogram for this memory game	
	Statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing no advantage and no disadvantage of using a stem-and-leaf plot over a histogram for this memory game	1
	No statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing at least one advantage and no disadvantage of using a stem-and-leaf plot over a histogram for this memory game	1
	No statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing no advantage and at least one disadvantage of using a stem-and-leaf plot over a histogram for this memory game	1
	No statement about the comment “someone said that stem-and-leaf plots are a sort of rotated histogram” and listing no advantage and no disadvantage of using a stem-and-leaf plot over a histogram for this memory game	0
9	Stating another type of graph that could be used to represent the same data and listing at least one advantage and at least one disadvantage of using this graph for this memory game	3
	Stating another type of graph that could be used to represent the same data and listing at no advantage and at least one disadvantage of using this graph for this memory game	2
	Stating another type of graph that could be used to represent the same data and listing at least one advantage and no disadvantage of using this graph for this memory game	2
	Stating another type of graph that could be used to represent the same data and listing no advantage and no disadvantage of using this graph for this memory game	1
	Not stating another type of graph that could be used to represent the same data	0
	Total	/18

Section 3

Back-to-back Stem-and-leaf graph– How left are you?

Question No.	Criteria	Mark
1	Value of your reaction times and correct statement about “how left-handed are you?”	2
	Value of your reaction times and incorrect statement about “how left-handed are you?”	1
	No value of your reaction times and a statement about “how left-handed are you?”	1
	No value of your reaction times and no statement about “how left-handed are you?”	0
2	Correct statement about the shape of each distribution left-hand and right hand	2
	Correct statement about the shape of the distribution of the left-hand and incorrect statement about the distribution of the right hand	1
	Incorrect statement about the shape of the distribution of the left-hand and correct statement about the distribution of the right hand	1
	Incorrect statement about the shape of each distribution left-hand and right hand	0

3	Correct statement about what the plot distribution should look like to show a tendency to ambidextrousness (numerical or explanation)	1
	Incorrect statement about what the plot distribution should look like to show a tendency to ambidextrousness (numerical or explanation)	0
4	Four correct values for the mean and the median for each distribution left and right hand and correct statement about the effect of taking out the outliers on making the mean and median closer or further apart	5
	Four correct values for the mean and the median for each distribution left and right hand and incorrect statement about the effect of taking out the outliers on making the mean and median closer or further apart	4
	Three correct values for the mean and the median for each distribution left and right hand and correct statement about the effect of taking out the outliers on making the mean and median closer or further apart	4
	Three correct values for the mean and the median for each distribution left and right hand and incorrect statement about the effect of taking out the outliers on making the mean and median closer or further apart	3
	Two correct values for the mean and the median for each distribution left and right hand and correct statement about the effect of taking out the outliers on making the mean and median closer or further apart	3
	Two correct values for the mean and the median for each distribution left and right hand and incorrect statement about the effect of taking out the outliers on making the mean and median closer or further apart	2
	One correct value for the mean and the median for each distribution left and right hand and correct statement about the effect of taking out the outliers on making the mean and median closer or further apart	2
	One correct value for the mean and the median for each distribution left and right hand and incorrect statement about the effect of taking out the outliers on making the mean and median closer or further apart	1
	No correct values for the mean and the median for each distribution left and right hand and correct statement about the effect of taking out the outliers on making the mean and median closer or further apart	1
	No correct values for the mean and the median for each distribution left and right hand and incorrect statement about the effect of taking out the outliers on making the mean and median closer or further apart	0
5	Correct values for the most common reaction time for the right hand and left-hand	2
	Correct value for the most common reaction time for the right hand and incorrect reaction time for the left-hand	1
	Incorrect value for the most common reaction time for the right hand and correct value for the left-hand	1
	Incorrect values for the most common reaction time for the right hand and left-hand	0
6	Correct statement about which handedness shows the larger range and explanation for this statement	2
	Correct statement about which handedness shows the larger range and no explanation for this statement	1
	Incorrect statement about which handedness shows the larger range	0
7	Statement about your opinion of fairness of this experiment on left and right handedness and statement of reason why you did or did not think it was fair	2

	Statement about your opinion of fairness of this experiment on left and right handedness and no statement of reason why you did or did not think it was fair	1
	No statement about your opinion of fairness of this experiment on left and right handedness	0
8	Stating another type of graph that could be used to represent the same data and listing at least one advantage and at least one disadvantage of using this graph for left and right handedness	3
	Stating another type of graph that could be used to represent the same data and listing at no advantage and at least one disadvantage of using this graph for left and right handedness	2
	Stating another type of graph that could be used to represent the same data and listing at least one advantage and no disadvantage of using this graph for left and right handedness	2
	Stating another type of graph that could be used to represent the same data and listing no advantage and no disadvantage of using this graph for left and right handedness	1
	Not stating another type of graph that could be used to represent the same data	0
	Total	/19