Business Math: Unit 2
Making Financial Decisions
Course Philosophy/Description

Business Mathematics is an elective Mathematics course of which students learn to use mathematics effectively as a tool in their personal and business lives. After students have completed this course, they will be able to apply mathematical concepts in various personal and business situations. All standards are aligned to the New Jersey Student Learning Standards of Mathematics and the New Jersey Personal Financial Literacy Standards.

Students will review and apply mathematical concepts that they learned in four of the conceptual categories, namely Number and Quantity, Algebra, Functions, and Statistics and Probability. They will understand terminology relating to personal and business mathematics applications and apply basic math skills to the solution of both personal and business applications. They will use common mathematical formulas to solve a variety of personal and business mathematics as well as apply knowledge of computer and calculator use. Students will also learn strategies for critical thinking and problem solving both in finance and business ethics.
This ESL framework was designed to be used by bilingual, dual language, ESL and general education teachers. Bilingual and dual language programs use the home language and a second language for instruction. ESL teachers and general education or bilingual teachers may use this document to collaborate on unit and lesson planning to decide who will address certain components of the SLO and language objective. ESL teachers may use the appropriate leveled language objective to build lessons for ELLs which reflects what is covered in the general education program. In this way, whether it is a pull-out or push-in model, all teachers are working on the same Student Learning Objective connected to the Common Core standard. The design of language objectives is based on the alignment of the World-Class Instructional Design Assessment (WIDA) Consortium’s English Language Development (ELD) standards with the Common Core State Standards (CCSS). WIDA’s ELD standards advance academic language development across content areas ultimately leading to academic achievement for English learners. As English learners are progressing through the six developmental linguistic stages, this framework will assist all teachers who work with English learners to appropriately identify the language needed to meet the requirements of the content standard. At the same time, the language objectives recognize the cognitive demand required to complete educational tasks. Even though listening and reading (receptive) skills differ from speaking and writing (expressive) skills across proficiency levels the cognitive function should not be diminished. For example, an Entering Level One student only has the linguistic ability to respond in single words in English with significant support from their home language. However, they could complete a Venn diagram with single words which demonstrates that they understand how the elements compare and contrast with each other or they could respond with the support of their home language (L1) with assistance from a teacher, para-professional, peer or a technology program.

http://www.state.nj.us/education/modelcurriculum/ela/ELLOverview.pdf
<table>
<thead>
<tr>
<th>#</th>
<th>Student Learning Objective</th>
<th>NJSLS – Math</th>
<th>NJ-Personal Financial Literacy Standards</th>
<th>Marking Period 2</th>
</tr>
</thead>
</table>
### Pacing Chart – Unit 2

<p>| | | | |</p>
<table>
<thead>
<tr>
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<tr>
<td>4</td>
<td>Analyze home ownership costs including mortgage costs and payments, real estate taxes, homeowner insurance, and other housing cost. Compare renting to purchasing options.</td>
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<tr>
<td>5</td>
<td>Perform cost benefit analysis for various insurance options including health, disability insurance, term and other types of life insurance.</td>
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<tr>
<td>6</td>
<td>Analyze various investment options and compare their returns. Investment options include certificate of deposit, stocks, mutual funds, bonds, real estate, and retirement investments.</td>
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</tbody>
</table>
Research about Teaching and Learning Mathematics

Structure teaching of mathematical concepts and skills around problems to be solved (Checkly, 1997; Wood & Sellars, 1996; Wood & Sellars, 1997)

Encourage students to work cooperatively with others (Johnson & Johnson, 1975; Davidson, 1990)

Use group problem-solving to stimulate students to apply their mathematical thinking skills (Artzt & Armour-Thomas, 1992)

Students interact in ways that support and challenge one another’s strategic thinking (Artzt, Armour-Thomas, & Curcio, 2008)

Activities structured in ways allowing students to explore, explain, extend, and evaluate their progress (National Research Council, 1999)

There are three critical components to effective mathematics instruction (Shellard & Moyer, 2002):

- Teaching for conceptual understanding
- Developing children’s procedural literacy
- Promoting strategic competence through meaningful problem-solving investigations

Teachers should be:

- Demonstrating acceptance and recognition of students’ divergent ideas.
- Challenging students to think deeply about the problems they are solving, extending thinking beyond the solutions and algorithms required to solve the problem
- Influencing learning by asking challenging and interesting questions to accelerate students’ innate inquisitiveness and foster them to examine concepts further.
- Projecting a positive attitude about mathematics and about students’ ability to “do” mathematics

Students should be:

- Actively engaging in “doing” mathematics
- Solving challenging problems
- Investigating meaningful real-world problems
- Making interdisciplinary connections
- Developing an understanding of mathematical knowledge required to “do” mathematics and connect the language of mathematical ideas with numerical representations
- Sharing mathematical ideas, discussing mathematics with one another, refining and critiquing each other’s ideas and understandings
- Communicating in pairs, small group, or whole group presentations
- Using multiple representations to communicate mathematical ideas
- Using connections between pictures, oral language, written symbols, manipulative models, and real-world situations
- Using technological resources and other 21st century skills to support and enhance mathematical understanding
Mathematics is not a stagnate field of textbook problems; rather, it is a dynamic way of constructing meaning about the world around us, generating knowledge and understanding about the real world every day. Students should be metaphorically rolling up their sleeves and “doing mathematics” themselves, not watching others do mathematics for them or in front of them. (Protheroe, 2007)

**Balanced Mathematics Instructional Model**

Balanced math consists of three different learning opportunities: guided math, shared math, and independent math. Ensuring a balance of all three approaches will build conceptual understanding, problem solving, computational fluency, and procedural fluency. Building conceptual understanding is the focal point of developing mathematical proficiency. Students should frequently work on rigorous tasks, talk about the math, explain their thinking, justify their answer or process, build models with graphs or charts or manipulatives, and use technology.

When balanced math is used in the classroom it provides students opportunities to:

- solve problems
- make connections between math concepts and real-life situations
- communicate mathematical ideas (orally, visually and in writing)
- choose appropriate materials to solve problems
- reflect and monitor their own understanding of the math concepts
- practice strategies to build procedural and conceptual confidence

Teacher builds conceptual understanding by modeling through demonstration, explicit instruction, and think alouds, as well as guiding students as they practice math strategies and apply problem solving strategies. (whole group or small group instruction)

Teacher and students practice mathematics processes together through interactive activities, problem solving, and discussion. (whole group or small group instruction)

Students practice math strategies independently to build procedural and computational fluency. Teacher assesses learning and reteaches as necessary. (whole group instruction, small group instruction, or centers)
<table>
<thead>
<tr>
<th>Effective Pedagogical Routines/Instructional Strategies</th>
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</thead>
<tbody>
<tr>
<td><strong>Collaborative Problem Solving</strong></td>
</tr>
<tr>
<td>Connect Previous Knowledge to New Learning</td>
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<tr>
<td>Making Thinking Visible</td>
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<tr>
<td>Develop and Demonstrate Mathematical Practices</td>
</tr>
<tr>
<td>Inquiry-Oriented and Exploratory Approach</td>
</tr>
<tr>
<td>Multiple Solution Paths and Strategies</td>
</tr>
<tr>
<td>Use of Multiple Representations</td>
</tr>
<tr>
<td>Explain the Rationale of your Math Work</td>
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<tr>
<td>Quick Writes</td>
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<tr>
<td>Pair/Trio Sharing</td>
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<tr>
<td>Turn and Talk</td>
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<tr>
<td>Charting</td>
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<tr>
<td>Gallery Walks</td>
</tr>
<tr>
<td>Small Group and Whole Class Discussions</td>
</tr>
<tr>
<td>Student Modeling</td>
</tr>
<tr>
<td><strong>Analyze Student Work</strong></td>
</tr>
<tr>
<td>Identify Student’s Mathematical Understanding</td>
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<tr>
<td>Identify Student’s Mathematical Misunderstandings</td>
</tr>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>Role Playing</td>
</tr>
<tr>
<td>Diagrams, Charts, Tables, and Graphs</td>
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<tr>
<td>Anticipate Likely and Possible Student Responses</td>
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<tr>
<td>Collect Different Student Approaches</td>
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<tr>
<td>Multiple Response Strategies</td>
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<tr>
<td>Asking Assessing and Advancing Questions</td>
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<tr>
<td>Revoicing</td>
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<td>Marking</td>
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<tr>
<td>Recapping</td>
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<tr>
<td>Challenging</td>
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<tr>
<td>Pressing for Accuracy and Reasoning</td>
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<tr>
<td>Maintain the Cognitive Demand</td>
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</table>
## Educational Technology

### Standards


<table>
<thead>
<tr>
<th>Technology Operations and Concepts</th>
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<tbody>
<tr>
<td>• Create professional documents (e.g., newsletter, personalized learning plan, business letter or flyer) using advanced features of a word processing program.</td>
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<tr>
<td>• Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.</td>
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</tbody>
</table>

<table>
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<tr>
<th>Digital Citizenship</th>
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<tr>
<td>• Model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics.</td>
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</table>

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<thead>
<tr>
<th>Research and Information Literacy</th>
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<tbody>
<tr>
<td>• Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.</td>
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<table>
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<tr>
<th>Design: Critical Thinking, Problem Solving, and Decision Making</th>
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<tbody>
<tr>
<td>• Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.</td>
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</tbody>
</table>
Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

- **CRP1. Act as a responsible and contributing citizen and employee**
  Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

- **CRP2. Apply appropriate academic and technical skills.**
  Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

- **CRP4. Communicate clearly and effectively and with reason.**
  Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others’ time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

- **CRP6. Demonstrate creativity and innovation.**
  Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

- **CRP7. Employ valid and reliable research strategies.**
  Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.
**Career Ready Practices**

- **CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**
  Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

- **CRP11. Use technology to enhance productivity.**
  Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

- **CRP12. Work productively in teams while using cultural global competence.**
  Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
WIDA Proficiency Levels

At the given level of English language proficiency, English language learners will process, understand, produce or use:

<table>
<thead>
<tr>
<th>Level</th>
<th>Language Features</th>
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</thead>
</table>
| 6- Reaching | - Specialized or technical language reflective of the content areas at grade level  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse as required by the specified grade level  
- Oral or written communication in English comparable to proficient English peers |
| 5- Bridging | - Specialized or technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse, including stories, essays or reports  
- Oral or written language approaching comparability to that of proficient English peers when presented with grade level material. |
| 4- Expanding | - Specific and some technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in oral discourse or multiple, related sentences or paragraphs  
- Oral or written language with minimal phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written connected discourse, with sensory, graphic or interactive support |
| 3- Developing | - General and some specific language of the content areas  
- Expanded sentences in oral interaction or written paragraphs  
- Oral or written language with phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written, narrative or expository descriptions with sensory, graphic or interactive support |
| 2- Beginning | - General language related to the content area  
- Phrases or short sentences  
- Oral or written language with phonological, syntactic, or semantic errors that often impede the communication when presented with one to multiple-step commands, directions, or a series of statements with sensory, graphic or interactive support |
| 1- Entering | - Pictorial or graphic representation of the language of the content areas  
- Words, phrases or chunks of language when presented with one-step commands directions, WH-, choice or yes/no questions, or statements with sensory, graphic or interactive support |
# Language Development Supports For English Language Learners

To Increase Comprehension and Communication Skills

## Environment

- Welcoming and stress-free
- Respectful of linguistic and cultural diversity
- Honors students' background knowledge
- Sets clear and high expectations
- Includes routines and norms
- Is thinking-focused vs. answer-seeking
- Offers multiple modalities to engage in content learning and to demonstrate understanding
- Includes explicit instruction of specific language targets
- Provides participation techniques to include all learners
- Integrates learning centers and games in a meaningful way
- Provides opportunities to practice and refine receptive and productive skills in English as a new language
- Integrates meaningful and purposeful tasks/activities that:
  - Are accessible by all students through multiple entry points
  - Are relevant to students' lives and cultural experiences
  - Build on prior mathematical learning
  - Demonstrate high cognitive demand
  - Offer multiple strategies for solutions
  - Allow for a language learning experience in addition to content

## Sensory Supports*

- Real-life objects (realia) or concrete objects
- Physical models
- Manipulatives
- Pictures & photographs
- Visual representations or models such as diagrams or drawings
- Videos & films
- Newspapers or magazines
- Gestures
- Physical movements
- Music & songs

## Graphic Supports*

- Graphs
- Charts
- Timelines
- Number lines
- Graphic organizers
- Graphing paper

## Interactive Supports*

- In a whole group
- In a small group
- With a partner such as Turn-and-Talk
- In pairs as a group (first, two pairs work independently, then they form a group of four)
- In triads
- Cooperative learning structures such as Think-Pair-Share
- Interactive websites or software
- With a mentor or coach

## Verbal and Textual Supports

- Labeling
- Students' native language
- Modeling
- Repetitions
- Paraphrasing
- Summarizing
- Guiding questions
- Clarifying questions
- Probing questions
- Leveled questions such as What? Where? Where? How? Why?
- Questioning prompts & cues
- Word Banks
- Sentence starters
- Sentence frames
- Discussion frames
- Talk moves, including Wait Time

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# BUILDING EQUITY IN YOUR TEACHING PRACTICE

How do the essential questions highlight the connection between the big ideas of the unit and equity in your teaching practice?

<table>
<thead>
<tr>
<th>CONTENT INTEGRATION</th>
<th>KNOWLEDGE CONSTRUCTION</th>
<th>PREJUDICE REDUCTION</th>
<th>EQUITABLE PEDAGOGY</th>
<th>EMPOWERING SCHOOL CULTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers use examples and content from a variety of cultures &amp; groups.</td>
<td>Teachers help students understand how knowledge is created and influenced by cultural assumptions, perspectives &amp; biases.</td>
<td>Teachers implement lessons and activities to assert positive images of ethnic groups &amp; improve intergroup relations.</td>
<td>Teachers modify techniques and methods to facilitate the academic achievement of students from diverse backgrounds.</td>
<td>Using the other four dimensions to create a safe and healthy educational environment for all.</td>
</tr>
</tbody>
</table>

This unit / lesson is connected to other topics explored with students.

There are multiple viewpoints reflected in the content of this unit / lesson.

The materials and resources are reflective of the diverse identities and experiences of students.

The content affirms students, as well as exposes them to experiences other than their own.

This unit / lesson provides context to the history of privilege and oppression.

This unit / lesson addresses power relationships.

This unit / lesson help students to develop research and critical thinking skills.

This curriculum creates windows and mirrors* for students.

This unit / lesson helps students question and unpack biases & stereotypes.

This unit / lesson help students examine, research and question information and sources.

This curriculum encourages discussion and understanding about the groups of people being represented.

This unit / lesson challenges dominant perspectives.

The instruction has been modified to meet the needs of each student.

Students feel respected and their cultural identities are valued.

Additional supports have been provided for students to become successful and independent learners.

Opportunities are provided for student to reflect on their learning and provide feedback.

There are opportunities for students to connect with the community.

My classroom is welcoming and supportive for all students?

I am aware of and sensitive to the needs of my students and their families.

There are effective parent communication systems established. Parents can talk to me about issues as they arise in my classroom.

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Culturally Relevant Pedagogy Examples

- **Encourage Students to Propose Ideas for Projects:** Let students take projects from concept to completion by pitching your idea, allowing them to showcase their strengths.
  **Example:** Students will develop project ideas that meet grade level standards. Assist students in choosing from a list of options to refine their ideas in order to meet standards.
  https://www.moneyinstructor.com/investing.asp

- **Call on Each Student:** Encourage each student to share his or her thoughts through call-and-response, keeping the class’s attention in the process.
  **Example:** Foster confidence. Make the assessment process less intimidating by offering different ways to demonstrate skills and understanding. For example, avoid handing out quizzes that are purely multiple choice or fill-in-the-blank. Mix in problems that involve explaining the step necessary to get to the answer. Then give students time to monitor their performance and assess their own progress, helping them focus on growth.

- **Present New Concepts Using Student Vocabulary:** Use student diction to capture attention and build understanding before using academic terms.
  **Example:** Create a scavenger hunt where students work together in groups to find new terms and their definition.
  http://www.classtools.net/QR/

- **Run Problem-Based Learning Scenarios:** Present relatable real-world problems for your students to solve, explicitly referencing cultures and communities when applicable.
  **Example:** Retirement is a time in life when the major sources of income change from earned income to employer based retirement benefits, private savings and investments, social security, etc. The following link provides a project where students will investigate and how much money they will need for retirement.
### Differentiated Instruction

**Accommodate Based on Students Individual Needs: Strategies**

<table>
<thead>
<tr>
<th>Time/General</th>
<th>Processing</th>
<th>Comprehension</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra time for assigned tasks</td>
<td>Extra Response time</td>
<td>Precise processes for balanced math instructional model</td>
<td>Teacher-made checklist</td>
</tr>
<tr>
<td>Adjust length of assignment</td>
<td>Have students verbalize steps</td>
<td>Short manageable tasks</td>
<td>Use visual graphic organizers</td>
</tr>
<tr>
<td>Timeline with due dates for reports and projects</td>
<td>Repeat, clarify or reword directions</td>
<td>Brief and concrete directions</td>
<td>Reference resources to promote independence</td>
</tr>
<tr>
<td>Communication system between home and school</td>
<td>Mini-breaks between tasks</td>
<td>Provide immediate feedback</td>
<td>Visual and verbal reminders</td>
</tr>
<tr>
<td>Provide lecture notes/outline</td>
<td>Provide a warning for transitions</td>
<td>Small group instruction</td>
<td>Graphic organizers</td>
</tr>
<tr>
<td></td>
<td>Partnering</td>
<td>Emphasize multi-sensory learning</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistive Technology</th>
<th>Tests/Quizzes/Grading</th>
<th>Behavior/Attention</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer/whiteboard</td>
<td>Extended time</td>
<td>Consistent daily structured routine</td>
<td>Individual daily planner</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>Study guides</td>
<td>Simple and clear classroom rules</td>
<td>Display a written agenda</td>
</tr>
<tr>
<td>Video Tape</td>
<td>Shortened tests</td>
<td>Frequent feedback</td>
<td>Note-taking assistance</td>
</tr>
<tr>
<td></td>
<td>Read directions aloud</td>
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<td>Color code materials</td>
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</tbody>
</table>

**Organization**:
- Individual daily planner
- Display a written agenda
- Note-taking assistance
- Color code materials
Interdisciplinary Connections

*Model interdisciplinary thinking to expose students to other disciplines.*

**Social Studies and Personal finance**

*Credit Card Paying the Minimum:*

- If you are not paying off your credit card balance in full every month, your money is slowly going down the “interest drain.” In this project you will select a credit card, use it to purchase a “big ticket” item, and see what happens when you make only the minimum payment on the card.

*Saving for Retirement*

- Students will analyze how much they need for retirement and design an investment portfolio to achieve their goals.
## Enrichment

### What is the Purpose of Enrichment?

- The purpose of enrichment is to provide extended learning opportunities and challenges to students who have already mastered, or can quickly master, the basic curriculum. Enrichment gives the student more time to study concepts with greater depth, breadth, and complexity.
- Enrichment also provides opportunities for students to pursue learning in their own areas of interest and strengths.
- Enrichment keeps advanced students engaged and supports their accelerated academic needs.
- Enrichment provides the most appropriate answer to the question, “What do you do when the student already knows it?”

### Enrichment is…

- Planned and purposeful
- Different, or differentiated, work – not just more work
- Responsive to students’ needs and situations
- A promotion of high-level thinking skills and making connections within content
- The ability to apply different or multiple strategies to the content
- The ability to synthesize concepts and make real world and cross-curricular connections
- Elevated contextual complexity
- Sometimes independent activities, sometimes direct instruction
- Inquiry based or open ended assignments and projects
- Using supplementary materials in addition to the normal range of resources
- Choices for students
- Tiered/Multi-level activities with flexible groups (may change daily or weekly)

### Enrichment is not…

- Just for gifted students (some gifted students may need intervention in some areas just as some other students may need frequent enrichment)
- Worksheets that are more of the same (busywork)
- Random assignments, games, or puzzles not connected to the content areas or areas of student interest
- Extra homework
- A package that is the same for everyone
- Thinking skills taught in isolation
- Unstructured free time
Assessments

**Suggested Formative/Summative Classroom Assessments**
- Describe Learning Vertically
- Identify Key Building Blocks
- Make Connections (between and among key building blocks)
- Short/Extended Constructed Response Items
- Multiple-Choice Items (where multiple answer choices may be correct)
- Drag and Drop Items
- Use of Equation Editor
- Quizzes
- Journal Entries/Reflections/Quick-Writes
- Accountable talk
- Projects
- Portfolio
- Observation
- Graphic Organizers/Concept Mapping
- Presentations
- Role Playing
- Teacher-Student and Student-Student Conferencing
- Homework
## New Jersey Student Learning Standards

### N.Q.A.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.

### A.CED.A.2: Create equations in two or more variables to represent relationships between quantities; Graph equations on coordinate axes with labels and scales.

### A.CED.A.3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*

### A.REI.C.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

### A.REI.C.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

### A.REI.D.10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). *[Focus on linear equations.]*

### A.REI.D.11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* *[Focus on linear equations.]*

### A.REI.D.12: Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

### A.SSE.B.4: Derive and/or explain the derivation of the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*

### F.BF.A.2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
New Jersey Student Learning Standards

F.IF.A.1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

F.IF.A.2: Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

F.IF.A.3: Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1.

F.IF.B.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.

F.IF.C.9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

F.LE.A.1: Distinguish between situations that can be modeled with linear functions and with exponential functions.

F.LE.A.2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

F.LE.A.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.

F.LE.B.5: Interpret the parameters in a linear or exponential function in terms of a context

HSS-MD.A.2: Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
### New Jersey Personal Financial Literacy Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1.12.B.1</td>
<td>Prioritize financial decisions by systematically considering alternatives and possible consequences.</td>
</tr>
<tr>
<td>9.1.12.B.4</td>
<td>Analyze how income and spending plans are affected by age, needs, and resources.</td>
</tr>
<tr>
<td>9.1.12.B.8</td>
<td>Describe and calculate interest and fees that are applied to various forms of spending, debt, and saving.</td>
</tr>
<tr>
<td>9.1.12.B.9</td>
<td>Research the types and characteristics of various financial organizations in the community (e.g., banks, credit unions, check-cashing stores, et. al.).</td>
</tr>
<tr>
<td>9.1.12.B.10</td>
<td>Develop a plan that uses the services of various financial institutions to meet personal and family financial goals.</td>
</tr>
<tr>
<td>9.1.12.C.1</td>
<td>Compare and contrast the financial benefits of different products and services offered by a variety of financial institutions.</td>
</tr>
<tr>
<td>9.1.12.C.2</td>
<td>Compare and compute interest and compound interest and develop an amortization table using business tools.</td>
</tr>
<tr>
<td>9.1.12.C.3</td>
<td>Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.</td>
</tr>
<tr>
<td>9.1.12.C.4</td>
<td>Compare and contrast the advantages and disadvantages of various types of mortgages.</td>
</tr>
<tr>
<td>9.1.12.C.5</td>
<td>Analyze the information contained in a credit report and explain the importance of disputing inaccurate entries.</td>
</tr>
<tr>
<td>9.1.12.C.6</td>
<td>Explain how predictive modeling determines “credit scores.”</td>
</tr>
<tr>
<td>9.1.12.D.1</td>
<td>Calculate short- and long-term returns on various investments (e.g., stocks, bonds, mutual funds, IRAs, deferred pension plans, and so on).</td>
</tr>
<tr>
<td>9.1.12.D.2</td>
<td>Assess the impact of inflation on economic decisions and lifestyles.</td>
</tr>
</tbody>
</table>
## New Jersey Personal Financial Literacy Standards

<table>
<thead>
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<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1.12.D.5:</td>
<td>Justify the use of savings and investment options to meet targeted goals.</td>
</tr>
<tr>
<td>9.1.12.D.7:</td>
<td>Explain the risk, return, and liquidity of various savings and investment alternatives.</td>
</tr>
<tr>
<td>9.1.12.D.10:</td>
<td>Differentiate among various investment products and savings vehicles and how to use them most effectively.</td>
</tr>
<tr>
<td>9.1.12.D.13:</td>
<td>Determine the impact of various market events on stock market prices and on other savings and investments.</td>
</tr>
<tr>
<td>9.1.12.E.1:</td>
<td>Evaluate the appropriateness of different types of monetary transactions (e.g., electronic transfer, check, certified check, money order, gift card, barter) for various situations.</td>
</tr>
<tr>
<td>9.1.12.E.4:</td>
<td>Evaluate how media, bias, purpose, and validity affect the prioritization of consumer decisions and spending.</td>
</tr>
<tr>
<td>9.1.12.E.6:</td>
<td>Evaluate written and verbal contracts for essential components and for obligations of the lender and borrower.</td>
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<tr>
<td>9.1.12.E.9:</td>
<td>Determine when credit counseling is necessary and evaluate the resources available to assist consumers who wish to use it.</td>
</tr>
<tr>
<td>9.1.12.G.3:</td>
<td>Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.</td>
</tr>
</tbody>
</table>
New Jersey Personal Financial Literacy Standards


9.1.12.G.5: Differentiate the costs and benefits of renter’s and homeowner’s insurance.

9.1.12.G.6: Explain how to self-insure and how to determine when self-insurance is appropriate.

9.1.12.G.7: Determine when and why it may be appropriate for the government to provide insurance coverage, rather than private industry.
<table>
<thead>
<tr>
<th>Mathematical Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make sense of problems and persevere in solving them.</td>
</tr>
<tr>
<td>2. Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>3. Construct viable arguments and critique the reasoning of others.</td>
</tr>
<tr>
<td>4. Model with mathematics.</td>
</tr>
<tr>
<td>5. Use appropriate tools strategically.</td>
</tr>
<tr>
<td>6. Attend to precision.</td>
</tr>
<tr>
<td>7. Look for and make use of structure.</td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
</tr>
<tr>
<td>Grade: Business Math</td>
</tr>
<tr>
<td>------------------------------</td>
</tr>
<tr>
<td><strong>NJSLS:</strong></td>
</tr>
<tr>
<td>N.Q.A.1, A.CED.A, A.CED.A.3,</td>
</tr>
<tr>
<td>A.REI.C.5, A.REI.C.6, A.REI.D.10,</td>
</tr>
<tr>
<td>F.BF.A.2, A.REI.D.12, A.SSE.B.4,</td>
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<tr>
<td>A.REI.D.11, F.IF.A.1, F.IF.A.2,</td>
</tr>
<tr>
<td>F.IF.A.3, F.IF.B.6, F.IF.C.9,</td>
</tr>
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<td>F.LE.A.1, F.LE.A.2, F.LE.A.3,</td>
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<tr>
<td>HSS-MD.A.2, F.LE.B.5</td>
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<tr>
<td><strong>NJPFLS:</strong></td>
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<tr>
<td>9.1.12.B.1, 9.1.12.B.4, 9.1.12.B.8,</td>
</tr>
<tr>
<td>9.1.12.B.9, 9.1.12.B.10, 9.1.12.C.1,</td>
</tr>
</tbody>
</table>

**Unit Focus:**

- Perform arithmetic operations on polynomials
- Interpret the structure of expressions
- Solve equations and inequalities in one variable
- Create equations that describe numbers or relationships
- Interpret functions that arise in applications in terms of the context
- Represent and solve equations and inequalities graphically
- Build a function that models a relationship between two quantities
- Construct & compare linear, quadratic, & exponential models
- Build new functions from existing functions
- Analyze functions using different representations
- Analyze credit decisions and costs
- Analyze loan statements and payoffs
- Analyze various options to acquire vehicles and operate it.
- Analyze home ownership and costs
- Perform cost benefit analysis for various insurances
- Analyze various investment options
New Jersey Student Learning Standard(s):
F.IF.A.1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
F.IF.A.2: Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
F.LE.A.1: Distinguish between situations that can be modeled with linear functions and with exponential functions.
F.BF.A.2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
F.IF.A.3: Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1.
F.LE.A.2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
F.LE.B.5: Interpret the parameters in a linear or exponential function in terms of a context.
F.BF.A.1: Write a function that describes a relationship between two quantities.
9.1.12.B.1: Prioritize financial decisions by systematically considering alternatives and possible consequences.
9.1.12.B.4: Analyze how income and spending plans are affected by age, needs, and resources.
9.1.12.B.8: Describe and calculate interest and fees that are applied to various forms of spending, debt, and saving.
9.1.12.B.9: Research the types and characteristics of various financial organizations in the community (e.g., banks, credit unions, check-cashing stores, et. al.).
9.1.12.B.10: Develop a plan that uses the services of various financial institutions to meet personal and family financial goals.
9.1.12.C.1: Compare and contrast the financial benefits of different products and services offered by a variety of financial institutions.
9.1.12.C.3: Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.
9.1.12.E.9: Determine when credit counseling is necessary and evaluate the resources available to assist consumers who wish to use it.

Student Learning Objective 1: Analyze account statements for charge accounts and credit cards. Identify the finance charges for unpaid balances and for average daily balances.
<table>
<thead>
<tr>
<th>MPs</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2 MP 7 MP 6</td>
<td>Business and consumers can use a variety of methods to make payments. Determine the cost of using a credit card. Analyze credit card accounts with making minimum payments. Analyze the debt-to-income ratio. Extract important information from credit card. Read important information from credit card statements. Calculate finance charges using average daily balance method (including new purchases). Calculate finance charges using average daily balance method (not including new purchases). Make informed decision to select best credit card.</td>
<td>Why do you need a credit card? How many credit cards does one person need? The cost of credit varies greatly when comparing sales credit to loan credit. Building a good credit rating and maintaining it has a positive effect on your ability to get credit in the future. Long term credit obligations have major implications in the budgeting process.</td>
<td>The Algebra of Loans Credit Card: Paying the Minimum Credit Card Payoff Options</td>
</tr>
</tbody>
</table>
New Jersey Student Learning Standard(s):

A.SSE.B.4: Derive and/or explain the derivation of the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.

F.IF.A.1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If \( f \) is a function and \( x \) is an element of its domain, then \( f(x) \) denotes the output of \( f \) corresponding to the input \( x \). The graph of \( f \) is the graph of the equation \( y = f(x) \).

F.IF.A.2: Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

F.LE.A.1: Distinguish between situations that can be modeled with linear functions and with exponential functions.

F.IF.B.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.

F.BF.A.2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

F.IF.A.3: Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by \( f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) \) for \( n \geq 1 \).

F.LE.A.2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

F.LE.B.5: Interpret the parameters in a linear or exponential function in terms of a context.

F.IF.C.9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

F.LE.A.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.

9.1.12.C.2: Compare and compute interest and compound interest and develop an amortization table using business tools.
9.1.12.C.3: Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.

9.1.12.C.4: Compare and contrast the advantages and disadvantages of various types of mortgages.

9.1.12.C.5: Analyze the information contained in a credit report and explain the importance of disputing inaccurate entries.

9.1.12.C.6: Explain how predictive modeling determines “credit scores.”

**Student Learning Objective 2:** Analyze loan statements including balances, installment loans, amount financed, monthly payments, finance charges, payoffs. Appropriately allocate the monthly payments between interest and principals.

<table>
<thead>
<tr>
<th>MPs</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/ Questions (Accountable Talk)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MP 1</td>
<td>Differentiate between a single payment loan and an installment loan. Calculate interest on a loan using the exact interest method. Define the number of days between dates for a short-term loan.</td>
<td>What is debt? How much does it cost to pay off the debts? What are the advantages and disadvantages of borrowing money? How do you use elapsed time to calculate interest?</td>
<td>Loan Payments Calculation Loan Payments Becoming Loan Worthy</td>
</tr>
<tr>
<td>MP 3</td>
<td>Calculate interest on a loan using ordinary interest method. Calculate the number and amount of monthly payments on an installed loan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 5</td>
<td>Define the number of days between dates for a short-term loan. Calculate the number and amount of monthly payments on an installed loan. Find the new balance on an installment loan. Calculate the final payment on a simple interest loan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 7</td>
<td>What factors are involved in calculating the cost of a loan? How would you determine whether or not to pay off a loan early?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
New Jersey Student Learning Standard(s):

A.CED.A.2: Create equations in two or more variables to represent relationships between quantities; Graph equations on coordinate axes with labels and scales.

A.REI.D.10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). [Focus on linear equations.]

N.Q.A.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.

A.REI.D.12: Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

A.REI.D.11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* [Focus on linear equations.]

A.REI.C.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A.REI.C.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

A.CED.A.3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

9.1.12.B.1: Prioritize financial decisions by systematically considering alternatives and possible consequences.

9.1.12.B.4: Analyze how income and spending plans are affected by age, needs, and resources.

9.1.12.B.8: Describe and calculate interest and fees that are applied to various forms of spending, debt, and saving.

9.1.12.C.2: Compare and compute interest and compound interest and develop an amortization table using business tools.
9.1.12.E.1: Evaluate the appropriateness of different types of monetary transactions (e.g., electronic transfer, check, certified check, money order, gift card, barter) for various situations.

9.1.12.E.2: Analyze and apply multiple sources of financial information when prioritizing financial

9.1.12.E.4: Evaluate how media, bias, purpose, and validity affect the prioritization of consumer decisions and spending.

9.1.12.E.6: Evaluate written and verbal contracts for essential components and for obligations of the lender and borrower.

**Student Learning Objective 3:** Analyze various options to acquire and operate a vehicle. Compare purchasing, leasing and renting options.

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<tr>
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</thead>
<tbody>
<tr>
<td>MP 1</td>
<td>Calculate the MSRP for a new car including optional equipment.</td>
<td>What factors influence the choice of car purchased?</td>
<td>Eureka Buying a Car</td>
</tr>
<tr>
<td>MP 3</td>
<td>Calculate the delivered price and the balance due for a new car.</td>
<td>How are loans secured?</td>
<td>The True Cost of Owning a Car</td>
</tr>
<tr>
<td>MP 5</td>
<td>Calculate the total amount paid and the finance charge for auto installment loans.</td>
<td>Are there benefits of leasing a vehicle?</td>
<td>My Car</td>
</tr>
<tr>
<td>MP 7</td>
<td>Calculating the purchase price of a used vehicle.</td>
<td>What is the benefit of comparing insurance policies?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine conditions that increase/decrease the value of the vehicle.</td>
<td>What are the total costs of buying a car?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read a NADA Guide or Kelly Blue Book as a basis of used car value.</td>
<td>What are the advantages and disadvantages of leasing vs. buying a new car?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>How does depreciation affect a car’s value?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>How does a car owner determine his/her annual cost of operating a car?</td>
<td></td>
</tr>
</tbody>
</table>
| Define the vocabulary associated with car insurance.  
| Differentiate between required and optional insurance.  
| Evaluate the conditions that influence driver rating factor.  
| Calculate insurance premiums based on types of coverage and driver rating factor.  
| Differentiate between fixed and variable costs associated with owning a car.  
| Calculate cost per mile of driving a car.  
| Calculate the cost of leasing a vehicle.  
| Calculate the cost of renting a vehicle.  
| Compare the costs of leasing and buying a car. |
New Jersey Student Learning Standard(s):
A.CED.A.2: Create equations in two or more variables to represent relationships between quantities; Graph equations on coordinate axes with labels and scales.

A.REI.D.10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). [Focus on linear equations.]

N.Q.A.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.

A.REI.D.12: Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

A.REI.C.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A.REI.C.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

A.CED.A.3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A.REI.D.11: Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* [Focus on linear equations.]


9.1.12.G.5: Differentiate the costs and benefits of renters and homeowner’s insurance.

9.1.12.C.2: Compare and compute interest and compound interest and develop an amortization table using business tools.

9.1.12.C.3: Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.
9.1.12.C.4: Compare and contrast the advantages and disadvantages of various types of mortgages.

9.1.12.C.5: Analyze the information contained in a credit report and explain the importance of disputing inaccurate entries.

9.1.12.C.6: Explain how predictive modeling determines “credit scores.”

**Student Learning Objective 4:** Analyze home ownership costs including mortgage costs and payments, real estate taxes, homeowner insurance, and other housing cost. Compare renting to purchasing options.

<table>
<thead>
<tr>
<th>MPs</th>
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<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>Calculate the down payment, closing cost, and mortgage loan amount.</td>
<td>How do mortgage bankers make money from mortgages?</td>
<td>Housing cost</td>
</tr>
<tr>
<td>MP 6</td>
<td>Calculate total interest cost of a mortgage loan.</td>
<td>How is the mortgage payment allocated?</td>
<td>Reading the Housing Market</td>
</tr>
<tr>
<td>MP 7</td>
<td>Calculate the savings from refinancing mortgages.</td>
<td>What are the various housing costs?</td>
<td>A Mortgage Math Problem</td>
</tr>
<tr>
<td></td>
<td>Calculate the monthly cost of home ownership.</td>
<td>What are the advantages and disadvantages of renting an apartment and buying a home?</td>
<td>Buying Your First Home</td>
</tr>
<tr>
<td></td>
<td>Calculate the cost of renting a home or apartment.</td>
<td>What’s the purpose of a credit score and how does it help you to have good credit?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compare the cost of renting vs. owning.</td>
<td>What factors are involved in determining the total amount of interest paid over the term of a mortgage?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculate property tax based on tax rate.</td>
<td>How does a property owner determine how much property tax is due?</td>
<td></td>
</tr>
</tbody>
</table>
New Jersey Student Learning Standard(s):
HSS-MD.A.2: Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.


9.1.12.G.3: Compare the cost of various types of insurance (e.g., life, homeowners, motor vehicle) for the same product or service, given different liability limits and risk factors.


9.1.12.G.6: Explain how to self-insure and how to determine when self-insurance is appropriate.

9.1.12.G.7: Determine when and why it may be appropriate for the government to provide insurance coverage, rather than private industry.

Student Learning Objective 5: Perform cost benefit analysis for various insurance options including health, disability insurance, term and other types of life insurance.

<table>
<thead>
<tr>
<th>MPs</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
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</thead>
<tbody>
<tr>
<td>MP 4</td>
<td>Compare costs of different types of health insurance.</td>
<td>Why do we need insurance?</td>
<td>Insurance Math Problem</td>
</tr>
<tr>
<td>MP 6</td>
<td>Calculate net cost of life insurance.</td>
<td>What should you look for when purchasing health insurance?</td>
<td>Insurance for All</td>
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<tr>
<td></td>
<td>Calculate out-of-pocket expenses for health insurance (co-pays and percentages).</td>
<td>What is the difference between term life and whole life insurance?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculate term life insurance based on a factor from a cost table.</td>
<td>How do you determine the net cost of an insurance policy?</td>
<td></td>
</tr>
<tr>
<td>Calculate whole life insurance based on a factor from a cost table.</td>
<td>Calculate health insurance premiums.</td>
<td>Describe out-of-pocket expenses relating to health insurance.</td>
<td></td>
</tr>
<tr>
<td>Calculate the cash and loan value of a life insurance policy.</td>
<td>Calculate health insurance benefits and co-insurance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculate disability insurance benefits.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**New Jersey Student Learning Standard(s):**

**F.BF.A.2:** Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

**F.IF.A.3:** Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by* \( f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) \) for *n* ≥ 1.

**F.LE.A.2:** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

**F.LE.B.5:** Interpret the parameters in a linear or exponential function in terms of a context.

**9.1.12.D.1:** Calculate short- and long-term returns on various investments (e.g., stocks, bonds, mutual funds, IRAs, deferred pension plans, and so on).

**9.1.12.D.2:** Assess the impact of inflation on economic decisions and lifestyles.

**9.1.12.D.3:** Summarize how investing builds wealth and assists in meeting long- and short-term financial goals.

**9.1.12.D.4:** Assess factors that influence financial planning.
9.1.12.D.5: Justify the use of savings and investment options to meet targeted goals.


9.1.12.D.7: Explain the risk, return, and liquidity of various savings and investment alternatives.


9.1.12.D.10: Differentiate among various investment products and savings vehicles and how to use them most effectively.


9.1.12.D.13: Determine the impact of various market events on stock market prices and on other savings and investments.

**Student Learning Objective 6:** Analyze various investment options and compare their returns. Investment options include certificate of deposit, stocks, mutual funds, bonds, real estate, and retirement investments.

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<tbody>
<tr>
<td>MP 1</td>
<td>Calculate the market price of bonds.</td>
<td>How do well-thought out investment strategies help individuals and families move towards a financially secure future?</td>
<td>Invest My Money</td>
</tr>
<tr>
<td>MP 2</td>
<td>Calculate total investment in bonds.</td>
<td></td>
<td>Investment Word Problem</td>
</tr>
<tr>
<td>MP 4</td>
<td>Calculate the cost of stock purchases.</td>
<td>What is “financially secure” mean?</td>
<td>Saving For Retirement.</td>
</tr>
<tr>
<td>MP 7</td>
<td>Calculate annual stock dividends.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Calculate the yield on stock investments.</td>
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<tr>
<td></td>
<td>Calculate proceeds from the sale of stock.</td>
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<tr>
<td></td>
<td>Calculate the total investment in a mutual fund.</td>
<td></td>
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</tr>
<tr>
<td>Calculate the amount and rate of commission.</td>
<td>How is investing in mutual funds different from stocks?</td>
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<td></td>
</tr>
<tr>
<td>Calculate profit or loss from mutual fund investment.</td>
<td>Identify factors that impact the net investment on real estate.</td>
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</tr>
<tr>
<td>Calculate net income from real estate investments.</td>
<td>Why is it necessary to plan early for retirement?</td>
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<tr>
<td>Calculate the rate of return on real estate investments.</td>
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<tr>
<td>Calculate your retirement income.</td>
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<td></td>
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<tr>
<td>Calculate your pension income.</td>
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</tbody>
</table>
## Unit 2 Vocabulary

- Account Statement
- Amount Financed
- Annual Percentage Rate
- Annual Percentage Yield
- Annual Premium
- Assessed Value
- Average-Daily Balance Method
- Base Price
- Beneficiary
- Bonds
- Cash Value
- Certificate of Deposit
- Charge Account
- Closed-End Lease
- Closing costs
- Co-Insurance
- Collision Insurance
- Comprehensive Insurance
- Co-Payment
- Credit Card
- Dealer’s cost
- Deductible
- Deductible clause
- Depreciation
- Destination Charge
- Dividend
- Down Payment
- Exact Interest
- Final Payment
- Finance Charge
- Fire Protection Class
- Health Insurance
- Health Maintenance Organization
- Homeowners Insurance
- Individual Retirement Account
- Installment Loan
- Lease
- Liability Insurance
- Life Insurance
- Limited Payment Policy
- Loading charge
- Loss
- Loss-Of Use coverage
- Market Value
- Maturity Value
- Medical coverage
- Mortgage Loan
- Mutual Fund
- Net Asset Value
- Open-End Lease
- Options
- Ordinary Interest
- Personal Liability coverage
- Preferred Provider Organization
- Premium
- Profit
- Promissory Note
- Property Damage Coverage
- Rate of Assessment
- Real Estate Taxes
- Rent
- Rental Property
- Repayment Schedule
- Replacement Value
- Required Minimum distribution
- Roth IRA
- Security Deposits
- Single Payment Loan
- Sticker Price
- Stock Certificate
- Stocks
- Tax Rate
- Term
- Term Life Insurance
- Traditional Plan
- Universal Life Insurance
- Unpaid Balance Method
- Used-Vehicle Guide
- Utility Costs
- Vehicle costs
- Whole Life Insurance
References & Suggested Instructional Websites

www.illustrativemathematics.org/

http://www.njcore.org/


http://mathforum.org/pow/financialed/

https://www.moneyinstructor.com/wsp/wsp0029.asp

http://www.bizmove.com/marketing/m2y3.htm


Field Trip Ideas

MUSEUM OF AMERICAN FINANCE (New York, NY) – For more than 20 years, educators from around the country have been bringing students to the Museum to help them understand how finance impacts their daily lives. The Museum offers discounted admission for pre-booked groups of eight or more, as well as a variety of classes for students in middle school through college.

http://www.moaf.org/index

MUSEUM of MATHEMATICS (New York) Mathematics illuminates the patterns that abound in our world. The National Museum of Mathematics strives to enhance public understanding and perception of mathematics. Its dynamic exhibits and programs stimulate inquiry, spark curiosity, and reveal the wonders of mathematics. The Museum’s activities lead a broad and diverse audience to understand the evolving, creative, human, and aesthetic nature of mathematics.

www.momath.org


https://www.newyorkfed.org/aboutthefed/visiting.html