financial algebra

7: Types of Credit & Modeling Functions
Unit Plan for Teachers

All lessons are designed to be approximately 60 minutes in length.

- To access lesson guides and answer keys, please visit the Financial Algebra course page while logged into your NGPF teacher account.
- Vocabulary terms for this unit can be found in Quizlet Vocabulary: Types of Credit & Modeling Functions

7.1 Credit Basics
Personal Finance

Objectives:
✓ Calculate simple interest
✓ Read and interpret data presented as multi-line graphs and stacked line graphs
✓ Explain why a person may need or want credit and the impact of debt on American finances
✓ Identify the major types of credit and their characteristics
✓ Understand the three basic components of a credit agreement: principal, interest rate, and term
✓ Differentiate between interest rate and APR

Common Core Math Standards
- CCSS.HSA.SSE.A.1
- CCSS.HSM
- CCSS.HSS.IC.B.6

National Standards for Personal Financial Education
Managing Credit
- 1b: Compare the cost of borrowing $1,000 by means of different consumer credit options
- 2a: Give examples of unsecured and secured loans
- 2b: Explain why lenders charge lower interest rates on secured loans than on unsecured loans
- 2c: Compare what happens if a borrower fails to make required payments on a secured loan, such as an auto loan or a home mortgage, versus failing to pay a credit card account

Resources
- Student Activity Packet
- Lesson Guide*

7.2 Compound Interest Formula
Math

Objectives:
- ✓ Use the compound interest formula given a financial situation and interpret its results
- ✓ Evaluate expressions given variable definitions
- ✓ Demonstrate how compound interest can affect future loan balances
- ✓ Explain the difference between APR and APY
- ✓ Calculate the future value of periodic investments

Common Core Math Standards
- CCSS.HSF.LE.A.1.C
- CCSS.HSF.LE.A.2
- CCSS.HSF.BF.A.1

National Standards for Personal Financial Education
Managing Credit
- 1a: Describe how credit card grace periods, methods of interest calculation, and fees affect borrowing costs
- 3b: Compare the cost of borrowing $1,000 using consumer credit options that differ in rates and fees

Resources
- Student Activity Packet
- Application Problems
- Lesson Guide*

7.3 Auto Loans and Mortgages
Personal Finance

Objectives:
- ✓ Evaluate expressions
- ✓ Explain the difference between secured and unsecured loans
- ✓ Compare how auto loans and mortgages are similar and different
- ✓ Demonstrate how interest rate, term, and down payment affect the monthly payments of a loan
- ✓ Describe the steps that a borrower should take if they fall behind on their loan payments

Common Core Math Standards
- CCSS.HSM

National Standards for Personal Financial Education
Managing Credit
- 2a: Give examples of unsecured and secured loans
- 2b: Explain why lenders charge lower interest rates on secured loans than on unsecured loans
- 2c: Compare what happens if a borrower fails to make required payments on a secured loan, such as an auto loan or a home mortgage, versus failing to pay a credit card account
- 3c: Compare monthly mortgage payments for loans that differ in repayment period, amount borrowed, and interest rate
- 6a: Identify examples of loans that may require down payments
- 6c: For a specified loan amount, compare the monthly loan payment with a 10% down payment versus a 20% down payment

Resources
- Student Activity Packet
- Lesson Guide*

7.4 Student Loans
Personal Finance

Objectives:
- ✓ Calculate the future value of a periodic investment
- ✓ Analyze exponential growth rate using a real-world scenario about loan repayment and investment returns.
- ✓ Explain the difference between private and Federal loans, and summarize the different types of Federal loans
- ✓ Consider strategies to minimize student loan debt
- ✓ Understand the different loan repayment options available
- ✓ Analyze sample graduate profiles and choose the repayment option that works best in the context of an individual's situation

Common Core Math Standards
- CCSS.HSF.LE.B.5
- CCSS.HSF.LE.A.1.C

National Standards for Personal Financial Education
Managing Credit
- 5a: Compare federal and private student loans based on interest rates, repayment rules, and other characteristics
- 5c: Estimate total interest on various student loans based on interest rates and repayment plan

Resources
- Student Activity Packet
- Lesson Guide*

7.5 Recursive Sequences
Math

Objectives:
- ✓ Write recursive formula for a given sequence
- ✓ Use a recursive formula to model debt repayment
- ✓ Calculate how a debt amount decreases over time, given the interest rate and regular payment amounts

Common Core Math Standards
- CCSS.HSF.IF.A.3
- CCSS.HSF.BF.A.1
- CCSS.HSF.BF.A.1.A
- CCSS.HSF.BF.A.1.B

National Standards for Personal Financial Education
Managing Credit
- 1b: Compare the cost of borrowing $1,000 using consumer credit options that differ in rates and fees

Resources
- Student Activity Packet
- Application Problems
- Lesson Guide*

7.6 Building an Amortization Spreadsheet
Math

Objectives:
- ✓ Create an amortization table using recursive formulas
- ✓ Implement absolute references within recursive formulas
- ✓ Perform error analysis on amortization calculations
- ✓ Understand the impact of modifying monthly payments on a loan
- ✓ Use amortization tables to compare different loan products with different features
- ✓ Understand the impact of longer loan terms on total interest accrued on a loan

Common Core Math Standards
- CCSS.HSF.IF.A.3
- CCSS.HSF.IF.B.4
- CCSS.HSF.IF.C.7
- CCSS.HSF.BF.A.1.A
- CCSS.HSF.BF.A.1.B

National Standards for Personal Financial Education
Spending
- 1d: Evaluate the advantages of using budgeting tools, such as spreadsheets or apps
- 3b: Analyze the cost and features of three competing products or services

Managing Credit
- 1b: Compare the cost of borrowing $1,000 using consumer credit options that differ in rates and fees
- 3c: Compare monthly mortgage payments for loans that differ in repayment period, amount borrowed, and interest rate
- 5c: Estimate total interest on various student loans based on interest rates and repayment plans

Resources
- Student Activity Packet
- Application Problems
- Lesson Guide*

7.7 Credit Cards
Personal Finance

Objectives:
- ✓ Solve multi-step word problems
- ✓ Use a recursive sequence to model debt repayment
- ✓ Explain why a person may need or want a credit card
- ✓ Explain how a credit card works in terms of making purchases, calculating interest, and managing payments
- ✓ Read a Schumer box

Common Core Math Standards
- CCSS.HSA.SSE.A.1
- CCSS.HSF.BF.A.1.A

National Standards for Personal Financial Education
Managing Credit
- 1a: Describe how credit card grace periods, methods of interest calculation, and fees affect borrowing costs

Resources
- Student Activity Packet
- Lesson Guide*

7.0 Unit Assessment

- 20 multiple-choice questions, 5 open-ended math questions, and 1 free response personal finance question
- Please access the Unit Test from the [Financial Algebra course page](#) while logged in to your teacher account.