Connecticut State Department of Education

## Mathematics Crosswalk

 Common Core State Standards aligned to Personal Finance StandardsThe high school standards specify the mathematics that all students should study in order to be college and career ready. Below is a list of Mathematics standards and the Personal Finance Concept that could be utilized to teach the specific CCCS standard. For more information about high school conceptual following
http://www.sde.ct.qov/sde/lib/sde/PDF/CCSS/CCSS Math Overview HS.pdf.

## Content Standard 1: Personal Decision Making

 Apply reliable information and systemic decision making to personal financial decisions1.0 Use the rational decision-making process as it applies to the roles of citizens, workers, and consumers.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard $9-12$ |
| :---: | :---: |
| Beginning |  |
| - Define and give examples of economic wants and needs. |  |
| - Recognize and assume responsibility for the consequences of economic choices. |  |
| - Apply the steps in a rational decision-making process to a situation involving an economic decision by an individual. |  |
| Intermediate |  |
| - Examine the impact of advertising, peer pressure, and family history on personal financial decisions. |  |
| - Apply the decision-making process to various types of decisions at different stages of the life-cycle. |  |
| Advanced |  |
| - Differentiate between types of decisions and identify those for which a formal decision-making process should be used. |  |
| - Analyze the effects of ethics on business and financial management decisions. |  |
| - Analyze the effects of inflations and taxes on business and financial management decisions. | CC.9-12.A.SSE.1: Interpret expressions that represent a quantity in terms of its context. <br> CC.9-12.A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. |

## Content Standard 2: Earning and Reporting Income Use a career plan to develop personal income potential

2.0 Identify various forms of income and analyze factors that affect income as a part of the career decision-making process.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard $9-12$ |
| :---: | :---: |
| Beginning |  |
| - Identify various ways people earn a living. |  |
| - Differentiate between earned and unearned income. |  |
| - Distinguish between income and wealth. |  |
| - Identify sources of unearned income (e.g. transfer payments and gifts). |  |
| - Calculate Net Pay | CC.9-12.A.SSE.1: Interpret expressions that represent a quantity in terms of its context. <br> CC.9-12.A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. <br> CC.9-12.A.CED. 2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. |
| Intermediate |  |
| - Analyze how career choice, education, and skills affect income and goal attainment. |  |
| - Analyze the characteristics and requirements of occupations of interest, including entrepreneurial opportunities. |  |

- Explain the effect on take-home pay of changing allowances claimed on an "Employees' Withholding Allowance Certificate" (IRS Form W-4).

|  | Discuss how personal choices concerning human capital <br> (experiences, technology, educational/training, and other <br> factors) influence income. |
| :--- | :--- |
| Advanced |  |
| • Analyze and prepare a federal and state income tax return. |  |

CC.9-12.A.SSE.1: Interpret expressions that represent a quantity in terms of its context.
CC.9-12.A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
CC.9-12.A.REI. 1 Explain each step in solving simple equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
CC. 9-12.A.REI. 2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

## CC.9-12.A.CED. 2 Create equations in two or more variables to represent

 relationships between quantities; graph equations on coordinate axes with labels and scales.CC.9-12.A.CED. 3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

Content Standard 3: Managing Finances and Budgeting
Organize personal finances and use a budget to manage cash flow
3.0 Develop and evaluate a budget plan.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard $9-12$ |
| :---: | :---: |
| Beginning |  |
| - Identify various sources of money for personal spending. |  |
| - Construct and use a personal budget plan and evaluate it according to short- and long-term goals. |  |
| Intermediate |  |
| - Identify ways in which individuals and families obtain financial resources. |  |
| - Define fixed and variable expenses. |  |
| - Categorize and classify expenses as fixed or variable. |  |
| - Determine discretionary income in a budget plan. |  |
| Advanced |  |
| - Compare a personal budget plan with typical consumer spending as a tool for determining individual financial goals. | CC.9-12.F.1F. 4 For a function that models a relationship between two quantities, interpret key features of the graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts, intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. <br> CC.9-12.F.IF. 5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble $n$ engines in a factory, then the positive integers would be an appropriate domain for the function. <br> CC.9-12.F.IF. 6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. |

- Describe how income and spending patterns change throughout the life cycle for the typical person or family.
CC.9-12.N.Q. 2 Define appropriate quantities for the purpose of descriptive modeling.
CC.9-12.F.LE.1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
CC.9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.


## Content Standard 4: Saving and Investing

 Implement a diversified investment strategy that is compatible with personal goals4.0 Evaluate savings and investment options to meet short- and long-term goals.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard $9-12$ |
| :---: | :---: |
| Beginning |  |
| - Describe why and how people save. |  |
| - Identify the opportunity costs of saving. |  |
| - Differentiate between saving and investing. |  |
| - Distinguish between simple and compound interest. |  |
| Intermediate |  |
| - Apply criteria for choosing a saving or investment instrument (e.g. market risk, inflation risk, interest rate risk, liquidity, and minimum amount needed for investment). |  |
| - Explain why a savings and investing plan changes as one proceeds through the life cycle. | CC.9-12.F.LE.1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. <br> CC.9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. <br> CC.9-12.F.LE. 3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. |

- Explain how and why the stock market works.
- Indentify the risk/return trade-offs for saving and investing.
- Analyze the power of compounding and the importance of starting early in implementing a plan for saving and investing.
CC.9-12.F.1F. 4 For a function that models a relationship between two quantities, interpret key features of the graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts, intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.
CC.9-12.F.IF. 5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble $n$ engines in a factory, then the positive integers would be an appropriate domain for the function.
CC.9-12.F.IF. 6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.
CC.9-12.N.Q. 1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
CC.9-12.F.LE. 1 Distinguish between situations that can be modeled with linear functions and with exponential functions
CC.9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
CC.9-12.F.LE. 3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
- Develop financial goals for the future based on one's lifestyle expectations and career choices.
- Calculate and apply the Rule of '72.
CC.9-12.A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
CC.9-12.A.CED. 3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.


## Advanced

- Examine the fundamental workings of the Social Security System and the system's effects on retirement planning.
CC.9-12.F.IF. 7 Graph functions expressed symbolically and show key feature of the graph, by hand in simple cases and using technology for more complicated cases.
CC.9-12.F.BF. 1 Write a function that describes a relationship between two quantities.
CC.9-12.F.LE. 1 Distinguish between situations that can be modeled with linear functions and with exponential functions
CC.9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
CC.9-12.F.LE. 3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
- Describe the advantages provided by employer-sponsored retirement savings plans including 401K and related plans.
CC.9-12.F.LE. 1 Distinguish between situations that can be modeled with linear functions and with exponential functions.
CC.9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
CC.9-12.F.LE. 3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.


## Content Standard 5: Buying Goods and Services

Use a rational decision making process to evaluate factors involved in buying decisions to optimize consumer satisfaction
5.0 Apply a decision-making model to maximize consumer satisfaction when buying goods and services.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard 9-12 |
| :---: | :---: |
| Beginning |  |
| - Apply a rational decision-making process to personal buying decisions |  |
| - Identify goods and services and distinguish between the two. |  |
| - Apply comparison shopping practices and return policies. |  |
| - Identify alternative sources for purchases (on-line, retail stores, catalogs). |  |
| - Recognize that laws are available to protect the rights of consumers. |  |
| Intermediate |  |
| - Discuss various ways competition among buyers helps the consumer. |  |
| - Describe reasons why there are variances in price for a given item bought from different providers. |  |
| - Use reliable consumer resources to collect information for making buying decisions about durable and nondurable goods. |  |

- Analyze and evaluate advertising claims.
- Investigate current types of consumer fraud, including online scams.
- Describe consumer rights, responsibilities, and remedies, give examples of each.
- Compare the costs and benefits of purchasing, leasing, and renting.
CC.9-12.A.CED. 2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
CC.9-12.A.CED. 3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
- Identify and describe consumer assistance services provided by public and private organizations (e.g. government, the Better Business Bureau, and manufacturers).
- Calculate the costs of utilities, services, maintenance, and other expenses involved in independent living.
CC.9-12.A.REI. 1 Explain each step in solving simple equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
CC. 9-12.A.REI. 2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
- Explain how a consumer can identify and report fraudulent behavior and practices observed on the Internet.


## Advanced

- Examine the impact of advertising and marketing on consumer demand and decision-making in the global marketplace.
- Research consumer advocacy groups that address consumer rights and responsibilities and describe how an individual can participate.
- Describe the role that supply and demand and market structure play in determining the availability and prices of goods and services.


## Content Standard 6: Banking and Financial Institutions

 Banking services are an integral part of managing and organizing financial transaction
### 6.0 Evaluate services provided by financial deposit institutions to transfer funds.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard $9-12$ |
| :---: | :---: |
| Beginning |  |
| - Identify various types of financial institutions. |  |
| - List the basic services provided by financial institutions. |  |
| - Identify the rights and responsibilities associated with using a checking account. |  |
| - Describe the steps involved in opening and using a checking account. |  |
| - Compare and contrast the different types of checking accounts offered by various institutions. |  |
| Intermediate |  |
| - Differentiate among types of electronic monetary transactions (e.g. debit cards, ATM, and automatic deposits/payments) offered by various financial institutions |  |
| - Identify other means of transferring funds (e.g., money orders and certified checks). |  |
| - Evaluate services and related costs associated with financial institutions in terms of personal banking needs. |  |

- Describe and use the steps involved in the bank reconciliation process.
CC.9-12.A.REI. 1 Explain each step in solving simple equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
CC. 9-12.A.REI. 2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
CC.9-12.A.CED. 2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
CC.9-12.A.CED. 3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
- Analyze privacy and security issues associated with financial transactions.
- Identify the functions of the Federal Reserve System. Advanced
- Explain how certain historical events have influenced the banking systems and other financial institutions.
- Examine the use of banks and other financial institutions from a global consumer perspective (e.g., immigrants to the U.S., fear of banks, cash-based systems in some countries, safety if deposits made in banks in other countries.


## Content Standard 7: Using Credit

Maintain credit worthiness, borrow at favorable terms and manage debt
7.0 Analyze factors that affect the choice of credit and the legal aspects of using credit.

| CT Personal Finance FRAMEWORKS PERFORMANCE STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard 9-12 |
| :---: | :---: |
| Beginning |  |
| - Explain when and why borrowing is used for the purchase of goods and services. |  |
| - Describe the risks and responsibilities associated with using credit. |  |
| - Identify the opportunity cost of credit decisions. |  |
| - Identify methods of establishing and maintaining a good credit rating. |  |
| - Determine the advantages and disadvantages of using credit. |  |
| - Evaluate the various methods of financing a purchase. |  |
| - Define interest as a cost of credit and explain why it is charged. |  |
| - Select an appropriate form of credit for a particular buying decision. |  |
| - Explain the need for a sound credit rating. |  |
| Intermediate |  |
| - Analyze credit card features and their impact on personal financial planning. |  |
| - Explain how the amount of principal, the period of the loan, and the interest rate affect the amount of interest charged. |  |
| - Explain why an interest rate varies with the amount of assumed risk. |  |

- Calculate a payment schedule for a loan.
CC.9-12.A.REI. 1 Explain each step in solving simple equations as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
CC. 9-12.A.REI. 2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
- Analyze various sources and types of credit (e.g. short-and long term) and related costs.
- Explain credit ratings and credit reports and describe why they are important to consumers.
- Describe the relationship between credit rating and the cost of credit.
- Give examples of benefits of financial responsibility and the cost of financial irresponsibility.
- Identify strategies for effective debt management.
- Analyze the sources of assistance for debt management.
- Identify the components listed on a credit report and explain how that information is used and how it is received by and reported from the credit reporting agencies.
- Identify specific steps that consumers can take to minimize their exposure to identify theft.
- Describe problems that occur when one is victim of identity theft.
- Identify specific steps that should be taken by a victim of identity theft.
- Identify ways that thieves can fraudulently obtain personal information.
- List entities that have a right to obtain individual Social Security numbers
- Explain the implications of bankruptcy.


## Advanced

- Examine the use of credit from a global consumer perspective (e.g., immigrant to U.S., family history, cashbased system in some countries, and east of overextension of credit).
- Compare and contrast the various aspects of credit cards (e.g., APR, grace period, incentive buying, methods of calculating interest, and fees).
- Research rights and responsibilities of consumers according to credit legislation (e.g., truth-in-lending, fair credit reporting, equal credit opportunity, and fair debt collection).
- Compare and contrast the legal aspects of different forms of credit (e.g., title transfer, responsibility limits, collateral requirements, and co-signing).
- Describe legal and illegal types of credit that carry high interest rates (e.g., payday loans, rent-to-buy agreements, and loan sharking).
CC.9-12.A.CED. 2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
CC.9-12.A.CED. 3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.


## Content Standard 8: Protecting against risk

Use appropriate and cost-effective risk management strategies

### 8.0 Analyze choices available to consumers for protection against risk and financial loss.

| CT Personal Finance FRAMEWORKS PERFORMANCE <br> STANDARDS 1-8 | Mathematics Crosswalk Common Course State Standard <br> $\mathbf{9 - 1 2}$ |
| :--- | :--- |
| Beginning |  |
| - Identify risk in like and how to gain protection again the |  |
| consequences of risk. |  |

liability, home and apartment, health, life, long term care and disability).

- Explain why insurance needs change throughout the life cycle.
- Identify various suppliers of insurance (e.g. public and private).
- Explain the role of insurance in financial planning.

Advanced

- Develop recommended insurance coverage for individuals/families for various risks and different income levels.
- Develop a plan for family financial security (e.g., secure storage of documents, cash reserve, household inventory, medical records retention) in case of a disaster.

