**MAT 131**  Names\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Project #2**

**Group Component** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Due: End of class period**

**Directions:**

* Work in groups of no more than 4 people. Feel free to send a representative to another group.
* Each group will hand in only **one** completed project at the end of the class period. This version will be graded. Make sure it is an **extra write-up**, not a group member’s original work.
* You must SHOW ALL WORK (including set-ups). Pay attention to details.
* **Do not round within an expression, wait until the end of each part.**



* **Round money values to the closest cent.**
* Remember to include units on final answers.

# HARD TIMES, HARD LOANS

When you borrow money by taking out a loan or using credit cards, financial institutions use compound interest to calculate how much money you are required to pay back.

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Suppose you have borrowed $6000 to pay for your tuition. The annual interest rate is 7.5% **compounded monthly**. Your loan is deferred, which means you are not making any payments on it, but it does accrue interest. The loan is in deferment for 5 years.

1. Fill in the following list:

*P* = *r* = *n* = *t* =

1. How much has the loan amount grown into at the end of the 5 year deferment period?

*Include the set-up.*

1. How much of this amount is **interest**? *Show your calculation.*

Once again, you need to borrow $6000 to pay for your tuition. You are taking out a loan at the same 7.5% interest per year, but it is **compounded continuously**. Again, the lender agrees for you to defer the loan payments for 5 years, but the amount borrowed accrues interest during this time.

1. Fill in the following list:

*P* = *r* = *t* =

1. How much has the loan amount grown into at the end of the 5 year deferment period?

*Include the set-up.*

1. How much of this amount is **interest**? *Show your calculation.*
2. Compare your answers to parts (c), and (f). Draw a reasonable conclusion. *Be sure to write in clear, complete sentences.*

1. Explain why you think credit card companies compound more often than monthly (close to continuously).

1. If you invested $800 in an account that is **compounded quarterly** at 1.5% annual interest, how long would it take your money to triple to $2400. Give the time in years *rounded to one decimal place.*

Fill in the following list:

*P* = *A* = *r* = *n* =

Find the time:

1. Does this answer surprise you? Why or why not?

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