Cell Phone Plans Assignment

Name:_____

/43 Total

This Investigation has the following components:	Things to keep in mind / words to learn:
INTRODUCTION – Overview of the different Plans PART A – Make a hypothesis → which do you think is best for you **(2 marks)** PART B – Investigate a Plan from the introduction **(8 marks)** PART C – Compare the plans **(12 marks)** PART D – Wrap Up Questions and graph **(21 marks)**	- **Initial Value (b)** - **Rate of Change or Slope (m)** - **Direct Variation** - **Partial Variation**

Resource used: http://www.cellphones.ca/cell-plans/compare/

INTRODUCTION – Overview of the Different Plans

Cell Phone companies have all kinds of plans. Some have a monthly cost just to keep your phone, and then they add a cost per minute to that. Other plans just have a cost per minute and have initial cost at the start of the month.

Today you will make a hypothesis as to which plan is best for you, and use graphing and linear relations to test your hypothesis and determine which plan is best.

Table 1: 6 Cell Phone plans from different Companies

	Company	Plan Title	Monthly Cost ($)	Cost per minute ($/min)
1	**Rogers**	All Day Plan	$0.00	$0.25/min
2	**Fido**	By the Minute 20¢ Any Time	$0.00	$0.20/min
3	**Telus**	Prepaid	$0.00	$0.35/min
4	**Rogers**	MY5 Prepaid	$20.00	$0.25/min
5	**Bell**	Pay by the Month – 10¢ Talk	$10.00	$0.10/min
6	**Public Mobile**	Unlimited Talk	$24.00	$0.00/min

PART A – Form a Hypothesis about which plan is best for you *(2 marks)*

1. Estimate how many minutes you talk on your cell phone every month: _____

2. Which plan above do you think will result in the cheapest plan for you? Why do you think so?

PART B – Choose a plan above and complete the following *(8 marks)*

The plan I chose is: _____

1. TABLES
   a) Fill in table 2 below using the cost of your plan

Table 2: Your Calculation of the cost of the plan *(2 marks)*

Time Spent Talking (minutes)	Cost Per Month ($)
0	
60	
120	
180	
240	
300	

2. RATE OF CHANGE and SLOPE (m)   *(2 marks)*
   a) Every time you use 1 more minute of talk time, how much does that cost?

   b) So, what is your rate of change? (change in cost / change in minutes talked)

3. INITIAL VAULE and Y-INTERCEPT (b)   *(2 marks)*
   a) How much does your plan cost even if you don't use any minutes?

   b) So, what is your initial value (b)?

4. EQUATION OF THE LINE ($y = mx + b$)   *(2 marks)*
   a) Knowing the value of m and b you found above, write the equation of your line: (e.g. *y = 0.15x + 20*)

PART C – Compare the Plans (12 marks)

1. FILL IN THE TABLE BELOW FOR EACH OF THE PLANS
You may need to use a piece of scrap paper to calculate the missing information

Table 3: Comparing all Cell Phones plans

	Plan Title	Information from other groups			Your Information	
		Initial Cost Each Month (b)	Rate of change or slope (m)	Equation of the line (y = mx + b)	Amount of Minutes you use per month (estimated) (x)	How much the plan will cost you each month (y)
1	ROGERS All Day Plan					
2	FIDO By the Minute 20¢ Any Time					
3	TELUS Prepaid					
4	ROGERS MY5 Prepaid					
5	BELL Pay by the Month – 10¢ Talk					
6	PUBLIC MOBILE Unlimited Talk					

TIP: How to use equation of the line to find y

Equation: the cost of the plan per month is **y**   we know $y = mx + b$

Given: Your estimated talk time is **x**   for me $x = 100$
         The rate of change is **m**   for this plan m= 0.35 ($0.35/minute)
         The initial value is **b**   for this plan b = 10   ($10 per month to start)

How to: We have a number for each variable so we can solve for y

         $y = mx + b$
         $y = (0.35)(100) + 10$
         $y = 35 + 10$ so, the plan would cost $45 for me
         $y = 45$

PART D – WRAP UP QUESTIONS   (21 marks)

1. Graph All the plans on the graph provided. Your graph should include talk times between 0 and 200 minutes.
(1mark for each plan, 2 marks for legend/clarity, 8 marks total)

   use one of the graphs provided

2. Was your plan in part B an example of *direct variation* (the plan depended only on the time spent talking) or a *partial variation*? (the plan depended on the time spent talking and an initial cost)   **(1 mark)**

3. Which Plan is best for you? Was this the same as your hypothesis?   **(2 marks)**

4. Which plan had the highest rate of change? Which plan has the lowest slope? **(2 marks)**

5. Using your graph, which plan would be best if you talked for 200 minutes? (1 mark)

6. When is the Rogers My5 plan better than the Telus prepaid plan? (1 mark)

7. Which plans are an example of direct variation? (3 marks)

8. By yourself or with a partner come up with at least 3 other things that need to be considered when choosing your cell phone plan (aside from cost per minute talking), and explain why these are important to you.
                                                                      (3 marks)

Cost ($)

72

64

56

48

40

32

24

16

8

20   40   60   80   100   120   140   160   180   200

Talk Time (minutes)

Legend: