COURSE TITLE: VISUALISING MATHS

PAINTING A PICTURE, THE MATHEMATICAL WAY

Key Stage 4 Programme – 2016-2017

Teacher Name: Dr Adeolu Adegbulugbe

Pupil Name_____

Timetable and Assignment Submission

Sections left blank will be filled in following a meeting with your pathway tutor.

Timetable – Tutorials

Tutorial	Date	Time	Location
1			
2			
3			
4			
5			
6			

Timetable – Homework Assignments

Homework Assignment	Description	Due Date
Tutorial 1	Written brief and data collection sheet design	
Tutorial 2	Survey redesign and data processing exercise	
Tutorial 3	Student reflection on previous homework	
Tutorial 4	Result analysis and reporting	
Tutorial 5	Data processing with Microsoft Excel	

KS4 Programme 2016-17 – Pupil Feedback Report

Lateness	
Any lateness	10 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

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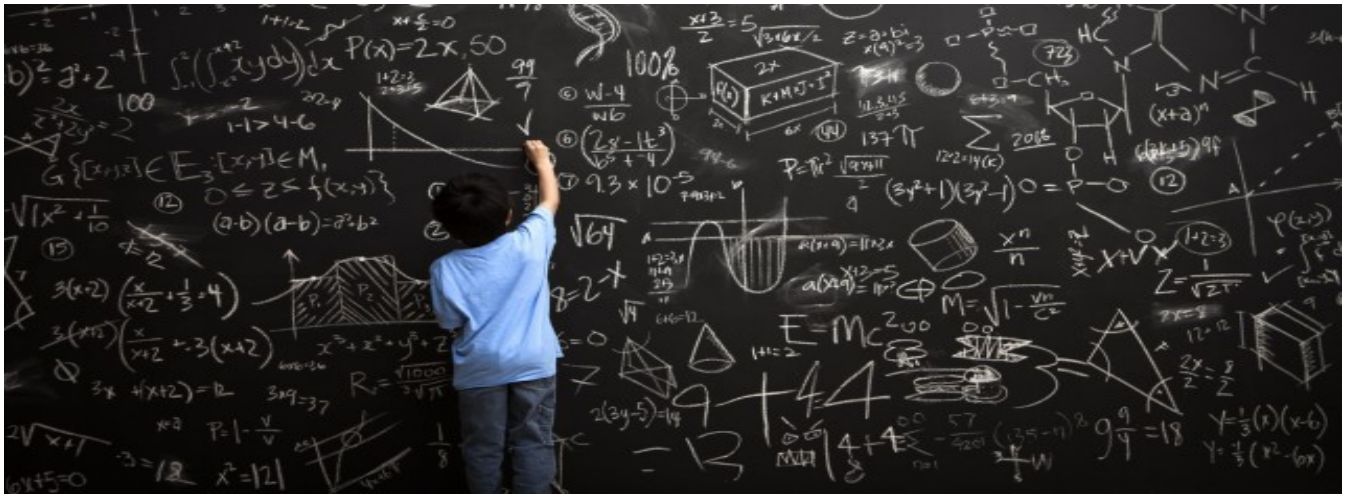
Course Rationale



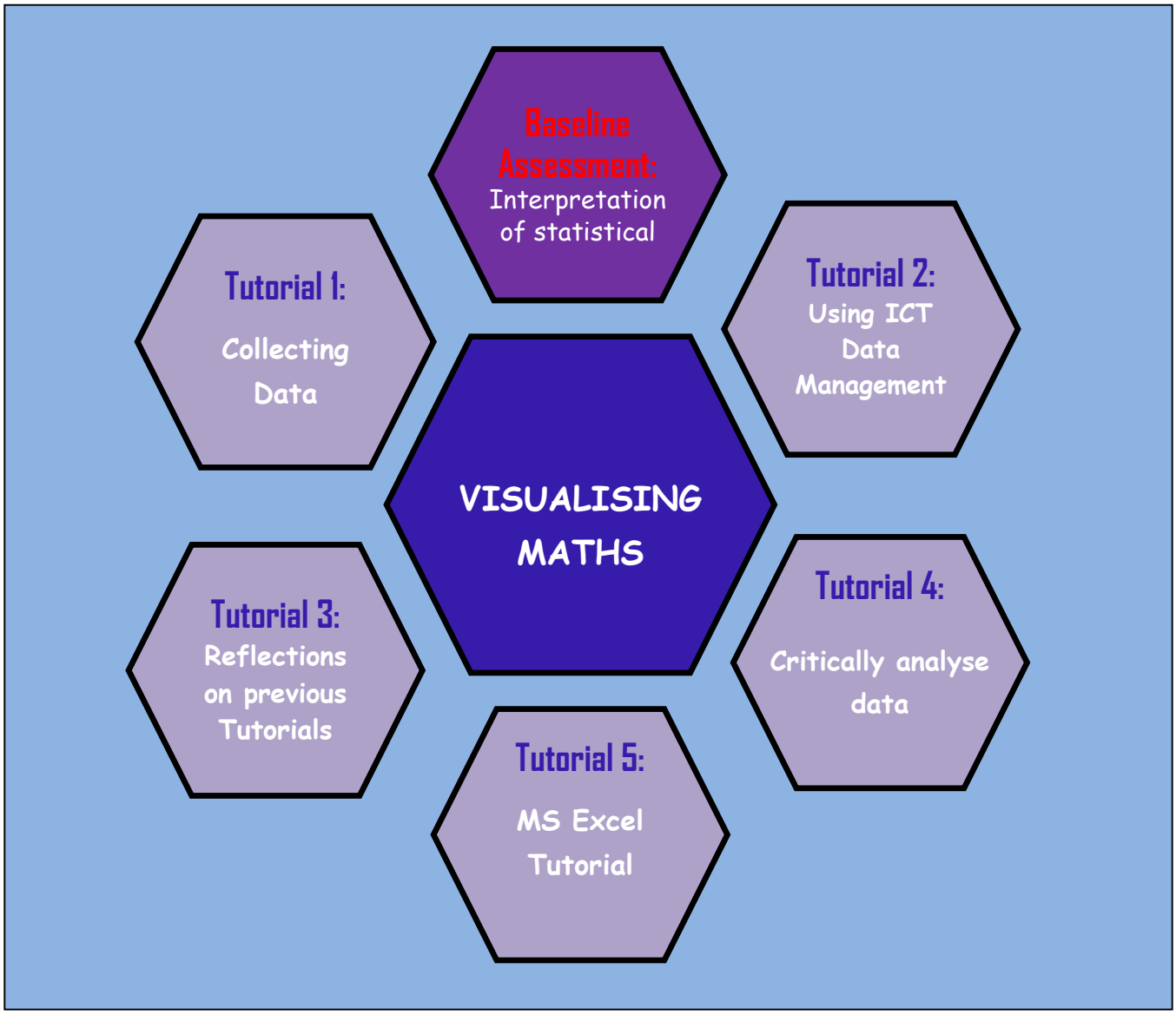
In today's world, scientist and mathematicians continually find it difficult to explain their discoveries in a meaningful way to general audiences. To make their data meaningful, they look for more and more ways to get the message across. The World Wide Web is increasingly becoming a medium for entertainment. Any message that is not presented in an interesting way risks not engaging with audiences. A picture they say, paints a thousand words and graphical representations have been used since the time of great mathematicians like Archimedes to convey difficult concepts. In this course, you will learn how to gather data and reason like a mathematician, apply your concepts like an Engineer and present your findings better than most scientists in today's word.

In this course pupils, will learn how to express mathematical data in a meaningful way by using diagrammatical concepts to conveying various types of information. Pupils will be introduced to critical analysis of data with the aim of appreciating methods of presenting statistical and none statistical data to a general audience.

This course aims to develop your data reasoning and critical thinking on information presentation. A key concept many mathematicians, engineers and scientists find increasingly difficult to master. It introduces the pupils to the use of graphical illustrations like tables, graphs, maps and charts used in data presentations and illustration. These concepts are increasingly applied in every works of life and mostly absent in the skill sets of a young school leaver starting an undergraduate degree.

Pupils will learn the use of some statistical terminologies with regards to data collection and analysis, presentation of grouped and ungrouped data and the representation of data in diagrammatical forms like bar charts, histograms and pie charts. Pupils will learn how to formulate a table from a brief of data and present this in diagrammatical ways to aid a meaningful overview.

Course Map



Legends (Look out for these colour codes)

Homework Brief

This is your brief explaining the story behind your task. Read through to obtain more details on the week's homework (deliverables).

Homework

This is your week's task. It provides details of week's project and work that needs to be handed in by the end of your submission

Grading/Scoring

Grade	Marks	What this means
1st	70+	Performing to an excellent standard at A-Level
2:1	60-69	Performing to a good standard at A-Level
2:2	50-59	Performing to an excellent standard at current key stage
3rd	40-49	Performing to a good standard at current key stage
Working towards a pass	0-39	Performing below a good standard at current key stage
Did not submit	DNS	No assignment received by The Brilliant Club

Key Skill	1st	2.2
Data Collection and documentation	☐ Pupils demonstrate an accurate, detailed and comprehensive knowledge of key concepts of data collection, interpretation and presentation.	☐ Pupils have demonstrated a basic, understanding of data collection and presentation.
Analysis of Data	☐ Pupil have demonstrated a critical analysis of the data gathered was done. Report also shows evidence that the concepts and theories taught were applied. Pupils have demonstrated the ability to carry out independent research, evaluate information clearly and fully, using appropriate supporting evidence that may be drawn from the whole specification and independent research. Reports presented make effective comparisons, explaining parallels, connections, similarities or differences.	☐ Pupil have demonstrated the ability to provide a sound analyses of data collected. Pupil report show a grasp of the concept taught and a good understanding of the gathering and analysis of data collected.
Data presentations	☐ Pupils have demonstrated the critical evaluation required in deciding the best presentations/illustration and therefore has shown that a consideration of the techniques taught were considered. ☐ Illustrations have been presented neatly and captures all the information collected.	☐ Pupils have demonstrated that a fair evaluation of data collected was done. ☐ Illustrations presented have shown a grasp of the techniques used in displaying data.
Knowledge and Understanding	☐ Pupils demonstrate accurate, detailed and comprehensive knowledge of key concepts and debates, incorporating the relevant content. Pupils produce answers which fully address the requirements of the question and demonstrate good contextual awareness. Pupils provide accurate evidence and independently researched example	☐ Pupils offer some analysis that shows some awareness of differing ideas. Pupils provide a simple evaluation of key concepts and debates, and make some comparison. Pupils make a good attempt at answering the question which partially addresses the requirements of the course, but lacks evidence of independent research and thought
Report writing	☐ Language is concise, clear and in an engaging style ☐ Writing is well structured. ☐ Appropriate technical vocabulary is confidently and correctly used where appropriate.	☐ Language is clear and reasonably detailed ☐ Some attempt to appropriately structure writing has been made ☐ Some attempt made to use technical vocabulary

INTRODUCTION

Congratulations! You have just enrolled to a specially designed pathway course aimed at helping you to develop competencies you will find increasingly useful during your transition from high school to University and during your study at the University. The course content you will encounter here are quite like those taught at the University and this provides the opportunity for you to learn and Experience University taught modules before you decide on your career choice at the University.

At the completion of this course, you will be awarded a certificate of completion at a graduation ceremony witnessed by friends, family, teachers and distinguished members of designated Universities. It is therefore important you work hard to complete the course and develop the skills necessary for your transition to the University.

Course Structure

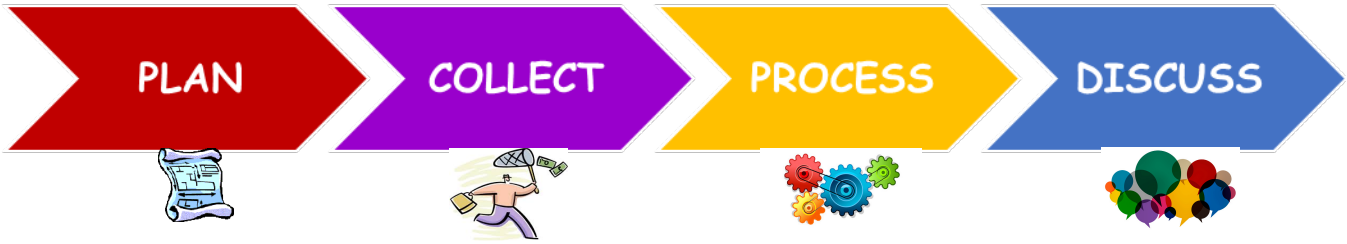
The course contains five tutorials you will be expected to attend and a sixth tutorial which is designed as your final assignment. At the end of each tutorial, you will be given a homework brief that explains the tasks to be completed in your week-long homework. The homework will detail the tasks to be completed and any deliverables expected.

Tutor Feedback

A pupil feedback report section is situated at the end of each tutorial and is designed to be used by your pathway tutor to provide you with feedback on your homework submission. Details of marks awarded are also provided in this section as well as any marks deducted for late submissions and Plagiarism. Marks awarded for tutorials 1 to 5 will sum up to a cumulative score which makes up 75% of your final grade while scores awarded for tutorial 6 make up 25% of the final grade. Good luck!

Victualing Mathematics

The beautiful art of mathematics comes to light when we present mathematical information in a graphical way and since applying maths allows us to solve problems, illustrating our results pictorially allows its appreciation by a greater audience. In these pathway course, we shall be exploring how we solve problems by applying maths and how we present our results to a greater audience with the aid of visual representations. Let us consider the problem-solving approach. The chart below outlines the main steps for conducting a research or investigation. You will need to master these steps to help with your research or problem solving tasks. The following are some of the questions you need to ask yourself in each stage of your problem-solving exercise;



PLAN - What is the question you want answers to? Is there a problem you want to find out some information about? How can statistics help you to find out the answer? Do you already have an idea of what it is you may discover? What do you expect the outcome and conclusions to be?

COLLECT - Exactly what data do you need to help you answer your question? Where will you go to find it? What variables will you use – are there useful extras that might be interesting to investigate? For example gender, age, height. How much data will you need? Does it need to be a random sample?

PROCESS - How are you going to organise your data? What kinds of tables and graphs will best present your data? How can you ensure you are concentrating on things that are important for your investigation?

DISCUSS - What does your data tell you? Does it answer your question? Does it answer other questions? How are you going to present your conclusions? Does your data present other questions to you? Can you use your results to make predictions? Does it raise any concerns? Where should the investigation go next?

The planning stage is very central to the entire problem solving cycle above. In fact, planning is done at every stage of your problem-solving task. A sample planning sheet has been provided for you in Appendix 1 to help with addressing every problem-solving exercise assigned.

Useful Hints

- Think of how you would plan an investigation to determine if boys are brighter than girls? Your predicted outcome will represent your hypothesis and based on your investigation you will have proof your hypothesis as true or false.
- Think of all the possible details you have to consider in planning your experiment/survey.

Tutorial1 - DATA COLLECTION

One of the most common tasks you will encounter during your study at the University is collecting data to test certain hypothesis or solve problems. This tutorial is designed to equip you with the skills required in analysing a problem and designing appropriate methods for collecting data and solving a problem. You will learn ways to conduct surveys and what makes a good survey. After studying this unit, you should be able to;

1. ***Learn the key elements of an investigative research***
2. ***Organise and design a data collection exercise effectively***
3. ***Gain substantial experience with designing data collection***

Collecting and recording data is a fundamental part of the scientific method used in solving problems. Once data has been recorded and organised, we can begin to draw conclusions about the way the world works around them. Collecting and handling data allows us to identify patterns, form theories and formulate further questions about their surroundings. Scientific data can be collected from carefully planned experiments, from general observations, or from random discoveries made every day.

Homework Brief

The management team at your school are currently considering business ventures within the school. They have just decided to open a pizza shop at the school selling delicious pizzas at affordable prices. However, they are unsure as to what pizzas to will generate the most profit. They are aware there are other pizza outlets around the school selling pizzas with various toppings. Their business development manager has advised that to compete with the several pizza shops in Grays, they would have to sell pizzas with the most favourite pizzas topping possible. To help with this, they have decided to hire a specialist who could find out from students in your school, the most favourite pizzas toppings.

Hurry! You have just been hired by the university as a specialist and you have been tasked with presenting your findings on the question below to the management board;

"WHAT PIZZA TOPPINGS FROM A LIST OF 6 TOPPINGS ARE MOST PREFERRED BY STUDENTS IN YOUR SCHOOL"?

Homework

1. **Write a brief to highlight your plan of action for collecting data. Your brief should include;**
   - *How many students you plan to survey*
   - *6 toppings you plan to choose (e.g. Cheese & ham, pepperoni & olives, sausages & Mushroom)*
   - *How you intend to collect your data*
   - *How you intend to record your data*
   - *Details you need to provide in your survey to ensure the right information is obtained (e.g. would you like your survey to have a title, instructions on how to fill out the survey e.t.c)*
   - *Share any other ideas you have for the week's task.*
2. **Design a data collection sheet to find out the favourite pizza toppings from your combination of 6 toppings.**

Pupil Feedback Report

Lateness	
Submission after 3.00pm on _____	5 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of RIS Teacher			
Title of Assignment			
Name of Pupil			
Name of School			
ORIGINAL MARK / 100		**FINAL MARK / 100**	
DEDUCTED MARKS		**FINAL GRADE**	

Homework (Test of Course Skill)

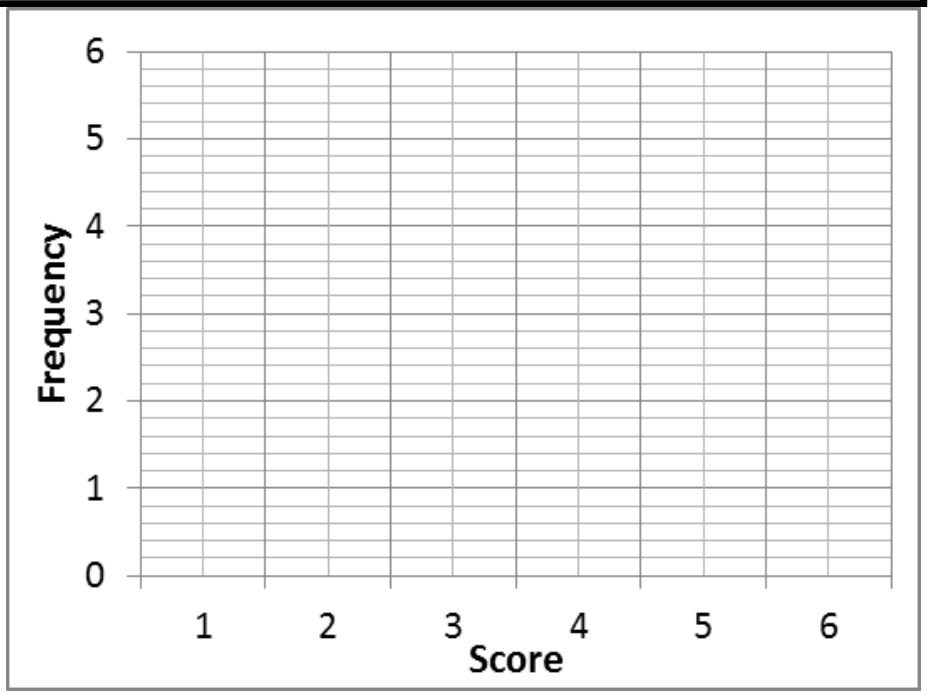
The homework assignment for the first tutorial is a baseline test to see your initial level of attainment in this subject area. The assignment will test for some or all the subject specific skills that are required later in the final assignment. Worry less about doing 'well' or 'badly' on the baseline test, it considers the fact that you may not be familiar with the subject area. It is designed to help you and your PhD tutor identify where you are at the start of the programme and to help you measure your progress along the way.

Raw scores

1	**1**	**4**	**3**	**2**	**4**	**4**	**5**	**6**	**2**
2	**3**	**4**	**4**	**1**	**1**	**3**	**4**	**5**	**3**
6	**5**	**1**	**5**	**6**	**5**	**3**	**5**	**1**	**2**

Frequency Table

	f	fx
1		
2		
3		
4		
5		
6		
total		



Compute the Averages

Mode: **Mean:**

Median: **Range:**

☐ **Calculate the '*fx*' column for a frequency table?**

☐ **Draw a pie chart with the data above?**

☐ **Draw up a stem and leaf diagram with the data above?**

☐ **Construct a bar chart with the data above on the graph sheet provided?**

☐ **Using class widths $0 < S \leq 2$, $2 < S \leq 4$ and $4 < S \leq 6$, draw up a histogram?**

☐ **Comment on which of the visual charts you prefer in explaining your results & why?**

Tutorial 2- USING ICT MANAGEMENT TOOLS

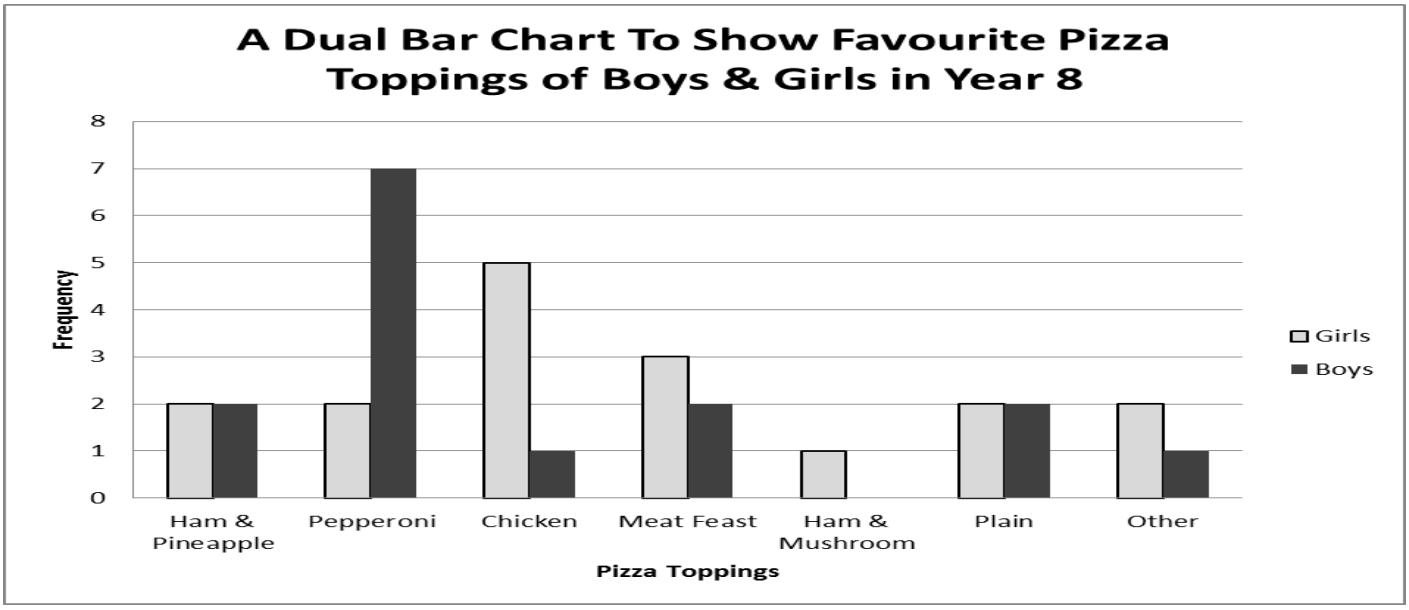
Data management tools are important applications used in managing, analysing and interpreting data. They are very useful when tools that can help to organise the data collection process and also the storage of data collected. There's quite a bit of data in our daily lives that needs to be stored, organized, and manipulated. Microsoft Excel is one of many great tools that use spreadsheets to help you track data. In this tutorial, you will learn to use Microsoft Excel to manage your data effectively. You will begin to acquire skills essential to your success at the University. After studying this Unit, you should be able to;

1. ***Effectively use a database management tool to organise and analyse your collected data***
2. ***Use information Microsoft Excel to effectively display your data and findings.***

You will be given a guided tour of the application and a few hands-on exercises within the application in a bid to build your competences in the use of Excel as a data management tool. Subsequently, you will utilise skills acquired from this unit in the week's deliverables.

Homework Brief

The school's management team have called you to a meeting to discuss the results and offer ideas. According to the business development manager, a popular pizza outlet that offers all six toppings you have selected believes that some of these toppings are more popular with boys than girls. They would also like to know how these preferences vary by age. The school management team has decided that they would like you to include these in your investigation and present your findings to the school board. How would you re-do your survey to investigate this and help them out? You will need to make sure your presentation looks eye-catching for draw the attention of the school board. Consider what additional data needs to be included in your survey to understand preferences in boys and girls. In Excel, a dual bar chart is called a "clustered bar chart". Remember to include a chart title, key, and axis labels on your graph. Think of how presentable you would like to have your chart.



Homework

1. **Redesign your survey in tutorial one to capture the new requirements requested by the board.**
2. **Conduct your survey and collect your data.**
3. **Using Microsoft Excel, record your data and present your data in a dual bar chart like shown above?**
4. **Can you draw a chart to show how these preferences vary by age?**
5. **Summarise in a short report, the changes you have made to your data collection exercise based on the requirement by the board.**

Pupil Feedback Report

Lateness	
Submission after 3.00pm on	5 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of RIS Teacher			
Title of Assignment			
Name of Pupil			
Name of School			
ORIGINAL MARK / 100		**FINAL MARK / 100**	
DEDUCTED MARKS		**FINAL GRADE**	

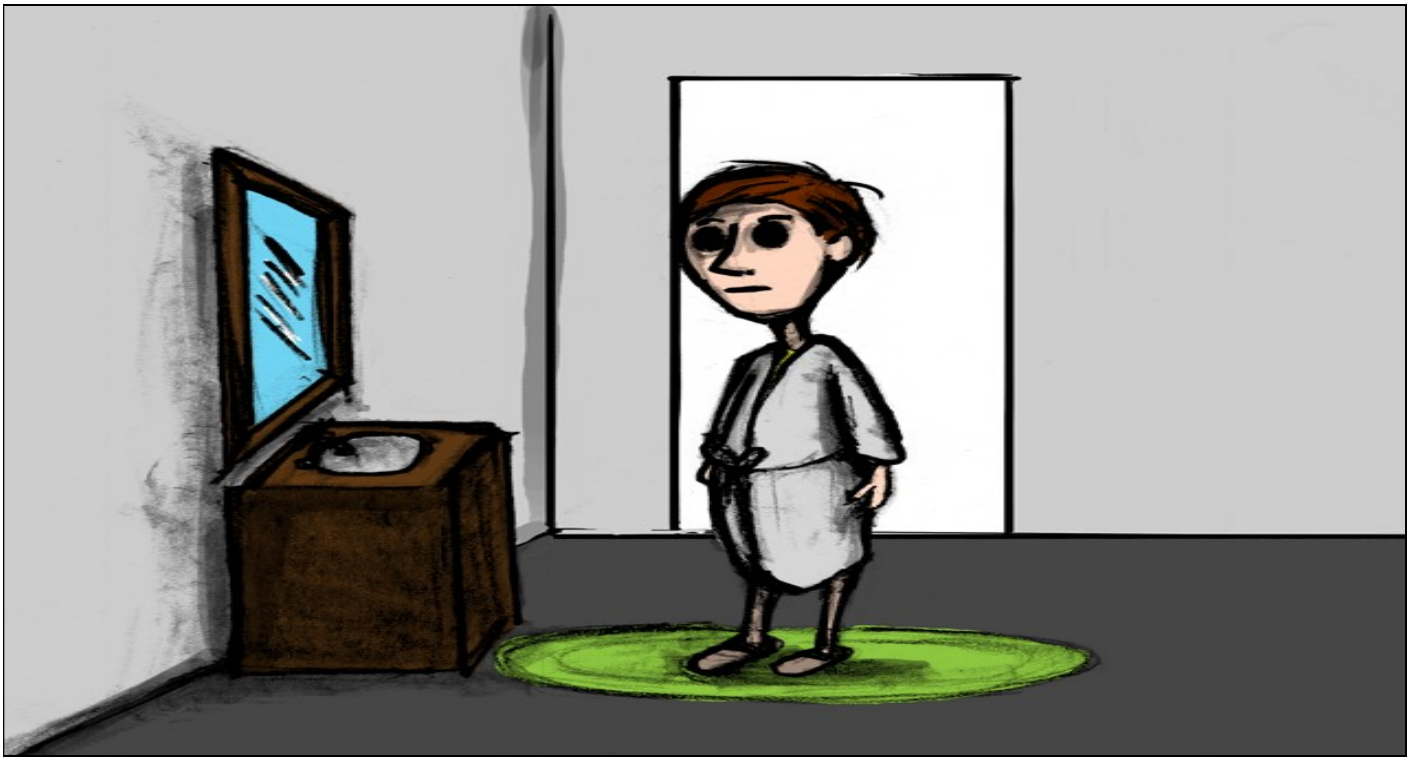
Tutorial 3 – Writing a Reflection on Work Presented

It is important to reflect on your work presented so far and your attempt at the tasks giving. A reflection allows you to sit back and reconsider your approach to tasks giving. It is expected that following such reflections, you will be able to identify better ways of doing the task. Reflections are integral parts of your learning curve at the university. Being able to reconsidered your attempt at giving task with the aim of improving on your performance in subsequent tasks.

In this unit, you will be given the opportunity to consider improvements that can be made on your work so far. You will also be allowed to make these improvements. You will need to step back from your work and look at what you have produced from a different perspective. After studying this Unit, you should be able to;

1. ***Self-reflection on the activities so far to Identifying opportunities for improvement***
2. ***Learn the art of self-reflecting.***

You could ask you friends to have a look at your work and give you their opinion of what you have done. Remember, the goal is to make improvements by identifying areas you could have done better. When you have made a list of things you could have done better, draw up a plan on how to implement your new ideas.



Homework Brief

Following your review of your presentation in comparison with others so far, write down 3 ways that you could improve your survey. Are there any ways to improve the data collection design? Next, make those improvements to your survey! You are allowed a final attempt at redesigning your survey in tutorial 1 to capture fresh ideas you have identified in your reflections. You can make any necessary changes you feel necessary. Note: You may conduct your survey if you feel this is necessary.

Homework

1. **Write down ways that you could improve your presentation in tutorial 2 based on your reflection.**
2. **Present your new data as you feel appropriate, making sure to include amendments you have identified in your reflections.**

Pupil Feedback Report

Lateness	
Submission after 3.00pm on	5 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of RIS Teacher			
Title of Assignment			
Name of Pupil			
Name of School			
ORIGINAL MARK / 100		**FINAL MARK / 100**	
DEDUCTED MARKS		**FINAL GRADE**	

Tutorial 4 – Critical Data Analysis and Presentation

A critical part of data management is making deductions from such data. We may have collected data to find out if boys are more intelligent than girls in a selected school and our data is meant to provide us with answers to our question. If we believe that boys are more intelligent than girls then our hypothesis is "Boys are far more intelligent than girls". To test our hypothesis, we would collect data and analyse such data to find out if infact our hypothesis is right or wrong. Critically analysing our data therefore reveals the answers we are looking for. Data analysis is is therefore a critical part of our data management. In this unit, you will learn how to analyse data collected to make inferences from such data. You will also learn to do some simple calculations to that give us a better view of our random data collected. These calculations could include working out the averages from the raw data or estimating the averages from your frequency tables/diagrams to working out the range for data collected. As a guide to analysing data, think about the following points carefully;

1. ***What information are you analysing?***
2. ***What do your results show you?***
3. ***Have you made comparisons between your sets of data?***
4. ***What can you interpret from your results?***

Homework Brief

Following your last meeting you have been called to meet with your school board to present the results of your investigation. You have given below, some guidance as to the sort of questions you should be expecting from the board;

- What pizza toppings would we sell the most?
- We have more boys in our school than girls would this affect what pizza toppings we sell the most?

- What pizza toppings are preferred the most by 11 year olds?
- Which 3 pizza toppings would we sell the most from all 6 toppings investigated?

Remember, these are just examples of such questions. This week you will need to analyse the data you have previously collected. You are expected to present this report to the board and therefore you will be expected to prepare a presentation showing the result of your investigation. Remember will write a report on the results obtained from Tutorial 3 and include their illustrations in making conclusions on the results of their findings. Pupils will also adopt the use of other diagrammatic illustrations that can be used to summarise the results of their

Homework

1. **Write a report of at least 200 words to summarise the findings from your data analysis exercise.**
2. **You will deliver a 10mins presentation to your tutor summarising the results of your investigation.**

The report is to be presented to your school management board and you should use your charts in summarising your findings from the results gathered. You are encouraged to find other ways to illustrate your findings in a diagrammatical way to buttress your conclusions on your findings.

Pupil Feedback Report

Lateness	
Submission after 3.00pm on	5 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of RIS Teacher			
Title of Assignment			
Name of Pupil			
Name of School			
ORIGINAL MARK / 100		**FINAL MARK / 100**	
DEDUCTED MARKS		**FINAL GRADE**	

Tutorial 5 –MS Excel Tutorial

In you previous exposure to ICT data management tool, you were assigned the task of using microsoft to organise and analyse your data. In this tutorial, we will learn to be proficient in the use of Microsoft Excel in managing and processing data. The interface and the workings of the application will be explained in a comprehensive detail so you can apply the knowledge learnt in your final assignment. This tutorial will involve a practical session in which you will try your hands out with the application. At the completion of this tutorial, you should be able to;

1. ***Creating a column chart, changing alignment in a spreadsheet file, chart formats including labels, x and y axis', gridlines, titles, legends, moving charts on the spreadsheet, creating a footer, setting up landscape format, and printing directions***
2. ***Comparing data, setting up a column chart, changing chart formats including labels, gridlines, titles, colours, and legends.***
3. ***Process given data develop graphical illustrations such as Bar Charts, Pie Charts, Histograms, Frequency Polygons and line plots.***
4. ***Interpret details on these plots to help with your discussions of your results.***

At the end of the hands-on tutorial activity, you will be given two hands-on activities to complete. You will be required to gain access to a computer to complete these activities and submit a printed copy of your work and a digital version as well.

Homework Brief

Follow the instructions given in the activities below. Once completed, save your files as your name and the activity number (e.g. Eric activity 1). Print out copy of your finished work and submit to your tutor.

Hands-on Activity 1

1. Open a new spreadsheet file.
2. Ms. Parry recently surveyed the students in her computer classes. She asked them several questions. One question was, "What is you favorite after school treat?" Their choices included candy, chips, cookies, or pizza.
3. Widen columns A and B.
   - Place the cursor on the line to the right of the column to be resized
   - The cursor will have a horizontal arrow through it; drag the line left to widen the width of the column

     OR

   - Place the cursor on the column to be sized
   - Click on ***format*** and choose ***Column Width*** from the menu; enter the column width from 0 to 225
   - Click ***OK***
4. ***Center-align*** the contents of all cells. (***Center-align*** will be on the standard toolbar just like Microsoft Word.)
5. To graph the results, set up a spreadsheet file so it looks exactly like this:

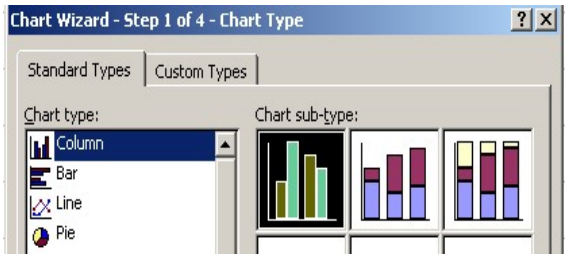
	A	B
1	Favorite Treats	Number of Votes
2	Candy	18
3	Chips	40
4	Cookies	80
5	Pizza	12

5. Select cells A1 through B5 (Left click the mouse starting in cell B5, then drag over left and all the way up to cells A1 and B1. They will all be blue except B5.)

	A	B
1	Favorite Treats	Number of Votes
2	Candy	18
3	Chips	40
4	Cookies	80
5	Pizza	12

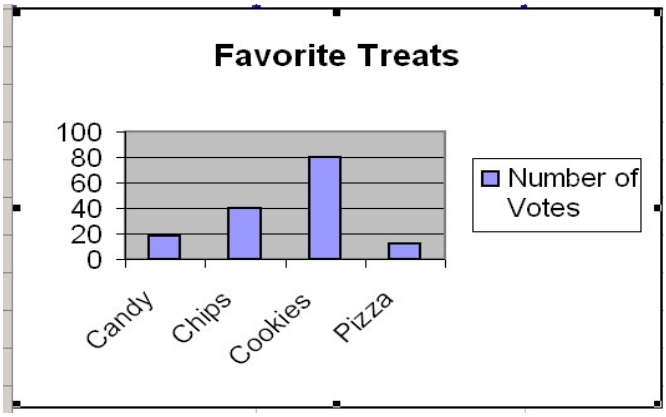
6. Click the ***Chart Wizard*** button from the standard toolbar.

   - <u>Step 1</u>: of the ***Chart Wizard,*** click ***Column*** and choose the ***Clustered Column*** subtype. Click ***Next.***



   - <u>Step 2</u>: choose from rows or columns. The data will be displayed in the chart differently based on your selection. Choose the option you prefer. Click next.

- Step 3: type ***Favorite Treats*** into the ***Chart Title*** box. If you wish to type in a label for the x or y axis, you can do that as well. Click ***Next.***
- Step 4: Select ***"As object in Sheet 1."*** Click ***Finish.*** Your chart should look similar to this if you chose the ***columns*** option in Step 2.



- Click the white area of the chart and drag the entire object beneath cell A5.

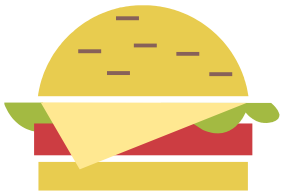
7. Finishing
   - Add a ***FOOTER*** to you document. Go to ***VIEW*** and choose ***HEADER/FOOTER***. Click the CUSTOM FOOTER button. In the box labeled "Left Section," type Activity 1, press Enter, and type your name.
   - Click the ***Print Preview*** icon on the toolbar, this will show you what the spreadsheet will look like when printed. Is your Footer there? The Chart?
   - Go to File and select Save. Give the file a name (use your name).
   - **Submit to your Tutor as instructed.**

Hands-on Activity 2

1. Open a new spreadsheet file.

2. Mrs. Jones recently polled all the students attending Baker Middle School. One of the questions she asked was, "What is your favorite cafeteria lunch?" The choices students could select from included hot dogs, burgers, tacos, pizza, or spaghetti. There were some interesting differences when the results were examined by gender.

Favorite Lunch	**Boys**	**Girls**
Burgers	60	40
Hot Dogs	70	20
Pizza	60	60
Spaghetti	20	60
Tacos	35	5

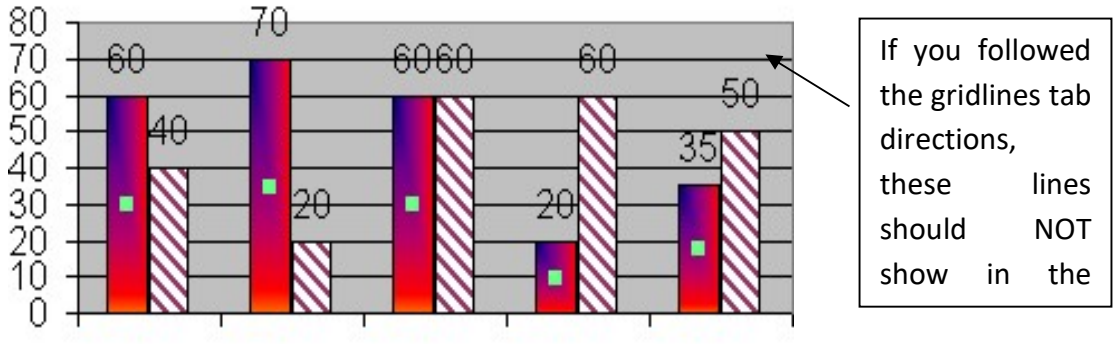


Create a spreadsheet file that includes this information. You should have data in cells A1 to C6.

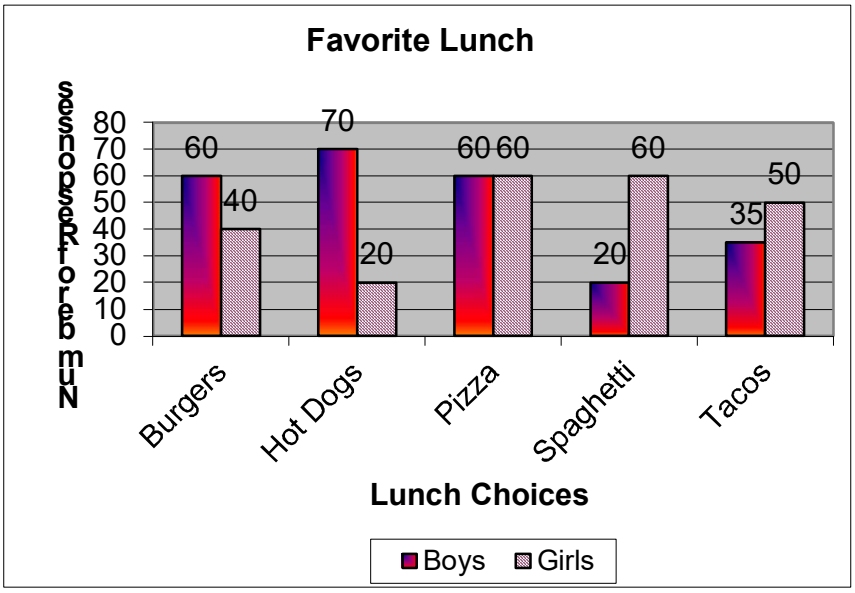
3. Select the contents of cells A1 through C6 for inclusion in a ***column chart.*** Use the ***Chart Wizard,*** and follow the instructions from Activity #2 if necessary.

4. ***Chart Customization***

- After the ***column chart*** is created, edit it by first clicking once in the white space inside the chart. Then go to ***Chart***. Choose ***Chart Options.***
- Click the ***Titles*** tab. Add ***labels*** for the x- and y-axis if you did not create them initially.
- Click the ***Gridlines*** tab. Get rid of the check in front of ***Value (Y) Axis, Major Gridlines.***
- Click the ***Legend*** tab. Change the placement of the legend to ***Bottom***.
- Click the ***Data Labels*** tab. Click ***Values.*** Click ***Next - Finish.***
- Click on one of the columns that represent data from boys. This should put a little box in each of the boy columns.



- Right-click on one of the columns. Choose Format Data Series. In the window that appears, choose a color that you would like to use to represent the boys' data. Then click the Fill Effects button. Experiment with the Gridlines, Textures, and Patterns tabs until you are satisfied with the outcome.
- Make similar changes to the girls' bars.
- Your chart should look something like this.



5. Click cell ***B5*** and change the number to ***40***. Watch the chart as you press ***Enter***.

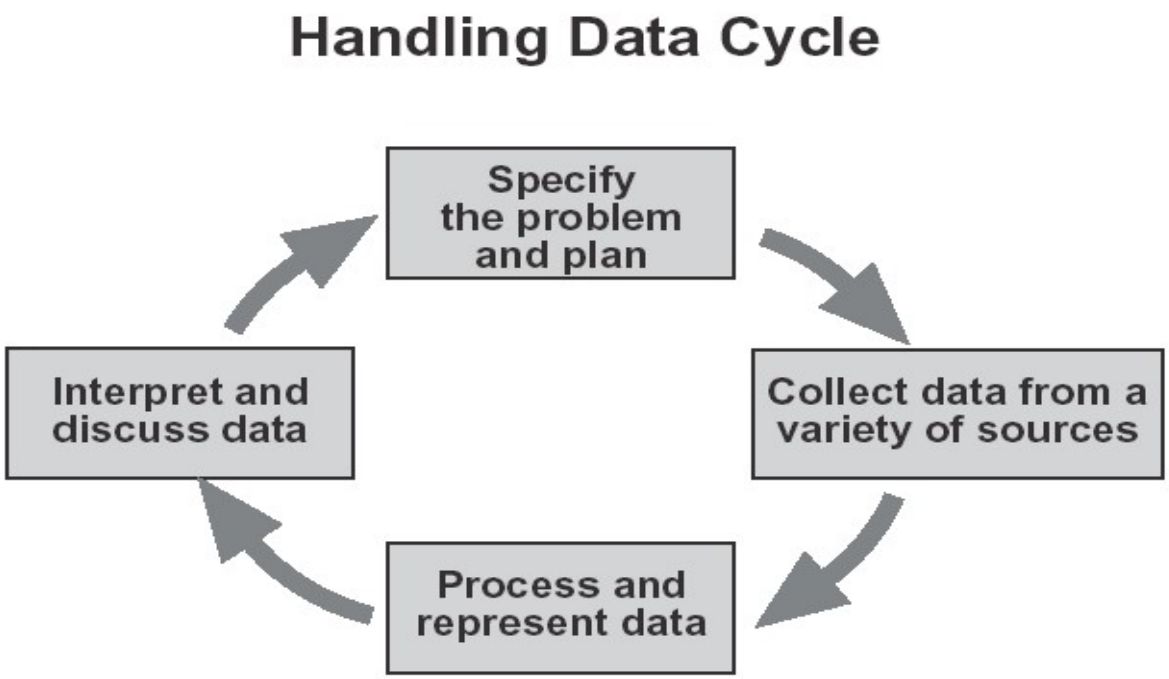
6. Finishing:
   - In the ***footer***, type *Activity 2*. Press ***Enter***, and type *your name.*
   - Go to File and select Save. Give the file a name (use your name).
   - **Submit to your Tutor as instructed.**

Tutorial 6 – Final Feedback/ Final Assignment

Congratulations on reaching the last and final tutorial on the Uni-pathway course. You have had a series of intensive tutorials aimed at developing your mathematic visualisation and your analytical reasoning skills. Now you will utilise all the skills acquired so far in your final assignment/project.

Final Assignment Brief

In your final tutorial, you are required to conduct a research of your own allowing you to select a hypothesis, collect your data, analyse your data and report your findings in a report to your course mates and your pathway tutor. Below is a summary chart to illustrate the process you will need to consider while planning your project.



1. Think thoroughly about what you intend to investigate. A few examples could be;
   - Boys are brighter than girls
   - Most girls are taller than boys in year 7
   - There are more left Handed year 7 students than there are in year 8
   - Football is the favourite sports amongst year 11 students than year 10
2. Once you have decided on your hypothesis, you will need to design your sampling and data collection exercise to gather data for testing your hypothesis. You will need to consider the following;
   - Where you are going to get your data from?
   - Will you need to design your survey?
   - How many students are you going to survey etc.

For your sampling, be sure to state how your sampling will aid you in investigating your hypothesis.

You also need to consider how you intend to process your data. You should think of how your data analysis will help you to obtain results of your investigation. Consider your interpretation of the data analysed and critically discuss in your report your findings.

Final Assignment

For your final assignment, you will design an investigation at your school.

1. **You are expected to come up with a hypothesis**
2. **Plan your sampling and data collection**
3. **Process and critically analyse your data**
4. **Write a report to summarise your findings from your investigation.**
5. **Present your findings to your course mates and your pathway tutor**

You have 2 weeks to complete your final assignment and submit your report.

Pupil Feedback Report

Lateness	
Submission after 3.00pm on _____	5 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of RIS Teacher			
Title of Assignment			
Name of Pupil			
Name of School			
ORIGINAL MARK / 100		**FINAL MARK / 100**	
DEDUCTED MARKS		**FINAL GRADE**	

Appendix 1 – Sample Planning Sheet

Student name…….

Investigation Title…….

Starting Thoughts/Ideas

What question or Hypothesis am I going to investigate?

What do I expect the answers to be and why?

Data: The population……

The sample size……

What data and variables will I need?

How will I collect it?

Process: What calculations will I do?

What information will these tell me?

What graphs/diagrams will I use?

What will these tell me?

Discuss: What have I discovered?

How do my results help with my question/hypothesis?

Can I use my results to make any predictions?

Are there now any other questions that have arisen?

Appendix 2 - Referencing Correctly

When you get to university, you will need to include references in the assignments that you write, so we would like you to start getting into the habit of referencing in your Brilliant Club assignment. This is important, because it will help you to avoid plagiarism. Plagiarism is when you take someone else's work or ideas and pass them off as your own. Whether plagiarism is deliberate or accidental, the consequences can be severe. To avoid losing marks in your final assignment, or even failing, you must be careful to reference your sources correctly.

What is a reference?

A reference is just a note in your assignment which says if you have referred to or been influenced by another source such as book, website or article. For example, if you use the internet to research a subject, and you want to include a specific piece of information from this website, you will need to reference it.

Why should I reference?

Referencing is important in your work for the following reasons:

- It gives credit to the authors of any sources you have referred to or been influenced by.
- It supports the arguments you make in your assignments.
- It demonstrates the variety of sources you have used.

When should I use a reference?

You should use a reference when you:

- Quote directly from another source.
- Summarise or rephrase another piece of work.

How do I reference?

There are several different ways of referencing, and these often vary depending on what subject you are studying. The most important to thing is to be consistent. This means that you need to stick to the same system throughout your whole assignment. Here is a basic system of referencing that you can use, which consists of the following two parts:

A marker in your assignment: After you have used a reference in your assignment (you have read something and included it in your work as a quote, or re-written it your own words) you should mark this is in your text with a number, e.g. [1]. The next time you use a reference you should use the next number, e.g. [2].

Bibliography: This is just a list of the references you have used in your assignment. In the bibliography, you list your references by the numbers you have used, and include as much information as you have about the reference. The list below gives what should be included for different sources.

Websites – Author (if possible), title of the web page, website address, [date you accessed it, in square brackets].

E.g. Dan Snow, 'How did so many soldiers survive the trenches?',
http://www.bbc.co.uk/guides/z3kgjxs#zg2dtfr [11 July 2014].

Books – Author, date published, title of book (in italics), pages where the information came from.

E.g. S. Dubner and S. Levitt, (2006) *Freakonomics*, 7-9.

Articles – Author, 'title of the article' (with quotation marks), *where the article comes from* (newspaper, journal etc.), date of the article.

Appendix 3 – University Applications Guidance

The most important factors to consider when choosing a subject to study at university is whether it interests you, whether you are any good at it and will you love studying it for at least the next three years. Here's the ultimate guide in choosing the right degree subject for you.

1. How are interested am I in the subject?

Being interested in a subject tends to go with an aptitude for it, but you can also be good at something you really don't want to study for three years. Remember that being motivated is an essential part of success, and maintaining your enthusiasm for the subject is most of the fun of being at university.

2. Will learning about that subject interest me for three years?

Think about what really does interest you. If you walk into a library, what subjects do you gravitate to? What really interests, fascinates and enthuses you? This bit is actually far more important than focusing on what job it might or might not lead to. Does that surprise you?

3. Do I choose a subject with an obvious career path?

Don't be afraid of picking something that doesn't have an obvious career path attached to it; the point of university study is not to prepare you for a specific job (with some obvious exceptions!) - even people with law degrees don't necessarily become lawyers. University level study is intended to train you in how to use your brain effectively and provides you with the opportunity to acquire skills that can be used in any number of ways. The actual subject is far less important to your career prospects, so always, always go for what you are passionate about rather than 'it'll get me a well paid job' as your starting point for picking a subject.

4. Should I consider choosing a degree subject that is entirely new?

There will be lots of degrees that you can take at University that you might not have heard of or thought about. Degree subjects like social anthropology, criminology, biosciences, Middle Eastern studies, pharmacology, American literature for example. Make sure you have a look at all the courses that a relevant university faulty offers - you might miss something that really appeals to you!

Will you be able to hack the library?

5. Should I consider choosing a degree with a placement or something similar?

What 'extras' are on offer? Work placement, field trips, year abroad, optional units from other subject areas such as a language? These can be important plus points on your CV when you eventually look for a job.

6. Should I consider a joint honours degree?

Look at degree courses in joint or combined subjects - two subjects may leave more career options open to you once you graduate, especially if one subject has a more vocational slant (like Business Studies or a language). These courses often have lower admissions requirements than a single subject course, not because they are 'easier' but because there is less applicant demand for some subject combinations

– The student Room