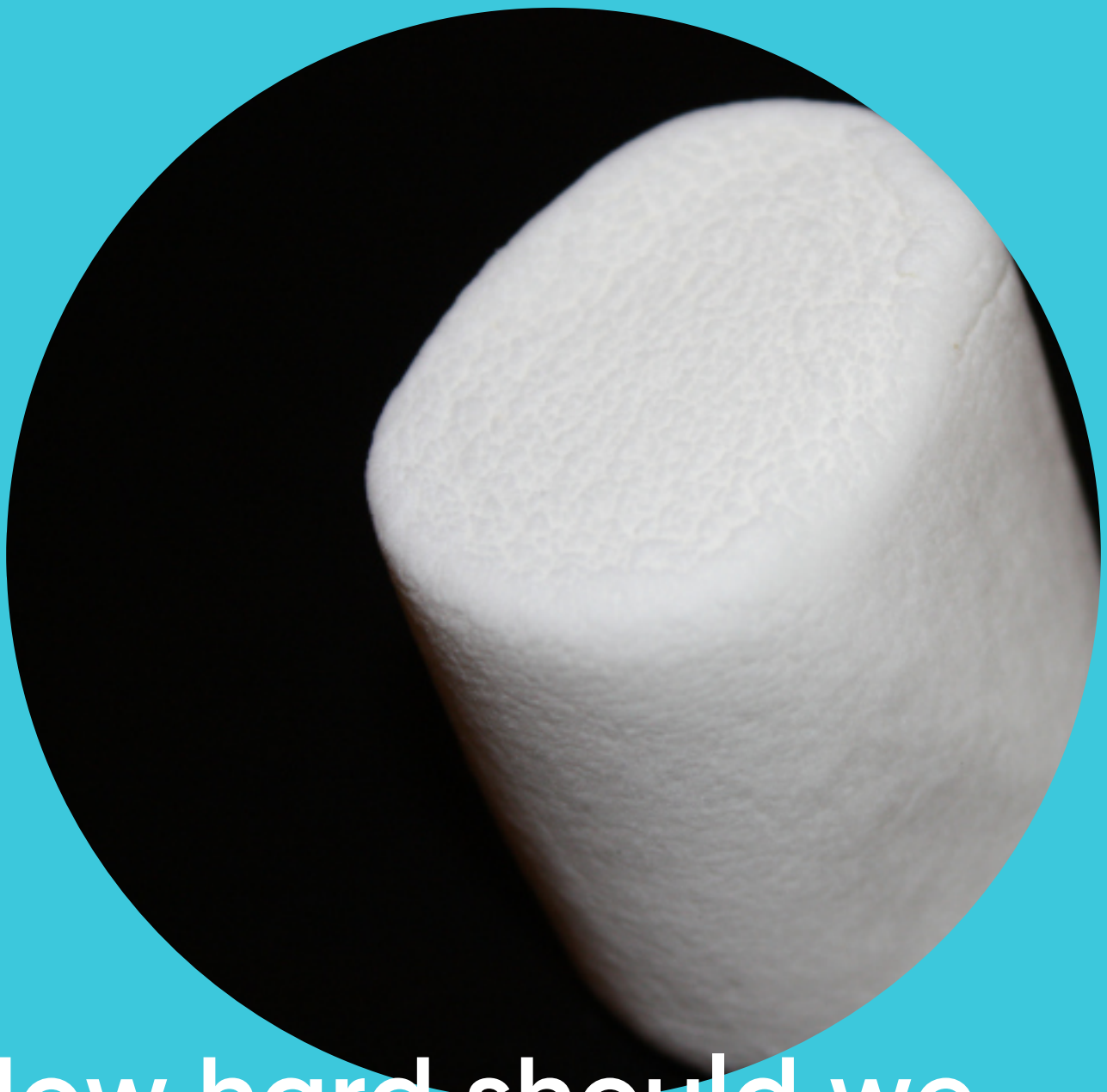


How hard should we work at school?

Key Stage 4 Programme

Pupil Name

Handbook Designed by Dr Chande

Timetable and Assignment Submission

Timetable – Tutorials

Tutorial	Date	Time	Location
1	12/12/18	2pm	KCL
2	wb 7/1/19	3pm	Chobham
3	wb 14/1/9	3pm	Chobham
4	wb 21/1/19	3pm	Chobham
5	wb 28/1/19		
6 (Feedback)	wb 11/2/19	3pm	Chobham
7 (Feedback)	wb 18/3/19	3pm	Chobham

Timetable – Homework Assignments

Homework Assignment	Description	Due Date
Tutorial 1	Exercise – what can we have?	
Tutorial 2	Exercise – what do we want?	
Tutorial 3	Exercise – maximising happiness	
Tutorial 4	Exercise – how hard should we work in school?	
Tutorial 5	Final Assessment	

Assignment Submission – Lateness and Plagiarism

Lateness	
Submission after deadline	10 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Uni Pathways – Pupil Feedback Report

Grade	Marks	Guidance
1st	70+	
2:1	60-69	
2:2	50-59	
3rd	40-49	
Working towards a pass	0-39	
Did not submit	DNS	No assignment received by The Brilliant Club

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

Name of PhD Tutor	Dr Chande		
Title of Assignment	How hard should we work at school?		
Name of Pupil			
Name of School	Chobham Academy		
ORIGINAL MARK / 100		FINAL MARK / 100	
DEDUCTED MARKS		FINAL GRADE	

If marks have been deducted (e.g. late submission, plagiarism) the PhD tutor should give an explanation in this section:

Learning Feedback Comment 1 -	
What you did in relation to this Key Learning Priority	How you could improve in the future
Learning Feedback Comment 2 –	
What you did in relation to this Key Learning Priority	How you could improve in the future
Learning Feedback Comment 3 –	
What you did in relation to this Key Learning Priority	How you could improve in the future
Resilience Comment -	
How you showed learning resilience during the course	How you could build learning resilience in the future

Contents

Course Rationale	5
Mark Scheme	6
Knowledge Organiser	8
Baseline Assessment	9
1. What can we have?	10
2. What do we want?	13
3. Maximising happiness	17
4. How hard should we work at school?	20
5. Critiquing our model	23
Final Assessment	25
Tutorial 6	26
Tutorial 7	27
Appendices	29

Course Rationale

How hard should we work at school? Should we work every hour we are awake? Probably not, we need to have a break too, it's important to enjoy our time with family and friends. So then, should we just spend all our time enjoying ourselves and never pick up our books? Well, no, we need to work hard to do well in our exams so we can go on to have a better job. How *should* we make this decision? Do we always make our decisions this way? If not, why not?

In this course, we will use mathematics to better understand decision making. This model is usually taught to first year economics undergraduates at university, but we can understand it using the maths taught in Years 7 to 9. We will use maths to understand the choices available to us, our preferences, and the decisions we make. We will then apply this model to the most important decisions we make in life, such as 'How hard should we work at school?' Lastly, we will *critique* this model, in the style of university students.

You may not be able to answer the question 'How hard should we work at school?' by the end of this course. You will, however, have a better understanding of what the question means.

Mark Scheme

STEM Mark Scheme

Skills	1st (70-100)	2:1 (60-69)	2:2 (50-59)
Knowledge and Understanding	All content included is relevant to the general topic and to the specific question/title Good understanding of all the relevant topics. Scientific terms are defined and used accurately throughout Clear justification on how the content included is related to the specific issues that are the focus of the assignment	Most of the content included is relevant to the general topic and to the specific question/title Good understanding of most the relevant topics Scientific terms are used accurately but not always clearly defined. Adequate justification on how the content included is related to the specific issues that are the focus of the assignment	Some of the content included is relevant to the general topic and to the specific question/title Good understanding on some of the relevant topics but occasional confusion on others. Scientific terms are used mostly accurately with occasional confusion and often not defined. Some justification on how the content included is related to the specific issues that are the focus of the assignment
Critical Evaluation/ Problem solving	Moved beyond description to an assessment of the value or significance of what is described Evaluative points are consistently explicit/systematic/reasoned/justified Effective critiques on the reliability of sources provided Consistently demonstrate clear, analytical and logical steps to solving problems	Mostly description but some assessment of the value or significance of what is described Evaluative points are mostly explicit/systematic/reasoned/justified Some evidence of critiques on the reliability of sources provided Some examples of solving problems but not consistently clear, analytical and logical	Only description with minimal assessment of the value or significance of what is described Evaluative points are at times explicit/systematic/reasoned/justified Limited evidence of critiques on the reliability of sources provided Demonstrate clear steps to solving problems but not consistently analytical or logical

Structure and Presentation	Ideas are presented in paragraphs and arranged in a logical structure that is appropriate for the assignment The introduction clearly outlines how the essay/report will deal with the issues The conclusion summarises all the main points clearly and concisely All calculations, formulas and methods are clearly structured, clear to follow and correct Tables and graphs are effectively constructed including appropriate headings, units and scales. All sources are referenced correctly in an agreed format	Ideas are presented in paragraphs and arranged in a structure that is mostly appropriate for the assignment The introduction adequately describes how the essay/report will deal with the issues The conclusion summarises most of the main points clearly Calculations, formulas and methods are mostly structured, clear to follow and correct Most tables and graphs are well constructed Most sources are referenced correctly in an agreed format	Ideas are presented in paragraphs and arranged in a structure The introduction mentions how the essay/report will deal with the issues The conclusion summarises some of the main points clearly Calculations, formulas and methods are not always structured, clear to follow and correct. Some tables and graphs are well constructed but contains some errors Some sources are referenced correctly in the agreed format with occasional errors

Knowledge Organiser

Concept	Explanation

Baseline Assessment

1. What is a good decision?

2. How hard should students work at school?

3. Why don't some students always work as hard as they should?

4. What might help students work harder?

Tutorial 1 – What can we have?

Objectives

- Learn the definition of a 'good decision'
- Learn how to graph our options

1. Look at the picture below. If I gave you $20, how would you decide what to buy?

Figure 1 - 99 Cent by Andreas Gursky (1999)

2. What is a good decision?

3. Mo has £400 to spend on Spurs tickets (£50 each) and dinner with friends (£40 each) this month. Can he afford:
    a. 2 spurs tickets and 3 dinners?
    b. 5 spurs tickets and 6 dinners?
    c. 5 spurs tickets and 4 dinners?
    d. To save time, how could we illustrate Mo's options?

4. Illustrate Mo's options on a graph

5. What is the equation for this line? (Hint: use y = mx+c)

6. The general equation for a 'budget constraint' is:

Homework 1

1. Update your knowledge organiser

2. Imagine you have £120 to spend on computer games (£30 each) or trainers (£60 each).

    a. Draw your budget constraint, label it BC1.

    b. Give an equation for your budget constraint.

    c. What is the opportunity cost of a pair of trainers? The unit of your answer should be 'computer games'.

    d. There is a sale on trainers, they are now just £40 each. Draw a new budget constraint on the same graph, label it BC2.

    e. Give an equation for your new budget constraint.

    f. What is the new opportunity cost of a pair of trainers?

Tutorial 2 – What do we want?

Objectives

- Learn how to illustrate our preferences on a graph

1. Imagine I gave you 30 donuts and you had to eat them all. Give your enjoyment for each donut a score out of 10.

Portion	1	2	3	4	5	10	15	30
Enjoyment								

2. If I gave you 30 donuts, how many would you swap for a glass of milk? What if I gave you fewer? Complete the table below.

Donuts given	Would swap…
30	
20	
10	
5	
4	
3	
2	
1	

3. Illustrate a typical person's preferences, using an indifference map, for donuts and milk on the graph below.

4. Draw an indifference map for something you love and something you hate.

5. Draw an indifference map for two similar products (e.g. Coke and Pepsi).

6. Draw an indifference map for left trainers and right trainers.

Homework 2

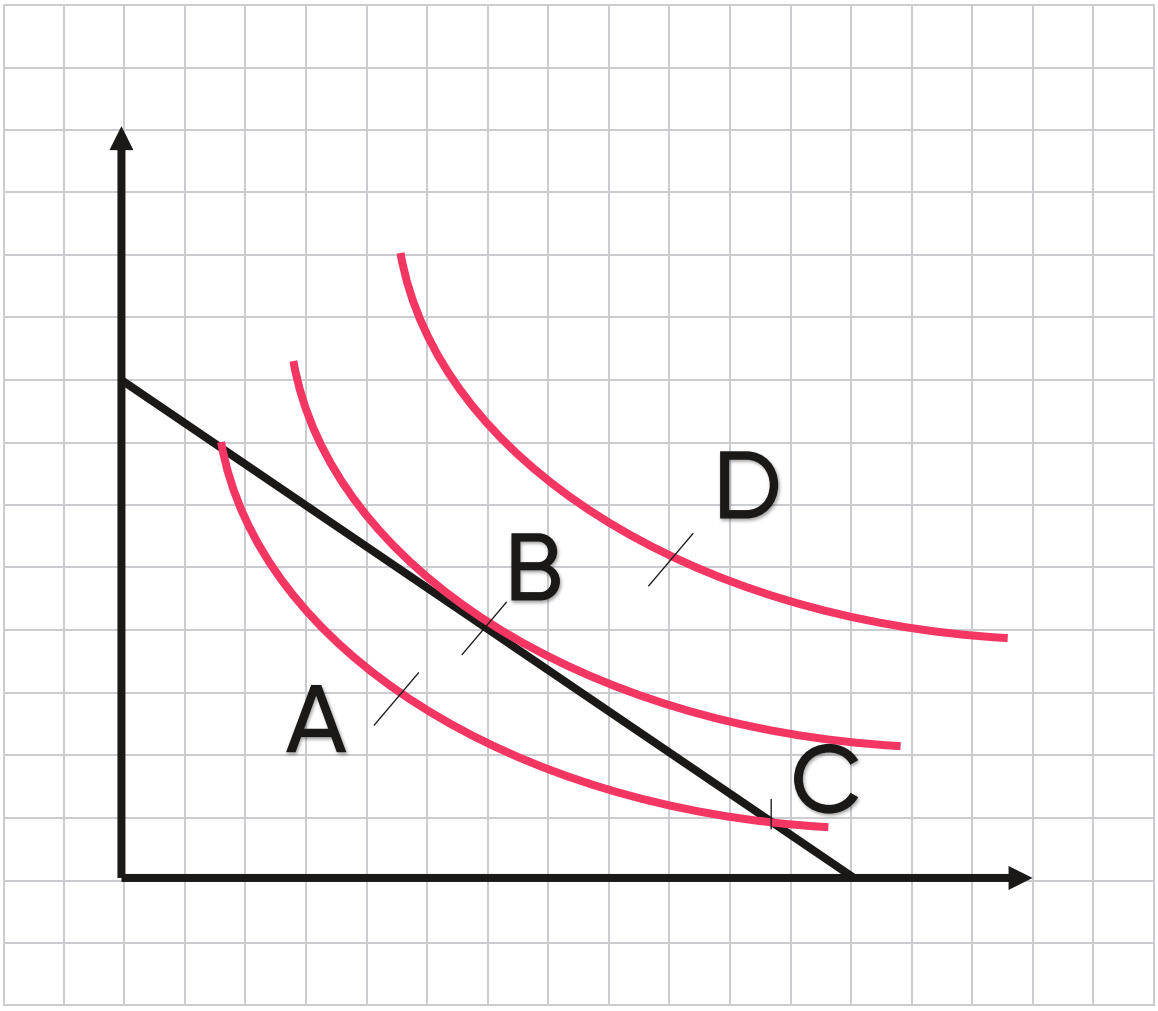
1. Update your knowledge organiser
2. Complete all the indifference maps in the previous section
3. In under 200 words, what does the slope of an indifference curve tell us about someone's preferences?

Tutorial 3 – Maximising happiness

Objective

- Use budget constraints and indifference maps to identify 'optimal' bundles
- Discuss what this has to do with how hard we work at school

1. Which of these is the 'optimal' bundle? Why aren't the others optimal?



2. How do we know we have chosen the optimal bundle?

3. Suppose we could have a summer job cleaning cars for £5 each. A car takes an hour to clean. How can we use our model to make this decision?

4. How could an adult use this to decide how hard to work?

Homework 3

1. Update your knowledge organiser

2. Complete all diagrams in the previous section.

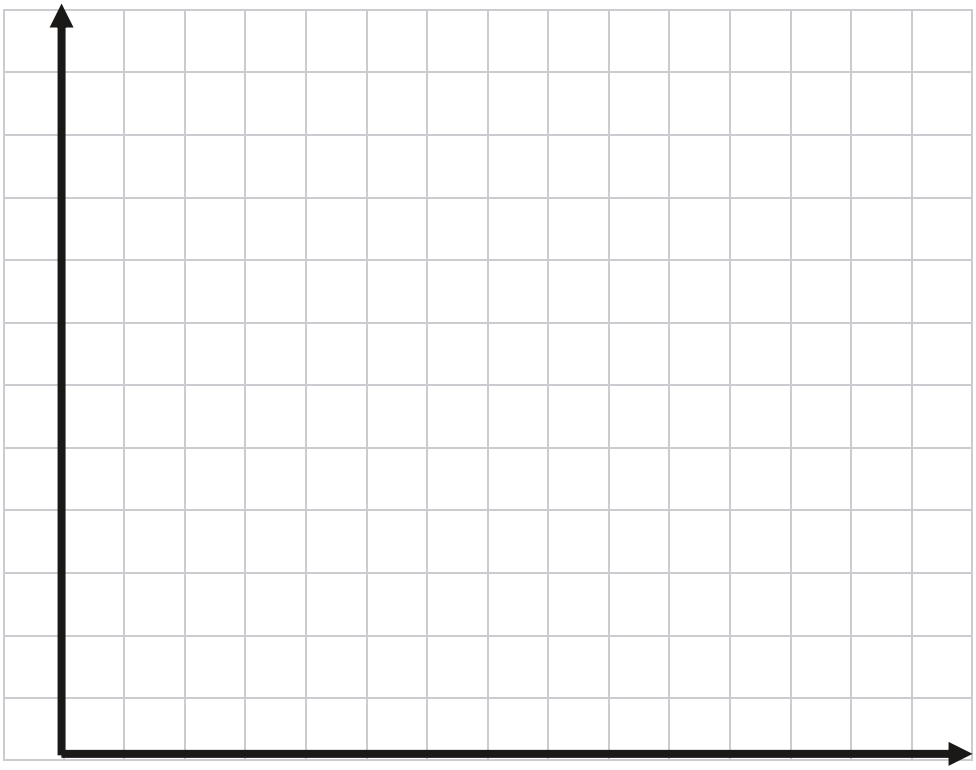
3. Imagine you were talking to your friend about this course. In no more than 200 words, how would you describe what you have learned so far?

Tutorial 4 – How hard should we work at school?

Objective

- Apply our model to how hard we should work at school

1. Applying our model to school work



2. Look back at question 4 from the last tutorial. How would this graph change if someone did well in their exams?

3. Does this mean we should study every minute of the day? Discuss.

Homework 4

1. Update your knowledge organiser

2. A graduate earning £27,000 per year will have to make student loan repayments of 9% of their income above £21,000. After loan repayments, how much more will she earn compared to a non-graduate (non-graduates earn an average of £18,000 per year)?

3. Assume the female graduate had £45,000 of loans. After 30 years, all student loans are cancelled.
    a. How much will she repay in total?
    b. How much of her loans are cancelled?
    c. In that time, how much more will she have earned than a non-graduate?

4. Other than money, write three reasons someone might want to go to university.

Tutorial 5 – Critiquing our model

Objectives

- Check understanding
- Discuss criticisms of our model

1. Criticisms of the model?

2. In light of these criticisms, how should students, schools, parents, behave differently?

Final Assignment

1. Asma has a budget of £80 for her birthday party to buy burgers (£4 each) and fries (£2 per portion).
    a. Show her budget constraint on a diagram and label it 'BC1' (2)
    b. What is the equation for her budget constraint? (2)
    c. What is the opportunity cost of a burger? Write your answer in terms of portions of fries. (2)
    d. The price of burgers goes up to £5. On the same diagram, draw her new budget constraint and label it BC2. (2)
    e. What is the new opportunity cost of a burger? (2)

2. Illustrate Zishan's preferences using indifference maps. Use a different diagram for each of his preferences.
    a. He loves cookies and hates broccoli. (2)
    b. He can't tell the difference between white bread and brown bread. (2)
    c. He only likes tuna and mayonnaise if he can eat them together (2)

3. Explain in under 100 words why a consumer's optimal choice is when their budget constraint is at a tangent to their indifference curve. (5)

4. On average, female graduates earn £27,000 per year (approximately £105 per day), compared to £18,000 (approximately £70 per day) for non-graduates.
    a. On the same diagram, draw a budget constraint for a typical graduate (label this BCG) and a non-graduate (label this BCN). The vertical axis is consumption per day and the horizontal axis is hours of leisure per day. (3)
    b. On the same diagram, draw two indifference curves. One should be at a tangent to BCG and another at a tangent to BCN. Which is higher? Describe what this diagram means. (4)
    c. Imagine you have 200 words to persuade a friend to go to university, using this model only. What would you write? (5)

5. You have 200 words to answer each of the following questions.
    a. How hard should students work at school? (4)
    b. Why don't students always work as hard as they should? (4)
    c. What might help students work as hard as they should? (4)

SUCCESS CRITERIA

Make sure you read the mark scheme before you start. Also, make sure you:

- Present your work as neatly and clearly as possible
- Use the vocabulary we have been using on the course, explaining any key words to show you know what they mean
- Explain and label your diagrams to show you know what they mean
- Check your written explanations make sense. Try recording yourself reading your answers out loud, then listen to them. Are they as clear as you can make them?

Tutorial 6 – Feedback tutorial

What is the Purpose of Tutorial 6?

- To receive feedback on final assignments.
- To share examples of best practice with the other pupils in your group.
- To write targets for improvement in school lessons.
- To reflect on the programme including what was enjoyed and what was challenging.

Draft assignment feedback

What I did well…	What I could have improved on…
•	•
•	•
•	•

My target for future work is…

Tutorial 7 – Feedback tutorial

What is the Purpose of Tutorial 7?

- To receive feedback on final assignments.
- To share examples of best practice with the other pupils in your group.
- To write targets for improvement in school lessons.
- To reflect on the programme including what was enjoyed and what was challenging.

Final assignment feedback

What I did well…	What I could have improved on…
•	•
•	•
•	•

My target for future work is…

Reflecting on Uni Pathways

What did you most enjoy about Uni Pathways?
• • •

What did you find challenging about the programme?	How did you overcome these challenges?
• • •	• • •

Appendix 1 – 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 really 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. In order 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 particular 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.
- It helps to prevent you losing marks, or failing, due to plagiarism.

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.
- Include a specific statistic or fact from a source.

How do I reference?

There are a number of 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:

1. **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].
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.

    a. **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].

    b. **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.

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

    E.g. Maev Kennedy, 'The lights to go out across the UK to mark First World War's centenary', Guardian, 10 July 2014.

Notes

Notes

Notes

UNI PATHWAYS

How hard should we work at school?

Key Stage 4 Programme

researchersinschools.org