ALBERTA DISTANCE LEARNING CENTRE

MATHEMATICS 30-2

MAT3792

Project Booklet

Student's Questions and Comments

FOR STUDENT USE ONLY

Student Name: _____

FOR ADLC USE ONLY

Assigned to _____

Marked by _____

Date received _____

Summary

	Possible Marks	Your Marks
Project Booklet	10	

Teacher's Comments:

_____

Teacher's Signature

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Mathematics 30-2
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Assignment Booklet Package

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Mathematics 30-2 Project

The Assignment

- Your assignment is to **research and make a presentation** (report, slideshow, video, etc.) on a current events topic or an area in real life that involves mathematics.

- This **Project Booklet will guide you through the process** of choosing a research topic, conducting your research, analyzing the data, and making a presentation.

Your Mark

- The Project is **worth 5% of your school-awarded mark** for Mathematics 30-2. 50% of your Project mark is based on completing Parts A to E in the Project Booklet and the other 50% is based on your Presentation. Refer to the Project Booklet Scoring Guide and the Presentation Scoring Guide at the end of this booklet for more detail.

Work On It Throughout The Course

- The recommended timeline is to complete **one part of the Project after each unit**. (The exceptions are Unit 4, when you write Exam One, and Unit 8, when you write Exam Two.) You will be reminded to work on the project in the Big Game sections at the end of each unit.
- **Following the recommended timeline** should ensure that you do not rush through any part of the project and that you are not completing the Project in its entirety at the last minute.
- **At the end of the course, you will hand in** the completed Project Booklet, and your Presentation.

View the Project Online

- To **access the project online**, go to the online version of Mathematics 30-2, select Content and then Student Resources.

The completed Project Booklet and your Presentation must be handed in *before* Exam Two can be written.

Project Part A

In Part A you will:

1. List three possible topics
2. Do preliminary research
3. Create a research question

Selecting Your Research Topic

Some examples of topics related to Mathematics 30-2 concepts are shown in the table below. This list is *not* intended to be an exhaustive list of all possible topics.

Mathematics 30-2 Concept	Topic
Permutations	Encryption of Bank Accounts, Passwords
Permutations	Computer Bar codes, License Plates
Combinations and Probability	Gambling, Lottos
Polynomial Functions	Price of Gasoline Over Time
Polynomial / Exponential	Investments (Growth or Decay)
Polynomial / Exponential	Statistics in Sports (salary vs. performance)
Polynomial / Exponential	Cost of Home Ownership
Polynomial / Exponential	Post-Secondary Education
Exponential Functions	Superbugs
Exponential Functions	Carbon Dating
Exponential Functions	Population Growth or Decay
Exponential Functions	Sustainability of Food Supply
Logarithmic Functions	Earthquakes and Tsunamis
Sinusoidal Functions	Modelling Weather Patterns

Criteria for Selecting Your Research Topic

Below are three questions that can help you determine if a topic you are considering is suitable.

- **Does the topic *involve Mathematics*?**
  Think about the mathematics related to the topic. You must be able to collect and analyze data that is related to your topic, use mathematical concepts, and/or perform calculations.

- **Is the topic *practical to research*?**
  Are there multiple sources of data (library, Internet, subject specialists) available to you? Are these sources reliable, and can you access them in a timely manner?

- **Does the topic *interest you*?**
  You will be more successful if you choose a topic that interests you.

1. In the box below, list three topics that interest you and state how they involve Mathematics. You don't have to restrict yourself to the topics listed in the chart on the previous page. Also, you can choose a topic that is not part of the Math 30-2 content.

Completing Preliminary Research

Do some research on each of your three topics to see which would have enough information to support a project. At the end of this section, you will decide which of these three possible topics will be the best for your research project. Consult newspapers, magazines, the Internet or other sources of reliable media, to research aspects of your topic you would like more information about. When you use media resources, you must **always** record the following information:

- The **type** (newspaper, website, book, magazine, etc.) of media
- The media **title** (such as "A Study of TV Violence")
- The media **source** (the author or URL or both, if possible)

2. Use the space below to record your sources and preliminary research information. Use *Valuable Notes of Interest* as a way to keep track of new research information you find. This will be a convenient short cut when you begin your in depth research. **Remember that your notes must always be in your own words, paraphrased, or written in quotation marks if you use exact wording from a source**. If you are not sure about this, contact your teacher.

My Preliminary Research Resources	
Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Based on your preliminary research, choose the best topic for your project and write it in the box below.

Selecting Your Research Question

To ensure you the best chance of success in this project, start with a clear and concise research question. This question will focus your primary research and presentation.

3. Complete the following table to create an effective research question.

Research Question: _____ _____ _____	
Does the question clearly identify the main objective of the research?	Yes / No
Will you be able to gather sufficient data and mathematically analyze it?	Yes / No

If you're not sure if you have an effective research question, contact your teacher for help and then write your revised question in this chart below.

Research Question: _____ _____ _____	
Does the question clearly identify the main objective of the research?	Yes / No
Will you be able to gather sufficient data and mathematically analyze it?	Yes / No

Project Part B

In Part B you will:

4. Conduct your research
5. Use a minimum of three sources
6. Identify and describe the controversial issues related to your topic

Read the following information on *Assessing the Reliability of Sources*, *When to Cite a Source*, and *How to Cite a Source*. You will be using this information when you conduct your research.

Assessing the Reliability of Sources

Ensure that the sources you use are reliable. Your school or community librarian can help you locate relevant sources, as can the librarians of local community colleges or universities. Other people, such as teachers, your parents or guardians, and local professionals may also have valuable input.

- Is a source ***credible***?
  When using any resource, ensure the validity of its content. If you are not sure about the reliability of a source, check the accuracy of the information with other Internet sites or resources.

- How ***up-to-date*** is the data?
  Because this project has a current events focus, you must ensure that the information you are using is as up-to-date as possible.

- Has any research been ***funded by a third party***?
  If research is funded by an organization with an interest in the outcome or with an agenda that it is trying to promote, the data may have bias. Knowing which organization has funded the research may help you decide how reliable the data is.

When to Cite a Source

- If you know a fact, you can use it in your presentation without citing the source. For example, you don't need to cite a source for any of the terms and concepts you learned in this course.

- If you had to look something up, you didn't know it and you have to give credit to the author.

How to Cite a Source

Throughout Your Presentation:

- Read the info you want to use and then put it in your own words. This is called paraphrasing.

- Include the author's name and the year it was published in brackets at the end of the sentence. For example, (Smith, 2013).

- Quotation marks are not needed for paraphrasing but they are needed for direct phrases taken from a source. Put quotation marks around the phrase and provide the author's info at the end in brackets. In general, your job is to make sense of what you read, and to paraphrase it, so try not to use many direct quotes.

In a Bibliography at the End of Your Presentation:

- List all the sources your have referred to on a separate page at the end of your presentation.

- To make your bibliography, follow the examples on the next page.

Examples of How to Cite a Source

Website:

Martin, Gary D., *Academy of Ancient Languages*. 2012.

http://aoal.org/

Online book or journal:

Dickinson, Emily. *Poems*. 1896.

http://www.columbia.edu/acis/bartelby/dickingson/

Periodical:

Greenwood, Veronica. *How Math Can Save a Dying Language*. DISCOVER Magazine, June 4, 2012, pages 10-12

Book:

Evans, Nicholas. *Dying Words: Endangered Languages and What They Have to Tell Us*. John Wiley & Sons, Mississauga, 2009

Encyclopedia article:

The origin of the Greek Alphabet. The Cambridge Encyclopedia of the World's Ancient Languages. Volume 1, 2004

Completing Your Research

4. Conduct your research and record your information in the tables on the following three pages. If you have extra pages, attach these to this booklet.
5. You must use a minimum of three sources (attach any extra pages if necessary) and cite all sources as shown above.

My Primary Research Resources	
Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Media Title:	
Media Type	
Media Source	
Valuable Notes of Interest	

Identifying Controversial Issues

While working on your research project, you might find some issues on which people disagree.

For more information on Controversial Issues, read **pages 406 – 407** *Project Connection* in your textbook, *Principles of Mathematics 12*.

6. Identify the most controversial issue you have uncovered during your research. Determine the various positions people have on this issue and the supporting arguments they present. Record all this information in the space below.

Project Part C

In Part C you will:

7. i. Choose a presentation style
   ii. Create a presentation outline

Presentation Styles

Your final presentation should be more than just a factual written report of the information you found. To make the most of your hard work, select a style for your final presentation that suits your strengths as well as your topic. Here are some examples.

- report on an experiment or an investigation
- annotated collage or poster
- photo essay
- web page
- slide show
- video
- advertising campaign or pamphlet
- demonstration or the teaching of a lesson
- debate (with help from others)
- short story, musical performance, or play
- table sized display
- podcast

Selecting Presentation Style

7. i. Decide on the presentation style you will use and write it in the space provided.

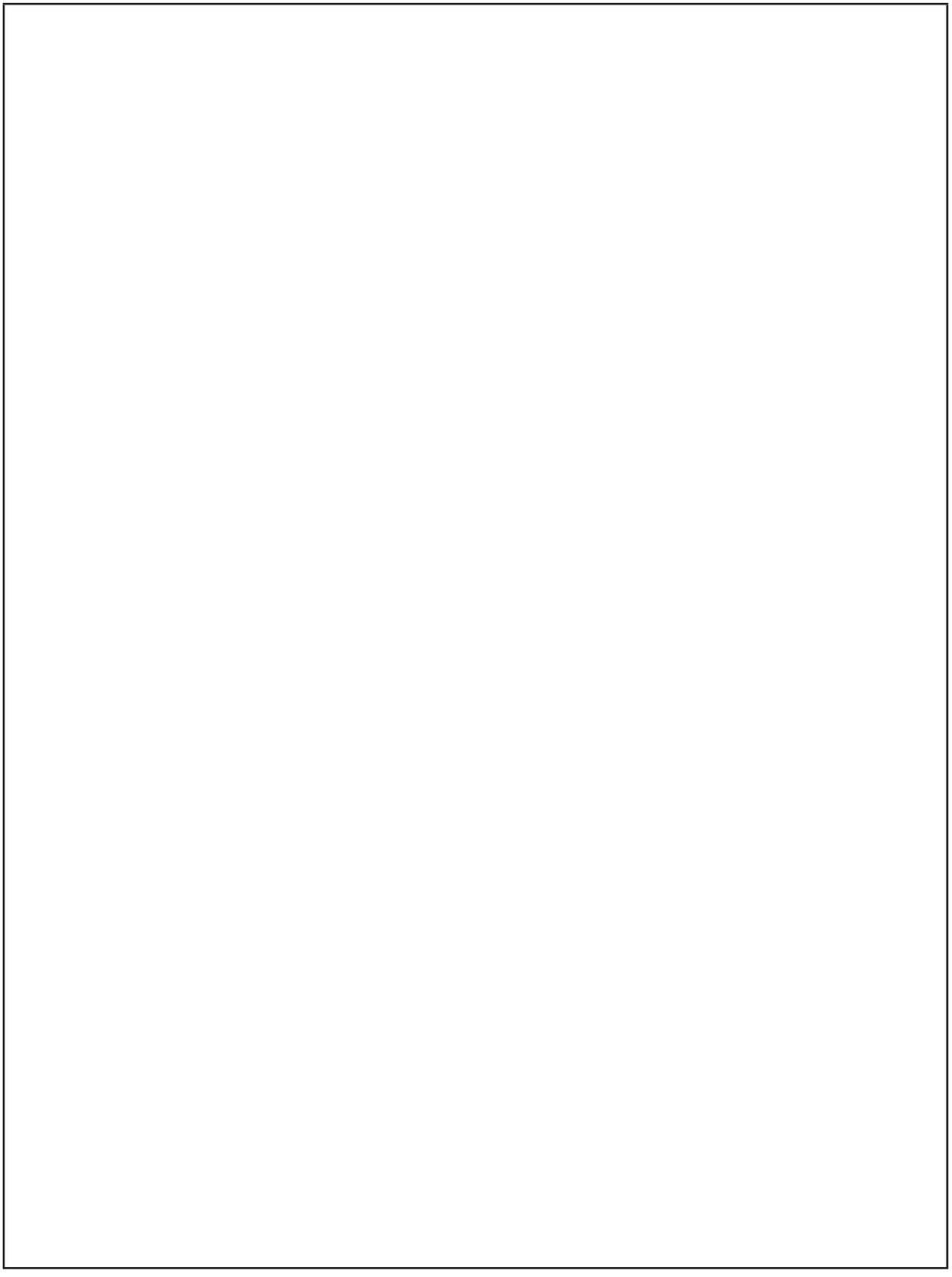
Creating a Presentation Outline

Construct a **detailed outline** for your presentation in the space below and on the next page. If you need more space, attach extra pages at the end of this booklet.

You can include some or all of the following in point form:

- The introduction of your topic and research question
- Explanation of how you will represent your data (on a graph, chart, etc.)
- Explanation of how you will mathematically analyze your data (create a regression equation, make a prediction, etc.)
- A list of and definitions of any Math terms or concepts you will include
- Explanation of how you will address the controversial issues
- The conclusion or answer to your research question
- Notes on how you will make it interesting and link it to current events or real life

7. ii. Construct a detailed outline for your presentation in the space below and on the next page.



Project Part D

In Part D you will:

8. Complete the self-evaluation of your first draft

Constructing Your Presentation

Construct the first draft of your presentation in the style that you have chosen. **Do not hand in your first draft** of the presentation. You will hand in your final draft only.

Self-Evaluate Your Presentation

8. Use the following checklist to self-evaluate your presentation and decide if it will be effective.

	1st Draft – My Comments
Did I define my topic well?	
Is my presentation focused?	
Did I organize my information effectively?	
Is it obvious that I am following a plan in my presentation?	
Am I satisfied with my presentation?	
What might make it more effective?	
What unanswered questions might my audience have?	
Have I reviewed the Presentation Scoring Guide (on the last page of this booklet) to clarify how my presentation will be evaluated?	
Is the majority of my presentation in my own words? If not, it is considered to be plagiarized.	
Did I properly cite all my sources?	

Project Part E

In Part E you will:

9. Have a peer (or teacher, or parent, other adult) review your presentation
10. Complete any necessary edits to your presentation based on your self-evaluation and peer review

Peer Review of Your Presentation

Ask a friend, teacher, parent or guardian, neighbour, or other interested party to read or observe your presentation and provide constructive feedback to you about your project and your presentation.

Ask your observer to consider the following.

- Content
- Organization
- Delivery
- Strengths and weaknesses of the presentation
- Problems or concerns with the presentation

9. Have the observer complete the following rating scale. Have the person sign and date it upon completion.

Peer Review of Your Presentation

The Presentation …

includes research question that is clearly focused	**5----------1**
presents key ideas and information clearly and concisely	**5----------1**
includes visuals that are easily understood	**5----------1**
applies mathematical knowledge and skills where necessary	**5----------1**
demonstrates a thorough understanding of the topic	**5----------1**

Name of Observer: _____

Signature of Observer: _____

Date of Observation: _____

Now that your project has been reviewed, you have an opportunity to make any final revisions before submitting it to be graded.

10. In the space below, record a summary of the revisions that you made as a result of your self-evaluation and/or peer review.

Project Booklet Scoring Guide

Part A:	**Complete**
1. List Three Topics	
2. Preliminary Research	
3. Research Question	

Part B:	
4. Primary Research	
5. Sources	
6. Controversial Issues	

Part C:	
7. Presentation Style and Outline	

Part D:	
8. Self-Evaluation	

Part E:	
9. Peer Review	
10. Revision	
	/10 = _____%

Project Part F

In Part F you will:

- Prepare the final draft of your presentation.
- Ensure that you have included all your sources and they are properly cited. The majority of your presentation should in your own words. If not, it is considered to be plagiarized and your project will not be accepted. Please contact your teacher if you have any questions about this.
- Submit your presentation to be graded.
- If your presentation involves a live component such as speech or demonstration, please record on video and send this in.
- Contact your teacher if you have any questions about how to submit your presentation or how your presentation will be scored.

Presentation Scoring Guide

Please note that any presentation with 3 or more Insufficient categories will be sent back to the student to be redone.

Criteria	Excellent 4	Proficient 3	Satisfactory 2	Limited 1	Insufficient 0
Subject and Topic	Subject and topic are defined *very clearly*.	Subject and topic are defined *clearly*.	Subject and topic are defined in a *adequate* manner.	Subject and topic are defined but *lack clarity*.	Subject and topic are *not defined.*
Research Question	Research question is *supported clearly with pertinent data*, statistics, facts, and/or examples.	Research question is *somewhat supported with effective data*, statistics, facts, and/or examples.	Research question is *somewhat supported with adequate data*, statistics, facts, and/or examples.	Research question is *somewhat supported with inaccurate or weak data*, statistics, facts, and/or examples.	Research question is *not supported* with data, statistics, facts, and/or examples.
Mathematical Concepts	*All* mathematical concepts *can be identified and are applied accurately* to the topic.	*Most* mathematical concepts *can be identified and are applied accurately* to the topic.	*Some* of the mathematical concepts *can be identified and are applied adequately* to the topic.	Mathematical concepts *cannot be identified or are applied inaccurately* to the topic.	Mathematical concepts are *not applied* to the topic.
Text and Graphics		Text and graphics support student purpose and topic *effectively with no errors.*	Text and graphics support student purpose and topic *effectively. Errors or omissions may affect clarity.*	Text and graphics support student purpose topic in a *limited way*.	Text and graphics *do not support* student purpose and topic.
Audience Understanding and Knowledge of Topic		Presentation *significantly increases* audience understanding and knowledge of topic.	Presentation *somewhat increases* audience understanding and knowledge of topic.	Presentation increases audience understanding and knowledge of topic in a *limited way*.	Presentation *does not increase* audience understanding and knowledge of topic.
Sources		*All* sources are *very clearly cited* in a bibliography. Material in presentation is paraphrased with author's last name and year at the end of the sentence.	*Most* sources are *clearly cited* in a bibliography. Most paraphrased material includes the author's last name and year at the end of the sentence.	Sources are *cited in an unclear manner* in the bibliography and/ or throughout the presentation.	Sources are *not cited*, material is not paraphrased, or credit is not given for paraphrased material.

Total: _____ /21 = _____%

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