



**GRADE 11 ESSENTIAL
UNIT B INTEREST AND CREDIT REVIEW**

Name: _____

Date: _____

Show work

Use your one-page 'study sheet' (ie: reference notes, cheat sheet) that you are slowly compiling.

Use a calculator to its full effect. Round answers to nearest 0.01 where appropriate.

Monthly Loan Payment Table have been provided (coloured)

Formulae are attached (you will always be given formulae)

Try a couple questions afterwards to check your answer on a website or using an app.

1. Cassandra borrows **\$3,000** from her aunt for **six** months. Her aunt charges her simple interest of **6.5%** annual interest rate (APR). Calculate how much interest Cassandra has to pay for the use of her aunt's money **and** the total that Cassandra pays back to her aunt?

2. Brandon wants to borrow some money from a Pay Day loan company. He borrows **\$600** for three months. He pays them back a total of **\$652.50**.

a. Determine the Annual Percentage Rate (APR %) that Brandon was paying for the use of that money. You may assume simple interest is used given that simple and compound interest work out the same for short loan periods regardless.

b. Use that APR that was just calculated in a compound interest calculation (compounded monthly) now to calculate the *difference* between simple interest and compound interest over this short period.

3. Complete the blanks in the table for various simple interest situations:

A total amount	I Interest	P Principal	r Interest Rate (APR)	t time
		\$1,200	10%	3 yrs
	\$600	\$2,000	5%	
\$3300		\$3,000		6 months

Workspace:

4. Chris bought a **\$1,000** Canada Savings Bond (CSB) from the government with his paper route money when he was **12** years old. It pays **8%** annual interest **compounded monthly**. He forgot all about the CSB until one day **18 years later** he found it in his sock drawer.

- Determine the value, **A**, of his **CSB** after that **18** years?
- If Chris had only earned simple interest at **8%** calculate the final amount he would have had to compare.

5. Complete the table for compound interest (the last two will be very tricky?)

A Final Amount [\$]	P Principal [\$]	r [% / yr]	Compounded (s)	n (time)
	\$2,000	6%	monthly	10 years
	\$7,500	7.25%	daily	3 months
\$10,000		8%	monthly	9 years
\$20,000	10,000	6.5%	annually	

Workspace:

6. Susie takes a \$10,000 loan over 5 years at 4% interest and will make monthly payments.

- a. Using the table, lookup and calculate her monthly payments.
- b. Calculate the total amount will she have paid at the end of the loan.
- c. Calculate how much interest she had paid.

7. Jason wants to borrow \$23,000 for a car. He will pay it off monthly over four years. The interest rate is 9%.

- a. What are his monthly payments?
- b. What will he have paid for the car at the end of the loan?
- c. Jason is offered that he won't have to make any payments for the first three months before his four year loan starts! ie: *He can defer payments*. However, his interest is still compounded and calculated for those three months! How much extra interest will Jason incur in those three months? (do a recursive simple interest calculation for those three months)

8. Gwen inherits \$5,000. The bank manager says Gwen should invest it at the bank with an excellent 4% interest and it would not take long for her money to double especially since the interest is compounded daily!

a. use the **Rule of 72** to estimate how many years it will take for Gwen's investment to double.

b. use that time approximation to accurately calculate to what value the investment would actually grow using (this will demonstrate that the compounding period is not an overly huge factor in this calculation)

- (1) compounding daily interest;
- (2) compounding monthly interest; and
- (3) compounding annual interest.

9. **UNIT A - Problem Solving.** Two hot dogs and a coke cost \$4.00. A coke is 50 cents less than a hot dog. How much is a coke? How much is a hot dog? [hint: Guess and Check until you get the correct answer!]

Bonus Challenge (*stuff you should likely know or be able to figure out*)

a. $1\frac{2}{5} + 3\frac{1}{3} =$

b. solve for x; $3x - 5 = 16$

Money Formulae:

A = P + I; the value of a loan or investment is the **P** **Principal** plus the **I** **Interest** that was earned

Simple Interest. **I = Prt**; where **I** is the interest, **P** is the Principal amount, **r** is the annual (yearly) interest rate, and **t** is the time in years.

Compound Interest: $A = P\left(1 + \frac{r}{s}\right)^{ns}$; where **A** is the final amount; **P** is the principal investment or loan; **r** is the interest rate (%) annually (APR); and 's' is the number of times per year the interest is calculated (compounded), and 'n' is the number of years of the investment or loan.