



# Comprehensive Curriculum

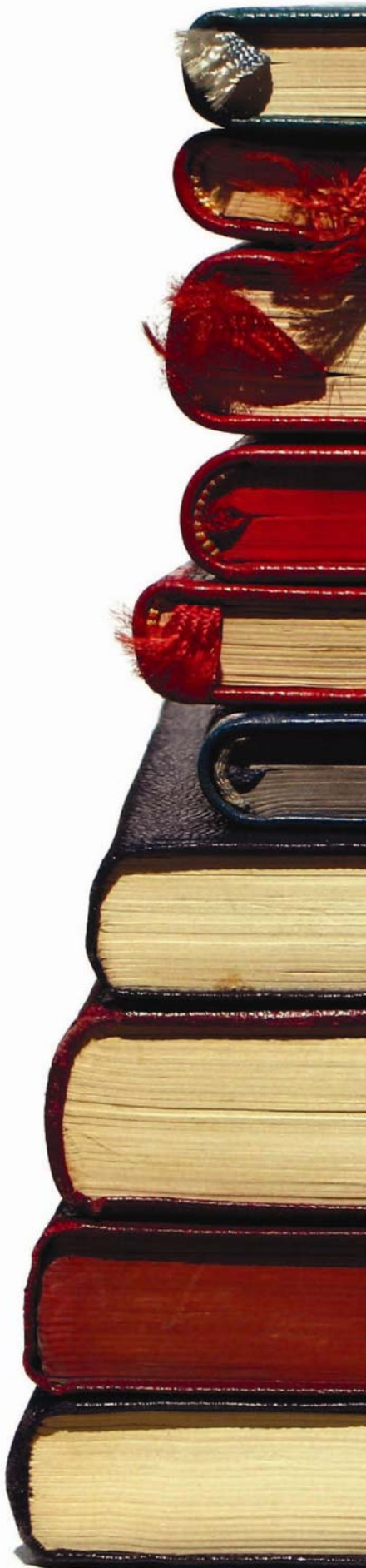
Revised 2008

## Financial Mathematics



Louisiana Department of  
**EDUCATION**

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## Financial Math

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## ***Louisiana Comprehensive Curriculum, Revised 2008*** **Course Introduction**

The Louisiana Department of Education issued the *Comprehensive Curriculum* in 2005. The curriculum has been revised based on teacher feedback, an external review by a team of content experts from outside the state, and input from course writers. As in the first edition, the *Louisiana Comprehensive Curriculum*, revised 2008 is aligned with state content standards, as defined by Grade-Level Expectations (GLEs), and organized into coherent, time-bound units with sample activities and classroom assessments to guide teaching and learning. The order of the units ensures that all GLEs to be tested are addressed prior to the administration of *iLEAP* assessments.

### **District Implementation Guidelines**

Local districts are responsible for implementation and monitoring of the *Louisiana Comprehensive Curriculum* and have been delegated the responsibility to decide if

- units are to be taught in the order presented
- substitutions of equivalent activities are allowed
- GLEs can be adequately addressed using fewer activities than presented
- permitted changes are to be made at the district, school, or teacher level

Districts have been requested to inform teachers of decisions made.

### **Implementation of Activities in the Classroom**

*Incorporation of activities into lesson plans is critical to the successful implementation of the Louisiana Comprehensive Curriculum.* Lesson plans should be designed to introduce students to one or more of the activities, to provide background information and follow-up, and to prepare students for success in mastering the Grade-Level Expectations associated with the activities. Lesson plans should address individual needs of students and should include processes for re-teaching concepts or skills for students who need additional instruction. Appropriate accommodations must be made for students with disabilities.

### **New Features**

*Content Area Literacy Strategies* are an integral part of approximately one-third of the activities. Strategy names are italicized. The link ([view literacy strategy descriptions](#)) opens a document containing detailed descriptions and examples of the literacy strategies. This document can also be accessed directly at <http://www.louisianaschools.net/1de/uploads/11056.doc>.

A *Materials List* is provided for each activity and *Blackline Masters (BLMs)* are provided to assist in the delivery of activities or to assess student learning. A separate Blackline Master document is provided for each course.

The *Access Guide to the Comprehensive Curriculum* is an online database of suggested strategies, accommodations, assistive technology, and assessment options that may provide greater access to the curriculum activities. The *Access Guide* will be piloted during the 2008-2009 school year in Grades 4 and 8, with other grades to be added over time. Click on the *Access Guide* icon found on the first page of each unit or by going directly to the url <http://mconn.doe.state.la.us/accessguide/default.aspx>.



**Financial Math  
Unit 1: Gross Income**

**Time Frame:** Approximately four weeks



**Unit Description**

This unit examines the various ways that people earn money. This unit also begins the process of compiling information for the creation of a unique financial plan for each student.

**Student Understandings**

Students will understand that gross income can be calculated in a variety of ways. Students will begin to understand how to set and write financially appropriate goals based on their unique needs and wants as well as their lifetime earning potential.

**Guiding Questions**

1. Can students correctly calculate straight-time pay? Overtime pay? Commission? Graduated commission? Piecework?
2. Can students apply calculating salary to different timeframes? Weekly, bi-weekly, semimonthly and monthly, when the information is given in one timeframe and asked in another?
3. Can students correctly count the number of hours worked on a timecard?
4. Can students recognize the difference between a need and a want?
5. Can students recognize a well-written financial goal?

**Unit 1 Grade-Level Expectations (GLEs)**

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)

<b>Algebra</b>	
	<b>Grade 9</b>
9.	Model real-life situations using linear expressions, equations, and inequalities (A-1-H) (D-2-H) (P-5-H)
15.	Translate among tabular, graphical, and algebraic representations of functions and real-life situations (A-3-H) (P-1-H) (P-2-H)
16.	Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology (A-4-H)
<b>Measurement</b>	
	<b>Grade 9</b>
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Data Analysis, Probability, and Discrete Math</b>	
	<b>Grade 9</b>
28.	Identify trends in data and support conclusions by using distribution characteristics such as patterns, clusters, and outliers (D-1-H) (D-6-H) (D-7-H)
	<b>Grade 10</b>
22.	Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix, or circle graph (D-7-H)
<b>Patterns, Relations, and Functions</b>	
	<b>Grade 9</b>
37.	Analyze real-life relationships that can be modeled by linear functions (P-1-H) (P-5-H)
	<b>Grade 10</b>
26.	Generalize and represent patterns symbolically, with and without technology (P-1-H)
27.	Translate among tabular, graphical, and symbolic representations of patterns in real-life situations, with and without technology (P-2-H) (P-3-H) (A-3-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
12.	Evaluate various careers in terms of availability, educational and skill requirements, salary and benefits, and intrinsic sources of job satisfaction (E-1A-H3)
23.	Describe the functions and purposes of the financial markets (E-1A-H7)
63.	Explain the role of the Federal Reserve System as the central banking system of the United States (E-1C-H4)

Note on GLEs: Throughout the body of this curriculum, the use of 9<sup>th</sup> grade GLE 4 refers to the student recognizing the reasonableness of solutions and verifying their results. 9<sup>th</sup> grade GLE 19 refers to the rounding of all answers that reflect money to the hundredths digit. 10<sup>th</sup> grade GLE 2 refers to using fractions, decimals and percents and recognizing the reasonableness of solutions and verifying their results.

## Sample Activities

### **Activity 1: Gross Pay Discussion (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4j, 11a, 14b, 14d)**

Materials List: Pay Discussion BLM, pencils, folding chairs(3 to 4)

Arrange the chairs in front of the classroom, in a row, facing the student desks.

This activity uses the *Student Questions for Purposeful Learning (SQPL)* ([view literacy strategy descriptions](#)) strategy. The teacher creates an *SQPL* lesson by first looking over the material to be covered in the day’s lesson. A statement is then generated related to the material that would cause students to wonder, challenge, and question. The statement does not have to be factually true as long as it provokes interest and curiosity. The teacher next presents the statement to students. Most often teachers write the statement on the board, though it can also be projected on the overhead or from a computer, put on a handout, and even stated orally for students to record in their notebooks.

Begin by briefly relating the teacher’s experiences in how people earn money. Include different methods for earning money, i.e., hourly rate, salary, etc. with the goal of sparking student interest in the nature of earning money.

Initiate the learning strategy by presenting a statement related to the material that would cause students to wonder, challenge, and question the topic, such as, “Everybody works hard for his/her money.” Write the statement on the board, projected on an overhead or from a computer projector, or even orally.

Have students pair-up, distribute the Pay Discussion BLM to each pair, and, based on the statement, generate 2 – 3 questions they would like answered. The teacher will solicit each pair to share their questions and write them on the board. In this process the teacher can combine similar questions so that a manageable number results after all pairs are polled. The following questions should be added to the list if not addressed by student-generated questions:

1. How did you earn money?
2. How much money did you earn?
3. How long did you work to earn the money?
4. What was the nature of the work?

Poll the class to identify 3 or 4 students with work experience. These students will serve as “guest speakers” in a modified *professor know-it-all* ([view literacy strategy descriptions](#)) strategy. Once coverage of content has been completed, the *professor know-it-all* strategy can be enacted. The strategy is appropriate after reading a story, a chapter from a novel or textbook, a lecture or presentation, a field trip, a film, or any other information source.

The teacher begins by forming groups of three or four students. The students are given the time to review the content just covered. The teacher tells them they will be called on randomly to come to the front of the room and provide “expert” answers to questions from their peers about the content. Also, the groups are asked to generate 3-5 questions about the content they might anticipate being asked and that they can ask other experts.

To add a level of novelty to the strategy, some teachers keep on hand ties, graduation caps and gowns, lab coats, clip boards, or other symbols of professional expertise for students to don when it’s their turns to be “professors”.

The teacher calls a group to the front of the room and asks them to face the class, standing shoulder to shoulder. The “professors” invite questions from the other groups. Students should ask their prepared questions first, then add others if more information is desired.

When the strategy is first employed, the teacher can demonstrate with the class how the “professors” should respond to their peers’ questions. Typically, students are asked to huddle after receiving a question, discuss briefly how to answer it, then have the “professor” spokesperson give the answer.

The teacher should remind students asking the questions to think carefully about the answers received and to challenge or correct the professor know-it-alls if answers were not correct or need elaboration and amending. After 5 minutes or so, a new group of *professor know-it-alls* can take their places in front of the class and continue the process of students questioning students.

Initially, it may be necessary and helpful to model the various types of questions expected from students about the content. For example, students should ask the “professors” both factual and higher-level questions.

The “guest speakers” will act as subject matter experts on the working world and will sit in the chairs in front of the classroom

Ask each pair to write the questions from the board down the left column of the Pay Discussion BLM. Explain to the students that each pair will choose one of the questions and ask one of the “guest speakers” to answer the question. Move from one pair to the next with each pair getting to ask 3 or 4 questions, in turn, from the “guest speakers.” Each pair is responsible for writing the answers to the questions they asked on the Pay Discussion BLM.

Conclude this activity with a recap of some of the experiences heard during the *professor know-it-all* phase. Focus on the activity performed for a specific duration of time and the money earned. The teacher should emphasize, without names, that different forms of work are often compensated at different wages.

**Activity 2: *The Story of Money* (GLEs: Economics (Core Course: Free Enterprise): 23, 63; Business: 11a, 11h)**

Materials List: *The Story of Money* comic books(classroom set), Money Voc Card BLM, Coincidence of Wants Voc Card BLM, Division of Labor Voc Card BLM, pencil

*The Story of Money* is one in an educational comic book series published by the Federal Reserve Bank of New York. Obtain a classroom set of these comics.

This activity will utilize a modified *vocabulary card* strategy ([view literacy strategy descriptions](#)). When students create vocabulary cards, they see connections between words, examples of the word, and the critical attributes associated with the word. This vocabulary strategy also helps students with their understandings of word meanings and key concepts by relating what they do not know with familiar concepts. Vocabulary cards require students to pay attention to words over time, thus improving their memories of the words. In addition, vocabulary cards can become an easily accessible reference for students as they prepare for tests, quizzes, and other activities with the words.

To begin, the teacher should lead a discussion on the nature of money and its changing form throughout history. The discussion should also emphasize the characteristics of money as a medium of exchange. Topics should include: “Why do we have money?”, “What are the forms of money in use today?”, and “What have different peoples used as money in the past?” This will prepare students for the comic. Following the discussion, each student will read *The Story of Money*. Revisit the questions posed before the reading and call-on students to provide answers to those questions based on their reading.

Hand-out the Money Voc Card BLM and demonstrate how to complete a vocabulary card by completing the Money Voc Card BLM. It is important that the students know the process and can understand the benefit of vocabulary cards. Distribute the Coincidence of Wants Voc Card BLM and have students complete in pairs. After each pair has completed the Coincidence of Wants Voc Card BLM, question each pair to determine understanding. Assign the Division of Labor Voc Card BLM as an individual activity.

*The Story of Money* can be obtained by writing:

Federal Reserve Bank of New York  
Public Information Department  
33 Liberty Street  
New York, New York 10045

Or <http://www.newyorkfed.org/publications/result.cfm?comics=1>

**Activity 3: Calculate Straight-Time Pay (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials list: 4-function calculators, pencil, paper

Have students individually work word problems calculating straight-time pay. The teacher should review number rounding skills and remind students that all operations with money must be rounded to the nearest hundredth. At the completion of the written portion of this activity, the teacher should lead a review discussion covering the proper sequence of operations and review student answers with emphasis placed on proper rounding.

Example.

Last week Harold work 38 straight-time hours. He is paid \$10 an hour for straight-time work. What is Harold's gross pay for the week?

Solution.

$$38 * \$10 = \$380.00 \quad \text{Gross Pay}$$

**Activity 4: Straight-Time Pay Using Graphing Calculator Functions (GLEs: Grade 9: 4, 5, 15, 19, 28, 37; Grade 10: 2, 22, 26, 27; Business: 14a, 14b, 14c, 14d, 14f)**

Materials list: graphing calculators

Calculators provide an easy means of both calculating and graphically displaying money earned using the straight-time pay method over any period of time and time increment. Most people begin their work careers by working at a job that pays using the straight-time method. The list function in a graphing calculator allows us to represent the time worked in any increment over any desired period. This list can then be multiplied by the set rate of pay creating a new list that gives the pay earned for each increment of time worked. The STAT function can then be used to create a scatter plot showing the pattern of compensation over time. Various rates of compensation should be used allowing the student to discover the linear pattern in this method of payment. In the following example the 0 to 6 in List 1 represents the number of hours worked. List 2 represents the money earned at \$5.15 per hour.

The teacher should review with the students how to create a table representing hours worked and wages earned using the stat function.

Method 1:

1. Press **STAT**
2. Highlight **1 (EDIT)** then press **ENTER**
3. Enter the numbers from 0 to 6 in list 1 (**L1**) in increments of 1 Enter the numbers from 0 to 30.90 in list 2 (**L2**) in increments of 5.15

(NOTE: If there are numbers already in the lists, you can clear the lists using one of several methods. To clear all the lists at once, press **2<sup>nd</sup> MEM** then highlight **4** and press **ENTER** twice. To clear one list such as LIST 1, you arrow up until you highlight the list name in this case **L1**. Press **CLEAR** and then arrow down. If you accidentally press the delete key (**DEL**) it will delete the entire list and the list name. To restore the list name, press **STAT** highlight **5** and press **ENTER**. To clear one number in a column, highlight that number and press **DEL**.)

Method 2:

1. Press **STAT**
2. Highlight **1 (EDIT)** then press **ENTER**
3. Highlight **L1** then press **2<sup>nd</sup> LIST**
4. Highlight **OPS** then the highlight the **5 (SEQ)** then press **ENTER**

<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>1</b>
-----	-----	-----	
L1 =seq(			

5. Enter the following key strokes: X **0** X **0** **6** **1** ) then press **ENTER**  
**NOTE:** Be sure to include the comma which is located just above the number 7 key and to close with parentheses.

<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>1</b>
-----	-----	-----	
L1 =...(X,X,0,6,1)			

<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>1</b>
0.00 1.00 2.00 3.00 4.00 5.00 6.00	-----	-----	
L1(1)=0			

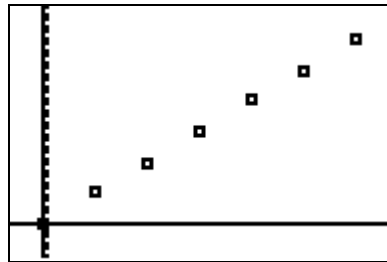
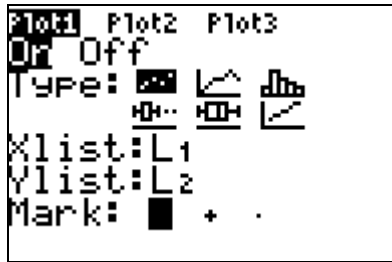
6. Highlight **L2** then press **2<sup>nd</sup> LIST**
7. Highlight **1** press **ENTER** press **\*** enter 5.15 press **ENTER**

<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>2</b>
0.00 1.00 2.00 3.00 4.00 5.00 6.00	-----	-----	
L2 =L1*5.15			

<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>2</b>
0.00 1.00 2.00 3.00 4.00 5.00 6.00	0.00 5.15 10.30 15.45 20.60 25.75 30.90	-----	
L2(1)=0			

Using the values in list 1 (L1) and list 2 (L2) created a scatter plot that shows the relationship of time worked and money earned.

1. Press **2<sup>nd</sup>** **STAT PLOT**
2. Highlight **1** and press **ENTER**
3. Highlight **ON** and press **ENTER**
4. Highlight **SCATTER PLOT** (dotted graph) and press **ENTER**
5. Highlight **Xlist** and enter **L1**
6. Highlight **Ylist** and enter **L2**
7. On **MARK**, highlight the little box
8. Press **ZOOM**
9. Highlight the **9** and press **ENTER**



Have the students repeat the above activity using values other than \$5.15 as the hourly compensation, noting what is similar and what is different with each graphical pattern (they will all be linear relationships but the rate of change, or slope, will vary).

**Activity 5: Calculate Straight-Time and Over Time Pay (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, pencil, paper

Have students individually work word problems calculating first straight-time pay and then over time pay. Not all of the word problems in this activity need to contain over time pay.

Sample Problem.

Cindy is paid \$7.35 an hour for a regular 32-hour week. Her over time rate is 1 ½ times her regular hourly rate. What is her total pay if she worked 40 hours last week?

Solution.

$$\$7.35 * 32 = \$235.20 \quad \text{Straight-Time Pay}$$

$$\$7.35 * 1.5 = \$11.025 \gggggg \text{round to } \$11.03 \quad \text{Over Time rate}$$

$$\$11.03 * 8 = \$88.24 \quad \text{Over Time Pay}$$

$$\$235.20 + \$88.24 = \$323.44 \quad \text{Total Pay}$$

**Activity 6: Over Time Pay Procedure (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, Over Time Pay Procedure BLM, pencil

Copy the two pages of the Over Time Pay Procedure BLM as one two-sided handout.

This activity uses the *story chain* literacy strategy ([view literacy strategy descriptions](#)). Story chains are especially useful in teaching math concepts, while at the same time promoting writing and reading. The process involves a small group of students writing a story problem using the math concepts being learned and then solving the problem. Writing out the problem in a story provides students a reflection of their understanding. This is reinforced as students attempt to answer the story problem.

After a new math concept is learned, groups of students should be formed. The group size will vary depending upon the nature of the math concept/computation. The first student initiates the story. The next, adds a second line, the next, a third line, etc., until the last student is expected to solve the problem. All group members should be prepared to revise the story based on the last student's input as to whether it was clear or not. Students can be creative and use information and characters from their everyday interests and media.

Arrange the students into groups of 4 to 5 students. Demonstrate the *story chain* concept on the board by calling on each group to provide a sentence in an over time pay story problem. When the problem is complete, review the problem and highlight the required information contained in the problem. If a group(s) has not provided a sentence to the story, ask it to solve the problem, otherwise have each group provide a solution.

After the demonstration, handout the Over Time Pay Procedure BLM, and have each group produce 4 to 5 gross pay *story chain* problems on part 1 of the Over Time Pay Procedure BLM. Refer to the examples below for guidance. After a group has written its problems, then each member of the group will solve one of the problems in the space provided in part 2 of the Over Time pay Procedure BLM. There should be enough *story chain* problems created to provide each group member the opportunity to solve one problem. If the information isn't complete, then the teacher should be prepared to add information, as necessary, to complete the problem.

Example scenario 1:

Jack works as a short-order cook at a local diner. Last week Jack worked 6 hours on Monday, 9 hours on Tuesday, 10 hours on Wednesday, 4 hours on Thursday, 9 hours on Friday, and 4 hours on Saturday to cover for a sick coworker. Jack earns \$6.45 per hour for each hour worked. He gets time-and-a-half for all hours over 40 worked in one week. How much did Jack earn last week?

*Solution.*

$$6 + 9 + 10 + 4 + 9 + 4 = 42 \text{ Hours worked}$$

$$40 * \$6.45 = \$258 \quad \text{Straight-time pay}$$

$$\$6.45 * 1.5 = 9.675 \ggg \$ 9.68 \quad \text{Overtime rate (rounded)}$$

$$\$9.68 * (42 - 40) = \$19.36 \quad \text{Overtime pay}$$

$$\$258 + \$19.36 = \$277.36 \quad \text{Gross Pay}$$

Example scenario 2:

Sara works at a local clothing store after school each day and on Saturday. Last week she worked  $27 \frac{1}{2}$  hours. Sara makes \$5.35 per hour. How much did Sara earn last week?

*Solution.*

$$27 \frac{1}{2} * \$5.35 = \$147.125 \ggg \$147.13 \quad \text{Gross Pay (rounded)}$$

**Activity 7: Counting Time (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 8b, 14a, 14b, 14c, 14d, 14f)**

Materials List: Count Timecards BLM, 4-function calculators, pencil

Develop a scenario problem that lists clock-in and clock-out times for an employee. Be sure to include clocking-out and in for lunch. Pay attention not to make the times all  $\frac{1}{4}$  hours of the clock. Construct the problem to challenge students to count time with many different difficulty levels. Use the Count Timecards BLM for students to record the clock-in and clock-out times from the problems the teacher developed. Direct students to complete the timecard.

Extend the activity by providing students with the hourly rate of the employee and have students calculate total pay. This activity can be repeated as necessary.

Sample Problem.

Employee Timecard					
Date	In	Out	In	Out	Total
2/18	7:00	11:00	12:00	4:40	$8 \frac{3}{4}$
2/19	7:15	11:30	12:15	5:00	9
2/20	12:00	5:00			5
2/21	2:00	6:30	7:30	10:30	$7 \frac{1}{2}$
2/22	9:00	1:00	1:30	4:30	8
<b>Total Hours:</b>					$38 \frac{1}{4}$

**Activity 8: Needs versus Wants (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a)**

Materials List: Needs vs. Wants BLM, pencil

This activity uses a modified *word grid* ([view literacy strategy descriptions](#)). To take full advantage of word grids, they should be co-constructed with students, so as to maximize participation in the word-learning process. The teacher should have a simple word grid on the wall that will serve as an example for explaining how it's constructed and used. After analyzing a demonstration word grid, students will be much better prepared to create and study from one with actual disciplinary content.

Students should be provided a blank word grid with plenty of columns and rows for an upcoming lesson or chapter. A large version of the grid could be put on poster paper and attached to the wall or one could be projected from an overhead or computer. As critical related terms and defining information are encountered, students should write them into the grid. The teacher can invite students to suggest key terms and features, too.

Once the grid is complete, the teacher should quiz students by asking questions about the words related to their similarities and differences. In this way, students will make a connection between the effort they put into completing and studying the grid, and the positive outcome on word knowledge quizzes.

Once several related terms are written along the vertical dimension of the grid, add features, characteristics, or other defining information in the spaces at the top of the grid moving left to right.

The teacher can demonstrate for students how the grid can be used to study key terminology based on critical defining characteristics. Students can be asked to provide features of similarity and difference for pairs of terms, as in "What are two common characteristics of needs?" or "Give me two ways that needs and wants are different?"

Prior to beginning the activity construct two word grids similar to the example one below on the board, one for needs and one for wants.

<b>Things we need</b>	<b>Does it cost money? (Y/N)</b>
<i>Shelter, home</i>	<i>Y</i>
<i>Food</i>	<i>Y</i>
<i>Clothing</i>	<i>Y</i>
<i>Love</i>	<i>N</i>

Begin the activity by reading the passage from *Alice in Wonderland* from the Needs vs. Wants BLM. Present the two word grids and solicit responses from students to fill-in each word grid. Differentiate responses by those that cost money and those that do not on each need and want grid. Discuss the two cost and no-cost categories briefly and throw-out the no-cost category. The object of the two modified word grids is to get students

thinking about things in their life that are needs and those that are wants. The scope of this activity deals only with those things that cost money.

The teacher should discuss with the class needs and wants and how values influence one's choices. Students should be invited to discuss their understanding of financial values and how it affects the financial decisions they make. Discuss the importance of creating a financial plan that reflects each student's unique set of needs and wants. Ask the students to complete the word grid on the Needs vs. Wants BLM. The student will contemplate ten items or activities that cost money. These items or activities can be anything the student wants from the most basic to outlandish dreams. After each student has listed ten items or activities, he/she will place a check mark in the column Need or Want that best describes the financial nature of that item or activity.

Refer to Unit 10, Activity 4, Complete Financial Plan, for guidance as to how to organize and construct the Financial Plan. This is the first activity that will be placed in the Financial Plan. Now is a great time to have students organize the sections of their plan folders in preparation of building their Complete Financial Plan as they progress through the course.

**Activity 9: Piece rate Work (GLEs: Business: 11a, 14b, 14d, 4j)**

Materials List: none

Definition of piece rate work: Piece rate payment is usually a price paid per unit of work. For example, in a manufacturing plant, workers are paid 10 cents per widget they make on the production line.

Divide students into groups of 4 or 5. Have students discuss ways in which people earn money on a piece rate basis. One member of each group should record the groups' discussion.

When the groups are finished, the teacher will write selected examples on the board. The teacher may want to add examples of his/her own. In a class discussion format, the class should solve the examples for piece rate earnings. The teacher may select students one-at-a-time to go to the board and solve example problems.

**Activity 10: Commission Sales (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials list: 4-function calculators, pencil, paper

Have students complete word problems involving commission sales earnings. The teacher should also include problems that include a minimum salary option if the sales level does not warrant a minimum earnings level. This activity should be tailored so that

students gain an understanding of percents and what happens to a number when multiplied by a percentage. Students should also understand that 100% is all of something, that 50% is  $\frac{1}{2}$  of something, etc.

Sample problem.

Janet sells cosmetics for Beautify Me, Inc. She is guaranteed a salary of \$1000 a month or 8  $\frac{1}{4}$ % of her total sales, whichever is greater. What is her gross pay for a month in which her total sales were \$13,126.38?

Solution.

$$\$13,126.38 * .0825 = \$1082.93 \text{ Commission}$$

$$\$1082.93 \text{ Gross Pay}$$

**Activity 11: Commission Using A Graphing Calculator (GLEs: Grade 9: 4, 5, 9, 15, 16, 19, 28, 37; Grade 10: 2, 22, 26, 27; Business: 14a, 14b, 14c, 14d, 14f)**

Materials list: graphing calculators

In the real world, sales people are often given options as to how their pay is to be calculated. Students should be prepared to use sound mathematical reasoning when making such decisions. Review with your students that the slope of a line is the rate at which a value is changing, and that the  $y$ -intercept is the value of the dependent variable ( $y$ ) when the independent variable ( $x$ ) was equal to zero. In creating a graph of money earned based on sales, the rate of change or slope is equal to the percent of each sales dollar that the employee receives as a commission. The  $y$ -intercept is the base salary given the employee before any sales commission is added. When two equations are plotted on the same graph and they intersect, the  $x$  and  $y$  values at this point are the same for each equation. These  $x$  and  $y$  values would be the solution to this system of equations. When plotting two pay options based on salary plus commission, this point tells us the amount of sales at which each option would provide the same income and what that income would be. If one salary option starts lower than another and its rate of change (slope) is greater than the other option, it will eventually intersect or overtake the second plan producing a higher wage after this point. The teacher should discuss with the students various pay options offered by employers: straight commission, base salary plus commission, and commission with a guaranteed minimum salary.

Have the students use calculators to compute their salaries if they had \$10,000 in sales and they received: (a) 3.5% of their gross sales, (b) \$350 plus 2% of their gross sales, (c) 4.2% of their gross sales with a \$500 minimum salary.

Clear the home screen

- (a) Enter 10000  $\boxed{[*]}$  .035 press  $\boxed{[ENTER]}$   
(b) Enter 350  $\boxed{[+]}$  10000  $\boxed{[*]}$  .02 press  $\boxed{[ENTER]}$

- (c) Enter 10000  $\times$  .042 press **ENTER** (Note that \$420 < \$500 therefore they would receive the minimum pay of \$500)

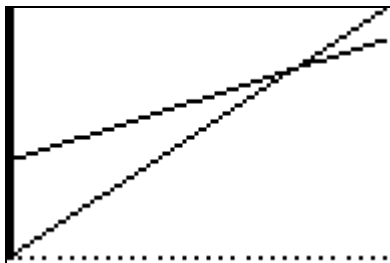
```

10000*.035      350.00
350+10000*.02   550.00
10000*.042      420.00
    
```

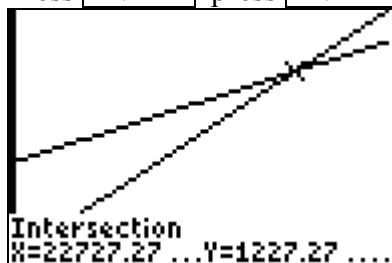
Given: Pay plan 1) \$250 base salary plus 4.3% of your gross sales  
 Pay plan 2) \$750 base salary plus 2.1% of your gross sales

Have the students write an equation for calculating the pay for each plan. Using a graphing calculator enter both equations and show their graphs. The intersection of the two graphs should appear on the screen. Discuss when it would be to their advantage to select each of the pay plans.

1. Press **Y=**
2. Enter  $250 + .043x$  into **Y1** press **ENTER**
3. Enter  $750 + .021x$  into **Y2** press **ENTER**
4. Press **WINDOW**
5. Enter 0 (**Xmin**) and press **ENTER**
6. Enter 30000 (**Xmax**) and press **ENTER**
7. Enter 5000 (**Xscl**) and press **ENTER**
8. Press **ZOOM**
9. Highlight 0 (**ZoomFit**) press **ENTER**



10. Press **2<sup>nd</sup> CALC**
11. Highlight 5 and press **ENTER**
12. Press **ENTER** press **ENTER** press **ENTER**



Discussion: The  $x$  value tells the student how much he/she needs to sell for the pay check to be the same using both pay plans. The  $y$  value tells him/her what his/her pay would be if his/her sales were equal to the  $x$  amount. Plan 2 is better if sales are less than \$22,727.27. Plan 1 is better if sales are more than this amount. They are both the same if the sales are exactly this amount.

**Activity 12: Goal Setting (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11i, 11k, 14b, 14d)**

Materials List: Financial Goals BLM, completed Needs vs. Wants BLM from Activity 8, pencil, paper

Distribute the Financial Goals BLM and discuss how values lead to goal setting and, thus, making financial goals. Have students review their Needs and Wants chart from Activity 8. Refer to the Financial Goals BLM for goal attributes and examples. The teacher should list examples of well-written goals on the board for students to follow.

Students should pick four of those items or activities from their Needs vs. Wants BLM and write financial goals for each item. Conclude the activity by asking students to share goals that they have written. Write selected goals on the board and assess them orally against the goal attributes on the Financial Goals BLM. Ask all the students to rewrite any goals that did not meet the attribute standards.

**Activity 13: Graduated Commission (GLEs: Grade 9: 28, 37; Grade 10: 22, 27; Economics (Core Course: Free Enterprise): 1; Business: 4c, 14a, 14b, 14c, 14d, 14f, 15e, 16c, 16d, 19f)**

Materials List: Interview BLM, Commission Earnings Data BLM, Earnings Data Chart BLM, pencils

This is a two-part activity.

Part One: Have students interview, or possibly research on the Internet, a person who earns money by graduated commission. Students will use the Interview BLM to record information gained about the person interviewed. After the interview, require each student to produce a visual aid describing the person interviewed and his/her employment. This visual aid may include a poster, video clip, picture, power point slide, banner, etc. Students will present their visual aids to the class and use them to describe the person interviewed and his/her occupation.

Part Two: Form groups of 4 to 5 students. Distribute one each of the Commission Earnings Data BLM and the Earnings Data Chart BLM to each group. Using the Interview BLM from each student for data, record all the salary data and the duration of current employment, in years, on the Commission Earnings Data BLM. Next ask each

group to use the table of data to create a scatter plot. The teacher may assist groups, as needed, to create an accurate scatter plot. Each group will then analyze the correlation between level of commission and duration of current employment and record the findings on the back of the Earnings Data Chart BLM. Conclude the activity by choosing one member from each group to share the findings with the class.

**Activity 14: Annual Salary (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, pencil, paper

Arrange students into groups of three or four each. Have students solve word problems pertaining to salary. Students should be able to recognize and solve problems that give information in one timeframe and ask the question in another timeframe, i.e. monthly salary to bi-weekly salary.

Example.

The Vid-Tek Company pays its security guards a salary of \$1,400 a month, but are switching to a bi-weekly pay basis. At the current annual rate, what will the security guards gross pay be each bi-weekly period?

Solution.

$$\$1,400 * 12 = \$16,800 \quad \text{Annual Salary}$$

$$\$16,800 / 26 = \$646.15 \quad \text{Biweekly Salary (rounded)}$$

**Activity 15: Career Exploration (Library Activity) (GLEs: Economics (Core Course: Free Enterprise): 1, 12; Business: 3b, 4d, 11e)**

Materials List: Career Expectations Opinionnaire BLM, Career Exploration BLM, pencils

This activity uses the *opinionnaire* literacy strategy ([view literacy strategy descriptions](#)). *Opinionnaires* are highly beneficial in promoting deep and meaningful understandings of content area topics by activating and building relevant prior knowledge, and by building interest and motivation to learn more about particular topics. *Opinionnaires* also promote self-examination, value youths' points of view, and provide a vehicle for influencing others with their ideas.

*Opinionnaires* are developed by generating statements about a topic that force students to take positions and defend them. The emphasis is on students' points of view and not the "correctness" of their opinions. Virtually every disciplinary topic lends itself to opinionating, even topics traditionally regarded as fact-based and objective.

By taking a stand on issues related to the topic of study and engaging in critical discussion about those issues, students not only heighten their expectations of the content to follow but also make many new connections from their opinions and ideas to those of their classmates.

*Opinionnaires* privilege students' personal insights, feelings, and ideas while catalyzing them to think deeply and critically about content area topics. Tapping the personal dimension in comprehension teaching and learning is necessary in order to ensure youth are engaged, find relevance, and feel valued as members of the classroom culture.

This activity can be accomplished in a library using the Occupational Outlook Handbook published by the US Department of Labor, or where a sufficient number of students have computer access to allow use of the websites below.

Prepare the students for this activity by asking them each to commit to a career choice for the duration of the class and to write that choice on the Career Expectations Opinionnaire BLM. Have students complete the Opinionnaire based on what they currently know or believe about each expectation. Randomly call on students to share some of their career expectations. Focus on education requirements and career pay.

Next, students will research their chosen careers and complete the Career Exploration BLM. Students should pay particular attention to the future trends of the specific career or industry. Students should interpret and summarize the information presented.

Conclude the activity by asking students to compare their expectations, as recorded on the Career Expectations Opinionnaire BLM, and their research data. Call on students to discuss the accuracy/inaccuracy of their expectations and the effect on their potential for actually pursuing those careers. Ascertain whether the research caused anyone to change his or her career choice. Students often choose careers with little or no factual information as to the nature of the career.

Information can be found from books published by the US Department of Labor, or from the Internet. The following US Department of Labor websites should help:  
<http://www.dol.gov/> and <http://stats.bls.gov>.

## Sample Assessments

### General Assessments

- Teacher observation during individual and group activities may be used. The Observation Record BLM and Observation Rubric BLM may be helpful to track a student’s progress through a unit or multiple units.
- The student will make a Mathematical Skills Portfolio containing notes taken during class lecture and activities 3, 5, 7, 9, 10 and 14.
- A unit test has been provided, Test BLM. The nature of the test teaches students to read and to follow directions as well as to test most of the computational material of the unit.

### Activity-Specific Assessments

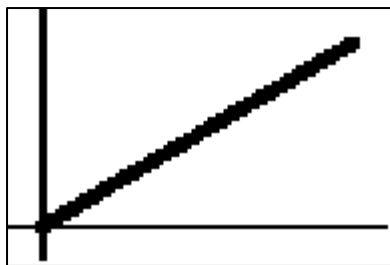
- Activity 2: Follow the activity with a discussion of the Money Voc Card BLM, Coincidence of Wants Voc Card BLM, Division of Labor Voc Card BLM. Administer The Story of Money Assessment BLM to determine mastery of the concepts discussed.
- Activity 4: Develop 2 problems to assess the students’ abilities to create lists on a graphing calculator and to use those lists to plot a scatter plot. Additionally, assess the students’ abilities to analyze the scatter plots produced with in-depth questions about their graphs. A sample problem follows:

John works as a pipefitter’s helper for Walters Mechanical Contractors. His normal workweek is 40 hours; he earns \$6.75 per hour. Create a table showing the number of hours John worked in 15 minute time increments, 0 hours, .25 hours, .50 hours, 1 hour, etc., in column 1 and the cumulative money earned in column 2. The data in column 2 correlates to the amount of money earned for the number of hours worked in column 1. For example L1:10, L2:67.50. Plot the resulting table as a scatter plot.

The teacher should check each student’s list and scatter plot to determine success.

L1	L2	L3	1
-----	-----	-----	
L1 = ..., X, 0, 40, .25			

L1	L2	L3	2
0.00	0.00	-----	
.25	1.69		
.50	3.38		
.75	5.06		
1.00	6.75		
1.25	8.44		
1.50	10.13		
L2(0)=0			



- Activity 12: Assess student's ability to envision and organize his/her financial future in his/her financial goals with the Financial Goals Rubric BLM.

### Resources

**Making the Most of Your Money** by Jane Bryant Quinn. Simon and Schuster, 1997. OSBN: 0-684-81176-6. 1066 pages. \$30.00. This guide includes information about investing, buying a home, life and health insurance, retirement planning, checklists for life changes, finding a financial advisor and financing college.

**Teen Guide to Personal Financial Management** by Marjolin Bijlefeld and Sharon K. Soumbaris. Greenwood Press, 2000. ISBN: 0-313-31107-2. 269 pages. \$45.00.

**How to Get What You Want in Life with the Money You Already Have** by Carol Keefe. Little, Brown, 1995. ISBN: 0-316-488518-7. 235 pages. \$11.95.

**Marshall Loeb's Lifetime Financial Strategies: Your Ultimate Guide to Future Wealth and Security** by Marshall Loeb. Little, Brown, 1996. ISBN: 0-316-53075-1. 861 pages. \$27.95.

**Building Wealth: A Beginner's Guide to Securing Your Financial Future** by Federal Reserve Bank of Dallas. For copies of this workbook, call (800) 333-4460, ext. 5254. An interactive version of this workbook can be found on the Dallas Fed's website, at [www.dallasfed.org](http://www.dallasfed.org).

**What is Financial Success?** Video. Available for download at <http://www.lpb.org/education/cyberchannel.cfm>. Blackline masters and a Teaching Guide are also available.

**Tools For Financial Success** Video. Available for download at <http://www.lpb.org/education/cyberchannel.cfm>. Blackline masters and a Teaching Guide are also available.

**Financial Math**  
**Unit 2: Net Pay**

**Time Frame:** Approximately two weeks



**Unit Description**

In this unit, students focus on payroll deductions and their calculations as they pertain to net pay. Students will continue to develop goal setting and writing skills. Emphasis is also given to the decision-making process.

**Student Understandings**

Students will understand that many deductions, both required and optional, are used in the calculation of net pay. Students will understand how the decision-making process is used to set and refine financial goals.

**Guiding Questions**

1. Can students correctly calculate federal income tax? State income tax? Social security tax? Medicare tax? Group insurance?
2. Can students apply those tax calculations and successfully determine net pay?
3. Can students write well-written financial goals?
4. Can students identify the parts of and use the decision-making process to direct their financial planning?

**Unit 2 Grade-Level Expectations (GLEs)**

<b>GLE#</b>	<b>GLE Text and Benchmarks</b>
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)

<b>Algebra</b>	
<b>Grade 9</b>	
9.	Model real-life situations using linear expressions, equations, and inequalities (A-1-H) (D-2-H) (P-5-H)
15.	Translate among tabular, graphical, and algebraic representations of functions and real-life situations (A-3-H) (P-1-H) (P-2-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Data Analysis, Probability, and Discrete Math</b>	
<b>Grade 9</b>	
28.	Identify trends in data and support conclusions by using distribution characteristics such as patterns, clusters, and outliers (D-1-H) (D-6-H) (D-7-H)
29.	Create a scatter plot from a set of data and determine if the relationship is linear or nonlinear (D-1-H) (D-6-H) (D-7-H)
34.	Follow and interpret processes expressed in flow charts (D-8-H)
<b>Patterns, Relations, and Functions</b>	
<b>Grade 9</b>	
37.	Analyze real-life relationships that can be modeled by linear functions (P-1-H) (P-5-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
51.	Explain how inflation and deflation are reflected in the Consumer Price Index (E-1C-H2)
52.	Explain the impact of inflation/deflation on individuals, nations, and the world, including its impact on economic decisions (E-1C-H2)

### Sample Activities

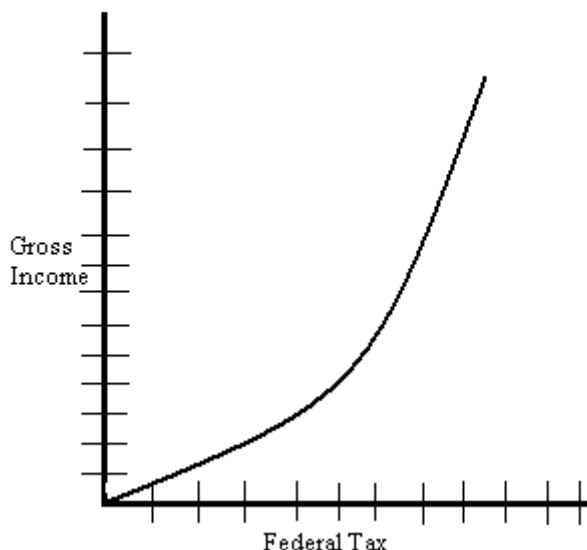
**Activity 1: Check Stubs (GLEs: Grade 9: 4, 5, 9, 19, 28, 29, 37; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: Check Stub BLM, Check Stub Graphing BLM, 4-function calculator, paper, pencil

Have students bring in check stubs from their jobs, if they are working, or from another source if they are not. Ensure they mark-out sensitive, personal information on the check stubs. Divide students into groups of 3 to 4 students. Have each group use the Check Stub BLM to gather information from the stubs. Have students circulate through the room and gather the income and tax figures from each group of students. Then have students return to their groups and calculate the percentages of gross for each tax. Finally, have students construct a graph for each type of tax and plot the data points using the Check Stub Graphing BLM. The students should produce a graph for each type of tax. The

graphs will show a non-linear curve with taxes rising sharply as income rises. If the data collected by the students isn't complete enough to show this, provide students with additional factual data to illustrate the point. This is a review of graphing and reading graphs from Algebra I.

Sample graph.



With students still aligned into groups of three or four and, using the graphs, have students discuss any correlations between gross pay and taxes paid by type: Federal, State, Social Security and Medicare. Students should be able to determine if the graphs represent a linear correlation between gross income and tax rate. They should be able to discuss the possibilities of why or why not. A findings sheet of correlations should be prepared by each group and presented to the class for discussion.

Example.

1. All tax rates represent a non-linear function.
2. As income rises, rates rise in a step-wise fashion.
3. All tax rates appear to rise at a different rate suggesting different tax rate break points for the different taxing agencies.

### Activity 2: Federal Income Tax (Business: **4b**, **5b**, **14a**, **14b**, **14c**, **14d**, **14f**, **19f**)

Materials List: 4-function calculator, paper, pencil, Internet capable computers, 2007 Tax Rate Schedule BLM

This is a two-part activity.

Part One: Have students calculate Federal Income Tax using tables to look-up the tax rate. Problems should include tax filers of various statuses as listed on the table below. The timeframe of the information presented should be varied to continue student mastery of converting between timeframes. A sample table is included in the 2007 Tax Rate Schedule BLM. The table below is sourced from the IRS website and updated tax tables can be obtained there at [www.irs.gov](http://www.irs.gov).

Part Two: This part of the activity uses the *SQPL* strategy ([view literacy strategy descriptions](#)). Begin the activity by writing a thought-provoking statement about taxes on the board. Example statements are: “Rich people pay too much in taxes,” “The government just wastes all our tax money,” “Poor people pay more taxes than rich people,” or “Taxes always go up, never down.” The statement chosen should guide the students into research to determine the validity of the statement. Briefly discuss the statement with the class, and then divide the students into groups of 2 or 3 students each. Have each group produce two or three questions that they would like answered about the topic sentence presented. After all groups have completed their questions, ask each group, in turn, to share its questions with the class. Write, on the board, good questions that accurately reflect the desired direction of student research. After eight to ten questions have been “settled on”, have each group conduct research, using the Internet, to answer the questions. Each group should prepare a fact-sheet reflecting the answers it has found to the questions. After the facts have been gathered, the teacher should lead a class discussion “wrapping-up” the question and answers. Lastly, have students individually write essays concerning their thoughts/positions on the topic sentence. The students’ positions must be supported by specific mathematical data gathered from their fact sheets and/or class discussion. These essays may be read aloud in class.

**Activity 3: State Income Tax (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Louisiana Resident Individual Income Tax FAQs BLM, 4-function calculators, paper, pencils

This is a two part activity.

Part One: Have students complete percentage word problems to solve for state income tax. State tax may be solved in any timeframe given. The student should recognize the timeframe given and calculate state tax for the required time period. In this activity, the student should focus on calculating state tax on a weekly basis so that weekly net pay can be calculated in a later activity. Include problems with a straight percentage and problems with a graduated tax percentage, for example:

Tax Rate	Annual Gross Pay
8.5%	First \$24,500
9.2%	Next \$24,500
11.8%	Over \$49,000

Sample Problem.

Brad's annual gross income is \$72,300. How much is deducted from his bi-weekly paycheck for state taxes?

*Solution.*

$$\$24,500 * .085 = \$2082.50$$

$$\$24,500 * .092 = \$2254.00$$

$$(\$72,300 - \$49,000) * .118 = \$2749.40$$

$$\$2082.50 + \$2254.00 + \$2749.40 = \$7085.90 \quad \text{Annual State Tax}$$

$$\$7085.90 / 26 = \$272.53 \quad \text{Biweekly State Tax}$$

Part Two: Hand-out the Louisiana Resident Individual Income Tax FAQs BLM to students. Discuss the information contained on the sheet. Discuss with students the responsibilities of paying taxes and the calculation of Louisiana Income Tax. Rework several of the problems from part one using the Louisiana Income Tax rate information on the sheet.

**Activity 4: Social Security and Medicare Tax (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f, 16c, 16d, 19f)**

Materials List: FICA Tax Rates BLM, Microsoft Power Point, Internet capable computers, 4-function calculator, paper, pencil

This is a two-part activity.

Part One: Have students practice calculating Social Security and Medicare Taxes. Students should, once again, give consideration to the timeframe of the information and the timeframe of the question. The teacher should include problems with information given in several timeframes and ask the students to calculate the taxes for a weekly timeframe. Problems should also be included to review the procedure for calculating gross pay from Unit 1. All of the gross pay calculation methods should be employed. Include some problems in which the annual gross income exceeds the Social Security cap.

Part Two: Distribute the FICA Tax Rates BLM and discuss the research project. Students research to discover current rates of Social Security and Medicare Tax, as well as the current income cap on Social Security Tax. Students should also gain an understanding of the purpose to the Federal Government of these taxes. Students may also be asked to find the future rise of the Social Security Tax and Medicare Tax. Students should prepare a Power Point Presentation presenting their findings to the class. Students should work in pairs or groups of three or four for this part of the activity. The teacher may want to facilitate a student-lead discussion of the future of Social Security and Medicare after the students have presented their findings.

**Activity 5: State Tax With A Calculator (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculator, paper, pencil

Although state taxes are based on projected annual gross income, most people are paid monthly (12 times a year), bi-weekly (26 times a year), or weekly (52 times a year). Businesses must use tax tables that convert annual deductions into deductions appropriate for normal pay periods. The table below shows the tax rates for various levels of income. Column 1 shows the tax rate, column 2 shows the annual income that will be taxed at each rate. Use your calculator to calculate the amount of your pay to be taxed at each rate if you are paid either monthly, bi-weekly, or weekly.

Tax Rate	Annual Gross Pay	Monthly Gross Pay	Bi-Weekly Gross Pay	Weekly Gross Pay
8.5%	First \$24,500	First	First	First
9.2%	Next \$24,500	Next	Next	Next
11.8%	Over \$49,000	Over	Over	Over

Row 1 and Row 2 (Both will be the same values.)

1. Enter 24500/12
2. Enter 24500/26
3. Enter 24500/52

Row 3 Enter monthly gross pay from row 1 press  $\square$  enter 2 press **ENTER**

1. Enter bi-weekly gross pay from row 1 press  $\square$  enter 2, press **ENTER**
2. Enter weekly gross pay from row 1 press  $\square$  enter 2 press **ENTER**

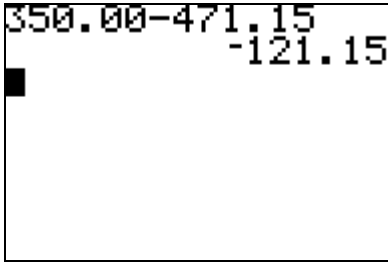
24500/12	2041.67	2041.67*2	4083.34
24500/26	942.31	942.31*2	1884.62
24500/52	471.15	471.15*2	942.30

Tax Rate	Annual Gross Pay	Monthly Gross Pay	Bi-Weekly Gross Pay	Weekly Gross Pay
8.5%	First \$24,500	First \$2041.67	First \$942.31	First \$471.15
9.2%	Next \$24,500	Next \$2041.67	Next \$942.31	Next \$471.15
11.8%	Over \$49,000	Over \$4083.34	Over \$1884.62	Over \$942.30

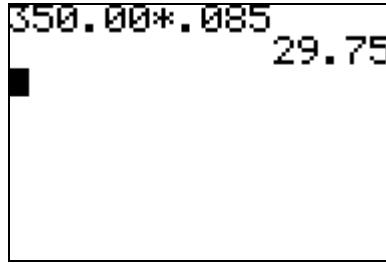
Use the state tax table just completed to determine the state tax for each of the following weekly gross pay checks. (The home screen is the calculator screen that is used for calculations such as basic operations, finding square roots, etc.)

- A. \$350 (350.00-471.15 <0 therefore all taxes are figures on rate 1)
1. Clear the home screen.

2. Enter 350[\*]0.085 then press **ENTER**



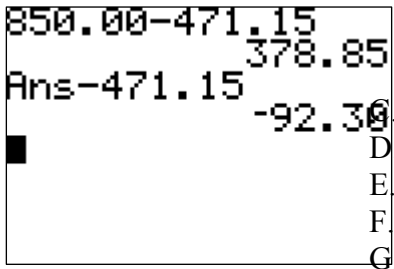
350.00-471.15  
-121.15



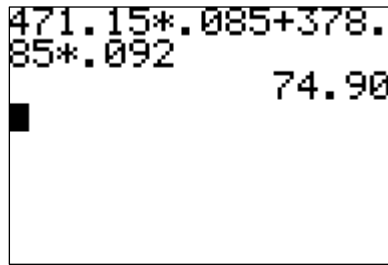
350.00\* .085  
29.75

- B. \$850 (850-471.15 = 378.85, 378.85-471.15 < 0 therefore taxes are figured using both rates 1 and 2)

1. Clear the home screen
2. Enter 471.15[\*]0.085[+]378.85[\*]0.092 then press **ENTER**



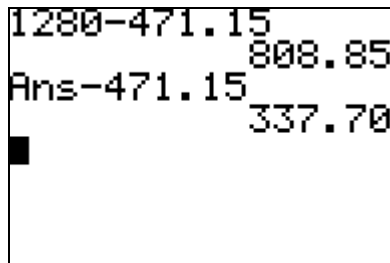
850.00-471.15  
378.85  
Ans-471.15  
-92.30



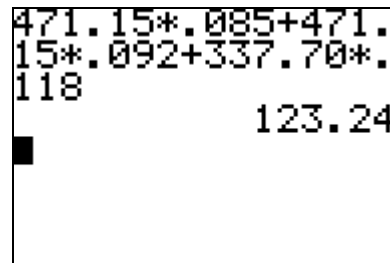
471.15\* .085+378.  
85\* .092  
74.90

- C. \$1,280 (1280-471.15 = 808.85, 808.85-471.15 = 337.70 therefore taxes are figured using rates 1, 2, and 3)

1. Clear the home screen
2. Enter 471.15[\*]0.085[+]471.15[\*].092[+]337.70[\*]0.118 then press **ENTER**



1280-471.15  
808.85  
Ans-471.15  
337.70



471.15\* .085+471.  
15\* .092+337.70\* .  
118  
123.24

An alternate/additional activity can be performed on a computer spreadsheet program such as *Microsoft Excel*<sup>®</sup>, using the same problem and data set.

**Activity 6: Group Health Insurance (GLEs: Grade 9: 4, 5, 19, 37; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f, 15e, 16c, 16d, 19f)**

Materials List: Health Insurance Research BLM, Microsoft Power Point, 4-function calculators, paper, pencil, Internet

This is a two-part activity.

Part One: This is an Internet activity. This is a group task with 3 to 4 students per group. Distribute the Health Insurance Research BLM and discuss it with students. A brief discussion of health insurance generalities may be helpful. Question students to gauge their experiences with health insurance. Give the research project to the students with no website references. Instruct students to use an Internet search to seek answers to the questions. When complete, have students create *PowerPoint*<sup>®</sup> presentations and present their findings to the class.

Part Two: Have students individually calculate group health insurance costs as a percentage of the annual premium for a set of word problems. This skill is needed to calculate net pay in the next activity.

Sample Problem.

Sherry Reese, a technical writer for Ace Electronics, earns \$423.08 a week. Her health insurance costs \$3,219 a year, of which her company pays 75%. How much is deducted each week from her paycheck for medical insurance?

*Solution.*

$$100\% - 75\% = 25\%$$

$$\$3,219 * 0.25 = \$804.75$$

$$\$804.75 / 52 = \$15.48$$

*This is the percentage Sherry pays*

*This is the amount Sherry pays annually*

*This is the amount Sherry pays weekly*

**Activity 7: Tying It All Together-Net Pay (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, paper, pencils

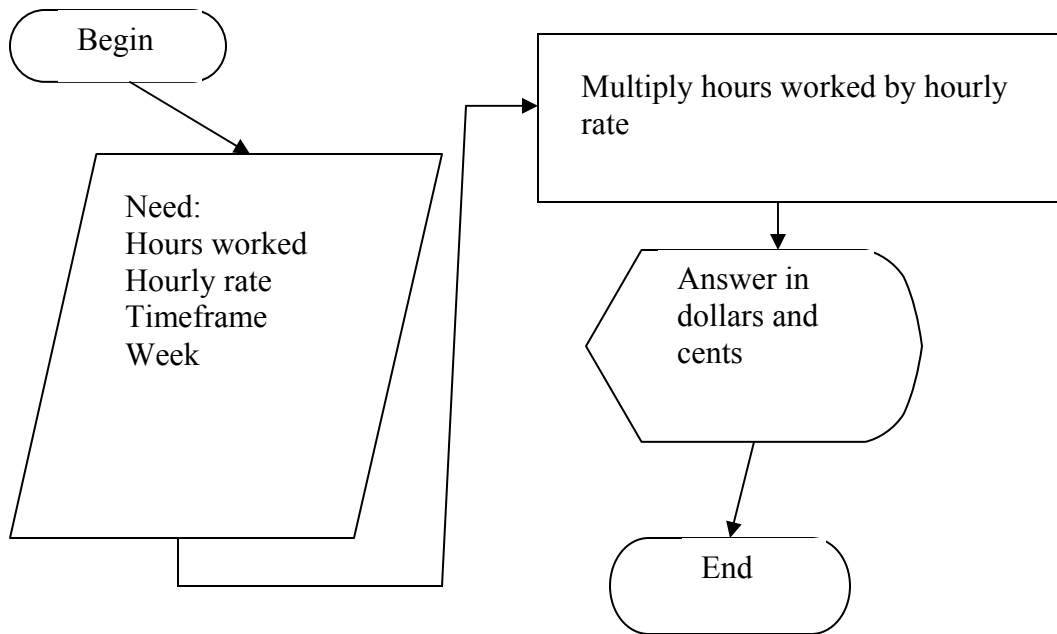
This is a two part activity.

Part One: This activity uses a modified *process guide* strategy ([view literacy strategy descriptions](#)). As students progress through information sources learning about a content area topic, their processing of the information and concepts can be guided. Process guides scaffold students' comprehension within unique formats. They are designed to stimulate students' thinking during or after their reading, listening, or involvement in any content area instruction. Guides also help students focus on important information and ideas, making their reading or listening more efficient. Process guides are designed to move students down the comprehension continuum from sentence surfing and repeating back what the text said, to connecting information and ideas to prior experience, and to applying new knowledge. Guides can be formatted in interesting and enticing ways.

By now the students have performed all the calculations required to produce net pay. The process guide will be used to solidify knowledge of the calculations required to reach each individual "piece" of the net pay problem. Begin with a non-mathematical explanation of obtaining net pay. Highlight all the "pieces" of a net pay problem, i.e., straight-time pay, over time pay, federal income tax, social security tax, etc. Have the

students produce a flowchart for each of the “pieces” of the net pay problem. The flowchart process guide should begin with input data required for the calculation, the proper timeframe of the calculation, all the steps of the calculation and the timeframe of the output data. A flowchart process guide should be created for all of the pieces of the net pay problem. Flowchart process guides should be made for straight-time pay, over time pay, piecework pay, salary, commission, federal income tax, state income tax, social security tax, Medicare tax, and group health insurance.

An example flowchart process guide for straight-time pay is provided on the next page.



Part Two: Have students solve word problems for net pay. Students should follow a format as listed below:

Gross Income	Federal Income Tax	State Income Tax	Social Security Tax	Medicare Tax	Group Health Insurance	Personal Deduction (if any)	Net Pay
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Problems should include all aspects of calculating gross pay learned in Unit 1 and all aspects of calculating each type of tax presented in this unit. This is a comprehensive activity.

**Activity 8: Review Financial Goals (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11i, 11k, 14d)**

Materials List: student work from Unit 1, Activity 12, and Unit 1, Activity 15, Financial Plan, paper, pencil

Look at the goals written in Unit 1. Have students refine/change their goals to reflect expected future incomes, as learned in Unit 1, Activity 15, and incorporate how to pay for education required to attain desired careers.

Look at Unit 10, Activity 4, Complete Financial Plan, for guidance as to how to construct and organize the Financial Plan.

**Activity 9: Decision Making Process (GLEs: Grade 9: 34; Economics (Core Course: Free Enterprise): 1; Business: 11k, 13b)**

Materials List: 5-Step Decision Making Process BLM, Financial Plan, pencil

Hand-out the 5-Step Decision Making Process BLM. Discuss with students the 5-step decision making process. First discuss each step individually, then the process as a whole. Use a student's financial goals from Activity 8 as an example showing how the decision making process applies to financial decisions. After the discussion, quiz students orally about what each step of the process means to them, and how the process can be beneficial to successful financial planning.

After the discussion, have students complete the *RAFT* ([view literacy strategy descriptions](#)) writing task on the 5-Step Decision Making Process BLM. Once students have acquired new content information and concepts, they need opportunities to rework, apply, and extend their understandings. *RAFT* writing is uniquely suited to doing just that. This form of writing gives students the freedom to project themselves into unique roles and look at content from unique perspectives. From these roles and perspectives, *RAFT* writing has been used to explain processes, describe a point of view, envision a potential job or assignment, or solve a problem. It's the kind of writing that when crafted appropriately should be creative *and* informative.

RAFT is an acronym that stands for:

**R** – Role (role of the writer)

**A** – Audience (to whom or what the RAFT is being written)

**F** – Form (the form the writing will take, as in letter, song, etc.)

**T** – Topic (the subject focus of the writing)

The students' roles should be to share the benefits of organizing problem solutions following the 5-step process. The audience is their peers. Students may prepare a song or poem.

Include this activity in their financial plan, inside front pocket.

**Activity 10: *The Story of Inflation* (GLEs: Economics (Core Course: Free Enterprise): 1, 51, 52; Business: 11a, 13g)**

Materials List: The Story of Inflation BLM, *The Story of Inflation* comic books (classroom set), Inflation Concept Map BLM, CPI Concept Map BLM, pencil

This activity uses the *graphic organizer* literacy strategy ([view literacy strategy descriptions](#)). Concept mapping is a technique that allows students to understand the relationships between ideas by creating a visual map of the connections. Concept maps allow the students to (1) see the connections between ideas they already have, (2) connect new ideas to knowledge that they already have, and (3) organize ideas in a logical, but not rigid structure, that allows future information or viewpoints to be included.

Have students read *The Story of Inflation*. As students read through the comic have them answer the questions from The Story of Inflation BLM. This will establish a baseline topic and allow the teacher to discuss inflation, its causes, its affect on the economy, its cure, and its impact on personal finances. During the discussion, the teacher can use the board to make an informal concept map of the discussion topics. Instruct students on the use of concept maps. Following the discussion, have the students complete the concept maps on the Inflation Concept Map BLM and the CPI Concept Map BLM. Emphasize that the concept map on the BLM may be modified to include as many bubbles as is required. Students should pay particular attention to the way the core inflation is measured.

*The Story of Inflation* can be obtained by writing:

Federal Reserve Bank of New York  
Public information Department  
33 Liberty Street  
New York, New York 10045

Or <http://www.newyorkfed.org/publications/result.cfm?comics=1>

**Activity 11: Net Job Benefits (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Job Benefits BLM, Job Benefits Practice Problems BLM, 4-function calculator, pencil

Distribute the Job Benefits BLM. Use it as a guide to discuss job benefits with students. Emphasize that many jobs come with “perks” that add value to that particular job. Those “perks” may be of significant value and should be considered when searching for a new job. Likewise, all jobs have expenses associated with them. A new job should be considered in light of the total benefits package, meaning wages plus job benefits minus expenses. Have students complete the Job Benefits Practice Problems BLM.

## Sample Assessments

### General Assessments

- The teacher will observe the students during group discussion. Refer to the Observation Sheet and Scoring Rubric in Unit 1 for guidance on scoring teacher observation.
- The teacher will check student's financial plan. Document should include:
  - Minimum of 8 financial goals
  - 5-step decision making process
- The students will add to their Mathematical Skills Portfolio containing notes taken during class lectures and Activity 2, part 1; Activity 3, part 1; Activity 4, part 1; Activity 6, part 2, and Activities 7 and 11.
- A unit test has been provided, Test BLM, to administer to students to assess their mastery of all the calculations involved in finding net pay. This test may take more than one class period for the average student to complete, if the periods are 55 minutes or shorter.

### Activity-Specific Assessments

- Activity 1: Use the Group Product Rubric BLM to assess a group's performance as related to data collected and the graphs produced for completeness and accuracy.
- Activity 2: Assess the essay written in part two of this activity with the Essay Rubric BLM.
- Activity 4: Assess the *PowerPoint*<sup>®</sup> presentations using the *PowerPoint*<sup>®</sup> Rubric BLM.

- Activity 5: The following table is an alternate representation of part of the federal tax schedule found in Activity 2:

	If TAXABLE INCOME		The TAX Is		
	THEN				
	Is Over	But Not Over	This Amount	Plus This %	Of the Excess Over
<b>SCHEDULE X —</b>					
<b>Single</b>	\$0	\$7,825	<b>\$0.00</b>	10%	\$0.00
	\$7,825	\$31,850	<b>\$782.50</b>	15%	\$7,825
	\$31,850	\$77,100	<b>\$4,386.25</b>	25%	\$31,850
	\$77,100	\$160,850	<b>\$15,698.75</b>	28%	\$77,100
	\$160,850	\$349,700	<b>\$39,148.75</b>	33%	\$160,850
	\$349,700	No limit	<b>\$101,469.25</b>	35%	\$349,700

Show how the figures under the column “This Amount” were calculated.

*Note to teacher:* On the fourth line, the \$15,698.75 is calculated as:

$$77,100 - 31,850 = 45,250$$

$$45,250 * 25\% = 11,312.50$$

$$11,312.50 + 4,386.25 = 15,698.75$$

**Financial Math  
Unit 3: Checking Accounts**

**Time Frame:** Approximately four weeks



**Unit Description**

This unit explores how to manage money in a checking account. Students will create initial financial plans based on their unique goals and the decision-making process.

**Student Understandings**

Students will understand how to deposit money into and to withdraw money from a checking account, as well as, handling the reconciliation process. Students will understand how to utilize effective goal setting and the decision-making process to create an initial financial plan. Students must understand the role each person plays in financial responsibility.

**Guiding Questions**

1. Can students correctly write a checking account deposit slip? A Check?
2. Can students maintain a check register?
3. Can students correctly identify parts of a checking account bank statement?
4. Can students reconcile a monthly checking account bank statement and a check register?
5. Can students create personalized financial plans to meet their personal financial goals from Unit 2?
6. Do students understand the importance of financial responsibility?

**Unit 3 Grade-Level Expectations (GLEs)**

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)

<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
17.	Analyze the role of various economic institutions in economic systems (E-1A-H6)
22.	Analyze the role of banks in economic systems (e.g., increasing the money supply by making loans) (E-1A-H7)
24.	Compare and contrast credit, savings, and investment services available to the consumer from financial institutions (E-1A-H7)
52.	Explain the impact of inflation/deflation on individuals, nations, and the world, including its impact on economic decisions (E-1C-H2)
53.	Describe the effects of interest rates on businesses and consumers (E-1C-H2)
55.	Predict how interest rates will act as an incentive for savers and borrowers (E-1C-H2)
56.	Explain various causes and consequences of unemployment in a market economy (E-1C-H3)
63.	Explain the role of the Federal Reserve System as the central banking system of the United States (E-1C-H4)

### Sample Activities

#### **Activity 1: Checking Account Simulation (GLEs: Grade 9: 4, 5, 19; Economics (Core Course: Free Enterprise): 1; Business: 8a, 14a, 14b, 14c, 14d, 14f)**

Materials List: Checking Account Application Form BLM, Blank Checks BLM, Deposit Slips BLM, Check Register BLM, pencils

This activity is a unit-long checking account simulation. Before beginning this activity, prepare enough copies of the required materials for each student to receive one account application form, one check register, one sheet of deposit slips, and two sheets of checks.

Begin the simulation by having the students complete the Checking Account Application Form BLM, thereby “opening” a checking account. Each student will open his/her account with the same amount of money. See Check Register Key BLM for this amount. Each student should also complete a deposit slip for the opening transaction for this amount and record the transaction in his/her check register. Use this time to explain the purpose of a deposit slip and its parts, as well as, how to write deposits in a check register.

On day two, instruct the students on the correct way of writing checks, the purpose of checks, the legal implications of writing checks, and the parts of a check, including the routing and account numbers at the bottom of the check. Students will write their first checks on the second day. Ensure that they have written them correctly.

On each succeeding day, beginning with day 2 of the unit, give the students additional transactions as specified on the Check Register Key BLM.

The unit test provided with this unit is an account statement. After all transactions are recorded, issue account statements and have the students reconcile their checking accounts.

All materials for this activity should be kept together and turned-in together when the unit is complete.

**Activity 2: *The Story of Banks* (GLEs: Economics (Core Course: Free Enterprise): 1, 17, 22, 24, 52, 53, 55, 56, 63; Business: 11h, 11k)**

Materials List: Opinions About Banks BLM, *The Story of Banks* comic books(classroom set), The Story of Banks BLM, pencil

This is another educational comic book available from the Federal Reserve Bank of New York. Contact information can be found in Unit 1.

This activity will use the *opinionnaire* literacy strategy ([view literacy strategy descriptions](#)). Begin the activity by distributing the Opinions About Banks BLM. Have the students complete the *opinionnaire* and set it aside for later. Before reading the comic books aloud in class, assign student readers for the main characters in the story. They are: Denny, Francisco, Evelyn, Mr. Banks, and a narrator to read everything else.

Have the student readers read through the story. Have the other students in the class complete the questions from The Story of Banks BLM.

After reading the story, discuss the answers to the questions on the The Story of Banks BLM. Have students respond to questions such as: “What are the responsibilities of having a checking account?” and “Why are checking accounts considered a key indicator of successful money management when applying for person’s first credit card?” After the class discussion, have students revisit their Opinions About Banks BLM. Ask them to reanswer the questions in the margin. Question the students to determine if any of their opinions changed as a result of reading the comic books. Explore why those opinions changed, and how that affects the management of their money.

As an alternate to the class discussion, the student could write a short essay on the responsibilities of having a checking account and managing it successfully.

**Activity 3: Reconciling a Bank Statement (GLEs: Grade 9: 4, 5, 19; Business: 8a, 14a, 14b, 14c, 14d, 14f)**

Materials List: Register BLM, Reconciling a Checking Account Notes BLM, Practice One BLM, Practice Two BLM, Practice Three BLM, Practice Four BLM, 4-function calculators, pencils

Practice One BLM, Practice Two BLM, Practice Three BLM, and Practice Four BLM are all two-page BLMs and should be copied as a one-page, two-sided handout.

This activity is the watershed event of this unit, and time should be given to ensure mastery of the reconciliation process. Expect this activity to take four to five class days. Begin by having the students complete the Register BLM. Follow with a non-numerical explanation of reconciling a bank statement on the board.

Use the *split-page notetaking* strategy ([view literacy strategy descriptions](#)) to explain the steps to reconcile a checking account statement. One good way to begin teaching the *split-page notetaking* strategy is by showing students the difficulty of trying to study from poorly organized notes. The teacher can create an example of “disorganized” notes by looking through the material to be covered and writing out main points, key terms, and specific supporting information in a mixed-up way for a section of the content. The teacher should point out to students that when they’re trying to study and recall the material, it becomes a confusing process to sort out the important from the less important with a random notetaking scheme. An example can be given to students in a handout, presented as an overhead or a computer slide. The teacher discusses the advantages of taking notes in this way. The teacher shows students how they can prompt recall by bending the sheet so that information in the right or left column is covered.

Have the students complete Reconciling a Checking Account Notes BLM as the teacher lectures through an explanation of how to reconcile a checking account statement. The teacher should pause at every step and question several students to gauge overall understanding of the reconciliation process. Students should understand that the reconciliation process is a “checks-and-balances” process to fix any mistakes that may have been made during the previous month by the bank or the individual. Explain to students how to record the service charge and fees that may be on the bank statement, but will not be on the check register, along with forgotten transactions. Also, include any interest that may have been added to the account. Refer to the Reconciling a Checking Account Notes with Answers BLM for reference during the explanation.

The blackline masters provided with this activity take the student from practice with check registers to reconciling checking accounts “from scratch.” They must identify outstanding checks and deposits and forgotten transactions. This activity should prepare the student to successfully reconcile the check register started in Activity 1 and the bank statement given as an assessment at the end of the unit. Begin with the Practice One BLM. Guide the students through problems 1 and 2 on the front-side and have them work in pairs to complete problems 3 and 4 on the back-side. Discuss the answers to

problems 3 and 4 with the class to ensure accuracy before proceeding. Next, have students complete problem 1 of the Practice Two BLM in pairs and discuss the answers as a class. Now, split the pairs and ask the students to work problem 2 individually. When complete review the answers with the class. Practice Three BLM is the first in which students are asked to identify outstanding transactions. Using the statement and register, guide the students through the process of identifying outstanding checks and outstanding deposits. Once found, the students should complete the “Reconciliation Worksheet” individually. Discuss the answers to the “Reconciliation Worksheet” with the class. The Practice Four BLM requires the students to identify outstanding transactions and complete the “Reconciliation Worksheet.” Have students complete the Practice Four BLM individually. When completed, ask students to exchange papers and present the solution to the class. Have each student write the solution to incorrect answers on the paper they are checking. Return the papers to the owner. Verbally quiz the students on what mistakes were made, why they were made and steps to take to decrease mistakes in the reconciliation process in the future.

**Activity 4: Check Register Calculator Activity (GLEs: Grade 9: 4, 5, 19; Business: 8a, 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculators, pencils

Use the calculator to reconcile the following monthly expenditures and deposits for a bank account.

Beginning balance: \$131.18

Checks written: \$145.72, \$38.23, \$214.09, \$85.76, \$237.73, \$123.54, \$21.98

Deposits made: \$250.23, \$250.23, \$123.18, \$250.23, \$250.23

Service charge: \$8.96

New checks: \$12.42

**Method 1**

1. Enter each of the deposits into List 1
2. Enter each of the checks written into List 2
3. Enter each checking account expense into List 3
4. Clear the home screen
5. Enter the beginning balance, then  $\boxed{+}$
6. Press  $\boxed{2^{nd}} \boxed{LIST}$  highlight **MATH**
7. Highlight 5 then press  $\boxed{ENTER}$
8. Press  $\boxed{2^{nd}} \boxed{L1}$  then press  $\boxed{)}$
9. Press the subtract sign, then repeat steps 6 and 7, then press  $\boxed{2^{nd}} \boxed{L2} \boxed{)}$
10. Press the subtract sign, then repeat steps 6 and 7, then press  $\boxed{2^{nd}} \boxed{L3} \boxed{)}$ , then press  $\boxed{ENTER}$

L1	L2	L3	3
250.23	145.72	ERR	
250.23	38.23	12.42	
123.18	214.09	-----	
250.23	85.76		
250.23	237.73		
-----	123.54		
	21.98		
L3()=8.96			

NAMES	OPS	MATH
1:	min(	
2:	max(	
3:	mean(	
4:	median(	
5:	sum(	
6:	prod(	
7:	stdDev(	

```

131.18+sum(L1)-s
um(L2)-sum(L3)
366.85

```

**Method 2**

1. Clear the home screen
2. Enter the beginning balance then add to this each of the deposits made
3. Continue by subtracting each of the checks written
4. Finish by subtracting each of the checking account expenses for the month
5. Press **ENTER**

```

0.23+123.18+250.
23+250.23-145.72
-38.23-214.09-85
.76-237.73-123.5
4-21.98-8.96-12.
42
366.85

```

(Notice that only the last entries are visible on the calculator screen.)

**Activity 5: Get MoneyWise (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 8a, 11k, 19f)**

Materials List: computers with Internet access

This is an Internet activity. Have students read through the information presented at the following web address: <http://www.usaedfoundation.com/financial/bi03.asp>

The student should read through the seven links at the bottom of the page, starting with *Choosing A Bank*. Have him/her take the self-test at the end of each section to measure understanding. Follow with a discussion about choosing the right bank.

**Activity 6: Electronic Money (GLEs: Grade 9: 4, 5, 19; Economics (Core Course: Free Enterprise): 1 Business: 8a, 14a, 14b, 14c, 14d, 14f)**

Materials List: Electronic Banking BLM, 4-function calculator, pencils

Download the brochure *Electronic Money* from the Chicago Federal Reserve's website at <http://www.chicagofed.org/publications/electronicmoney/electronicmoney.pdf>.

Print and copy the *Electronic Money* brochure, one for each student. This document is nineteen pages long, therefore, an alternate form of dissemination may be used. A shorter, online version of the document located at [http://www.chicagofed.org/consumer\\_information/electronic\\_money.cfm](http://www.chicagofed.org/consumer_information/electronic_money.cfm) may be used also.

Discuss electronic banking with students. Using the brochure as a guide, cover the topics presented in the brochure, including the history of electronic banking, consumer resistance and the future of electronic banking. Allow the students opportunity to respond to the topics and an opportunity to research topics of interest to them.

After the discussion, students should complete the Electronic Banking BLM.

**Activity 7: Financial Plan (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 8a, 11k, 19f)**

Materials List: Financial Plan Outline BLM, pencils, computers with Internet access

This is an Internet activity. Hand-out the Financial Plan Outline BLM and briefly discuss the five components of a complete financial plan. Have students research personal financial planning. Each student should create an outline of the information contained in a personal financial plan. The following Internet addresses may be helpful: <http://www.usaaedfoundation.com/financial/bi01.asp>

The following document may be helpful to students. The teacher should download the document and distribute it to students on paper, or provide the Internet address to students so that they may download it.

[www.gettingfiscallyfit.org/consumer/participant/Pmm%20Participant.pdf](http://www.gettingfiscallyfit.org/consumer/participant/Pmm%20Participant.pdf) This is a PDF document. You must have Adobe Acrobat to view it. You can download a free version of Adobe Acrobat at [www.adobe.com](http://www.adobe.com).

The student outline should contain these five components:

1. Set goals
2. Inventory
3. Analyze
4. Plan
5. Update

Students should prepare information on each of the components of a financial plan and integrate their previously prepared goals into these documents. The student should recognize that the components of a financial plan roughly mirror the 5-step decision making process.

Emphasize to students that a financial plan is a living document that changes as a person moves through his/her working lifecycle. Students should also recognize that the financial planning process mirrors the decision-making process and that they are really one in the same. A financial plan is a life-long decision-making process.

The teacher may want to require that students complete some of the online forms presented on the first webpage above to enhance the lesson.

Look at Unit 10, Activity 4, Complete Financial Plan, for guidance as to how to organize and construct the Financial Plan.

**Activity 8: Personal Financial Responsibility (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4j, 11k)**

Materials List: Responsibility BLM, computers with Internet access, pencils

Arrange students into groups of three or four and have them discuss the tenants of personal financial responsibility. Then have them research the topic on the Internet. Each group should complete the Responsibility BLM . The chart below lists some possible answers.

<b>Tenants of Personal Financial Responsibility</b>		
<b>Property/Audience</b>	<b>Pros</b>	<b>Cons</b>
<i>Financial security</i>	<i>One can have all the things within their financial means</i>	<i>Requires discipline</i>
<i>Commitment to protecting family</i>	<i>Loved ones enjoy all the benefits of financial security</i>	<i>Loved ones are not well cared for financially which may lead to ill health and poor opportunities for the future</i>
<i>Not getting in debt over my means</i>	<i>Plan for and manage acquisition of debt to my advantage</i>	<i>Not be tied to high-interest, high-cost debt</i>

After each group has completed its table of information, the teacher will employ a modified *questioning the author (QtA)* ([view literacy strategy descriptions](#)). The goals of *QtA* are to construct the meaning of text, to help students go beyond the words on the page, and to relate outside experiences to the texts being read. *QtA* involves the teacher and the class in a collaborative process of building understanding during reading. The teacher participates in *QtA* as a facilitator, guide, initiator, and responder. The teacher

strives to elicit readers' thinking while keeping them focused in their discussion. Students need to be taught that they can, and should, ask questions of authors as they read. Teachers should make a poster of the types of questions students are expected to ask. These should be modeled by the teacher and students should be encouraged to ask their own.

The *QtA* strategy is modified in this activity such that the "author" is each group, and the answers on its Responsibility BLM are the subject. Call on each group to discuss their answers with the class. Give other groups an opportunity to ask questions of the "presenter" group to aid clarity or increase depth of the answers given. The teacher can record thoughtful answers on the board to aid in the discussion.

**Activity 9: *The Story of Checks and Electronic Payments* (GLEs: Economics (Core Course: Free Enterprise): 1, 22, 24, 63; Business: 11h, 11k)**

Materials List: The Story of Checks and Electronic Payments BLM, pencils, poster board, markers, colored pencils

This is another educational comic book available from the Federal Reserve Bank of New York. Contact information can be found in Unit 1. Have students read the comic book and answer the open-ended questions from The Story of Checks and Electronic Payments BLM.

Students may include references from within the comic book for their answers as well as references from any prior knowledge they have gained in this unit. Answers to each question should be in paragraph form.

Have the students choose one of the questions and create a poster presenting the question and the answer to the question visually. Finish the activity by using the modified *questioning the author (QtA)* ([view literacy strategy descriptions](#)). After the posters are made, have students come to the front of the classroom and explain their posters to the class. After the explanation, ask other students to question the "author" about his/her poster and his/her representation of the answer. The teacher should monitor the questions and answers presented by students to add clarification and completeness to student answers.

## Sample Assessments

### General Assessments

- Have students explain the process of checking accounts. Include:
  - How to choose a suitable bank.
  - How to open a checking account

- How to write checks and deposit slips.
- What to do with a check register.
- How to reconcile a checking account, including outstanding checks and deposits, forgotten transactions, service charge and interest.
- The student will make a Mathematical Skills Portfolio containing notes taken during class lecture and completed blackline masters from Activity 3. Include the following:
  - Register BLM
  - Reconciling a Checking Account Notes BLM
  - Practice One BLM
  - Practice Two BLM
  - Practice Three BLM
  - Practice Four BLM
- A unit test, Test BLM, has been provided. The test is a culmination of the checking account simulation began as Activity 1.

### Activity-Specific Assessments

- Activity 1: Use the Maintain Check Records Rubric BLM to score the student's ability to correctly maintain checking account records throughout the course of the unit. Check the student's checks, deposit slips and check register several times during the course of the activity.
- Activity 7:
  - Assess the completeness of the student's financial plan outline as well as the integration of previously written goals into the plan.
  - The student outline should contain these five components:
    1. Set goals
    2. Inventory
    3. Analyze
    4. Plan
    5. Update
  - Students should prepare information on each of the components of a financial plan and integrate their previously prepared goals into the documents.
- Activity 8: Use the Financial Responsibility Rubric BLM to assess the student's participation during this group assignment.

## **Resources**

**Teen Guide to Personal Financial Management** by Marjolin Bijlefeld and Sharon K. Soumbaris. Greenwood Press, 2000. ISBN: 0-313-31107-2. 269 pages. \$45.00.

**How to Get What You Want in Life with the Money You Already Have** by Carol Keeffe. Little, Brown, 1995. ISBN: 0-316-488518-7. 235 pages. \$11.95.

**Marshall Loeb's Lifetime Financial Strategies; Your Ultimate Guide to Future Wealth and Security** by Marshall Loeb. Little, Brown, 1996. ISBN: 0-316-53075-1. 861 pages. \$27.95.

**Financial Math**  
**Unit 4: Savings Accounts**

**Time Frame:** Approximately three weeks



**Unit Description**

This unit addresses the usefulness of savings accounts and how to manage them. Discussions will center on the time value of money and the advantages of starting a savings plan early in life. There is also consideration given to saving versus investing. Compound and simple interest will be investigated.

**Student Understandings**

Students will understand how to deposit and withdraw money from a savings account, how to maintain a passbook and read a savings account statement, and how to calculate simple and compound interest. Students will know how to evaluate savings versus investing and when to apply each to their financial plans. Students will establish the advantage of beginning a savings plan early in life.

**Guiding Questions**

1. Can students correctly write a savings account deposit slip? Withdrawal slip?
2. Can students accurately maintain a savings account passbook?
3. Can students read a savings account bank statement?
4. Can students calculate simple interest? Compound interest?
5. Can students communicate the difference in saving and investing and determine when each technique is appropriate?
6. Do students recognize the importance of beginning a savings plan early in life?

**Unit 4 Grade-Level Expectations (GLEs)**

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)

	<b>Grade 10</b>
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
<b>Measurement</b>	
	<b>Grade 9</b>
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
22.	Analyze the role of banks in economic systems (e.g., increasing the money supply by making loans) (E-1A-H7)
24.	Compare and contrast credit, savings, and investment services available to the consumer from financial institutions (E-1A-H7)
53.	Describe the effects of interest rates on businesses and consumers (E-1C-H2)
54.	Predict the consequences of investment decisions made by individuals, businesses, and government (E-1C-H2)
55.	Predict how interest rates will act as an incentive for savers and borrowers (E-1C-H2)
63.	Explain the role of the Federal Reserve System as the central banking system of the United States (E-1C-H4)
65.	Explain the role of the Federal Deposit Insurance Corporation (FDIC) (E-1C-H4)

### Sample Activities

**Activity 1: Savings Account Forms (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: savings account deposit and withdrawal slips(student provided), paper, pencil, 4-function calculator

This is a two-part activity.

Part One: Have students visit a local bank and retrieve several copies of savings account deposit and withdrawal slips. Prepare several scenarios for the students to complete with the forms. The teacher should point out the differences and similarities to checking account forms. Also, speak to savings account passbooks and other methods for maintaining one's savings account balance.

Part Two: This part of the activity uses a modified *SQLP* ([view literacy strategy descriptions](#)). On the board, or overhead, write a leading statement about common misconceptions of savings accounts, for example, "The bank doesn't pay enough interest

to bother putting my money in a savings account.” or, “It’s too hard to get to my money in a bank, I’d rather keep it hidden in my house.” Once the statement is presented, ask students to pair-up and generate 3 to 4 questions they’d like answered about the statement. The modification of the typical *SQPL* process is that the questions and answers are not addressed directly. The teacher will collect the student responses/questions to the statement and keep them until later in the unit. Ask each pair to reproduce their questions and seek the answers during the remainder of the unit.

**Activity 2: Account Statements (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11h, 11k)**

Materials List: Differences Grid BLM, savings account statement (teacher provided), paper, pencil

This activity uses the *word grid* ([view literacy strategy descriptions](#)) to compare a savings account statement and a checking account statement from Unit 3. To take full advantage of word grids they should be co-constructed with students, so as to maximize participation in the word learning process. The teacher should have a simple word grid on the wall that will serve as an example for explaining how it’s constructed and used. A large version of the grid could be put on poster paper and attached to the wall or one could be projected from an overhead or computer. As critical related terms and defining information are encountered, students should write them into the grid. The teacher can invite students to suggest key terms and features, too.

Once the grid is complete, the teacher should quiz students by asking questions about the words related to their similarities and differences. In this way, students will make a connection between the effort they put into completing and studying the grid, and the positive outcome on word knowledge quizzes.

Distribute the Differences Grid BLM and copies of the savings account statement to each student. Begin the discussion of similarities and differences between checking and savings accounts and their statements. Pause to allow students time to digest this discussion and invite the students to suggest entries for the word grid. As each entry is added to the word grid, place a checkmark in the appropriate row. See Differences Grid Example below.

Students should recognize the importance of reconciling their savings account statement from previous learning in Unit 3. Review the reconciliation procedure with the students and explain that savings account statements are usually sent quarterly because of the small number of transactions in a savings account.

Similarity/ Difference	Pays Interest	Service Charge	Write Checks For Purchases	ATM Access To Money	Monthly Statements	Quarterly Statements	Tied to Debit Card For Purchases	Online Access to Account	Direct Deposit	Limited Number of Withdrawals
Checking	✓	✓	✓	✓	✓		✓	✓	✓	
Savings	✓	✓		✓		✓		✓		✓

**Activity 3: A Penny Saved (GLEs: Economics (Core Course: Free Enterprise): 1, 22, 24, 53, 54, 55, 63, 65; Business: 11i, 11k)**

Materials List: *A Penny Saved* (classroom set), A Penny Saved BLM, paper, pencil

This is another educational comic book available from the Federal Reserve Bank of New York. Contact information can be found in Unit 1.

Have students read the comic *A Penny Saved*. As students read, have them complete the A Penny Saved BLM. After the questions on the A Penny Saved BLM are complete, reform the pairs from Activity 1, Part 2 and distribute the *SQPL* questions from

Activity 1. Have each pair answer as many of the questions as they could with knowledge from the comic book. Call on pairs to share with the class the questions that were answered and the answers they found. Chances are that other pairs will have similar questions and answers. At this time, do not address the unanswered questions. Re-collect the questions.

**Activity 4: Simple Interest (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Simple Interest BLM, 4-function calculator, paper, pencil

Have students complete the Simple Interest BLM. Point out to the students that simple interest is not often used to calculate savings account interest. This activity is a primer for Activity 5.

**Activity 5: Compound Interest (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14c, 14d, 14f)**

Materials List: Compound Interest Practice BLM, 4-function calculator, paper, pencil

Have students work the Compound Interest Practice BLM. Students should use repetitions of the simple interest formula for the number of interest periods presented in the problem. The procedure to use the simple interest formula to find compound interest is:

1. Find interest<sub>1</sub> for the first period.
2. Add interest<sub>1</sub> to balance, resulting in new balance<sub>1</sub>.
3. Find interest<sub>2</sub> for the second period with new balance<sub>1</sub>.
4. Add interest<sub>2</sub> to new balance<sub>1</sub>, resulting in new balance<sub>2</sub>.
5. Continue 2-step cycle for the total number of interest periods.

The students must practice recognizing the total number of interest periods presented in a problem. Use board examples prior to asking them to work alone. This problem set should contain problems with compounding periods of monthly, quarterly, semi-annually and annually. Limit total interest periods to about 8 or 10 in this activity. Longer periods are covered with the Compound Interest Equation in Activity 9.

Example.

Jana deposited \$1500 in a new bank savings account on the first of a quarter. The principal earns 5% interest compounded quarterly. She made no other transactions during the period. How much was in her account at the end of 6 months?

*Solution:*

$$\$1500 * .05 * (3/12) = \$18.75 \quad \text{First period interest}$$

$$\$1500 + \$18.75 = \$1518.75 \quad \text{New balance after one period}$$

$$\$1518.75 * .05 (3/12) = \$18.98 \quad \text{Second period interest (rounded)}$$

$$\$1518.75 + \$18.98 = \$1537.73 \quad \text{New balance after two periods (six months)}$$

**Activity 6: Simple Interest Calculator Activity (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14b, 14c, 14d, 14f)**

Materials List: graphing calculators

The understanding of compound interest begins with the understanding of simple interest. The ability of a graphing calculator to do recursive calculations provides a means by which students can easily create charts showing ending balances when simple interest is allowed to accumulate. This method can be used to introduce compound interest by simply changing the time period from year to any smaller period, and by changing the interest rate to the annual rate divided by the number of periods per year. This gives the students a hands-on approach in conceptualizing compound interest.

We deposit \$100.00 into a saving account at a simple interest rate of 5% per year. Calculate the total amount of money you have at the end of each year.

**Method 1**

Make a chart showing the beginning balance each year, the amount of interest earned each year, and the ending balance. Note that the ending balance for year one is the starting balance for year two.

Year	Beginning Balance	Interest Earned	Ending Balance
1	100	5.00	105.00
2	105	5.25	110.25
3	110.25	5.51	115.76
4	115.76	5.79	121.55
5	121.55	6.08	127.63

**Method 2**

1. Enter 100 into the calculator then press **ENTER**
2. Press **+** then enter 0.05 then press **2<sup>nd</sup>** **ANS** then press **ENTER**
3. Press **ENTER**
4. Press **ENTER**
5. Press **ENTER**
6. Press **ENTER**

Note that your answers are the balances that you have each year. Once you get to step 3, the answer you get when you press **ENTER** is the ending balance for that year. The calculator uses recursion or the last answer to calculate the next answer. Allow the student to explore by replacing the 5% rate in step 2 with other interest rates.

### Method 3

1. On the TI83 press **2<sup>nd</sup>** **FINANCIAL**. In the TI83Plus, press **APPS**, then **FINANCIAL**
2. Highlight **TVM** then press **ENTER**
3. Enter 5 for **N=** then press **ENTER**
4. Enter 5 for **%=** then press **ENTER**
5. Enter (-)100.00 for **PV=** then press **ENTER**  
**NOTE: The negative key is just below the 3 and is a negative sign inside parentheses (-)**
6. Enter 0 for **PMT=** then press **ENTER**
7. Press **ENTER**
8. Enter 1 for **P/Y** then press **ENTER** (Note: C/Y will automatically change to 1)
9. Highlight the number after **FV**
10. Press **ALPHA** then **SOLVE**

```
N=5.00
I%=5.00
PV=-100.00
PMT=0.00
FV=0.00
P/Y=1.00
C/Y=1.00
PMT: [ ] BEGIN
```

```
N=5.00
I%=5.00
PV=-100.00
PMT=0.00
FV=127.63
P/Y=1.00
C/Y=1.00
PMT: [ ] BEGIN
```

Allow the student to explore by replacing the 5 in step 4 with other interest rates as in method 2.

### Activity 7: Banking Literacy (GLEs: Economics (Core Course: Free Enterprise): 1, 24, 54, 55; Business: 11h, 11i, 11k)

Materials List: Banking Literacy Teaching Plan BLM, Banking Literacy Tasks BLM, Internet access, paper, pencil

This is a two-part activity.

Part One: Investigate the website of the Federal Reserve Bank of New York which offers a banking investigation lesson for the student:

<http://www.ny.frb.org/education/finlitation.html>.

Refer to the Banking Literacy Teaching Plan BLM for instructions on how to begin this activity. Distribute the Banking Literacy Tasks BLM to each group of 3 to 5 students.

Have the groups work through this computer lesson and Banking Literacy Tasks BLM. Encourage the groups to follow the web links to seek-out answers to questions posed in the online lessons. Students may need help with the voice recorder in Microsoft Windows, please be prepared to provide assistance. This activity should take approximately four days.

Part Two: The students should now be able to answer all of their *SQPL* ([view literacy strategy descriptions](#)) questions asked as part of Activity 1. Reorganize the pairs from Activity 1 and redistribute the question/answer documents to each pair. Ask each pair to think about the answers already given in Activity 3 checking for accuracy and/or completeness. Also ask them to answer the questions they could not answer before. Most, if not all, questions should be answered by this point. Call on pairs to share questions and answers with the class. Several pairs may have similar questions and answers and be able to assist each other with clarification/completion. If any questions remain unanswered at this point, write them on the board. Assign a question(s), depending on the number of unanswered questions, to each pair. Ask each pair to research the answer and be prepared to share it with the class. Discuss the unanswered questions when all pairs have completed their research.

**Activity 8: Compound Interest Using the Calculator (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculator

This activity will use the graphing calculator to show compound interest is a continuation of the process used in Activity 5. When interest is calculated more than once a year we must first determine the interest rate that is to be paid each period. This is done by dividing the annual simple interest rate by the number of times per year that we will be calculating interest. If the simple interest rate is 5% and we are compounding quarterly then we would divide 0.05 by 4, and the rate used would be 0.0125 every three months. (Note: Discuss with students why they need to divide the annual percentage by the number of times compounded each year.) A chart can now be made similar to the one used in Activity 6. The time will no longer be in years, but in increments equal to the time span between calculating the interest. The interest rate will be the one found by dividing the simple interest rate by the number of times compounded per year. The following chart is for a simple interest rate of 5% compounded every 3 months (quarterly) over a three year period.

Months	Beginning Balance	Interest Earned	Ending Balance
3	100	1.25	101.25
6	101.25	1.27	102.52
9	102.52	1.28	103.80
12	103.80	1.29	105.09
15	105.09	1.32	106.41

18	106.41	1.33	107.74
21	107.74	1.35	109.09
24	109.09	1.36	110.45
27	110.45	1.38	111.83
30	111.83	1.40	113.23
33	113.23	1.41	114.64
36	114.64	1.44	116.08

There are only two differences between putting this activity into the calculator and the method used in Activity 5. Instead of putting 0.05, enter 0.05/4 and press enter 12 times instead of 5 times.

This process could be very cumbersome as the number of times the interest is compounded each year or the number of years becomes large. One gauge of understanding mathematics is efficiency when performing certain mathematical tasks. If students look for patterns, they can often find more efficient means of performing mathematical calculations. Have the students look for patterns in the method used to calculate the ending balance for each period.

The following explanation uses the symbols from Activity 9:

$P$  = the principal (current worth)

$A$  = the initial amount on deposit

$r$  = the interest rate (expressed as a decimal: ex: 6% = .06)

$n$  = the number of times per year that interest is compounded

$t$  = the number of years invested

In the first period we took the initial balance and added to it the interest earned for that period to calculate the ending balance.

Initial balance + initial balance times interest rate = ending balance

$A + A(r/n) = P$  (Note: the current worth is the ending value for any given period.)

Using the distributive property and factoring out what is common, rewrite this as:

$$A(1 + r/n) = P$$

The current worth for the first period (3 months) now becomes the initial values for the 2<sup>nd</sup> period and the process is repeated. This means that the initial amount is now  $A(1 + r/n)$ .

Initial balance + initial balance times interest rate = ending balance

$$A(1 + r/n) + A(1 + r/n)(r/n) = P$$

Again using the distributive property we can rewrite this as:

$$A(1 + r/n)(1 + r/n) = P$$

The current worth for the 2<sup>nd</sup> period (6 months) now becomes the initial values for the 3<sup>rd</sup> period and the process is repeated. This means that the initial amount is now  $A(1 + r/n)(1 + r/n)$ .

Initial balance + initial balance times interest rate = ending balance

$$A(1 + r/n)(1 + r/n) + A(1 + r/n)(1 + r/n)(r/n) = P$$

Again using the distributive property we can rewrite this as:

$$A(1+r/n)(1+r/n)(1+r/n) = P$$

At this point a pattern is emerging. The ending balance is found by multiplying the initial beginning balance times the repeating quantity  $(1+r/n)$ . The student should also notice the quantity  $(1+r/n)$  is repeated the same number of times as the number of periods that he/she has compounded the money.

Allow the students to determine how many times they would have to multiply by  $(1+r/n)$  for both a variety of years and a variety of compounding periods.

Remembering efficient mathematics, ask the students for an efficient method of showing this repetitive multiplication in a simplified formula,  $P=A(1+r/n)^{nt}$ .

**Activity 9: Compound Interest Equation (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: scientific calculator, paper, pencil

Use the following reference to introduce students to the compound interest equation. The Compound Interest Equation  $P = A(1+r/n)^{nt}$

where

$P$  = the principal (current worth)

$A$  = the initial amount on deposit

$r$  = the interest rate (expressed as a decimal: ex: 6% = 0.06)

$n$  = the number of times per year that interest is compounded

$t$  = the number of years invested

Have students rework problems presented in Activity 6, this time using the compound interest equation. Additional problems should also be given with longer, up to 30 years, timeframes to illustrate to the student the simplicity and usefulness of this equation. Attention should once again be paid to the number of times per year that interest is compounded. Students should master that skill in this activity.

**Activity 10: Student's Turn (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: scientific calculator, paper, pencil

This activity uses the *story chain* ([view literacy strategy descriptions](#)). *Story chains* are especially useful in teaching math concepts, while at the same time promoting writing and reading. The process involves a small group of students writing a story problem using the math concepts being learned and then solving the problem. Writing out the problem in a story provides students a reflection of their understanding. This is reinforced as students attempt to answer the story problem.

After a new math concept is learned, groups of students should be formed. The group size will vary depending upon the nature of the math concept/computation. The first student initiates the story. The next, adds a second line, the next, a third line, etc., until the last student is expected to solve the problem. All group members should be prepared to revise the story based on the last student's input as to whether it was clear or not. Students can be creative and use information and characters from their everyday interests and media.

Arrange the students into groups of 4 to 5 students. Demonstrate the story chain concept on the board by calling on each group to provide a sentence in the story problem. When the problem is complete, review the problem and highlight the required information contained in the problem. If a group(s) has not provided a sentence to the story, ask them to solve the problem, otherwise have each group provide a solution.

After the demonstration, have each group produce 8 to 10 *story chain* problems; enough to provide each group member the opportunity to solve 2 problems. The problems may be of any type of interest calculation method learned in the unit. Check each group's progress to ensure problem variation.

Example:

Student 1: Susan deposited \$10,000 in her savings account at Trans-Louisiana Bank.

Student 2: The bank pays 2.2% interest, compounded quarterly.

Student 3: How much interest does Susan earn in 1 year if no money is deposited or withdrawn?

Student 4: Provide solution:  $P = 10,000(1 + .022/4)^{(4 * 1)}$

$$P = 10,221.82$$

$$\text{Interest earned} = \$10,221.82 - \$10,000 = \$221.82$$

## Sample Assessments

### General Assessments

- Have students write essays on their understanding of the time value of money. The essays should explain their positions and understanding of beginning disciplined savings and investing plans early in life. Use the Time Value of Money Scoring Rubric BLM to assess the essay.
- The student will make a Mathematical Skills Portfolio containing notes taken during class lecture and completed problems from Activities 1, 9, and 10. Also include the following: Simple Interest BLM from Activity 4 and the Compound Interest Practice BLM from Activity 5.

- A unit test has been provided. Administer the Unit 4 Test BLM and check with Unit 4 Test with Answers BLM to assess student mastery of calculations contained in this unit.

### Activity-Specific Assessments

- Activity 3: After students read the comic, arrange them into groups of three or four and have each group create a poster illustrating what the group thought were the most salient points presented. Each group will:
  1. Choose and research a topic or idea presented on the poster.
  2. Discuss its poster and orally present an extension to a topic or idea presented on the poster.

Use the A Penny Saved Scoring Rubric BLM to score the research and oral presentation.

Hang the posters in the classroom.

Example of research and presentation:

1. The "Rule of 72" is a rule of thumb that can help compute when money will double at a given interest rate. It's called the rule of 72 because at 10%, money will double every 7.2 years.
2. To use this simple rule, divide the annual interest into 72. For example, if 6% is given on an investment and that rate stays constant, money will double in  $72 / 6 = 12$  years. Of course, an interest rate can also be computed if money one wants to double an investment in a given number of years. For example, if money has to double in two years so that a new SUV can be purchased, then  $72 / 2 = 36\%$  is the rate of return needed.
3. Like any rule of thumb, this rule is only good for approximations. Next give a derivation of the exact number for the case of an interest rate of 10%.
4. How long does it take a given principal,  $P$ , to double given either the interest rate  $r$  (in percent per year) or the number of years  $n$ ? Solving this equation:
5.  $P(1 + r/100)n = 2P$
6. Try the case of  $r = 10\%$ :
7.  $P(1 + 10/100)n = 2P$
8. Divide each side by  $P$  to get:
9.  $(1 + r/100)n = 2$
10. Continuing:  
 $(1 + 10/100)n = 2$   
 $1.1n = 2$
11. From calculus the natural logarithm ("ln") has the following property:  
 $\ln(ab) = b(\ln(a))$
12. Use this as follows:  
 $n(\ln(1.1)) = \ln(2)$   
 $n(0.09531) = 0.693147$
13. Finally leaving:  $n = 7.2725527$

14. This means that at 10%, money doubles in about 7.3 years. So the rule of 72 is close.
15. Solve the equation for other values of  $r$  to see how rough an approximation this rule provides. Here's a table that shows the actual number of years required to double money based on different interest rates, along with the number that the rule of 72 gives you.

% Rate	Actual	Rule 72	
1	69.66	72	
2	35.00	36	
3	23.45	24	
4	17.67	18	
5	14.21	14.4	
6	11.90	12	
7	10.24	10.29	
8	9.01	9	
9	8.04	8	
10	7.27	7.2	
..	..	..	
15	4.96	4.8	
20	3.80	3.6	
25	3.11	2.88	
30	2.64	2.4	(10% error)
40	2.06	1.8	
50	1.71	1.44	(19% error)
75	1.24	0.96	
100	1.00	0.72	(38% error)

Above information researched at <http://invest-faq.com/articles/analy-rule-72.html>

- **Activity 6:** Have students complete the Mid-Unit Quiz BLM. This quiz will measure student mastery of calculations learned in this unit to this point. The quiz may be assigned to pairs of students. Score with Mid-Unit Quiz with Answers BLM.
- **Activity 9:** Assess student mastery of compound interest by administering the Compound Interest Assessment BLM. Check with the Compound Interest Assessment with Answers BLM.

## Financial Math

### Unit 5: Cash Purchases and Earning Potential

**Time Frame:** Approximately three weeks



#### Unit Description

The focus of this unit is on cash purchases, receipts, and sale prices. An exploration of the monetary value of an education, lifetime earning potential and educational requirements of a chosen profession is also included. Financial plans are reviewed for validity after reassessing earning potentials.

#### Student Understandings

Students can calculate sales tax, total purchase price of a receipt when multiple items are purchased, as well as unit pricing, and can determine the better buy among similar items. Students know how item prices are reduced through coupons, rebates and sales. Students will explore the monetary value of an education and their lifetime earning potentials for their chosen professions. Students will indicate how educational choices affect earnings potential, in turn, which affects their financial plans.

#### Guiding Questions

1. Can students calculate sales tax for one or more items?
2. Can students calculate total purchase price for a receipt with multiple items?
3. Can students calculate unit price and determine the better buy among similar items?
4. Can students calculate the reduced price of an item when coupons are used? Rebate? Dollar amount of sale?
5. Can students calculate the percentage markdown of an item when original price and markdown price are known?
6. Do students know the earning potentials and educational requirements for their chosen professions?
7. Did students review/alter their financial plans to reflect their earnings potentials?

**Unit 5 Grade-Level Expectations (GLEs)**

<b>GLE#</b>	<b>GLE Text and Benchmarks</b>
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
<b>Algebra</b>	
<b>Grade 9</b>	
15.	Translate among tabular, graphical, and algebraic representations of functions and real-life situations (A-3-H) (P-1-H) (P-2-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Data Analysis, Probability, and Discrete Math</b>	
<b>Grade 10</b>	
22.	Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix, or circle graph (D-7-H)
<b>Patterns, Relations, and Functions</b>	
<b>Grade 10</b>	
27.	Translate among tabular, graphical, and symbolic representations of patterns in real-life situations, with and without technology (P-2-H) (P-3-H) (A-3-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
3.	Identify factors that drive economic decisions (e.g., incentives, benefits, costs, trade-offs, consequences) (E-1A-H1)
12.	Evaluate various careers in terms of availability, educational and skill requirements, salary and benefits, and intrinsic sources of job satisfaction (E-1A-H3)

## Sample Activities

### Activity 1: Sales Receipts (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2, 27; Business: 11a, 14a, 14b, 14c, 14d, 14f, 15e, 19e, 20c)

Materials List: store sales receipts (provided by students, five each), Sales Receipt BLM, 4-function calculator, pencils

This is a two-part activity.

Part One: Copy the two pages of the Sales Receipt BLM as a two-side, one-page worksheet. Have students bring to class at least 5 sales receipts from the last two weeks. Distribute the Sales Receipt BLM and have students transfer the sales information from their receipts onto the templates; this will help them understand organization of sales receipts. Not all of the student receipts will contain all of the information; be prepared to provide missing information so that students are able to complete the Sales Receipt BLM as completely as possible. Have students calculate the sales tax percentage of each sales receipt on the Sales Receipt BLM.

Discuss with the class the sales tax rate findings.

- Are all of the sales tax rates the same?
- Were all of the purchases made in the same city? Same parish?
- What is the sales tax rate for your city? Your parish?
- Were some of the items purchased exempt from sales tax?
- Were some of the items charged a higher than standard sales tax?

Part Two: Have students research the history of sales tax to answer questions such as:

- Why do we have sales taxes?
- What is the money from sales taxes used for?
- What does the Louisiana Tax Code say about sales taxes administered by local governments?
- What items are exempt from sales tax and why?
- What is an excise tax and why is it charged?
- Why is gasoline taxed so heavily and where do the funds go?

After research has been conducted, solicit answers to the questions above from students. Discuss any differences in answers found by different students. Complete the activity with *RAFT writing* ([view literacy strategy descriptions](#)) assignment. Ask students to write letters to their congressmen from the point-of-view of concerned citizens. A suggested topic of the letter is “Why does the ordinary citizen pay so much in taxes?” Alternatively, the teacher could choose another tax topic to be the subject of the letter. The letters should be no shorter than 1 ½ pages written on a word processor, and should include factual information gathered during student research.

**Activity 2: Calculating Total Purchase Price (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

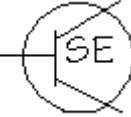
Materials List: Sales Receipt BLM, 4-function calculators, pencils

Students will use the Sales Receipt BLM for this activity also. Produce a quantity such that each student has enough blank receipts on which to transfer problem data. Provide students with sales receipt problems, in paragraph form, and have them calculate total purchase price on the Sales Receipt BLM. The students must transfer the information to the sales receipt and calculate total purchase price. Single and multiple quantities should be given. Have students complete both the Unit Price and Amount columns for all items, even if they are single quantity items. Subtotal, Sales Tax, and Total fields must also be calculated. Five to ten of these receipt problems should be used.

Example.

George Rodriguez needed some school supplies for his daughters to use at school. Her list included two items that were difficult to find. On 8/21/2008, he stopped by State Electronics in hopes they would have the items. He was in luck; they had both. George purchased two Louisiana Instruments Financial Calculators for \$38.52 each, and three Teen’s Finance Quick Reference Cards, since he wanted one for himself, for \$3.19 each. His local sales tax rate is 9%. Complete the sales receipt and calculate the subtotal, sales tax and total for George’s purchase.

*Solution.*

 State Electronics 14 State Road Anytown, Louisiana 77777 318-555-1234		Sold To:	
		George Rodriguez	
		Date: 9/18/2005	
Sold by: <i>br</i>	Cash <i>XXX</i>	Charge	Delivery <i>no</i>
Quantity	Description	Unit Price	Amount
2	Louisiana Instruments Financial Calculator	38.52	\$77.04
3	Teen’s Finance Quick Reference Cards	3.19	\$9.57
<h1>Thank You</h1> For shopping with us.		Subtotal	\$86.61
		Sales Tax – 9%	\$7.79
		Total	\$94.40

**Activity 3: Total Purchase Price: Spreadsheet Application (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14b, 14d, 15e)**

Materials List: Spreadsheet Task BLM, computers with spreadsheet software

Divide the class into pairs of students and distribute the Spreadsheet Task BLM. Have students, in pairs, create a sales receipt on a spreadsheet program such as *Microsoft Excel*<sup>®</sup>. The spreadsheet should automatically calculate the Amount column when quantity and unit price are entered. The spreadsheet should also automatically calculate the Subtotal, Sales Tax and Total fields as items are added. An example spreadsheet follows.

State Electronics 14 State Road Anytown, Louisiana 77777 318-555-1234						<b>Invoice No.</b>		
<b>INVOICE</b>								
<b>Customer</b>								
Name	George Rodriguez						Date	
Address							Order No.	
City		State		ZIP		Rep		
Phone							FOB	
<b>Qty</b>	<b>Description</b>						<b>Unit Price</b>	<b>TOTAL</b>
1	1hp nano motor						\$14.25	\$14.25
3	widget couplers						\$24.36	\$73.08
							SubTotal	\$ 87.33
							Shipping	
<b>Thank You Please come again</b>						SalesTax	8.25%	\$ 7.20
						<b>TOTAL</b>		\$94.53

Students should explore adding and editing formulas in a spreadsheet. The above spreadsheet is a pre-existing template in *Microsoft Excel*<sup>®</sup>. Consult this template for the spreadsheet formulas used by first going to the Tools menu and choosing Protection, and Removing Protection from this document. Then left-click on a cell that calculates automatically and the formula used to generate the numbers in the cell will be displayed in the Formula section of the toolbar.

The student pairs should create a sales receipt from scratch. The pair’s spreadsheet will not be as polished as this template, but the formulas should be learned and entered correctly to generate a correctly calculated sales receipt.

**Activity 4: Unit Price Comparison (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 11k, 14a, 14b, 14c, 14d, 14f)**

Materials List: Unit Price Comparison BLM, 4-function calculators, pencil

This is a two-part activity.

Part One: Discuss unit pricing using examples such as those that follow:

- ❑ One soft drink in a 12-pack
- ❑ One ounce of Louisiana Hot Sauce in a 12oz bottle
- ❑ One pound of dog food in a 50 pound bag
- ❑ One pound of turkey for a 12 lb turkey

Discuss how to pick out the better buy by comparing unit prices of similar items. Ask students to provide examples of comparative shopping that they have done. Discuss the benefits and drawbacks of comparative shopping.

Have students calculate unit price and best buy for several examples of common grocery store items. Allow students to discover that it is often necessary to round unit price answers with more precision than the hundredths digit to accurately determine best buy.

Part Two: Send students to the grocery store with the Unit Price Comparison BLM. The task is to locate multiple brands and sizes for each item. For each item record: the brand, size, and total price. In class, have the students calculate the unit price for each item and determine the best buy based on unit price. A sample follows.

Item	Brand	Size	Price	Unit Price	Check for best buy
Toothpaste	Super Cleaning Power	8.6oz	\$1.48	\$0.1721	√
	Extra Whitening	11.3oz	\$1.99	\$0.1761	
Dog Food	Munchy Munch	50 lbs	\$15.98	\$0.3196	
	Crunchy Crunch	72 lbs	\$22.48	\$0.3122	√

**Activity 5: Making Change (GLEs: Grade 9: 5, 19; Business: 14a, 14b, 14c, 14d)**

Materials List: Counting Change BLM, pencil

Distribute the Counting Change BLM and discuss counting change with the students. Calculators should not be permitted for this activity. Students should learn to count change mentally following the examples from the Counting Change BLM.

**Activity 6: Comparing With A Calculator (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2, 22; Business: 11k, 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculator

Sample Problem. Jan was shopping with her mother and was in a hurry to get home. She was having a hard time understanding why her mother took so much time grocery shopping. She told her mom, “All you have to do is go down the aisles and put what you need in the basket.”

Jan’s mother told her that she could help pick up the items on the shopping list and get finished faster. Jan’s task was to go buy pancake syrup and get the best buy possible since they live on a tight budget. When Jan got to the syrup section there were five different choices. Which one of the following would be the best buy if all the syrups were of equal quality?

1. \$15.94 for 34.25 oz
2. \$12.67 for 24.86 oz
3. \$6.35 for 16.70 oz
4. \$16.10 for 35.00 oz
5. \$5.20 for 12.50 oz

1. Press **STAT** and highlight **1** and press **ENTER**
2. Enter the costs in list **1**
3. Enter the ounces in list **2**
4. Highlight **L3**, the press **2<sup>nd</sup> L1** press **÷** press **2<sup>nd</sup> L2** then press **ENTER**

L1	L2	3
15.940	34.250	-----
12.670	24.860	
6.3500	16.700	
16.100	35.000	
5.2000	12.500	
-----	-----	
L3 = L1 / L2		

L1	L2	L3	3
15.940	34.250	.4654	
12.670	24.860	.5097	
6.3500	16.700	.3802	
16.100	35.000	.4600	
5.2000	12.500	.4160	
-----	-----	-----	
L3(1) = .4654014598...			

5. Press **2<sup>nd</sup> LIST**
6. Highlight **OPS** highlight **1** press **ENTER**
7. Press **2<sup>nd</sup> L3** press **,** press **2<sup>nd</sup> L1** press **,** press **2<sup>nd</sup> L2** press **)** press **ENTER**
8. Press **STAT** highlight **1** press **ENTER**

```
SortA(L3,L1,L2)
Done
```

L1	L2	L3	3
6.3500	16.700	.4160	
5.2000	12.500	.4160	
16.100	35.000	.4600	
15.940	34.250	.4654	
12.670	24.860	.5097	
-----	-----	-----	
L3(1)= .3802395209...			

NOTE: The columns are sorted according to the column named first which is L3. The values are moved as an ordered triplet. Take time to compare the before and the after sorting tables. Discuss with the students the units for each column. It is now obvious that the 16.7 oz container of syrup which costs \$6.35 is the best buy.

**Activity 7: Coupons and Rebates (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 11k, 14a, 14b, 14c, 14d, 14f)**

Materials List: coupons and rebate offers clipped from newspaper (student provided), 4-function calculators, pencil

Have students clip coupons and rebate offers out of a newspaper and bring to class. Students should know that coupons reduce the price of an item at the time of purchase and that rebates reduce the price of the item, but often delay that reduction by some extended time. Coupons are generally offered by the retail establishment, and rebates are typically offered by the product manufacturer. Explain that rebates often must be mailed to the product manufacturer to receive the refund, so the cost of the envelope and postage should be deducted from the rebate amount. Have students work problems that contain coupons and rebates. This is a good time to reinforce calculating total purchase price for a sales receipt. Give students sales receipt problems with coupons and rebates included.

**Activity 8: Sale Prices (GLEs: Economics (Core Course: Free Enterprise): 1, 3; Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have the students complete a *SPAWN* ([view literacy strategy descriptions](#)) writing assignment. *SPAWN* is an acronym that stands for five categories of writing options (*Special Powers*, *Problem Solving*, *Alternative Viewpoints*, *What If?*, and *Next*). Begin by targeting the kind of thinking students should be exhibiting. If they are to anticipate the content to be presented or reflect on what has just been learned, then certain prompts work best.

Next, select a category of *SPAWN* that best accommodates the kind of thinking about the content that students are to exhibit. For example, if the teacher wants students to regard recently learned material in unique and critical ways, the *Alternative Viewpoints* category prompts writing of this nature. If, on the other hand, the teacher desires students think in

advance about an issue and brainstorm their own resolutions, the Next and Problem Solving prompts may work best.

Present the *SPAWN* prompt to students. This can be done by simply writing it on the board or projecting it from the overhead or computer. If an anticipatory prompt, students will need to see it and begin writing before the new material is presented. If a reflective prompt, it should be revealed after new content has been covered.

Allow students to write their responses within a reasonable period of time. In most cases prompts should be constructed in such a way that adequate responses can be made within 10 minutes. Students should be asked to copy the prompt in their notebooks before writing responses and to record the date.

Since this is not formal writing, *SPAWN* writing should not be graded as such. Instead of a thorough assessment of students' *SPAWN* writing, most teachers who use this strategy give simple grades such as points for completing responses. *SPAWN* writing should be viewed as a tool students can use to reflect on and to increase their developing disciplinary knowledge and critical thinking.

For this assignment the student will write from an A or, Alternative Viewpoint perspective, that of the store manager. This is an individual writing task. Ask the students to choose a store that they often visit, such as a clothing store or department store. Have the student write a narrative, in his/her learning log, of what sales displays he/she may see walking through the store. Have the students, from the point-of-view of the store manager, explain the store displays that indicate a sale price is being offered, i.e., rack of clothes with 20% off sign on top of the rack. Have them tell how it is used to attract customers. Explore how these sale prices are displayed, and how the sale "slogans" are worded to draw shopper's attention to the sale items.

When all students are finished, ask students to share all, or a portion, of their ideas with the class. Discuss the placement and use of sale signage in store displays and how that attracts shoppers. Ask other students to provide sale "slogans" they have seen on recent trips to a store. Answers may include:

- 1/3 off
- 1/2 of 1/2 off
- 40% off
- half-price sale
- \$15 off suggested price

Use these responses as examples to work problems explaining the many forms that sale prices can take in stores. A full review of fractions and percentages should be done at this point. Students should know how to quickly, mentally calculate the estimated sale price of an item.

Have students calculate the sale price of items given many forms of sale price presentation. Use student responses to form the sale price presentation of the problems. Students should also be presented with and asked to calculate the percentage of

markdown when the original price and the sale price are known. This activity should be done both with and without calculators. Stress the student's ability to determine the estimated sale price of an item mentally.

**Activity 9: Career Update (GLEs: Economics (Core Course: Free Enterprise): 1, 12; Business: 11e, 19f)**

Materials List: Career Update BLM, Career Exploration BLM (Unit 1, Activity 15), Internet capable computers, pencil

In this task the students will research to update or confirm their previous findings concerning their chosen careers. Have students remove the Career Exploration BLM from their financial plan binders to use as comparison in this activity. Blank Career Exploration BLMs should be provided for students to record new information. Ensure that students research the same career they chose in Unit 1, Activity 15.

Begin the activity by asking students to look over the Career Exploration BLM and think of questions concerning their careers and the paths that remain unanswered. Then lead a *brainstorming* ([view literacy strategy descriptions](#)) discussion with the class. Question students to discover what questions they still have concerning their careers and the pathways to reach them. Write the questions on the board; allow 10 to 15 questions. These questions may be far reaching in scope and may cover topics such as: entrance to college or trade school, clarification on required certifications for chosen career, and regional or local earnings data. Next, review the questions written on the board, combine similar questions, and rephrase questions, if necessary. Have the students write the remaining questions on the back of the blank Career Exploration BLM. Distribute the Career Update BLM.

The questions generated in the *brainstorming* activity will drive student research for this activity. The idea is that each student do research to discover the answers to the questions written on the back of the blank Career Exploration BLM. Each student should endeavor to find the answers to those questions in the context of the chosen career and situation in life, i.e., college scholarships or planned relocation. If, in the course of the research, the student finds information different from the information on the Career Exploration BLM completed in Unit 1, then he/she should write that information on the front of the blank Career Exploration BLM.

For the activities related to college and career search, use the LA ePortal (<https://www.laeportal.com/main.aspx>). The Board of Regents and LDE have developed this website. It is designed for Louisiana schools and features Louisiana colleges and businesses.

Up-to-date information is also available on many careers on the Internet. Sites such as the ones listed below offer an invaluable resource to the student developing a career and education plan.

<http://www.careereducationadvisor.com/>

<http://www.mapping-your-future.org/MHSS/> (Students should complete the “Ten Steps to Planning for Your Future” contained on this website.)

The above websites should be visited and explored by all students first; however, student research could range from university websites to discover admissions and financial aid requirements to military websites to seek the nearest recruiter. Direct student research to ensure efficiency of computer time, but be prepared to offer alternate computer time to allow students ample opportunity to finalize their career plans. Alternate computer time can be home usage, scheduling before or after school access, or reserving a computer lab for the class. It is conceivable that not all questions will be answered on the Internet, especially those that apply to the local economy or job market. Allow students to conduct informal interviews with persons working locally in their chosen careers to complete student knowledge. Require name and phone number or email address of all persons interviewed.

Student knowledge of a chosen career and its education requirements, professional certifications, etc., should be in final form after this activity.

**Activity 10: Financial Plan Review (GLEs: Economics (Core Course: Free Enterprise): 1, 12; Business: 11k)**

Materials List: Financial Plan (Unit 3, Activity 7), updated Career Expectations BLM (Unit 5, Activity 9)

Have students review the financial plans they created in Unit 3, Activity 7. Students should add or rewrite goals to accommodate their knowledge of the educational requirements for their chosen careers. Have students create detailed timelines for meeting their educational requirements and include these in their financial plans. Students should also revise their longer-term goals to account for the income differences they discovered while researching their chosen careers.

**Activity 11: Graphing Sales and Rebates (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 11k, 14a, 14b, 14c, 14d, 14f)**

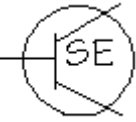
Materials List: Sales Receipt BLM (from Activity one), Bar Graph BLM, 4-function calculator, pencil, paper, computer with spreadsheet program (optional)

This is a two-part activity.

Part One: Have the student use the Sales Receipt BLM from Activity 1, Part 1 as the data to construct pie charts. Data for the pie charts will be 1) amount of each item, 2) sales tax, and 3) total amount. Use the example provided below to discuss with students the process of turning item costs and sales tax into percentages of the total sale, and then to degrees

on a pie chart. Have students construct pie charts for the five sales receipts on the Sales Receipt BLM.

Example:

 State Electronics 14 State Road Anytown, Louisiana 77777 318-555-1234		Sold To:  George Rodriguez  Date: 9/18/2005	
Sold by: <i>br</i>	Cash <i>XXX</i>	Charge	Delivery <i>no</i>
Quantity	Description	Unit Price	Amount
2	Louisiana Instruments Financial Calculator	38.52	\$77.04
3	Teen's Finance Quick Reference Cards	3.19	\$9.57
<h2>Thank You</h2> For shopping with us.		Subtotal	\$86.61
		Sales Tax – 9%	\$7.79
		<b>Total</b>	<b>\$94.40</b>

*Solution:* Louisiana Instruments Financial Calculator:

$$77.04 \div 94.40 = 81.6\% \text{ of total}$$

$$360^\circ * .816 = 294^\circ \text{ of the circle}$$

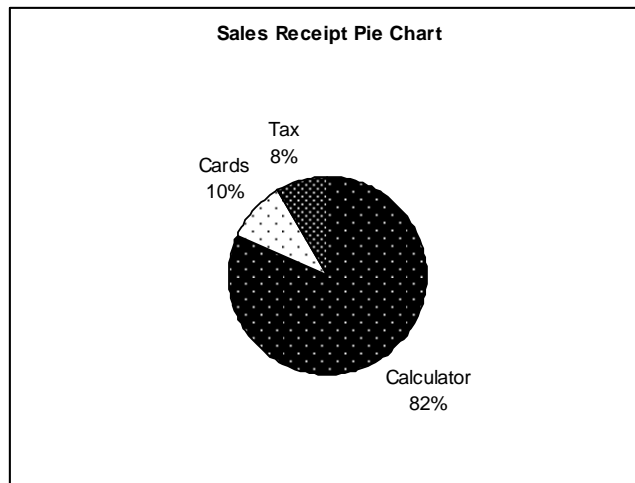
Teen's Finance Quick Reference Cards:

$$9.57 \div 94.40 = 10.1\% \text{ of total}$$

$$360^\circ * .101 = 36^\circ \text{ of the circle}$$

Sales Tax:  $7.79 \div 94.40 = 8.3\% \text{ of total}$

$$60^\circ * .083 = 30^\circ \text{ of the circle}$$



Note: This pie chart was generated on *Microsoft Excel*<sup>®</sup>. Students should produce their pie charts on paper by hand using graphing techniques. An extension of this activity

would be to then require the students to produce the same pie charts using a spreadsheet program and the same data.

Part Two: Briefly review with students the proper way to construct bar graphs and double bar graphs. Pay particular attention to scale and axes labeling. Have students complete the Bar Graph BLM. After completion, discuss with students the visual representations presented on the charts.

**Activity 12: Lifetime Earnings (GLEs: Economics (Core Course: Free Enterprise): 1, 12; Business: 11e)**

Materials List: Internet capable computer, The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings (Census Bureau pdf file), Earnings vs. Education BLM, pencil

Download the Census Bureau report *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings* (2002) at <http://www.census.gov/prod/2002pubs/p23-210.pdf>. Reproduce a copy for each student. Students will need only the first eight pages of the document.

Copy the four pages of the Earnings vs. Education BLM as two 2-sided pages.

This activity uses the *reciprocal teaching* ([view literacy strategy descriptions](#)) strategy. *Reciprocal teaching* highlights four comprehension processes: summarizing, questioning, clarifying, and predicting. Because emphasis is on understanding these processes, students will need many exposures to all comprehension processes.

1. Begin by asking a question such as, “How much can I earn in a working lifetime?” to stimulate student interest in the topic. Ask for student input, and guide the discussion to the content of the “The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings” report. Distribute the “The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings” report. Read aloud the introductory section, up to “Education and Earnings”, and write a summary statement on the board, seeking input from the class.
2. Distribute the Earnings vs. Education BLM. Have students record responses on the Earnings vs. Education BLM. Write the title of the next section, Education and Earnings, on the board. Ask students to make predictions about the content of this section of material. Write those predictions on the board and seek student input about what he/she should know about a credit report.
3. Ask students to read the Education and Earnings section of material and pause. Explain to the class that the teacher is now the questioner and will ask questions covering what was read, such as, “In 2000, what percentage of Americans had a high school diploma?” Ask as many questions as required to cover the material. Pay particular attention to the graphs; ask questions specific to reading the graphs.

4. Now model the clarification process. Discuss topics contained in this section of material that the students may need clarified.
5. Now with the help of the students, produce a summary of the Education and Earnings section and write it on the board.
6. After modeling the comprehension processes of reciprocal teaching, divide students into groups of four with each one taking responsibility for one of the comprehension processes as in summarizer, questioner, clarifier, and predictor. Assign the next section, Synthetic Earnings, and tell students to interact while reading, with each student taking the lead to model and guide the others in the comprehension process over which he/she is responsible. Students should use the Earnings vs. Education BLM to record their answers.
7. Monitor student groups by moving throughout the room. Provide extra support and modeling for groups having difficulty with the reciprocal processes.
8. Have the students pause after the Synthetic Earnings section and poll each group for responses to each of the comprehension processes.
9. Complete the remaining two sections, Sex, Education and Earnings, and Race and Hispanic Origin, Education and Earnings in the same fashion, pausing for a discussion between sections.
10. Students may be sensitive to some of the data presented in the report. Make every effort to be non-judgmental, presenting only the facts of the report.
11. Conclude the activity by returning to the initial question, “How much can I earn in a working lifetime?” Answer this question by summarizing the report with input from students.

### **Sample Assessments**

#### **General Assessments**

- Evaluate student’s listening and reading skills with the LRR Rubric BLM.
- The student will add to his/her Mathematical Skills Portfolio: notes taken during class lecture and the Sales Receipt BLM from Activities 1 and 2, the Unit Price Comparison BLM from Activity 4, the Counting Change BLM from Activity 5, and the Bar Graph BLM from Activity 11.
- Evaluate the student’s critical thinking and writing skills with the Test BLM.

#### **Activity-Specific Assessments**

- Activity 1: Score the research and report in part 2 with the Sales Tax Research Rubric BLM.

- Activity 3: Score the students on the spreadsheet receipt they produced using the Receipt Spreadsheet Rubric BLM.
- Activity 5: Observe student participation and calculator output to score this activity. Use the Graphing Calculator Rubric BLM.
- Activity 11: Measure student mastery of graphing presented in this activity by administering the Graphing Quiz BLM.

## Financial Math Unit 6: Credit

**Time Frame:** Approximately five weeks



### Unit Description

In this unit, students focus on credit in two forms, credit cards and installment loans. Students will learn how credit card interest is calculated, and how this affects the final price of a purchase. Several methods of calculating interest are discussed. Borrowing money in the form of an installment loan is discussed with calculations for finance charge and total repaid emphasized. Loans will be compared according to duration and APR. Then students will learn how to determine the best choice for a given situation. The credit qualification process and how to bolster chances of qualifying for credit in the context of meeting financial goals will be examined. Also, the legal rights of borrowers and action steps to alleviate excessive debt will be explored.

### Student Understandings

Students will understand how to calculate credit card interest using the three methods discussed below. Students will understand how to read and complete a credit card application. They will identify the key components of the pending account that will affect the future price of purchases, as well as, the expenses associated with owning a credit card. Students will understand how to calculate down payment, monthly payment, and total amount repaid. Students will understand how to calculate the maturity value of a single-payment loan using ordinary and exact interest. Students will understand that different loan terms and/or down payments lead to different monthly payments and to the total cost of an item purchased on credit. Students should understand how to shop for loans, and how to choose the one that best meets their needs. Students will understand the importance of maintaining a clean credit history, and how it affects their financial success. Students will also understand the legal rights of the borrower, the importance of not over-extending debt, and how to get out of debt.

### Guiding Questions

1. Can students define credit card terminology used in this unit?
2. Can students identify the key components of a credit card account statement?
3. Can students calculate credit card interest based on the Previous-Balance Method? Unpaid-Balance Method? Average Daily Balance Method?
4. Do students understand the credit qualification process?
5. Can students complete a credit card application?
6. Can students communicate the importance of using credit wisely?

7. Can students calculate maturity value of a single-payment loan using ordinary interest? Exact interest?
8. Can students calculate the down payment of a loan?
9. Can students calculate simple interest and monthly payment using tables?
10. Can students calculate total amount repaid and compare different loans?
11. Do students understand how to shop for a loan that meets their needs?
12. Do students understand the legal rights of borrowers?

### Unit 6 Grade-Level Expectations (GLEs)

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
<b>Algebra</b>	
<b>Grade 9</b>	
15.	Translate among tabular, graphical, and algebraic representations of functions and real-life situations (A-3-H) (P-1-H) (P-2-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
4.	Analyze an economic choice at the personal, family, or societal level to determine its opportunity cost (E-1A-H1)

## Sample Activities

### **Activity 1: Credit Terminology (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a, 11f, 11k, 19f)**

Materials List: Vocabulary Chart BLM, Credit Knowledge BLM, Internet capable computers, 4-function calculators, pencils, pens

This is a two part activity.

Part One: Begin the unit, and the activity, with a *vocabulary self-awareness* ([view literacy strategy descriptions](#)) chart. Because students bring a range of word understandings to the task of reading content texts, it is important to assess students' word knowledge before reading or doing other tasks involving text. This awareness is valuable for students because it highlights their understanding of what they know, as well as what they still need to learn in order to fully comprehend the reading.

Words are introduced at the beginning of the reading or the unit, and students complete a self-assessment of their knowledge of the words. Identify target vocabulary for the lesson and provide students with a list of terms in a chart. Students may add terms to the list as they read. Each vocabulary word is rated according to the student's understanding, including an example and a definition, on a scale from being very comfortable with the word to unsure, or to seeing it for the first time. Over the course of the reading or unit, students add new information to the chart. The goal is to bring all students to a comfortable level with the unit's content vocabulary. Because students continually revisit their vocabulary charts to revise their entries, they have multiple opportunities to practice and extend their growing understanding of important content terms.

Distribute the Vocabulary Chart BLM and have students rate their understanding of each word. Ask students to keep this chart handy throughout the unit and to add information as new terms are learned. Initially, students should complete the Vocabulary Chart BLM in pencil, as new information is added. They should write it in pen. Be prepared to revisit the Vocabulary Chart BLM daily during the unit. When the unit is complete, the difference in what is written in pencil and what is written in pen may be striking for many students. If students still have questions about specific meanings of any of the credit terms listed on the Vocabulary Chart BLM or any term they may have added, the Internet can assist students in discovering the meaning of those credit terms. Websites like this may be helpful:

<http://home3.americanexpress.com/corp/consumerinfo/glossary.asp>.

Part Two: Distribute the Credit Knowledge BLM. Have students individually follow the directions to get to <http://www.practicalmoneyskills.com/english/index.php>.

Be prepared to record student quiz grades on their Credit Knowledge BLM for each quiz. Each quiz has 10 questions. Once complete the computer will provide a score for the quiz, but not retain the score.

**Activity 2: Credit Card Statements (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a, 11f)**

Materials List: Credit Card Statement BLM, computers with Internet access, pencils

Distribute the Credit Card Statement BLM to students. Have them complete the sheet individually at an Internet capable computer. The students are directed to this website: [http://www.practicalmoneyskills.com/english/resources/tutor/statements/credit\\_state.php](http://www.practicalmoneyskills.com/english/resources/tutor/statements/credit_state.php)

After all students have completed the BLM, discuss the terms presented in bold print. Discuss with students:

- **Statement Date.** Date statement was printed; statement may not contain recent charges.
- **Payment Due Date.** Date that payment must be posted by, not the day it should be placed in the mail.
- **Credit Line.** Maximum outstanding balance you may accrue.
- **Credit Available.** Credit line minus new balance.
- **New Balance.** Total of previous balance, plus new purchases and finance charge.
- **Minimum Payment Due.** The minimum amount you must send by the payment date to keep the account current.
- **Posted.** The day the charge or payment was posted to the account. This will seldom be the sold date for charge transactions.
- **Periodic Rate.** The monthly interest rate charged on outstanding balances.
- **Annual Percentage Rate.** The annual rate charged on outstanding balances.

Students should become familiar with the basic terminology used on credit card statements, and its impact on their credit future.

**Activity 3: Calculate Credit Card Interest (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, pencils

Discuss three different methods used to calculate credit card finance charges: (1) previous balance method, (2) unpaid balance method, and (3) average daily balance method. Use the information from the Credit Card Statement BLM discussed in Activity 2. The three methods are exemplified below.

Previous Balance Method

$$\begin{array}{rcl} \textit{Previous balance} & * & \textit{Periodic rate} = \textit{Finance charge} \\ \$169.38 & * & .02 = \$3.39 \textit{ finance charge} \end{array}$$

Unpaid Balance Method

$$\begin{array}{rcl} \textit{Previous balance} & - & (\textit{payments} + \textit{credits}) = \textit{Unpaid balance} \\ \$169.38 & - & \$50.00 = \$119.38 \textit{ unpaid balance} \end{array}$$

$$\begin{array}{rcl} \textit{Unpaid balance} & * & \textit{periodic rate} = \textit{Finance charge} \\ \$119.38 & * & .02 = \$2.39 \textit{ finance charge} \end{array}$$

Average Daily Balance Method

This method is long and tedious and attention to detail is important. It is nothing more than finding an average. Review finding averages before students work this part of the activity.

$$\textit{Sum of daily balances} / \textit{number of days} = \textit{average daily balance}$$

<i>Dates</i>	<i>Transaction</i>	<i>Balance</i>	<i>Number of Days</i>	<i>Sum of Days</i>
3/14-3/19	None	\$169.38	6	\$1,016.28
3/20-3/27	+14.83	\$184.21	8	\$1,473.68
3/28-4/10	+52.91	\$237.12	14	\$3,319.68
4/11-4/14	-50.00	\$187.12	4	\$748.48
<b>Totals:</b>			32	\$6,558.12

$$\$6,558.12 / 32 = \$204.94 \quad \textit{Average daily balance}$$

$$\begin{array}{rcl} \textit{Average daily balance} & * & \textit{Periodic rate} = \textit{Finance charge} \\ \$204.94 & * & .02 = \$4.10 \textit{ finance charge} \end{array}$$

It is important that the student be able to calculate finance charges accurately. Give students several problems and ask them to calculate the interest each of the three ways. Allow them to discover the differences in the finance charges for each way. Discuss with the student that most credit card companies use the average daily balance method to calculate interest, and that some credit card companies are using a 2-cycle Average Daily Balance to calculate interest.

**Activity 4: Getting Credit Started (GLEs: Economics (Core Course: Free Enterprise): 1, 4; Business: 5b, 11f, 19f)**

Materials List: Internet capable computers, pencil, highlighters

This activity will utilize a modified *GISTing* ([view literacy strategy descriptions](#)) strategy. The ability to summarize is perhaps the most important subskill involved in comprehension. But it's a difficult skill to teach. Unskilled students are prone to say too little or too much in their summaries. *GISTing* is an excellent strategy for helping students paraphrase and summarize essential information. Students are required to limit the gist of a paragraph to a set number of words. Individual sentences from a paragraph are presented one at a time while students create a gist that must contain only the predetermined number of words. Limiting the total number of words, forces students to think about only the most important information in a paragraph, which is the essence of comprehension.

The first step in teaching *GISTing* is to select appropriate material on which to write gists. It's best to start with relatively short paragraphs of no more than three to five sentences that are easily understood. Second, establish a limited number of spaces to represent the total number of words of the gist, say 15 or so. Third, have students read the first sentence of the paragraph and, using only the spaces allowed, have them write a statement in those spaces capturing the essential information of the sentence. This is the beginning of their gist. Fourth, have students read the second sentence of the paragraph and, using the information from the first and second sentences of the paragraph, have them rewrite their gist statements by combining information from the first sentence with information from the second. Again, the students' revised gist statements should be no more than the allotted number of spaces. This process continues with the remaining sentences of the paragraph. As students read each succeeding sentence, they should rework their gist statement by accommodating any new information from the sentence into the existing gist statements, while not using any more than the allotted number of spaces. Finally, students should share their gists for comment and critique.

Since it may not be possible for all students to view the Internet article at the same time, a modified *GISTing* technique will be used. Begin by reminding students of the fundamental characteristics of a summary or gist by placing these on the board or overhead:

- Shorter than the original text
- A paraphrase of the author's words and descriptions
- Focus on the main points or events

Have students visit [http://www.credit.com/life\\_stages/starting\\_out/](http://www.credit.com/life_stages/starting_out/) and read the *How Credit Works* tip. After each student has read the story, discuss the main points of the article with the entire class. After the discussion, ask each student to summarize what he/she has read using no more than 130 words. When all students have completed their

gists, ask 3 to 4 students to read their gists aloud. Discuss the merits and detractions of each gist after it is read. Next, ask each student to highlight 4 or 5 main points of his/her gist. Poll the class for highlighted points and write them on the board. Discuss differences and similarities of what students chose as important. Lastly, have the students rewrite their gists, this time with a word limit of 45.

Repeat the above activity with the *Starting From Scratch* tip and the *Credit Impact* tip. For the second and third exposure to *GISTing*, restrict the number of words allowed in the gist. Suggested word count on the second gist is 100 initial and 40 final, and for the third gist, 85 initial and 35 final.

**Activity 5: Credit Card Application (GLEs: Economics (Core Course: Free Enterprise): 1, 4; Business: 11f)**

Materials List: consumer credit card applications with account agreement attached (students bring two each), Credit Card Application BLM, pencil

First, have the students fill out each of the credit card applications, minus their social security numbers. Ask the students to relate to the class their observations and concerns about the required information on a credit card application.

Second, distribute the Credit Card Application BLM. Ask students to read through the credit card agreement that should be attached to the application and record the information on the Credit Card Application BLM for each application.

Discuss the nature of the information requested by credit card providers, and the similarities and differences of key points of the account agreement.

**Activity 6: Debit Reduction Graphing Calculator Style (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 11k, 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculators

Present students with the following scenario.

You receive your credit card statement on January 1, 2009 and it shows a balance due of \$1,000 and an interest rate of 3% per month on the unpaid balance. You decide to stop using your credit card and make the minimum payment of \$50 per month in an effort to reduce your debts.

- (a) What will your credit card statement show as a balance due on January 1, 2010?
- (b) How much interest did you pay during the year?

**Method 1**

1. Clear the home screen
2. Enter 1000 press **ENTER**
3. Press **[-]** enter 50 press **+** press **(** press **2<sup>nd</sup>** **ANS** press **[-]** enter 50 press **)** enter .03 press **ENTER**

1000  
1000.00  
Ans-50+(Ans-50).  
03  
978.50

NOTE: This will be the balance on February 1, 2009.

4. Press **ENTER** 11 more times

860.93  
835.26  
808.81  
781.50  
753.53  
724.63  
694.87

NOTE: This will be the balance due on January 1, 2010.

5. Clear the home screen
6. Enter 1000 press **[-]** press **2<sup>nd</sup>** **ANS** press **ENTER**
7. Enter 12 press **\*** enter 50 press **[-]** press **2<sup>nd</sup>** **ANS** press **ENTER**

753.53  
724.63  
694.87  
1000-Ans  
305.13  
12\*50-Ans  
294.87

NOTE: \$294.87 is the interest paid for 2009.

**Method 2**

1. Press **APPS** highlight 1 press **ENTER** (TI-83Plus)  
Press **2<sup>nd</sup>** **Finance** highlight 1 press **ENTER** (TI-83)
2. Highlight 1 press **ENTER**
3. Enter 12 (N=) press **ENTER**

4. Enter 3 (I%=) press **ENTER**
5. Enter 1000 (PV=) press **ENTER**
6. Enter -50 (PMT=) press **ENTER**
7. Enter 0 (FV=) press **ENTER**
8. Enter 1 (C/Y=) press **ENTER**
9. Highlight **BEGIN** press **ENTER**

```

N=12.00
I%=3.00
PV=1000.00
PMT=-50.00
FV=0.00
P/Y=1.00
C/Y=1.00
PMT:END
    
```

10. Move cursor to **FV=0** press **ALPHA** **SOLVE**

```

N=12.00
I%=3.00
PV=1000.00
PMT=-50.00
FV=-694.87
P/Y=1.00
C/Y=1.00
PMT:END
    
```

NOTE: The negative sign in front of the \$694.87 indicates that this amount will still be owed after the 12 payments. Negative means money coming out of the pocket.

11. Clear the home screen
12. Press **APPS** highlight **1** press **ENTER** (TI-83 Plus)  
Press **2<sup>nd</sup>** **Finance** highlight **1** press **ENTER** (TI-83)
13. Highlight **9** press **ENTER**
14. Enter 12 press **↵** press **ENTER**
15. Repeat step 12
16. Highlight **0** press **ENTER**
17. Enter 1 press **↵** enter 12 press **↵** press **ENTER**
18. Repeat step 12
19. Highlight **A** press **ENTER**
20. Repeat step 17

NOTE: Due to the calculation method used by the calculator, answers may vary a few cents.

bal(12)	674.65
$\Sigma$ Prn(1, 12)	-325.35
$\Sigma$ Int(1, 12)	-274.65
■	

NOTE: This gives a balance after 12 payments, how much has been paid on the principal in payments 1 through 12, and how much interest was paid in payments 1 through 12. Ask the students to find these values for different payment periods.

Have the student investigate what the balance, principal paid, and interest paid would be if the payment made was more than 50. To do this, replace the  $-50$  in step 6 with amount such as  $-55$ ,  $-60$ , and  $-65$ . Have the students discuss the changes they see.

**Activity 7: Single-Payment Loan (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 11a, 11f, 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculators, pencils

Discuss with students the idea of short-term single payment loans with examples, i.e., borrowing money until payday to pay:

- a veterinary bill
- a water bill
- an insurance deductible

Explain to students that these are one-time loans that must be repaid in full at the end of the term of the loan. Interest rates for these loans are often extremely high.

Define for students the difference in ordinary (360 day year) and exact (365 day year) interests. Have students work word problems to solve for maturity value involving both types of interest calculations. Also, ask students to surmise why there would be two different year calculations and explain which calculation would benefit the borrower and which would benefit the lender.

This is also the correct time to introduce down payments. Have students calculate the down payment and amount financed for loan amounts in word problems. These may be incorporated into single-payment loan problems. Explain why down payments may be required by a lender, and why they may be beneficial to the borrower regardless of lender requirement.

Example.

Ardella purchased bedroom furniture for \$1009.56. She made a 10% down payment and financed the remaining amount using the store's single-payment loan with 13.8% ordinary interest for 45 days. What amount did she finance? What is the maturity value of her loan?

*Solution:*

$$\$1009.56 * .1 = \$100.96 \quad \text{Down payment}$$

$$\$1009.56 - \$100.96 = \$908.60 \quad \text{Amount financed}$$

$$\$908.60 * .138 * (45/360) = \$15.67 \quad \text{Finance charge}$$

$$\$908.60 + \$15.67 = \$924.27 \quad \text{Maturity value}$$

**Activity 8: Interest and Monthly Payment Using Tables (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Installment Loan with Tables BLM, 4-function calculator, pencils

Distribute the Installment Loan with Tables BLM and have students complete the problems. Students should use the formulas, table and methods described on the Installment Loan with Tables BLM.

Example.

Mark obtained an installment loan of \$2460. He obtained the loan at an APR of 10% for 12 months. What is the finance charge?

*Solution:* (The method and table from the Installment Loan with Tables BLM are used.)

$$\$2460 / 100 * 8.79 = \$216.23 \quad \text{Monthly payment}$$

$$\$216.23 * 12 = \$2594.76 \quad \text{Total amount repaid}$$

$$\$2594.76 - 2460 = \$134.76 \quad \text{Total finance charge}$$

**Activity 9: Repayment Schedule (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Repayment Simulation BLM, 4-function calculators, pencil

Explain repayment schedules, amortization tables, for a credit account. Show the students, with an example problem, that it is possible to calculate the amount paid to principal and interest each month even before a credit purchase is made. Discuss how to calculate the final month's payment, the total amount repaid, and the total interest. After the discussion, distribute the Repayment Simulation BLM and ask students to complete the repayment schedule. The students may need help getting started.

**Activity 10: Electronic Loan Calculation (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14b, 14c, 14d, 14f)**

Materials List: Electronic Loan Calculation BLM, loan calculator software or Internet capable computers, computer printer

Distribute the Electronic Loan Calculation BLM. Have students work the problems, this time using loan calculator software, such as this one available on the Internet:  
<http://www.bankrate.com/brm/popcalc2.asp>

Have the students print one Amortization Table for a problem they are working. Every student should print a different Amortization Table. Have the students analyze the table for trends in Principal Paid and Interest Paid each month. Students should be able to observe that most interest is paid at the beginning of a loan, and that near the end of a loan most of the monthly payment goes to reduce the principal. Students should be able to answer the "Why does this happen?" question as part of their analyses. Students should also observe that the last monthly payment is different. They should address why and how this happens in their analyses.

**Activity 11: Graphing Calculator Interest (GLEs: Grade 9: 4, 5, 15; Grade 10: 2; Business: 11a, 11k, 13a, 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculators

This is a three part activity.

Part One: You have been saving up to buy a car and have \$2300 in your savings account. When you visit the used car lot you see a car you want for \$5,250 plus a 7.8% sales tax. The salesperson tells you that he will finance the entire car including taxes for 30 months at 9.9% interest if you pay the \$150 license fee. Given this information, complete the following chart.

Amount Financed	Interest Rate	Number of Payments	Monthly Payments	Total Interest

1. Clear home screen
2. Enter 5250 \* 1.078 press **ENTER**
3. On the TI83, press **2<sup>nd</sup> FINANCIAL**. On the TI83Plus, press **APPS** then **FINANCIAL**
4. Enter 30 (N=) press **ENTER**
5. Enter 9.9 (I%=) press **ENTER**
6. Enter 5659.50 (PV=) press **ENTER**
7. Enter 0 (PMT=) press **ENTER**
8. Enter 0 (FV=) press **ENTER**
9. Enter 12 (P/Y=) press **ENTER**
10. Highlight the 0 after PMT= press **ALPHA SOLVE** Record the monthly payment
11. Clear the home screen
12. Press **APPS** highlight 1 press **ENTER** highlight A press **ENTER**
13. Enter 1,30) press **ENTER**

NOTE: This is the total interest paid.

N=30.00
I%=9.90
PV=5659.50
PMT=213.73
FV=0.00
P/Y=12.00
C/Y=12.00
PMT: <b>BEGIN</b>

ΣInt(1,30)
-752.40

Amount Financed	Interest Rate	Number of Payments	Monthly Payments	Total Interest
\$5659.50	9.9%	30	\$213.73	\$752.40

Part Two: You want to buy the car in Activity 1 but decide that the monthly note is more than you can afford. What would your monthly payment be if you took \$2000 from your savings and used it as a down payment? The interest rate and number of payments would still be the same. How much money would you save on interest?

1. Clear home screen
2. Enter 5250 \* 1.078 press **ENTER**
3. On the TI83 press **2<sup>nd</sup> FINANCIAL**. On the TI83Plus, press **APPS** then **FINANCIAL**

4. Enter 30 (N=) press **ENTER**
5. Enter 9.9 (I%=) press **ENTER**
6. Enter 3659.50 (PV=) press **ENTER**
7. Enter 0 (PMT=) press **ENTER**
8. Enter 0 (FV=) press **ENTER**
9. Enter 12 (P/Y=) press **ENTER**
10. Highlight the 0 after PMT= press **ALPHA SOLVE**
11. Record the monthly payment
12. Clear the home screen
13. Press **APPS** highlight 1 press **ENTER** highlight A press **ENTER**
14. Enter 1 ( 30 ) press **ENTER**

```

N=30.00
I%=9.90
PV=3659.50
PMT=-138.20
FV=0.00
P/Y=12.00
C/Y=12.00
PMT: [ ] BEGIN
    
```

Amount Financed	Interest Rate	Number of Payments	Monthly Payments	Total Interest
\$5659.50	9.9%	30	\$213.73	\$752.40
\$3659.50	9.9%	30	\$138.20	\$486.50
Difference			\$75.73	\$265.90

Part Three. You have second thoughts on using the money in your savings account for a down payment. You do not want to lose the interest that they are paying you on your account. How much interest would you need to get on the \$2000 over the thirty month period to equal the interest you save by using it for a down payment?

1. Press **APPS** highlight 1 press **ENTER** highlight 1 press **ENTER**
2. Enter 30 (N=) press **ENTER**
3. Enter 0 (I%=) press **ENTER**
4. Enter -2000 (PV=) press **ENTER**
5. Enter 0 (PMT=) press **ENTER**
6. Enter 2265.90 (FV=) press **ENTER**
7. Enter 12 (P/Y=) press **ENTER**
8. Highlight the 0 after I%= press **ALPHA SOLVE**

```

N=30.00
I%=.42
PV=-2000.00
PMT=0.00
FV=2265.90
P/Y=12.00
C/Y=12.00
PMT: [ ] BEGIN
    
```

.417\*12  
5.004

(NOTE: If you put \$2000 in savings at 0.42 interest, compounded monthly for 30 months%, rounded to 2 decimal places, your account will be worth \$2265.90 at the end of 30 months. This is equivalent to an annual rate of approximately 5.004%.)

**Activity 12: Comparing Loans (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 4c, 4j, 13a, 14b, 14d, 14f)**

Materials List: Loan What-If BLM, pencil

Copy the two pages of the Loan What-If BLM as a 1-page, 2-sided handout.

Begin with a *SQPL* ([view literacy strategy descriptions](#)) exercise. Write several statements on the board pertaining to comparing loans, i.e., “It doesn’t matter if you pay a down payment or not, the loan still costs the same thing,” “Interest rate doesn’t matter, the shortest loan is always cheaper,” and “I should always go for the smallest monthly payment.” Engage students in a discussion about each of the statements and write student questions and/or comments about each topic. Leave these on the board and return to them after the students have completed the Loan What-If BLM. Distribute the Loan What-If BLM, divide students into groups of 3 to 4 each and ask each group to complete the Loan What-If BLM.

When all groups are complete, revisit the questions/comments on the board and discuss each one. Were the students’ questions answered? Did their comments (assumptions) remain true, or were some disproven? Use this discussion to dispel myths about borrowing money.

Conclude the activity by calling on selected groups to discuss their decisions on a particular scenario. After a group has presented, poll the class for differing opinions and have that group elaborate upon their rationale.

**Activity 13: Credit and Your Rights (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4c, 11a, 11f)**

Materials List: Credit and Your Consumer Rights (pdf document), Discussion Guide BLM, pencils

Before the activity, download and reproduce one copy for each student of the Federal Trade Commission document “Credit and Your Consumer Rights,” available at <http://www.ftc.gov/bcp/online/pubs/credit/crdright.pdf>.

Copy the 4 pages of the Discussion Guide BLM as 2, 2-sided pages, enough for each 4-person group.

This activity uses the *reciprocal teaching* ([view literacy strategy descriptions](#)) strategy. *Reciprocal teaching* highlights four comprehension processes: summarizing, questioning, clarifying, and predicting. Because emphasis is on understanding these processes, students will need many exposures to all comprehension processes.

1. Begin by asking a question such as, “Who or what protects Americans from credit fraud, and what are our rights?” to stimulate student interest in the topic. Ask for student input, and guide the discussion to the content of the Credit and Your Consumer Rights handout. Distribute the Credit and Your Consumer Rights handout. Read aloud the introductory section, up to “Your Credit Report,” and write a summary statement on the board, seeking input from the class.
2. Write the title of the next section, Your Credit Report, on the board. Ask students to make predictions about the content of this section of material. Write those predictions on the board and seek student input about what they know about a credit report.
3. Ask students to read the Your Credit Report section of material and pause. The teacher should now be the questioner and ask questions covering what was read, such as, “How often can I get a free copy of my credit report?” Ask as many questions as required to cover the material.
4. Now model the clarification process. Discuss topics contained in this section of material that the students may need clarified.
5. Now with the help of the students, produce a summary of the Your Credit Report section and write it on the board.
6. After modeling the comprehension processes of reciprocal teaching, divide students into groups of four with each one taking responsibility for one of the comprehension processes as in summarizer, questioner, clarifier, and predictor. Assign the next section, Your Credit Application, and tell students to interact while reading with each student taking the lead to model and guide the others in the comprehension process over which s/he is responsible. Students should use the Discussion Guide BLM to record their answers.
7. Monitor student groups by moving throughout the room. Provide extra support and modeling for groups having difficulty with the reciprocal processes.
8. Have the students pause after the Your Credit Application section and poll each group for its responses to each of the comprehension processes.
9. Complete the remaining three sections, Your Credit Billing and Electronic Fund Transfer Statements, Your Debts and Debt Collectors, and Solving Your Credit Problems, in the same fashion, pausing for a discussion between sections.

## Sample Assessments

### General Assessments

- Have students write essays on their views on the use of credit. The essay should explain their position and understanding of getting started in credit. Use the Use of Credit Rubric BLM to assess the essay.
- The student will turn in their completed credit card applications. They should be completely and correctly filled out.
- Orally question students on their knowledge and the purpose of the amortization table printed in Activity 10.
- A unit test has been provided. Administer the Unit 6 Test BLM to assess student mastery of calculations contained in this unit.

### Activity-Specific Assessments

- Activity 3: Assess student mastery of interest calculation using the average daily balance method with the Average Daily Balance BLM.
- Activity 9: Score the Repayment Simulation BLM for completeness and correctness using the Repayment Schedule Rubric BLM.
- Activity 11: Assess student mastery of this calculator activity with the House Savings BLM.
- Activity 13: Score the student's performance working in this group activity and the quality of the product produced with the Reciprocal Teaching Rubric BLM.

## Resources

**Easy Credit** by Anne Weiss. Twenty-first Century Books (Brookfield), 2000. ISBN: 0-7613-1503-9.

**Peterson's College Money Handbook.** Peterson. Annual. \$26.95.

**The African-American Student's College Guide; Your One-Stop Resource for Choosing the Right College, Getting In, and Paying the Bill** by Isaac Black. Wiley, 2000. ISBN: 0-471-29552-3. 369 pages. \$19.95.

## Financial Math Unit 7: Transportation

**Time Frame:** Approximately three weeks



### Unit Description

This unit explores automobile transportation and the many costs associated with it. These costs include purchasing, insuring, operating and maintaining an automobile.

### Student Understandings

Students will understand that buying, operating, and maintaining an automobile represents a major financial commitment. Students will understand that used vehicles can have several different costs, and decide which cost is appropriate given a situation. Students will understand the difference between buying and leasing an automobile not only financially, but legally, as well. Students will determine how to calculate the cost of renting a vehicle. Students will also develop an understanding of the forces that determine current and future gasoline prices.

### Guiding Questions

1. Can students calculate the purchase price of a new automobile?
2. Can students calculate the dealer's cost of a new automobile?
3. Can students calculate how rebates affect final vehicle price?
4. Can students read the NADA manual and accurately price a used vehicle?
5. Can students calculate the operating and maintenance costs of an automobile?
6. Can students calculate vehicle depreciation based on yearly percentage?
7. Can students calculate the total cost to lease an automobile when returned to dealership at the end of the lease term? When purchased at the end of a lease term?
8. Can students accurately compare the total cost of buying an automobile with that of leasing, and can they contrast the legal differences?
9. Can students calculate the cost of renting an automobile?
10. Can students relate the fundamental forces that determine the price of a gallon of gasoline at a local station?

**Unit 7 Grade-Level Expectations (GLEs)**

<b>GLE#</b>	<b>GLE Text and Benchmarks</b>
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
<b>Algebra</b>	
<b>Grade 9</b>	
15.	Translate among tabular, graphical, and algebraic representations of functions and real-life situations (A-3-H) (P-1-H) (P-2-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Data Analysis, Probability, and Discrete Math</b>	
<b>Grade 10</b>	
20.	Show or justify the correlation (match) between a linear or non-linear data set and a graph (D-2-H) (P-5-H)
<b>Patterns, Relations, and Functions</b>	
<b>Grade 10</b>	
27.	Translate among tabular, graphical, and symbolic representations of patterns in real-life situations, with and without technology (P-2-H) (P-3-H) (A-3-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
27.	Explain, analyze, and apply principles of supply and demand, including concepts of price, equilibrium point, incentives, and profit (E-1B-H1)
40.	Describe the worldwide exchange of goods and services in terms of its effect in increasing global interdependence and global competition (E-1B-H4)

## Sample Activities

### **Activity 1: New Automobile Purchase Price (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have students work problems to find the purchase price of a new automobile.

Example.

Bernie Maples plans to buy a Jupiter four door car with an MSRP of \$21,060. The optional features Bernie is considering and their suggested prices follow: alarm system, \$500; larger wheels and tires, \$945; accent stripes, \$170; leather seats, \$895; extended warranty, \$615. At the car dealer's showroom she decides to add only the larger wheels and tires and the leather seats to the basic Jupiter car. What is the MSRP of the car and the options selected?

*Solution.*

$$\$21,060 + \$945 + \$895 = \$22,900 \text{ MSRP}$$

Students should work a set of 10 – 12 problems similar to the one above. Some problems should be arranged to resemble a new automobile price sticker.

### **Activity 2: Dealer's Cost (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Dealer's Cost Worksheet BLM, 4-function calculator, pencil

The second page of the Dealer's Cost Worksheet BLM should be used as a template and enough copies made of it to provide the students one worksheet for each problem given.

Dealer's cost of an automobile is often given as a percentage of the price of the base vehicle and the options. Destination charge is also added to the dealer's cost. Have students rework the problems from Activity 1 on the Dealer's Cost Worksheet BLM. This time they must calculate dealer's cost of the automobile. Be sure to provide the dealer's cost percentage for the base price and each option in the problems. See the worksheet below for an example solution.

Dealer's Cost Worksheet			
Vehicle / Options	MSRP	Dealer's Cost Percentage	Dealer's Cost
<i>Jupiter base price</i>	\$21,060	89.5%	\$18,848.70
<i>Alarm system</i>	\$500	51 ¼%	\$256.25
<i>Larger wheels and tires</i>	\$945	62.3%	\$588.74
<i>Accent stripes</i>	\$170	10%	\$17
<i>Leather seats</i>	\$895	92 ½%	\$827.88
<i>Extended warranty</i>	\$615	3%	\$18.45
<i>Destination charge</i>	\$465	100%	\$465
Total Dealer's Cost			\$21,022.02
Dealer's Profit if all Options Are Purchased			\$3627.98
Percentage of Dealer Profit			17.26%

**Activity 3: Vehicle Rebates (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Rebate Worksheet BLM, 4-function calculator, pencil

This activity is a comprehensive activity. Have students work the problems on the Rebate Worksheet BLM. These problems require students to calculate monthly payment, total amount repaid, and total finance charge both with and without a vehicle rebate.

Sample problem.

This sample problem is the same information from the Rebate Worksheet BLM, worksheet #1. Use this problem as an example for the class.

Bernie Maples plans to buy a Jupiter four door car with an MSRP of \$21,060. The optional features Bernie is considering and their suggested prices follow: alarm system, \$500; larger wheels and tires, \$945; accent stripes, \$170; leather seats, \$895; extended warranty, \$615. At the car dealer's showroom she learns of an incentive cash rebate of \$2,000. She agrees to finance the car for 48 months at 10.5% APR. Complete the worksheet below to determine if Bernie should apply the rebate to the purchase price of the Jupiter if she decides to buy all of the options.

*Solution.*

Automobile Rebate Worksheet			
Vehicle / Options	MSRP	Cost Without Rebate	CostW Rebate
<i>Jupiter base price</i>	\$21,060	Monthly Payment: \$631.04	Monthly Payment: \$579.84
<i>Alarm system</i>	\$500		
<i>Larger wheels and tires</i>	\$945		
<i>Accent stripes</i>	\$170	Total Amount Repaid: \$30,289.92	Total Amount Repaid: \$27,832.32
<i>Leather seats</i>	\$895		
<i>Extended warranty</i>	\$615		
<i>Destination charge</i>	\$465	Total Finance Charge: \$5,639.92	Total Finance Charge: \$5,182.32
TOTAL MSRP:	\$24,650		
Rebate: 2,000			
APR: 10.5%	Term: 48 months		
Total cost of car without rebate: \$30,289.92			
Total cost of car with rebate: \$27,832.32			
Actual savings with rebate applied: \$2457.60			
Percentage of savings with rebate applied: 9.97%			

Students should realize that though the rebate was only 8.11% of the MSRP of the car in the example above, additional savings can be obtained by applying the rebate to the purchase price through finance charge savings, moving the true amount of the rebate to 9.97% of the MSRP.

**Activity 4: Used Vehicle Pricing (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4j, 14b, 14d, 19f)**

Materials List: Used Auto Worksheet BLM, computer with Internet access, pencil

National Automobile Dealer's Association publishes a book that contains prices for used automobiles. The book has prices for two different categories for each vehicle: Clean Retail Price and Clean Trade-In Price. If a current book cannot be obtained use the following website to complete this activity. <http://www.nadaguides.com/default.aspx>

Assign each student a different automobile to research the used vehicle value for each of the categories. Students should use a family vehicle with the actual mileage, condition, and options of the vehicle. If a family vehicle is unavailable, provide relevant automobile data to the students so that they can complete this activity. Have each student research his/her vehicle and complete the Used Auto Worksheet BLM.

After the Used Auto Worksheet BLMs are completed, arrange students into groups of three or four students to discuss topics such as the following:

- Does vehicle mileage affect value?

- How do vehicle options affect price?
- Is vehicle color considered in used vehicle pricing?
- Why are the Clean Trade-In and the Clean Retail Value different?

Have each group write and answer the questions presented.

**Activity 5: Vehicle Operating Costs (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil, paper

Have students work word problems to calculate the operation and maintenance costs of vehicles. Students should be given problems with variable costs and fixed costs in a table, and be asked to calculate the cost per mile to operate the vehicle.

A sample problem with a table of costs is provided below.

Richard purchased a used vehicle for \$12,000 one year ago. He drove 15,861 miles during the year and kept the following record of his expenses. He estimates the vehicle's present value at \$10,800. What was the cost per mile for Richard to operate his vehicle?

Variable Costs		Fixed Costs	
<i>Gasoline</i>	<i>\$613.89</i>	<i>Insurance</i>	<i>\$932.19</i>
<i>Oil Changes</i>	<i>\$82.55</i>	<i>License/Registration</i>	<i>\$52.50</i>
<i>Maintenance</i>	<i>\$119.24</i>	<i>Depreciation</i>	<i>\$1200.00</i>
<i>New Tire</i>	<i>\$87.62</i>	<i>(\$12,000 – \$10,800)</i>	
<b>TOTAL</b>	<b>\$903.30</b>	<b>TOTAL</b>	<b>\$2184.69</b>

*Solution:*

$$(\$903.30 + \$2184.69) / 15,861 = \$0.195 \quad \text{Cost per mile}$$

After the problem set is complete, rearrange students into groups of three or four each and ask them to discuss operating costs. Ask them to create two lists, one for variable costs and one for fixed costs. Define each type of cost at the top of the list, and then have students list all costs they can remember. Have the groups share their lists with the class. Ensure that the students understand the nature of variable costs and fixed costs.

**Activity 6: Calculator Linear Depreciation (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2, 20, 27; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: graphing calculator, pencil

A graphing calculator allows us to easily view both numerically and graphically the mathematical relationships in a linear depreciation. Over time, the student can see the numerical depreciation as the rate of change or slope of the graph representing the value

of an item. This provides the student with an opportunity to discuss multiple representations of data.

Mosley Corporation buys a new high speed lathe for \$85,000 to use in its machine shop. The life of the lathe is estimated to be 10 years, and the company decides to use linear depreciation for tax purposes. Make both a table and a graph showing the lathe's value over its ten year life expectancy.

1. Press  $\boxed{y=}$  highlight Y1=
2. Enter 85000  $\boxed{-}$  (85000/10)  $\boxed{*}$  press  $\boxed{\text{ENTER}}$

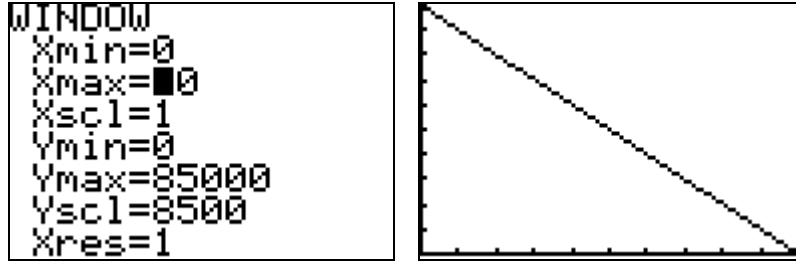
Plot1	Plot2	Plot3
\Y1=	85000-	(85000
\	10)	X
\Y2=		
\Y3=		
\Y4=		
\Y5=		
\Y6=		

3. Press  $2^{\text{nd}}$   $\boxed{\text{TABLE SET}}$
4. Highlight **TBLSTART**= enter 0
5. Highlight  $\Delta$ **TBL**= enter 1
6. Press  $2^{\text{nd}}$   $\boxed{\text{TABLE}}$

X	Y1
0.00	85000
1.00	76500
2.00	68000
3.00	59500
4.00	51000
5.00	42500
6.00	34000

(NOTE: Press the down arrow to see the remaining values)

7. Press  $\boxed{\text{WINDOW}}$
8. Enter 0 (**Xmin**=) press  $\boxed{\text{ENTER}}$
9. Enter 20 (**Xmax**=) press  $\boxed{\text{ENTER}}$
10. Enter 1 (**Xscl**=) press  $\boxed{\text{ENTER}}$
11. Enter 0 (**Ymin**=) press  $\boxed{\text{ENTER}}$
12. Enter 85000 (**Ymax**=) press  $\boxed{\text{ENTER}}$
13. Enter 8500 (**Yscl**=) press  $\boxed{\text{ENTER}}$
14. Enter 1 (**Xres**=) press  $\boxed{\text{ENTER}}$
15. Press  $\boxed{\text{GRAPH}}$



**Activity 7: Vehicle Depreciation (GLEs: Grade 9: 4, 5, 15, 19; Grade 10: 2, 20, 27; Business: 4j, 14b, 14c, 14d, 14f, 15e)**

Materials List: Spreadsheet Depreciation BLM, Depreciation Story Chain BLM, computers with spreadsheet software, 4-function calculator, pencil

This is a two-part activity.

Part One: This is a spreadsheet activity. Distribute the Spreadsheet Depreciation BLM and have students individually create a spreadsheet to calculate the annual automobile depreciation.

Part Two: This part of the activity will be a modified *story chain* ([view literacy strategy descriptions](#)). The modification occurs because, unlike a traditional *story chain* in which a last student solves the problem, the problem created will be solved collectively by all members of the group.

Form students into groups of three, and distribute the Depreciation Story Chain BLM to each group. Each group will create a similar problem to the sample above, but its problem should be a linear depreciation problem. Be prepared to read and approve each problem created prior to spreadsheet creation. Each group will produce a spreadsheet and print a graph of its linear depreciation model.

As an alternate, this activity can also be solved and graphed using a graphing calculator as described in Activity 6.

**Activity 8: Vehicle Lease Cost (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have students work word problems to calculate the total cost of leasing an automobile. The problems should include a vehicle deposit, title fee, license fee, monthly payments, and term of lease. Select problems should also include a mileage charge and vehicle residual value.

Example.

Dennis has an open-ended lease for a Stardust Spitfire sports car. The lease costs \$495 a month for 36 months. He paid a deposit of \$2,100, a title fee of \$78.25, and a license fee of \$192.14. At the end of the lease, he can buy the car for its residual value of \$19,560. What is the total lease cost? What is the total cost if he buys the car?

*Solution.*

$$\begin{aligned}(\$495 * 36) + \$2,100 + \$78.25 + \$192.14 &= \$20,190.39 && \text{Total lease cost} \\ \$20,190.39 + \$19,560 &= \$39,750.39 && \text{Total cost to lease, then buy}\end{aligned}$$

**Activity 9: Buying Versus Leasing (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4j, 11a)**

Materials List: Buying/Leasing Opinionnaire BLM, Buying Vs Leasing Notes BLM, 4-function calculator, pencil

Begin this activity by downloading the PowerPoint presentation on buying vs. leasing, available at <http://www.federalreserve.gov/pubs/leasing/slides.htm>.

Print the teacher notes for the presentation following the instructions on the website.

This activity will use the *opinionnaire* ([view literacy strategy descriptions](#)) strategy. Distribute the Buying/Leasing Opinionnaire BLM and have students mark their opinions in the “Before” column. Allow the students to discuss the Buying/Leasing Opinionnaire BLM in small groups of 3 to 4 each to aid in the formulation of opinions on the topic.

This phase of the activity will utilize a modified form of *split-page notetaking* ([view literacy strategy descriptions](#)). Distribute the Buying Vs Leasing Notes BLM before the slideshow presentation. Ask the students to take notes in each of the boxes on the Buying Vs Leasing Notes BLM as the slideshow is presented. Ask the students to watch the slideshow and listen for explanations of buying and leasing an automobile. They should take care to write the appropriate response in the correct column. Notetaking in this modified format, with three columns instead of two, will allow the student to easily discern any similarities or differences between buying and leasing automobiles.

At the conclusion of the slideshow, discuss correct and incorrect responses from student boxes. Close the activity by returning to the Buying/Leasing Opinionnaire BLM. Ask students to mark their “After” opinions. Poll the class to determine if anyone’s opinion changed as a result of watching the slideshow presentation. Ask students to share their thoughts on situations in which leasing would be more appropriate, and situations in which buying would be more appropriate to gauge understanding.

**Activity 10: Renting An Automobile (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: class set of newspapers, Rental Cost Worksheet BLM, 4-function calculator, pencil

The Rental Cost Worksheet BLM is a template. Make two 2-sided copies for each group so that 8 problems may be calculated.

Distribute newspapers and have students find rental car advertisements. Alternately, you may have each student bring three such ads to class.

Divide the students into groups of three or four and distribute the Rental Cost Worksheet BLM to each group. Have each group analyze the ads for the necessary information to complete the worksheet. Miles driven and gasoline cost per gallon should be given to include in their calculations.

Not all information to complete the worksheet may be available from all ads; be prepared to provide required information to the groups. Each group should complete a worksheet for eight different rental advertisements.

Hang full-page ads in the classroom.

**Activity 11: Louisiana Minimum Auto Insurance (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a, 11j)**

Materials List: 3x5 cards(9 per student), Louisiana Liability Minimum BLM, 4-function calculator, pencil

A modified *vocabulary card* ([view literacy strategy descriptions](#)) strategy will be used for this activity. Distribute nine 3x5 cards to each student. At the top-right of the first card write, “What benefit does car insurance provide?”. In the same place on the second card write, “Why does Louisiana require liability automobile insurance?” Continue in this manner for each of the remaining cards with the following questions:

- What are the minimum coverage amounts for Louisiana?
- What do the three numbers of liability coverage mean?
- Why does insurance cost more for teen drivers?
- What are the statistics on teen accidents in Louisiana?
- Are accident rates appreciably different for males and females?
- Can I buy more car insurance than the minimum?
- Why would I want more than minimum coverage?

Example 3x5 card:

Front

What benefit does car insurance provide?

Back

*Car insurance keeps people safe when they wreck their cars. It fixes the car too.*

Have students form groups of 3 to 4 and ask each group to discuss the questions and its possible answers. Each student will write the group's answer on the reverse side of his/her 3x5 card. When complete, poll the groups for answers to the questions, but do not provide the correct answers.

To find the correct answers, students will interview a Louisiana Automobile Insurance agent. They will use the 3x5 cards as note-cards to record their answers.

After returning from the interview, distribute the Louisiana Insurance BLM. Have students organize their interview notes (3x5 cards) into a series of small, 8 ½" by 11", poster-like illustrations to represent the questions and answers from the interview. This series of small posters would resemble a *PowerPoint*<sup>®</sup> presentation, but is done by hand. The students may include any pamphlets that the agent they interviewed may have given them. Hang each student's work in the classroom.

Below is an example of what may be contained on the small posters. The small posters could be created as slides on a presentation program such as *Microsoft PowerPoint*<sup>®</sup> as an alternative.

<p style="text-align: center;"><b>Louisiana Liability Insurance</b></p> <p style="text-align: right;">1</p>	<p style="text-align: center;"><b>Benefits</b></p> <ul style="list-style-type: none"> <li>• Provides financial security against loss of personal property</li> <li>• Provides liability protection against loss of another's property</li> <li>• Provides medical injury coverage on all occupants of a vehicle involved in an accident</li> </ul> <p style="text-align: right;">2</p>
<p style="text-align: center;"><b>Louisiana Requirements</b></p> <ul style="list-style-type: none"> <li>• \$10,000/\$20,000/\$10,000</li> <li>• \$10,000 medical liability limit per person in an accident</li> <li>• \$20,000 medical liability total per accident</li> <li>• \$10,000 property loss liability per accident</li> </ul> <p style="text-align: right;">3</p>	<p style="text-align: center;"><b>Teen Drivers</b></p> <ul style="list-style-type: none"> <li>• Teens have less experience</li> <li>• Teens are involved in more accidents</li> </ul> <p style="text-align: right;">4</p>
<p style="text-align: center;"><b>Male Drivers</b></p> <ul style="list-style-type: none"> <li>• Teen males have a greater risk of being involved in an accident than teen females</li> </ul> <p style="text-align: right;">5</p>	<p style="text-align: center;"><b>More Coverage</b></p> <ul style="list-style-type: none"> <li>• Yes, I can buy more coverage</li> <li>• Collision, repairs my vehicle when involved in an accident</li> <li>• Comprehensive, repairs my vehicle when damaged by "Acts of God"</li> <li>• Towing, pays recovery costs of my vehicle</li> <li>• Uninsured Motorist, pays to fix my vehicle when involved in an accident with an uninsured motorist</li> </ul> <p style="text-align: right;">6</p>

**Activity 12 Who Sets Gas Prices? (GLEs: Economics (Core Course: Free Enterprise): 1, 27, 40; Business: 11a, 11c, 12l, 13a, 13g)**

Materials List: Gasoline Pricing BLM, Gasoline Reciprocal Teaching Record BLM, 4-function calculator, pencil  
This is a two-part activity.

**Part One:**

This activity uses a web-based article entitled *How Gas Prices Work*. The article may be printed from the *How Stuff Works* website at <http://www.howstuffworks.com/gas-price.htm/printable>. Print the article directly from the Internet and reproduce it for student

use. The Gasoline Reciprocal Teaching Record BLM, an eight page document, correlates with the *How Gas Prices Work* article. Each page is a *reciprocal teaching* discussion guide for each of the eight sections of the article. Copy the Gasoline Reciprocal Teaching Record BLM as four 2-sided pages.

*Reciprocal teaching* ([view literacy strategy descriptions](#)) will be used to read the Gasoline Pricing BLM. Distribute the Gasoline Pricing BLM and the Gasoline Reciprocal Teaching Record BLM. Go through the article that is the Gasoline Pricing BLM in sections as identified on the Gasoline Reciprocal Teaching Record BLM. Follow the practices of *reciprocal teaching* to lead the class through the reading and discussion of the Gasoline Pricing BLM. Students will use the Gasoline Reciprocal Teaching Record BLM to record their answers to each section. Begin each section by asking students to make a prediction about the section, then as the article is read, pause periodically to allow students to determine if predictions were accurate or not. Likewise, encourage questions from students as the article is read and have students actively search for answers in the text. Provide clarification when students need help in understanding key ideas in each section. Finally, work with students to create section summaries that capture the main points. Modeling and eliciting these important thinking processes while reading the article will prepare students for effective independent reading of text.

Part Two:

On the Internet, download and print the student research log located at <http://www.econedlink.org/lessons/em394/log.pdf>. Have students, in pairs, complete the research log, producing all spreadsheets, graphs and charts required by the log.

## Sample Assessments

### General Assessments

- Assess student understanding of the unit's topics with the Transportation Jeopardy BLM.
- The students will write position essays considering whether to purchase a new or used automobile. The essay should include supporting examples from topics discussed in this unit, as well as, their financial plan. Assess the essay with the Car Purchase Essay Rubric BLM.
- Assess student mastery of the computation in this unit with Quiz BLM.

### **Activity-Specific Assessments**

- Activity 6: TVM Master BLM.
- Activity 7: Depreciation Analysis BLM.
- Activity 11: Assess the small posters created in this activity with the Insurance Posters Rubric BLM.

**Financial Math  
Unit 8: Housing**



**Time Frame:** Approximately three weeks

**Unit Description**

This unit focuses on the costs associated with providing shelter for an individual and for a family. A review/update of the financial plan to include their housing goals is also included.

**Student Understandings**

Students will understand how to calculate closing costs of a mortgage loan, real estate taxes, finance and operating costs associated with home ownership. Students will realize the benefit of an appropriate level of insurance for their homes. Students will explore the tax benefits of home ownership. Students will complete a rental agreement. Students will incorporate housing costs which must fit into their long-term financial plans.

**Guiding Questions**

1. Can students calculate down payment, mortgage loan amount, monthly payment, total amount repaid, and total interest cost of a mortgage loan?
2. Can students calculate closing costs of a mortgage loan?
3. Can students calculate real estate taxes?
4. Can students identify and calculate miscellaneous costs associated with providing shelter?
5. Can students identify an appropriate insurance policy for a particular home?
6. Can students communicate the tax benefits of owning a home?
7. Can students effectively integrate future housing needs/wants into their financial plans?
8. Can students complete a rental agreement?

**Unit 8 Grade-Level Expectations (GLEs)**

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)

GLE#	GLE Text and Benchmarks
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
	<b>Grade 10</b>
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
	<b>Measurement</b>
	<b>Grade 9</b>
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
	<b>Economics (Core Course: Free Enterprise)</b>
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)

### Sample Activities

#### **Activity 1: Mortgage Loan Cost (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: Mortgage Loan Table BLM, 4-function calculator, pencil

Review how to calculate monthly payment, total amount repaid, total interest, and down payment. This is a comprehensive activity, tying together all of the concepts of calculating loans, and repayment thereof from previous units in the context of mortgage loan costs. Use the Mortgage Loan Table BLM to calculate monthly payment. Have students work 10 to 12 problems similar to the one below.

Example.

Ellen reached an agreement with a realtor to buy a house for \$138,500. She made a down payment of 10% and will finance the remainder. She could finance the mortgage in one of two ways: Homeworks Mortgage at 6.5% for 25 years or Friendly Homeloans at 5.5% for 20 years. Which mortgage results in a larger amount of interest paid? How much greater?

*Solution:*

*Mortgage amount financed:  $\$138,500 * 90\% = \$124,650$*

*Homeworks Mortgage:*  
 $(\$124,650 / \$1000) * 6.75(\text{number from table}) = \$841.39$  *Monthly Payment*

$\$841.39 * 12 * 25 = \$252,417$  *Total Amount Repaid*

$\$252,417 - \$124,650 = \$126,767$  *Total Interest Paid*

<p><i>Friendly Homeloans:</i>  <math>(\\$124,500 / \\$1000) * 6.88(\text{number from table}) = \\$857.59</math>    <i>Monthly Payment</i></p> <p><math>\\$856.56 * 12 * 20 = \\$205,821.60</math>    <i>Total Amount Repaid</i></p> <p><math>\\$205,574.40 - \\$124,650 = \\$81,171.60</math>    <i>Total Interest Paid</i></p>
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*The most interest would be paid if she financed at Homeworks Mortgage. The difference is that the Friendly Homeloans loan is repaid five years sooner and costs \$45,595.40 less in interest.*

**Activity 2: Closing Costs (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Economics (Core Course: Free Enterprise): 1; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have students calculate closing costs for a typical home mortgage. Present the closing cost information in a table, similar to the one below, and have students calculate closing costs for several word problems using the same table.

<b>Closing Costs Table</b>	
Appraisal fee	\$350
Credit report	\$75
Loan origination fee	2% of mortgage
Abstract of title	\$110
Attorney fee	\$450
Service fee	.5% of mortgage
Documentation stamp	.3% of mortgage
Processing fee	1.05% of mortgage

At least one problem should address *points*. Students should understand points and the role in the closing process, and what happens when they pay points to reduce a mortgage loan interest rate.

Points example.

Betty and Sam Cormic have agreed to purchase a \$128,930 home. They plan to make a 12% down payment. Homeworks Mortgage is willing to finance the mortgage at 6.5% for 30 years plus 2 points. How much cash will they need to secure the loan, including the down payment?

*Solution:*

*Closing costs table from previous page is used.*

$$\$128,930 * .12 = \$15,471.60$$

*Down Payment*

$$\$128,930 - \$15,471.60 = \$113,458.40$$

*Mortgage Loan Amount*

<b><i>Closing Costs Table from Previous Page</i></b>	
<i>Appraisal fee</i>	<i>\$350</i>
<i>Credit report</i>	<i>\$75</i>
<i>Loan origination fee</i>	<i><math>\\$113,458.40 * .02 = \\$2,269.17</math></i>
<i>Abstract of title</i>	<i>\$110</i>
<i>Attorney fee</i>	<i>\$450</i>
<i>Service fee</i>	<i><math>\\$113,458.40 * .005 = \\$567.29</math></i>
<i>Documentation stamp</i>	<i><math>\\$113,458.40 * .003 = \\$340.38</math></i>
<i>Processing fee</i>	<i><math>\\$113,458.40 * .0105 = \\$1,191.31</math></i>
<i>Down Payment (from above)</i>	<i>\$15,471.60</i>
<i>Points (1 point equals 1 percent of mortgage loan)</i>	<i><math>\\$113,458.40 * .02 = \\$2,269.17</math></i>
<b><i>TOTAL CASH NEEDED AT CLOSING:</i></b>	<b><i>\$23,093.92</i></b>

**Activity 3: RESPA (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a)**

Materials List: information About RESPA BLM, RESPA Notes BLM, 3x5 cards( any color other than white, class set), pencils

In this activity, the students will practice a modified form of *split-page notetaking* ([view literacy strategy descriptions](#)). Before the activity, become familiar with the Real Estate Settlement Procedures Act (RESPA) that is presented as the Information About REAPA BLM. If additional information is needed, or desired, it can be found at: <http://www.hud.gov/offices/hsg/sfh/res/respamor.cfm>. The Information About RESPA BLM shouldn't be provided to the students.

Briefly describe and write on the board some consumer perils associated with closing costs and seek input/comments from students. Conduct the remaining activity as follows:

1. Provide each student the RESPA Notes BLM, a 3x5 card, and review the *split-page notetaking* format.
2. Ask each student to listen to the lecture about RESPA for the answers to the questions on the RESPA Notes BLM.
3. Tell students to raise (flash) their 3x5 cards when they think a question has been answered. A small prize, i.e., pencil or eraser, may be given to the first to recognize each answer, if desired.
4. When an answer is recognized, repeat the answer and direct students to record it on the RESPA Notes BLM. Clarify each answer as required.
5. Continue in this fashion until all questions have been answered.

- To conclude this activity, refer back to the descriptions/questions of consumer perils on the board. Review them one at a time and discuss with students how RESPA will eliminate that peril.

Students should place the RESPA Notes BLM in their ongoing financial plans.

**Activity 4: Real Estate Taxes (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have students work word problems to calculate real estate taxes. Students should understand how to calculate the assessed value of a home and the taxes, presented in mills.

Example.

Jose and Trudy own a home that has a market value of \$348,000. Their parish rate of assessment for resident homeowners is 45%. The tax rate is 47.537 mills. How much should be placed in escrow each month to pay the annual taxes?

*Solution.*

$$\$348,000 * .45 = \$156,600 \quad \text{Assessed value}$$

$$\$156,600 / 1000 * 47.537 = \$7444.29 \quad \text{Annual real estate tax}$$

$$\$7444.29 / 12 = \$620.36 \quad \text{Placed in escrow each month to pay annual taxes}$$

**Activity 5: Other Housing Costs (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 4j, 14a, 14b, 14c, 14d, 14f)**

Materials List: Other Housing Costs BLM, Career Exploration BLM(completed in Unit 5, Activity 9), pencil

Arrange students into groups of three or four and distribute the Other Housing Costs BLM to each group. Have each group use *brainstorming* ([view literacy strategy descriptions](#)) to share ideas about costs of housing beyond the mortgage or rent payment. Ask each group to write its responses in the circles of the *graphic organizer* ([view literacy strategy descriptions](#)) on the Other Housing Costs BLM. Each group should try to fill all the circles. Next draw a master concept map on the board or overhead and poll each group for responses to fill the master map. Discuss each entry in the master map.

The FHA allows you to use 29% of your income towards housing costs and 41% towards housing expenses and other long-term debt. Highlight the difference between housing

costs and housing expenses. Students should understand the FHA recommendation that total housing expenses should not exceed 41% of the monthly net pay.

Using the master map on the board, or overhead, and student responses, apply costs to the expense categories listed. Next, provide monthly mortgage and taxes, and have students work a total housing expense problem.

Conclude the activity by having the students refer to the Career Exploration BLM completed in Unit 5, Activity 9. Have them calculate, using the FHA recommendation, what price house they could afford at the income level of their chosen career.

**Activity 6: Housing Rental Agreement (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 9c, 11a)**

Materials List: Rental agreement (student provided, one per student), 4-function calculator, pencil

Have students visit a local rental agent or apartment complex and procure a rental agreement.

In class, have each student complete the rental agreement. On the board, list items common to each rental agreement. Make a separate list containing rental agreement items that may be specialized for a particular situation, also list the situation.

Discuss with the students the legal particulars of a rental agreement and how to properly protect oneself in a rental contract.

Seek student responses and list on the board:

- Application fee
- Deposit
- Monthly due date of rent
- Late payment fee
- Pets and pet deposit
- Returned check fee
- Agreement termination procedure
- Agreement early termination procure and penalty
- Cleaning standards upon termination
- Other contract stipulations

**Activity 7: Homeowners Insurance (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 5d, 11j, 19f)**

Materials List: Homeowners Quiz video, computer with video capability(teacher), Homeowners Insurance BLM, computer with Internet and word processing capabilities(students)

Prompt student interest by showing the Homeowners Quiz video, 3 minutes 42 seconds long, to the class. The video is located on the Internet at:

<http://www.iii.org/static/video/mediaplayer/homequiz.wmv>

Discuss the video and poll the class to determine student knowledge/awareness of homeowners insurance. Distribute the Homeowners Insurance BLM and provide an overview of the task. Allow 4 to 5 days for students to complete their reports.

Have the students produce a paper, in the form of an outline, containing the answers to the questions on the Homeowners Insurance BLM. Require that the reports contain at least one chart or graph, and that the reports are typed.

**Activity 8: Benefits Of Home Ownership (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a, 11k, 13a)**

Materials List: Rent Or Buy? BLM, 4-function calculator, pencil, notebooks

This activity will use the *DR-TA* ([view literacy strategy descriptions](#)) strategy to engage students in a discussion about home ownership versus renting. In short, the *DR-TA* strategy follows this format:

1. Introduce background knowledge. Begin the lesson with a discussion about information students may already know, including personal experiences and prior readings. Discuss the title of the topic or section. Record students' ideas on the board.
2. Make predictions. Ask questions that invite predictions, such as: "What do you expect to learn from this section?"; "Based on what we've learned already, what information do you think the author will include?" Have students write their predictions in their notebooks.
3. Read a section of text, stopping at predetermined places to check and revise predictions. Ask students to reread their predictions. Let them know they should change their predictions, if necessary, and cite new evidence for doing so. Repeat this cycle several times as students read through the text. Key questions students should consider are: "What have you learned so far from the text?" (summarize); "Can you support your summary with evidence from the text?" ; "What do you expect to read next?" (predict).
4. Once the reading is completed, use student predictions as a discussion tool. Ask students to reflect on their original predictions and track changes in their thinking

and understanding as they confirmed or revised their predictions. Students should write statements of overall understanding in their notebooks.

5. Emphasize to students that they should use this same process when they read on their own.

For this activity, students should recall what they have learned about home mortgage payments, taxes and rental payments. Proceed through the following sequence of events:

1. Write “Should I buy or rent a home or apartment?” on the board and use it as a springboard for a class discussion. Record students’ responses on the board.
2. Ask students to recall what they have learned about mortgage calculations, home prices, and rental prices, and ask students to make predictions about the reading. Have students write their predictions in their notebooks.
3. Distribute the Rent Or Buy? BLM.
4. Have students begin reading the Rent Or Buy BLM stopping at the 5<sup>th</sup> reason in the first section.
5. Discuss what has been read thus far, and poll students to respond to their predictions.
6. Have students make predictions about what the remaining 5 reasons will be.
7. Read the remaining five reasons and again pause to poll students on their predictions.
8. Ask students to quickly calculate how much rent they might expect to pay over a 20 year period and record it in their notebooks.
9. Read and discuss the Did You Know How Much Rent You Pay? table.
10. As a conclusion, have students compare their original predictions to the Should You Rent Or Own? section. Poll them to determine if their original predictions held up in the reading, or if their predictions were deemed false. Ask students to record their conclusions and justifications in their notebooks.

**Activity 9: Housing Costs (Financial Plan) (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 13a, 14b, 19f)**

Materials List: house listings(student provided, one for each student), How Much Can You Afford? BLM, Career Exploration BLM (Unit 5, Activity 9), Internet capable computer with printer, stick glue, pencil

Distribute the How Much Can You Afford? BLM and ask students to find, in the newspaper, a real estate listing for a home that they would someday like to own, clip it, and bring it to class.

Use the Career Exploration BLM (Unit 5, Activity 9) from their financial plans to complete the “How Much Home Can You Afford?” calculator at the following web address: [http://www.ginniemaegov/2\\_prequal/intro\\_questions.asp?Section=YPTH](http://www.ginniemaegov/2_prequal/intro_questions.asp?Section=YPTH).

Have students print the output from the web calculator and glue the home listing to the back of the page. Under the home listing, have students answer:

1. Could you afford the house you chose?
2. Why did you choose this house?
3. What concessions could you make to modify (lower) your housing wants?

Conclude by discussing student findings and their thoughts on the type and quality of the home they might afford. Poll the class about amenities they'd be willing to concede to afford a home.

Have students include the How Much Can You Afford? BLM in their financial plans.

## Sample Assessments

### General Assessments

- Assess mastery of the calculations from this unit with the Calculation Test BLM.
- Assess understanding of the ideas from this unit with the Writing Test BLM.
- The student will add to his/her Mathematical Skills Portfolio with notes taken during class lectures in activities 1, 2, and 4.

### Activity-Specific Assessments

- Activity 1: Assess mastery of mortgage loan repayment and graphing calculator usage with Graphing Calculator Solution BLM.
- Activity 2: Assess mastery of closing cost calculation with the Closing Cost BLM.
- Activity 6: Score completeness and accuracy of the rental agreement using the Renting Rubric BLM.
- Activity 8: Assess Internet research with the Internet Research Rubric BLM.

## Resources

**The American Bar Association Guide to Home Ownership; the Complete and Easy Guide to All the Law Every Home Owner Should Know.** Times Books, 1995.  
Easy to read, jargon-free.

**How to Buy a House, Condo, or Co-op** by Michael C. Thomsett and the editors of Consumer Reports Books. 1990.

## Financial Math

### Unit 9: Investments and Insurance

**Time Frame:** Approximately four weeks



#### Unit Description

Basic investing skills and how to begin to plan and implement a long-term investing plan are introduced with relevant topics. This unit addresses life insurance in two forms: term life and whole life. Healthcare is explored with research and a debate. The financial plan will be updated to include topics discussed in the unit.

#### Student Understandings

Students will understand how to read stock and mutual fund tables in a newspaper. Students will understand the risks and rewards associated with different types of investments, how to calculate the purchase cost and the selling cost of stocks, mutual funds, both load and no-load funds, and bonds. Students will learn to calculate and compare effective annual yield for different investments, and choose an investment based on their risk/reward tolerance and time horizon. Students will understand the difference between term life and whole life and when each is appropriate. Students will understand the healthcare issue and be able to communicate effectively their positions on matters concerning how to finance the rising costs of healthcare. Students will understand how insurance and investments fit into their plans for financial success.

#### Guiding Questions

1. Can students illustrate the differences between term life and whole life and determine when each type would be appropriate?
2. Can students identify issues related to financing healthcare and express an effective opinion regarding those issues?
3. Can students read the stock and mutual fund tables in a newspaper?
4. Can students identify the risk/reward continuum and place each type of investment accurately on it?
5. Can students calculate the purchase cost and selling cost of stocks, mutual funds, load and no-load funds, and bonds?
6. Can students calculate and compare effective annual yield for different investment types and choose an appropriate investment for a given situation?
7. Can students effectively integrate life insurance, health insurance, and investments into their financial plans?

**Unit 9 Grade-Level Expectations (GLEs)**

<b>GLE#</b>	<b>GLE Text and Benchmarks</b>
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
4.	Distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology (N-3-H) (N-4-H) (N-7-H)
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Grade 10</b>	
2.	Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)
3.	Identify factors that drive economic decisions (e.g., incentives, benefits, costs, trade-offs, consequences) (E-1A-H1)
4.	Analyze an economic choice at the personal, family, or societal level to determine its opportunity cost (E-1A-H1)
34.	Describe the impact of given forms of taxation (E-1B-H3)
35.	Describe the effects of governmental action or intervention in a market economy (E-1B-H3)
52.	Explain the impact of inflation/deflation on individuals, nations, and the world, including its impact on economic decisions (E-1C-H2)
54.	Predict the consequences of investment decisions made by individuals, businesses, and government (E-1C-H2)

**Sample Activities**

**Activity 1: Stock Market Investing (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Economics (Core Course: Free Enterprise): 1, 3, 4; Business: 11i, 14a, 14b, 14c, 14d, 14f, 19f)**

Materials List: Stock Portfolio BLM, Portfolio Buy Sheet BLM, Company Sheet BLM, Portfolio Tally Sheet BLM, folders (one for each student), computer with Internet access, 4-function calculator, pencil

Prepare for each student: 1 copy of the Stock Portfolio BLM, 1 copy of the Portfolio Buy Sheet BLM, 10 copies of the Company Sheet BLM, and 1 copy of the Portfolio Tally

Sheet BLM. Organize into a folder for each student and issue the complete folder on the first day of the activity.

This activity should span the entire unit, and will illustrate the dynamic nature of stock market investments. Use the following activity guidelines.

- ❑ Each student begins with a hypothetical \$50,000 to invest in the NYSE.
- ❑ Students should be given two days to research companies listed on the NYSE and choose their investments at <http://www.nyse.com/>. Be prepared to assist student stock market research as required.
- ❑ Each student must invest as close to possible all of the \$50,000 on NYSE listed companies.
- ❑ Students must invest in common stock of 10 companies.
- ❑ They must buy a minimum of 10 shares in each company.
- ❑ On the “buy day”, instruct students how to calculate stock purchases. Include broker commission in the lecture, even though no commission is charged in the conduct of this activity.
- ❑ Each day have students update the Company Sheet BLM for each company in which they invested using the previous day’s closing price. Students can check the closing price of their stocks at the above NYSE web address or the daily newspaper.
- ❑ At the end of the activity, on the “sell day”, instruct students in calculating the selling price of their stocks. Again include broker commission in the lecture, but do not pay any when calculating selling price for this activity.
- ❑ Students should use their Company Sheet BLMs to compile the Portfolio Tally Sheet BLM. Below is a sample tally sheet.

<b>NYSE Investments - Tally Sheet</b>					
<b>Company</b>	<b>Shares Purchases</b>	<b>Purchase Price</b>	<b>Final Price</b>	<b>Investment Results</b>	<b>Profit/Loss</b>
AAA	100	\$32.14	\$33.92	\$178	PROFIT
BBB	100	\$1.25	\$.88	-\$37	LOSS
CCC					
DDD					
EEE					
<b>Portfolio Total</b>				<i>\$141</i>	<i>PROFIT</i>

Supplement the daily task of students updating their Company Sheet BLMs with additional discussion of stocks, stock markets and general investing ideas. Students should work additional word problems concerning the buying and selling of stocks.

**Activity 2: Financial Times (GLEs: Economics (Core Course: Free Enterprise): 1; Business: 11a)**

Materials List: financial section of newspaper(student provided), Newspaper Stock Listings Notes BLM , Newspaper Listings BLM, pencil

Have each student bring the financial section of a newspaper to class. Be prepared to supply a financial section to those students who do not bring their newspaper section.

This activity should focus only on stocks listed on the NYSE, New York Stock Exchange.

Distribute the Newspaper Stock Listings Notes BLM. Students will use the *split-page notetaking* ([view literacy strategy descriptions](#)) strategy to take notes during the class lecture explaining how to read the stock market tables. Use the examples provided on the Newspaper Listings BLM to explain to students how to read the stock market tables. Pause after the explanation of each column. Choose a student to read what he/she wrote for notes on the Newspaper Stock Listings Notes BLM for that sub-topic. Write the response on the board. Refer to the response; use it to summarize the sub-topic. Correct or clarify any incorrect or incomplete responses

Distribute the Newspaper Listings BLM. After the discussion, ask students to find the newspaper listings for the ten stocks they identified on their Portfolio Buy Sheet BLM from Activity 1. Have them complete the table on the Newspaper Listings BLM.

Conclude the activity by showing students how to read Mutual Fund tables from the same financial sections.

**Activity 3: Nightly Business Report (GLEs: Economics (Core Course: Free Enterprise): 1, 3, 4; Business: 11a, 13e)**

Materials List: Business Television Opinionnaire BLM, television (for student homework), Nightly Notes BLM, notebook, pencil

Prepare five copies of the Business Television Opinionnaire BLM per student and five copies of the Nightly Notes BLM per student. Begin this activity on a Monday. This activity will employ an *opinionnaire* ([view literacy strategy descriptions](#)) to mark student changes in attitude throughout the course of the week of watching “Nightly Business Report.”

Begin the activity by briefly describing what business television is. The task of this activity is to have students watch 5 episodes, during one week, of the “Nightly Business Report” on Louisiana Public Broadcasting television at 5:30 pm. Distribute one copy of the Business Television Opinionnaire BLM. Have students record their opinions/attitudes about business television. Be sure to ask them to write “Monday” on

the day of week line on the Business Television BLM. Discuss student responses on the *opinionnaire*; write selected responses on the board to summarize student attitudes.

Next, distribute to each student five copies of the Nightly Notes BLM and provide detail about the task. Have students keep diaries of the episodes on the Nightly Notes BLM containing:

- Date of episode
- Summary of major topics covered with relevant points from each article
- Closing numbers for the Dow Jones Industrial Average, the NASDAQ, the SandP 500, Light Sweet Crude, and Brent North Sea Crude.
- Listing of any topics that would directly affect the financial stability of their lives and how the affect would manifest itself.

Each day, ask students to share their notes taken on the prior evening's episode with their neighbors in the classroom; this will help solidify and clarify information gained. Debrief the students by discussing the major points of the episode with the class. On the board, one at a time, write the major topics covered in the episode and poll students to provide detail about these topics. Clarify important points for students and ask questions to gauge depth of understanding. Summarize, with the help of students, each topic covered.

After the daily information exchange, on Tuesday through Friday, distribute another copy of the Business Television Opinionnaire BLM. Ask students to complete it, but tell them not to discuss their responses.

Continue, in this fashion, finishing the following Monday. After the daily debrief and the final *opinionnaire*, ask students to think, in general terms, about what they have learned during the week of watching the "Nightly Business Report." Have them discuss in small groups of 3 to 4 students what they have learned. Each group should produce a list of four concepts it learned that week.

Conclude the activity by polling each group about what it learned. Write relevant responses on the board.

A transcript of each episode is available at <http://www.pbs.org/nbr/site/onair/transcripts/archive/>.

**Activity 4: Investing Basics (GLEs: Economics (Core Course: Free Enterprise): 1, 3, 4; Business: 4c, 11i, 19f)**

Materials List: computer with Internet access, 4-function calculator, pencil

Assign a different investment topic to pairs of students to research. Upon research completion, the students should produce full-size posters displaying the results of their research, and should prepare a 3 to 4 minute presentation of findings. Allow one week for research and poster preparation. Allow two class periods for presentation of posters. The

presentation should be oral, given by both members, and should include their poster as a visual aid. Require that each student, not giving a presentation, write two questions during each presentation that they would like answered. Use each pair giving a presentation as a *professor know-it-all* ([view literacy strategy descriptions](#)) to answer selected student questions relating to their research topics. Be prepared to choose student questioners for each presentation.

The goal of this activity is for each pair of students to produce answers for one piece of the investing “puzzle.” The class, collectively, should assemble the “puzzle” into a coherent picture of investing.

There are many sources of information on investing basics; information is available on the Internet at sites such as:

1. <http://www.fool.com/school/basics/basics.htm>
2. <http://www.thestreet.com/tsc/basics/index.html>
3. <http://finance.yahoo.com/education>
4. <http://www.investopedia.com/university/buildingblocks.asp>
5. and many more, just search the Internet for “investing basics”

Information is available in current personal finance magazines such as *Kiplinger’s Personal Finance* and *SmartMoney*. Information is available in many books at any library.

Topics assigned should include, but are not limited to:

1. Stocks
  - a. How to buy and sell
  - b. Capital gains
  - c. Brokerage fees
  - d. Tax implications
  - e. Types of stock
  - f. Risks/Rewards
2. Mutual Funds
  - a. What are they?
  - b. What types are available?
  - c. Load and No-load
  - d. How to buy and sell
  - e. Advantages/Disadvantages
3. Bonds
  - a. What are they?
  - b. Types of bonds
  - c. How to buy and sell
  - d. Par value, coupon rate and maturity date
  - e. Bond mutual funds
4. Stock research material
  - a. Valueline
5. Mutual fund research material
6. Morningstar
6. Dividend Reinvestment Plans (DRiPs)
  - a. What are they?
  - b. How do I get started?
  - c. What companies offer them?
  - d. Advantages/Disadvantages
7. Time Value of Money
  - a. The power of compounding
  - b. Why invest sooner rather than later?
8. Investment Styles
  - a. Homerun hitter
  - b. Slow-and-steady wins the race
9. Risk/Reward Continuum
  - a. Low risk investments
  - b. High risk investments
10. How to pick a stockbroker
  - a. How is a stockbroker paid?

- |  |                            |
|--|----------------------------|
| b. What qualifies someone to be a stockbroker? | a. New York Stock Exchange |
| c. What can I expect from a stockbroker?       | b. American Stock Exchange |
|  | c. NASDAQ                  |
| 11. Stock Exchanges in the United States       | 12. Retirement Investing   |
|  | a. IRAs                    |
|  | b. 401(k)s                 |

**Activity 5: Mutual Funds (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 11i, 14a, 14b, 14c, 14d, 14f)**

Materials List: Introduction to Mutual Funds BLM, Discussion Guide BLM, 4-function calculator, pencil

This is a two-part activity.

Part One: Prepare one copy of the Introduction to Mutual Funds BLM and the Discussion Guide BLM for each student.

This activity uses *reciprocal teaching* ([view literacy strategy descriptions](#)). Follow the procedure below.

1. Begin by writing a question such as, “About 9 million Americans own shares in mutual funds<sup>1</sup>, so what’s the big deal?” on the board to stimulate student interest in the topic. Ask for student input, and guide the discussion to the content of the Introduction to Mutual Funds BLM.
2. Distribute the Introduction to Mutual Funds BLM and the Discussion Guide BLM. Model for the class the four steps of *reciprocal teaching* using the first section, “What Are They.” Seek input from the class during the writing of the summary.
3. Students should, by now, have an understanding of the reciprocal teaching process; therefore, the remainder of the Introduction to Mutual Funds BLM will be read by groups of four students, following the *reciprocal teaching* process. Divide students into groups of four students. Assign one student from each group to each of the four comprehension processes of the *reciprocal teaching* process, i.e. one student to make predictions, one to write questions, one to clarify and one to summarize.
4. Ask the groups to read the next section, “Advantages and Disadvantages.” Monitor each group to assure that students are fulfilling the roles assigned them. Assist students with their assigned roles within each group. Groups, and students within groups, may find it difficult to follow the *reciprocal teaching* process without outside assistance; be prepared to provide this assistance.
5. After each group has completed the “Advantages and Disadvantages” section, poll each group to assess depth of comprehension.

6. Complete the remainder of the Introduction to Mutual Funds BLM in a similar fashion, pausing between each section.
7. It should be noted that there is no section of the Discussion Guide BLM for sections titled “How to Buy and Sell Shares” and “Degrees of Risk.” Students should, however, read these sections during the activity.

<sup>1</sup> Taken from text at <http://www.nodebtносweat.com/howmutualfundswork.htm>.

Part Two: Have students work word problems related to the buying and selling in mutual funds and bonds.

**Activity 6: Effective Annual Yield (GLEs: Grade 9: 4, 5, 19; Grade 10: 2; Business: 11i, 14a, 14b, 14c, 14d, 14f)**

Materials List: 4-function calculator, pencil

Have students calculate effective annual yield for certificates of deposit, stocks, mutual funds, both load and no-load, and bonds. Word problems should be presented of each type. A sample problem follows.

Example.

The Racines own 300 shares of Aleron Corp, purchased at \$15.37 per share. Two years later they sold the stock for \$17.18 per share. For each transaction, they paid a 2% commission to their stockbroker. While they held the stock, it paid an \$0.08 per share dividend quarterly. What is the annual yield? What is the total return on their investment?

*Solution.*

$$(\$0.08 * 4) / \$15.37 = 2.08\% \quad \text{Annual yield}$$

$$300 * \$15.37 * 1.02 = \$4703.22 \quad \text{Cost of stock}$$

$$300 * \$17.18 * .98 = \$5050.92 \quad \text{Proceeds from sale}$$

$$(\$5050.92 - \$4703.22) + (\$0.08 * 12 * 300 = \$635.70) \quad \text{Total gained from stock ownership}$$

$$\$635.70 / \$4703.22 = 13.5\% \quad \text{Total return on investment}$$

After the problems are complete, discuss how effective annual yield is used to alleviate any differences in investment return timelines, such as stocks paying quarterly dividends and mutual funds paying annual distributions.

**Activity 7: Investment Risk/Reward (GLEs: Economics (Core Course: Free Enterprise): 1, 3, 4; Business: 11i, 13a, 19f)**

Materials List: Risk vs. Reward BLM, computer with Internet access, 4-function calculator, pencil

Copy the two pages of the Risk vs. Reward BLM as one 2-sided paper.

Distribute the Risk vs. Reward BLM and discuss, in basic terms, investment risk and reward. Refer to the graphic on the reverse side of the Risk vs. Reward BLM to clarify student questions. Following the discussion, assign the research task detailed on the Risk vs. Reward BLM.

Have each student produce a poster-sized graphic of the risk/reward continuum for various investment types. At the bottom of the poster, the students should list three ways to minimize investment risk over the long term.

In an informal manner, have students present and describe their graphics to the class. Hang graphics in classroom.

**Activity 8: Life Insurance (GLEs: Economics (Core Course: Free Enterprise): 1, 4; Business: 11j)**

Materials List: Life Insurance Terms BLM, computer with Internet access, 4-function calculator, pencil

This activity uses a modified *vocabulary cards* ([view literacy strategy descriptions](#)) strategy. The strategy has been modified by excluding an illustration, and by using the Life Insurance Terms BLM to record responses instead of 3x5 or 5x7 cards.

Distribute the Life Insurance Terms BLM and refer to them to provide students a basic understanding of the terminology and purpose of life insurance. Using the Internet as a resource, have students individually research definitions for each of the terms on the Life Insurance Terms BLM.

Conclude the activity by allowing time for students to review the words on the Life Insurance Terms BLM. Then, have students find a partner to quiz and to hold each other accountable for accurate information on the Life Insurance Terms BLM.

**Activity 9: Healthcare (GLEs: Economics (Core Course: Free Enterprise): 1, 3, 4, 34, 35, 52, 54; Business: 4j, 5a, 11a, 11j, 13k, 19f)**

Materials List: computer with Internet access, ability to show computer videos or slideshows to class, Health Insurance: Understanding What It Covers BLM, Health Insurance on Trial BLM, pencil

Note to teacher. During the execution of this activity, students should also be tracking their expenses according to Unit 10, Activity 1. This will be important to realize the goals of Unit 10.

This is a five-day activity.

Before beginning the activity, explore the Health Politics website at: <http://www.healthpolitics.org/home.asp>. This website contains many downloadable videos and slideshows pertaining to various healthcare issues. The most relevant topics are covered in the “Health Care Reform” link on the left side of the page. Choose several different videos and/or slideshows to download, and show them to the students to peak student interest in the topic. Suggested downloads include: *Accidental Health Care*, *Building Tomorrow’s Health Care*, *Who are America’s Uninsured?*, *The Road to Universal Health Coverage*, and *Health Insurance Reform*.

Ask students to respond to the statistics, comments and points-of-view of each presentation. Ask students if they, or anyone they know, are affected by any of the health issues highlighted in the presentations. Discuss the rising burden on society to provide quality healthcare to our growing masses. In general, discuss what the students think about:

- Is healthcare too expensive?
- Why are healthcare costs rising at a rate much higher than core inflation?
- Who should be responsible for paying the rising costs of healthcare?
  - Society as a whole through higher taxes
  - Individuals through higher group insurance rates
- What about those who can’t pay?
- What about prescription medication? Who should pay?
  - Society as a whole (higher taxes)
  - Individuals (potentially greater, disproportionate individual burden)
- What would cause healthcare rates to rise so high so fast?
  - Shortage of doctors
  - Shortage of medical facilities
  - Shortage of prescription medication
- What role does medical technology play in rising costs?
- Does a healthy, long life have a price? If so, what is it and who decides?

As students provide answers and discussion points for the topics, begin to separate like-minded students into working groups. Finalize the working groups into similar points of view at the end of the discussion, and divide the students into the working groups. Each

group need not be the same size, but each group should have a minimum of five members.

Assign each group a topic to research based on similar points of view. A sample list follows:

- Social medicine, society pays for everyone's healthcare costs
- Private medicine, individuals pay for their own healthcare needs
- Middle-Of-The-Road medicine, help those that need help and those that can, pay

Mock Trial. HEALTHCARE: HOW DO WE FIX IT?

Each working group will be a defensive team for the defense of the group's point-of-view concerning healthcare. The groups should prepare a defense to present to a judge on day 5 of this activity.

Days 1 through 4. Give each working group four days to research and plan for a defensive argument based on the group's research and prevailing point of view. Assist the groups in the formulation of a thesis and preparation of the argument.

Day 5. Ask another teacher or an assistant principal to preside, as judge, over a mock trial of the healthcare issue. Each group will present its researched argument to the judge with facts, conjecture and visual displays. While one group is presenting, the other groups can serve as the jury for the argument. The idle groups should take notes and respond to the judge as necessary.

After the mock trial concludes, discuss the healthcare issue with the class again. Probe the students with questions such as:

- Did the research or mock trial sway any opinions about the issue?
- Does anyone have any greater respect for another group's opinion than it did before the mock trial?
- How did the mock trial change the views of healthcare?

**Activity 10: Financial Plan Update (GLEs: Economics (Core Course: Free Enterprise): 1, 3, 4; Business: 11i, 11k, 13a)**

Materials List: student's financial plans, 4-function calculator, pencil

Based on Unit 3, Activity 7, the student's financial plan should contain these five components:

1. Set goals
2. Inventory
3. Analyze
4. Plan
5. Update

Divide the students into groups of three or four each. Have each group integrate its life and health insurance preferences and investment decisions based on the new information presented in Unit 9. Students must review savings practices and update them with an investment strategies to meet long-term goals. Students must review their current practices with regard to life and health insurance, and modify them to include new/revised goals with regard to insurance protection.

## Sample Assessments

### General Assessments

- A topics comprehension quiz is provided as the Building Wealth Quiz BLM.
- A calculation assessment is provided as the Test BLM.
- Administer the “Test Your Money Smarts” quiz located at: <http://www.sec.gov/pdf/monyquiz.pdf>. The answer key is located at: <http://www.sec.gov/pdf/quizansr.pdf>. This is a pdf document and cannot be given directly from the computer. Download the document and reproduce it before administering the quiz.

### Activity-Specific Assessments

- Activity 1: Have students use graphing calculators, their Portfolio Buy Sheet BLM and the Calculator Tool BLM to create lists of their investment portfolios in graphing calculators.
- Activity 8: Use the Definitions BLM to assess students understanding of insurance terms.
- Activity 9: Use the Trial Rubric BLM to score the student’s research for trial, performance, and benefit to his/her group while investigating healthcare.

## Resources

**Street Wise: A Guide for Teen Investors** by Janet Bamford. Bloomberg Press, 2000. ISBN: 1-57660-039-4. 223 pages. \$16.95.

**The Only Investment Guide You’ll Ever Need** by Andrew P. Tobias. Harcourt Brace and Co. 1996. ISBN: 0-15-600337-6. 221 pages. \$12.00.

**The First Book of Investing; the Absolute Beginner’s Guide to Building Wealth Safely** by Samuel Case. Prima Pub. ISBN: 0-7615-0838-4. 346 pages. \$15.

**The Small Investor; a Beginner's Guide to Stocks, Bonds and Mutual Funds** by Jim Gard. Ten Speed Press, 1996. ISBN: 0-89815-825-7. 282 pages. \$11.95.

**The Dean Witter Guide to Personal Investing** by Robert M. Gardiner. Dutton, 1997. 217 pages. ISBN: 0-525-94300-5. 217 pages. \$24.95.

## Financial Math Unit 10: Record Keeping

**Time Frame:** Approximately one week



### Unit Description

This unit ties the many aspects of financial planning and money management together. Budgeting is introduced to enhance the relevance of current financial needs and future purchasing decisions. The financial plan is finalized.

### Student Understandings

Students will understand the importance of tabulating accurate historical records and how they can be used to accurately predict future financial events. Students will understand how a comprehensive financial plan comes together and how to use the decision-making process to adjust the plan through time.

### Guiding Questions

1. Can students calculate historical spending records?
2. Can students prepare a monthly budget sheet?
3. Can students complete their comprehensive financial plans to include all of the items discussed above?
4. Can students identify how the decision-making process is used to make adjustments to a financial plan over time?

### Unit 10 Grade-Level Expectations (GLEs)

GLE#	GLE Text and Benchmarks
<b>Number and Number Relations</b>	
<b>Grade 9</b>	
5.	Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) (N-5-H)
<b>Measurement</b>	
<b>Grade 9</b>	
19.	Use significant digits in computational problems (M-1-H) (N-2-H)
<b>Data Analysis, Probability, and Discrete Math</b>	
<b>Economics (Core Course: Free Enterprise)</b>	
1.	Apply fundamental economic concepts to decisions about personal finance (E-1A-H1)

GLE#	GLE Text and Benchmarks
4.	Analyze an economic choice at the personal, family, or societal level to determine its opportunity cost (E-1A-H1)

### Sample Activities

#### **Activity 1: Wrap-up Log (GLEs: Economics (Core Course: Free Enterprise): 1, 4; Business: 13b)**

Materials List: student learning log (notebook), pencil

For this unit, have students maintain a *learning log* ([view literacy strategy descriptions](#)). Explain that the *learning log* will be used to record observations, thoughts, and reflections of things learned in Financial Math. Each day, present students with a *learning log* writing prompt at the beginning of class, which requires reflective thinking about what was learned in this course. Allow no more than ten to fifteen minutes to complete each prompt. Daily writing prompts:

Day 1: Reflect on your maturation as a consumer during this course.

Day 2: What will you take away from this course that you will definitely be using in ten years?

Day 3: Explain how the 5-step decision making process has influenced your actions or changed your perspective, not necessarily financially.

Day 4: Have you had any “A-ha” or “Now I get it” experiences in this course? Explain.

Day 5: If you could write two sentences about finances on paper and seal it in a vault to be opened in twenty years, what would you write?

#### **Activity 2: Spending Record (GLEs: Grade 9: 5, 19; Economics (Core Course: Free Enterprise): 1, 4; Business: 8a, 14a, 14b, 14c, 14d, 14f)**

Materials List: Cash Flow Record BLM, 4-function calculator, pencil

Copy the two pages of the Cash Flow Record BLM as one 2-sided page.

Distribute the Cash Flow Record BLM and discuss the financial importance of knowing where your money is spent. Students should understand that the first step toward managing money is to keep accurate records of how money is spent.

Have students complete a personal spending record for the two weeks. Begin the last week of Unit 9 and continue in this unit. The Cash Flow Record BLM should be used to update short-term financial goals in students' financial plans.

**Activity 3: Monthly Budget (GLEs: Grade 9: 5, 19; Economics (Core Course: Free Enterprise): 1, 4; Business: 8a, 11a, 14a, 14b, 14c, 14d)**

Materials List: Monthly Budget Sheet BLM, Cash Flow Record BLM from Activity 2, 4-function calculator, pencil

Use the Cash Flow Record BLM prepared for the first week of this unit to extrapolate dollar amounts to prepare a monthly budget sheet. Explain the process of budgeting and how to use the Monthly Budget Sheet BLM in the process of financial planning. Explain that projected income and expenses would be written in the "Budgeted Amount" column before the month begins. At the end of the month, complete the "Actual Amount" column and investigate any significant differences.

Provide students with dollar amounts to write in the "Actual Amount" column and discuss reasons why there may be differences from the budgeted amount.

**Activity 4: Complete Financial Plan (GLEs: Economics (Core Course: Free Enterprise): 1, 4; Business: 8a, 11k)**

Materials List: binder (1 ½ inch), dividers, colored pencils

Students should compile all of their financial planning information into a comprehensive financial plan. The plan has been created, updated, and modified throughout the course. Students will have a clear plan of action to shape their financial futures. The financial plan must be organized in a binder with dividers used to separate the sections. Students should decorate the section dividers with colored pencils to reflect the theme of the section. Include the following sections:

1. Financial Goals
  - a. Needs vs. Wants BLM; Unit 1, Activity 8
  - b. Financial Goals BLM; Unit 1, Activity 12
  - c. Review goals; Unit 2, Activity 8
  - d. Financial Plan Outline BLM; Unit 3, Activity 7, must contain no less than 10 goals. This is where individual financial goals and educational timeline should be. These will be different for each student. The rest of the financial plan is just supporting documentation.
  - e. Detailed timeline for meeting educational requirements of chosen career; Unit 5, Activity 10
  - f. Revise longer-term goals to account for the income differences discovered while researching chosen career; Unit 5, Activity 10

2. Earnings Potential
  - a. Career Expectations Opinionnaire; Unit 1, Activity 15
  - b. Career Exploration BLM; Unit 1, Activity 15
  - c. Income Tax fact sheet; Unit 2, Activity 2, Part 2
  - d. Research and *RAFT writing*; Unit 5, Activity 1, Part 2
  - e. Print of “Ten Steps to Planning for Your Future” Internet worksheet; Unit 5, Activity 9
  - f. Career Expectations BLM; Unit 5, Activity 9
3. Automobile
  - a. Used Auto Worksheet BLM; Unit 7, Activity 4
  - b. Vehicle operating costs problems; Unit 7, Activity 5
  - c. Vehicle depreciation spreadsheet and graph; Unit 7, Activity 7, Part 1
  - d. Buying/Leasing Opinionnaire BLM plus Buying Vs. Leasing Notes BLM; Unit 7, Activity 9
  - e. Gasoline Pricing BLM and Gasoline Reciprocal Teaching Record BLM; Unit 7, Activity 12
4. Housing
  - a. Unit Price Comparison BLM; Unit 5, Activity 4, part 2
  - b. Closing Cost BLM; Unit 8, Activity 2, Specific Assessment
  - c. Information About RESPA BLM plus RESPA Notes BLM; Unit 8, Activity 3
  - d. Other Housing Costs BLM; Unit 8, Activity 5
  - e. Completed rental agreement; Unit 8, Activity 6
  - f. Homeowners Insurance BLM with answer outline; Unit 8, Activity 7
  - g. How Much Can You Afford? BLM with printed Internet worksheet; Unit 8, Activity 9
5. Insurance
  - a. Life
    - i. Life Insurance Terms BLM; Unit 9, Activity 8
  - b. Auto
    - i. Louisiana Minimum Auto Insurance illustrations; Unit 7, Activity 11
  - c. Health
    - i. Print of PowerPoint slides; Unit 2, Activity 6
    - ii. Health Insurance: Understanding What It Covers BLM; Unit 9, Activity 9
6. Investments
  - a. Inflation Concept Map BLM; Unit 2, Activity 10
  - b. CPI Concept Map BLM; Unit 2, Activity 10
  - c. Responsibility BLM; Unit 3, Activity 8
  - d. A Penny Saved BLM with answers; Unit 4, Activity 3
  - e. Portfolio Buy Sheet BLM, Company Sheet BLM and Portfolio Tally Sheet BLM; Unit 9, Activity 1
  - f. Newspaper Stock Listings Notes BLM; Unit 9, Activity 2
  - g. Investing Basics research notes; Unit 9, Activity 4

- h. Introduction to Mutual Funds BLM and Discussion Guide BLM; Unit 9, Activity 5
  - i. Risk vs. Reward BLM; Unit 9, Activity 7
  - j. “Test Your Money Smarts” quiz with corrected answers; Unit 9, General Assessments
7. Banking
- a. Opinions About Banks BLM; Unit 3, Activity 2
  - b. The Story Of Banks BLM; Unit 3, Activity 2
  - c. Checking account simulation; Unit 3, Activity 1: include account application, all deposit slips, checks, check register and reconciliation worksheet in a pocket folder
  - d. Banking Literacy; Unit 4, Activity 7: include all documents produced during this activity
8. Credit
- a. Vocabulary Chart BLM; Unit 6, Activity 1
  - b. Getting Credit Started; Unit 6, Activity 4: include all gists from activity
  - c. Credit Card Application BLM with completed credit card applications; Unit 6, Activity 5
  - d. Repayment Simulation BLM; Unit 6, Activity 9
  - e. Electronic Loan Calculation BLM with print of amortization table; Unit 6, Activity 10
  - f. Credit and Your Consumer Rights document plus Discussion Guide BLM; Unit 6, Activity 13

The creation of this document should be a watershed event in their lives. They should refer to this document often as a guiding light on their paths to financial success. Effort should be made by the students to organize their financial plans into neat, complete documents that are easily referenced and amendable when the need arises.

### Sample Assessments

#### General Assessments

- Have students write a response to the prompt, “If I could tell the future me in twenty years something about financial planning it would be...”
- Have each student write three questions about the financial planning process and/or any of it’s parts or methodology. Collect the papers and redistribute them such that a student does not receive their own paper. Have each student now answer the questions as completely as possible.
- An end-of-course test has been provided; End-Of-Course Test BLM.

### **Activity-Specific Assessments**

- Activity 2: Use the Cash Flow Rubric BLM to score the Cash Flow Record BLM for weeks one and two.
- Activity 3: In pairs, have students create spreadsheet worksheets that resemble the Monthly Budget Sheet BLM. Their spreadsheets should auto-calculate each of the “totals” cells and the “balance” cell.
- Activity 4: Use Financial Plan Rubric BLM to score the Financial Plan.