**Financial Literacy Lesson Plan**

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| **Connections to Financial Literacy**   * *increase consumer protection and consumer awareness while considering actual costs of a purchase (e.g., cell phone plan)* * *understand the difference between needs and wants related to a purchase* * *reflect critically as consumers about the costs presented in advertising* | |
| **Unit 1: Day 4: Calculating Which is the Best Deal** | **Subject/Course**  **MPM2D Principles of Mathematics, Grade 10, Academic** |
| Curriculum Expectations | Learning Goals |
| **Analytic Geometry**  **Overall Expectations**  **By the end of the course students will:**  • model and solve problems involving the intersection of two straight lines;  **Specific Expectations:**  • *solving problems involving the intersection of two straight lines*   * solve systems of two linear equations involving two variables, using the algebraic method of substitution or elimination; * solve problems that arise from realistic situations described in words or represented by linear systems of two equations involving two variables, by choosing an appropriate algebraic or graphical method.   **Mathematical Process Focus:**   * **connecting:** students will connect wants and needs to their financial reality using mathematical principles * **reflecting:** students will reflect on algebraic solutions to confirm reasonableness of an answer and to determine appropriate selections given real world financial options | At the end of this lesson, students will be able to   * select and apply an algebraic method to solve a system of linear equations connected to a real world context; * analyze a solution to a linear system and justify conclusions connected to a realistic situation (e.g., financial context). |
| Instructional Components and Context | |
| Readiness Students can   * Solve linear systems using algebraic methods of substitution and elimination * interact positively in a small group  Terminology Substitution  Elimination  Solve  Algebraic solution  Independent variable  Dependent variable  Commission  Salary | Teacher’s Note The lesson times listed in this lesson are suggestions. Times will vary depending on the prior knowledge of your students with the concepts and/or ideas presented. Materials  * Financial Literacy Lesson 4 MPM2D Smartboard version (Smart Notebook file) * BLM 4.1: Decisions, Decisions! * Document camera (optional) * Chart Paper (optional) * BLM 4.2: Earning a Living! |

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| **Minds On (10 minutes)** | **Connections** |
| **Whole Class ⇒ Discussion: Getting to know your cell phone usage**  Pose the following question: How do you know if you are on the right cell phone plan for you? Include a discussion about needs and wants regarding owning a cell phone.  Students who wish can share their own cell phone usage.  Use the Smart Notebook File or create a table to tally the students’ information or create your own table similar to:    Discuss the Budget column and how the monthly bill can be greater than the budget. Elicit discussion of what influences the amount a person can afford and the things that affect the price on the bill (usage and taxes, service charges). | **DIapplesmall**  Open Question to stimulate student interest in the topic and engage a wide variety of learners. |
| **Action!** **(25 minutes)** |  |
| **Groups of 3 ⇒ Investigation:** Decisions, Decisions!  Students are divided into groups of three based on like abilities. Each group is given a copy of BLM 4.1 and clarifies the instructions and question if necessary. Students a have approximately 20 minutes to develop a solution to the problem they choose. | **DIapplesmall**  Parallel task allows the students to select between a problem with the equations defined and a problem with given information but no equations given.  If a document camera will not be used in the consolidation, consider having the group record their work on chart paper or overhead transparency.  Teachers may choose to alter the plan options so as not to have any free text messaging. This would change the follow-up discussion as there would no longer be a need to make as many decisions/ assumptions about Joe and Gloria’s usage. The free texts have been included to make the situation more realistic and to allow for deeper discussion about the complexity of math in the real world. |

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| **Consolidation** **(40 minutes)** |  |
| **Whole Class ⇒ Math Congress (30 minutes)**  Selected groups share their solutions with the whole class. Display and annotate student work while asking for others to question and comment on the solution. This can be facilitated with a document camera, overhead projector or chart paper.  Some common questions you might ask:   * What algebraic method did you choose and why? * What assumptions did you make about Gloria or Joe’s calling usage? * What assumptions did you make about Gloria or Joe’s budget? * Which plan would you choose for your own cell plan? (Relate this back to the tally in the minds on. Choose a range from the table and ask which plan is best and why?) * How realistic is the pricing on each of the plans from the problem? (Elicit the fact that generally minutes and number of texts are variables and there are other features that add costs (e.g., downloads, voice mail) and that the total is never the actual total because of taxes and other costs like network access fees. This is an opportunity to review the calculation of the HST.) * If you buy a cell phone plan with a price of $20 per month, what could be the total on your bill if you include estimated other costs (e.g., access fees, texting, long distance)? Justify your answer.   Optional connection: link to the web site of a local cell phone company and see if their pricing is similar to those in the problem or determine which of their plans best suits Joe, Gloria or someone from the class.  Practice: **(10 minutes)**  Individually students complete the exit card (BLM 4.2) to show what they have learned. | aal  Students assess their understanding and ask questions to build on that understanding.  afl  Students complete the practice question before leaving class so the teacher can determine who needs more practice and what the next steps should be. |

**BLM 4.2 – Decisions, Decisions!**

In groups of three, choose one of the two problems to solve algebraically:

**Option A:**

Gloria is going to purchase her first cell phone and has gathered information from two companies. The table below shows the information about the two plans she is considering.

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| Koojo | Telyou |
| $20 per month  with 50 texts per month  Additional texts cost $0.15 each | $30 per month  with unlimited texts to your "Fav 5" and $0.12 per text to everyone else. |

Which plan would you recommend for Gloria? Justify your recommendation algebraically. What assumptions have you made?

**Option B:**

Joe is looking into getting a cell phone. He has been to two different companies and was given the following information about plan costs.

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| --- | --- |
| Version Mobile | Chatty Mobility |
| C= 0.15t + 25  where C = plan cost and  t = # of texts sent  note: the first 25 texts are free | C = 0.10t + 35  where C = plan cost and  t= # of texts sent  note: texts are free to your "fav 5" |

Which plan would you recommend for Joe? Justify your recommendation algebraically. What assumptions have you made?

**BLM 4.2 Exit Card: Pick a Plan!**

Complete these questions independently and give your solutions to your teacher before leaving class. Do part a or b and part c.

a) After doing some research on the internet, Jaden has found two companies that provide movie download rentals. One company Webflicks, charges an annual membership fee of $49 plus $3.00 per rental download. Another company, InterMovies, charges no membership fee but $5.00 per rental download. Jaden averages 30 movie rentals per year. Which company should he choose? Justify your answer by determining which range of movie rentals per year is cheaper for each company. Use an algebraic solution.

OR

b) After doing some research on the internet, Jaden has found two companies that provide movie download rentals. Based on the information given by each company, he determined the equations that model each company’s rental fee to be: WebMovies: C= 79 + 2r

Interflicks: C= 6.5r where C is the rental cost in dollars

and r is the number of movie rentals per year.

Jaden averages 30 movie rentals per year. Which company should he choose? Justify your answer by determining which range of movie rentals per year is cheaper for each company. Use an algebraic solution.

c) Reflect on your own movie rental experiences. Which company would you prefer? Justify your answer.