Colorado Math Pathways Convening
on
Quantitative Reasoning/Liberal Arts Math

Focus on Finance

MAT 120 Math for Liberal Arts 4 credits

New Course Description

The course… Highlights connections between mathematics and the society in which we live and is intended for liberal arts majors. Topics include set theory and logic, mathematical modeling, probability and statistical methods, and consumer mathematics.

CLO Required

1. Apply formal logic and sets to discriminate between valid and invalid arguments.
2. Apply mathematical modeling to real world applications.
3. Utilize appropriate models to solve real world financial problems.
4. Apply probability and statistics to discriminate between valid and invalid conclusions.

I) Utilize appropriate models to solve real world financial problems.
    a) Simple and compound interest
    b) Loans with applications
    c) Annuities with applications
    d) Applications using percentages such as budgets, sales tax and discounts
    e) Cost estimation using applied geometry

Remember for our activities today you are a student enrolled in Math for the Liberal Arts. What kinds of questions, behaviors, and challenges do you think they will face as they progress through each activity?

The assumption for these activities is that we have completed a short module around simple interest and compound interest: flipped lesson video, short interactive lecture, or some other format to compare and share the formulas and a few examples.

Activity 1: Power of powers

The impact of compound interest results from raising quantities to larger powers. Examine the following pairs and determine which is larger:

$2^3, 3^2$

$4^5, 5^4$

$6^7, 7^6$

In general if *n* and *m* are large numbers and *n* exceeds *m*, which would you guess in larger m^n, n^m? Explain why.

Activity 2: Compound Interest

$$FV = P(1 + i)^n$$

FV = future value

P = principal (initial amount)

i = annual rate divided by compounding periods

n = time multiplied by compounding periods

Save vs spend

Coffee habits and weekend entertainment add up quickly. Instead of spending $5 a weekday on coffee or $20 a night on the weekend, you decide to explore how you might save your money.

Scenario 1: You decide to save your coffee money for a year. You make a deposit into a savings account at the end of the year that earns 2.5% annual interest, compounded monthly. The money is left untouched for 10 years. How much money will you have at the end of that timeframe? How much is principle? How much is interest?

Scenario 2: Instead of saving your coffee money, you decide to save your weekend entertainment funds. You also save this money for a year. You make a deposit into a savings account that earns 2.5% interest, compounded monthly for 10 years. How much money will you have at the end of that timeframe? How much is principle? How much is interest?

If you were going to choose to cut out coffee or weekend entertainment spending, which one might you choose and why?

Scenario 3: You decide to buy an espresso machine and make your own coffee at home. You save $5 per day every day. Suppose you make a weekly deposit into your savings account that earns 2.5% interest, compounded monthly for 10 years.

How is this scenario similar to the previous? How is this scenario different? What should you consider as you set up your calculations?

How much money will you have at the end of that timeframe?