

## **“When am I going to use this?”**

*“When am I going to use this?”*

High School mathematics teachers are frequently confronted with this challenge from students. From bisecting an angle with a compass and straight edge, to the strange “±” sign in the quadratic formula, students often don’t see the connection between the mathematics they are learning and the life they are living. The connections are there; but are well hidden from students behind the abstractions of our approach to teaching mathematics.

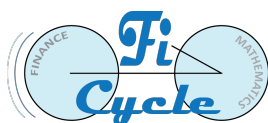
*“I wish I learned this in High School.”*

Since I work in finance, friends often ask me financial questions, such as, “Should I buy bitcoin?” “Are interest rates going up or down?” Seldom do people ask me about the questions that I think are important, “How much do I need to save for retirement?” “How much insurance do I need?” When I discuss the principles involved in evaluating financial decisions, they often wonder why they didn’t learn those concepts in school.

The mathematics course we have developed at the Financial Life Cycle Education Corp, called FiCycle for short, addresses both issues. It addresses high school mathematics standards (related to Algebra II, Probability, Statistics, and Modeling) while providing students with an understanding of the principles of personal finance and the mathematical tools they need to apply those principles to real decisions throughout their life.

The course is organized around understanding the ideas of wealth and consumption. Drawing on the “Life Cycle Hypothesis” of Nobel Prize winner Franco Modigliani, we focus on how people can transfer wealth across time: borrowing to transfer wealth from the future to the present to fund consumption now, and investing to transferring wealth to the future for retirement and other needs we may have later in life. We also show how the transfer of wealth across time creates risk and describe how to measure and manage that risk.

All of this takes mathematics: starting with basic numeracy and understanding percentages, fractions, and decimals, and extending to exponents and logarithms, probability, and regression. When students see this math in the context of finance, they never ask “when will I use this?” In fact, students find that they even enjoy mathematics.



Here's an example. In math class, we are taught the distributive rule:  
 $A \times (B + C) = (A \times B) + (A \times C)$ . Perhaps you remember being learning this.

In one class, students were learning the basics of future value. The equation for future value (FV) is:

$$FV = \text{Balance} \cdot (1 + \text{Rate}).$$

For example, if you have 1000 and you earn 8% interest, how much money do you have at the end of one year? There are two ways to solve this:

1. You can add 1 and 0.08 and get 1.08 and then multiply that number by 1000 and get 1080.
2. You can split the FV equation into two pieces:

$$\text{Balance} \cdot (1 + \text{Rate}) = (\text{Balance} \cdot 1) + (\text{Balance} \cdot \text{Rate}) = 1000 + 80 = 1080.$$

Shown this problem and the connection between the two solutions, a student exclaimed: "I like this math." Who wouldn't? While this is the same distributive rule, it has a purpose and that purpose drives engagement and understanding. Once shown the financial example, it is then much easier for the student to generalize to the more traditional approach to the distributive property and understand why it is important.

Why do we have high school students asking, "When will I use this?" and graduates saying, "I wish I had learned this"? We can address both the students and the graduates, and at the same time improve mathematics education.

**FiCycle Math shows the way.**

Andy Davidson  
Founder, Financial Life Cycle Education (a not for profit)

Contact us: [info@ficyle.org](mailto:info@ficyle.org)

