

Lesson 17 : Calculating Bills with Flat Rate and Usage Rate

**TASK 1 – CHANGING INTERNET PROVIDERS**

Alejandro recently moved to Montreal and needs to set up internet at his new apartment. Read Appendix I on page 6 to understand his data usage habits.

In Appendix II on page 8, you will find descriptions of two internet plans. Based on Alejandro's typical data usage history, determine which plan is the most economical for him. Justify your answer with calculations. Show all your work.

**Approach:**  
To figure out which plan is the cheapest/economical, create a bill for Alejandro's typical/average usage habits under each plan.

Light Package  
 $\$28.99$  → flat rate  
 which include 1000 MB

- Al uses 5850 MB  
 - ∴ (5850 - 1000) 4850 MB  
 over limit (must pay)  
 - 0.10 \$/MB

Additional Total Usage Cost  
 $= (\text{cost per unit}) \times (\text{number of units})$

A.T.U.C =  $0.10 \frac{\$}{\text{MB}} \times 4850 \text{ MB}$   
 $\text{u.c.} = 485 \text{ \$}$

unlimited Package

Strategies:

- be neat
- do a chart for each plan
- use appendix as a check list
- create your bill following typical format (subtotal, gst, qst etc)

0.10 \$ for 1 MB  
 0.20 \$ for 2 MB  
 1.00 \$ for 10 MB  
 10.00 \$ for 100 MB

Subtotal = F.R. + u.c.  
 $= 28.99 + 485$   
 S.T. = \$513.99  
 GST (5%) =  $0.05 \times \text{Subtotal}$   
 $\text{GST (5\%)} = 0.05 \times 513.99$   
 $= 25.70 \text{ \$}$   
 $\text{QST (9.975\%)} = 0.09975 \times 513.99$   
 $= 51.27 \text{ \$}$   
 TOTAL = S.T + GST + QST  
 $= \$590.96 \text{ \$}$

One last tip/strategy: Convert where necessary to work with same units.

e.x. Here work with MB. So convert 5 GB to MB

Create the bill for the unlimited Plan. Pick which plan most economical.


Do task 2 and task 3 (probably for homework). Check your answers.

These tasks are in L17. For homework before test on Monday, make sure to finish all handouts from lessons 13 - 17.

You can sign off to work independently if you wish. I'll be here till 1:30 to answer any questions. You're welcome :)

Appendix I

PAST INTERNET STATEMENTS

	Summary of Usage	
	November 2019	December 2019
Internet (MB)	10,200	1,500

pg 6  
typical/average.

Average data  
usage

$$= \frac{10200 + 1500}{2}$$

$$= 5850 \text{ MB}$$


Average = middle value

$$\bar{x} = \frac{x_1 + x_2 + x_3}{3}$$

$$\text{Avg} = \frac{\sum_{i=1}^n x_i}{n}$$

Appendix II

INTERNET PLAN DESCRIPTIONS

	→ LIGHT PACKAGE	→ UNLIMITED PACKAGE
	\$28.99 / month <i>Flat Rate</i>	\$68.99 / month <i>Flat Rate</i>
Internet	1,000 MB	5 GB

- Data/Internet *usage Rate*
- \$0.10 / additional MB *← if over 1000 MB*
- GST
- 5% ✓
- QST
- 9.975% ✓
- ← if over 5 GB*

What's 100 km in miles?

+ - x ÷  
L13

$$100 \text{ km} = 62 \text{ miles}$$

$$\frac{100 \text{ km}}{1 \text{ km}} = \frac{x \text{ miles}}{0.62 \text{ miles}}$$

- Unknown Equivalent Equation (1)

- Conversion Rate equation. (2)

$$0.62 \cdot \frac{100}{1} = \left( \frac{x}{0.62} \right) \cdot 0.62$$

$$1 \text{ km} = 0.62 \text{ mile}$$

$$62 \text{ miles} = x$$

$$2 + 2 + 2 \overset{-1}{=} 5 + 1 \overset{-1}{|}$$

What's 55 miles in km?

$$\frac{55 \text{ miles}}{0.62 \text{ m}} = \frac{x \text{ km}}{1 \text{ km}}$$

Solve x

isolate x

evaluate

$$\frac{55}{0.62} = x$$

$$88.7 \text{ km} \approx x$$

Believe nothing  
(L13)