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Money Math

Lessons for Life

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Sponsored by

Citigroup Foundation
Department of the Treasury
Jump\$tart Coalition for Personal Financial Literacy
University of Missouri—St. Louis

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ISBN 978-0-9709279-1-0

\$³ = \$ ¢ \$ $\frac{1}{2}$ \$ + \$ ∞ \$ ÷ \$

Teachers may obtain a free printed copy of *Money Math: Lessons for Life*
by sending an e-mail request to: moneymath@bpd.treas.gov

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Printed in the United States of America.

ISBN 978-0-9709279-1-0

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Lesson 1 The Secret to Becoming a Millionaire.....1

Students learn how saving helps people become wealthy. They develop “rules to become a millionaire” as they work through a series of exercises, learning that it is important to: (1) save early and often, (2) save as much as possible, (3) earn compound interest, (4) try to earn a high interest rate, (5) leave deposits and interest earned in the account as long as possible, and (6) choose accounts for which interest is compounded often. This lesson assumes that students have worked with percents and decimal equivalents.

Lesson 2 Wallpaper Woes 25

Students hear a story about Tom, a middle-school student who wants to redecorate his bedroom. They measure the classroom wall dimensions, draw a scale model, and incorporate measurements for windows and doors to determine the area that could be covered by wallpaper. Students then hear more about Tom’s redecorating adventure, learning about expenses, budget constraints, and trade-offs. For assessment, students measure their rooms at home. This lesson requires that students know how to measure, or a review may be necessary before teaching.

Lesson 3 Math and Taxes: A Pair to Count On..... 39

Students examine careers and reflect on how workers use math in their occupations. They study selected occupations, learning about the work skills (human capital) that different workers possess and salaries that those workers earn. Next, students learn about how taxes are paid on income that people earn and how income tax is calculated. They learn how the progressive federal income tax is based on the ability-to-pay principle.

Lesson 4 Spreading the Budget 67

Students develop a budget for a college student, using a spreadsheet. They examine the student’s fixed, variable, and periodic expenses and revise to adjust for cash flow problems that appear on the first spreadsheet. This lesson is designed to increase student awareness and appreciation of the efficiency of using computer technology in math applications.

Let's face it—kids like money. So, what better way to help young people embrace math than by teaching them about money...and what better *reason* can we give them for learning math? Through *Money Math: Lessons for Life*, middle grade students apply math skills to some of life's costly challenges, learning important personal finance concepts along the way. This wonderfully integrated teaching resource complements what students will likely learn before and afterward, because financial education isn't a one-shot deal and financial literacy requires a lifetime of learning. The Jump\$tart Coalition is proud to continue to support this updated curriculum.

Laura Levine, Executive Director
The Jump\$tart Coalition for Personal Financial Literacy

In today's complex financial world, being financially literate is a critical life skill... as important as reading, writing and arithmetic. So to combine financial education within the teaching of math is an ingenious way to teach both of these subjects simultaneously. To support financial literacy, Citi and the Citigroup Foundation made a commitment in 2004 of \$200 million over ten years to support financial education initiatives around the world. We truly believe that you are never too young to learn how to manage your finances and that *Money Math: Lessons for Life* is a tool to start our young students on the road to becoming financially independent.

Dara Duguay, Director
Citigroup Office of Financial Education

Money Math: Lessons for Life teaches students responsible financial practices before they develop bad habits. For example, one path to accumulating wealth is to start saving at a young age and let compounding interest pay you for your effort. Another is to plan your budget realistically, by bringing your income and expenses into balance—minimizing spending so that you will have money to save. These two life lessons alone would reduce credit card debt, reduce financial pressures on families, and increase personal savings and wealth.

Barbara Flowers, Director
Center for Entrepreneurship and Economic Education
University of Missouri—St. Louis

We've all heard the facts: Americans are borrowing more and saving less; we haven't planned well enough for retirement; few of us are prepared for financial emergencies. Dealing with these realities can be stressful, but the best research tells us that financial education can, and does, make a positive difference in people's lives. *Money Math: Lessons for Life* offers a head start toward financial literacy that applies middle school math concepts through real-life examples from personal finance. Public Debt is proud to support this unique program that helps our children learn how to make positive financial decisions—an important skill they can use throughout their lives.

John Swales, Assistant Commissioner
Office of Retail Securities
Bureau of the Public Debt
Department of the Treasury

Correlation of Money Math: Lessons for Life to National Standards in K-12 Personal Finance Education

Financial Responsibility and Decision Making		Lessons			
		1	2	3	4
Overall Competency Apply reliable information and systematic decision-making to personal financial decisions.		1	2	3	4
Standard 1 Take responsibility for personal financial decisions	Expectations – 4th Grade				
	▪ List examples of financial decisions and their possible consequences.	1	2	3	4
	▪ Identify ways to be a financially responsible youth.	1	2		4
	Expectations – 8th Grade				
	▪ Identify ways to be a financially responsible young adult.	1	2	3	4
	▪ Give examples of the benefits of financial responsibility and the costs of financial irresponsibility.	1	2	3	4
Standard 2 Find and evaluate financial information from a variety of sources	Expectations – 4th Grade				
	▪ Give examples of situations in which financial information would lead to better decisions.	1	2	3	4
	▪ Identify sources of financial information.	1	2	3	4
Standard 4 Make financial decisions by systematically considering alternatives and consequences	Expectations – 4th Grade				
	▪ Explain how limited personal financial resources affect the choices people make.	1	2	3	4
	▪ Rank personal wants/needs in order of importance.	1	2	3	4
	▪ Set measurable short-term financial goals.		2	3	4
	▪ Outline the steps in systematically evaluating alternatives and making a decision.	1	2	3	4
	Expectations – 8th Grade				
	▪ Prioritize personal financial goals.		2	3	4
	▪ Evaluate the results of a financial decision.	1	2		4
▪ Apply systematic decision making to a medium-term goal.	1	2	3	4	
Standard 5 Develop communication strategies for discussing financial issues	Expectations – 8th Grade				
	▪ Explain how discussing important financial matters with household members can help reduce conflict.		2		4

Correlation of *Money Math: Lessons for Life* to National Standards in K-12 Personal Finance Education

Income and Careers		Lessons			
		1	2	3	4
Overall Competency Use a career plan to develop personal income potential.					
Standard 1 Explore career options	Expectations – 4th Grade				
	▪ Explain the difference between a career and a job and identify various jobs in the community.			3	
	▪ Give an example of how an individual’s interests, knowledge, and abilities can affect career and job choice.			3	
	▪ Examine a job related to a career of interest.			3	
	Expectations – 8th Grade				
	▪ Give an example of how education and/or training can affect lifetime income.			3	
	▪ Compare personal skills and interests to various career options.			3	
▪ Describe the educational/training requirements, income potential, and primary duties of at least two jobs of interest.			3		
Standard 2 Identify sources of personal income	Expectations – 4th Grade				
	▪ Explain the difference between a wage and a salary.			3	
	▪ Identify jobs children can do to earn money.	1			
	▪ Give examples of sources of income other than a wage or salary.	1			
	Expectations – 8th Grade				
▪ Define gift, rent, interest, dividend, capital gain, tip, commission, and business profit income.	1		3	4	
Standard 3 Describe factors affecting take-home pay	Expectations – 4th Grade				
	▪ Define tax and explain the difference between sales and income taxes.			3	
	▪ Give an example of how government uses tax revenues.			3	4
	Expectations – 8th Grade				
▪ Explain all items commonly withheld from gross pay.			3	4	

Correlation of *Money Math: Lessons for Life* to National Standards in K-12 Personal Finance Education

Planning And Money Management		Lessons			
		1	2	3	4
Overall Competency Organize and plan personal finances and use a budget to manage cash flow.		1	2	3	4
Standard 1 Develop a plan for spending and saving	Expectations – 4th Grade				
	▪ Give examples of household expense categories and sources of income.		2		4
	▪ Describe how to allocate a weekly allowance among the financial goals of spending, saving, and sharing.	1			
	Expectations – 8th Grade				
	▪ Prepare a personal spending diary.				4
	▪ Discuss the components of a personal budget, including income, planned saving, taxes, and fixed and variable expenses.				4
	▪ Given a household case study, calculate percentages for major expense categories.				4
Standard 4 Apply consumer skills to purchase decisions	Expectations – 4th Grade				
	▪ Apply systematic decision making to a personal age-appropriate purchase.		2		4
	Expectations – 8th Grade				
	▪ Explain the relationship between spending practices and achieving financial goals.	1	2		4
	▪ Given an age-appropriate scenario, describe how to use systematic decision making to choose among courses of action that include a range of spending and non-spending alternatives.	1	2		4

Correlation of *Money Math: Lessons for Life* to National Standards in K-12 Personal Finance Education

Saving and Investing		Lessons			
		1	2	3	4
Overall Competency Implement a diversified investment strategy that is compatible with personal goals.					
Standard 1 Discuss how saving contributes to financial well-being	Expectations – 4th Grade				
	▪ Describe the advantages and disadvantages of saving for a short-term goal.	1			4
	▪ Describe ways that people can cut expenses to save more of their incomes.				4
	Expectations – 8th Grade				
	▪ Give examples of how saving money can improve financial well being.	1			4
	▪ Describe the advantages and disadvantages of saving for short- and medium-term goals.	1			4
	▪ Explain the value of an emergency fund.				4
	▪ Explain why saving is a prerequisite to investing.	1			
Standard 2 Explain how investing builds wealth and helps meet financial goals	Expectations – 4th Grade				
	▪ Give an example of an investment and explain how it can grow in value.	1			
	Expectations – 8th Grade				
	▪ Apply systematic decision making to determine when to invest cash not needed for short-term spending or emergencies.	1			
	▪ Define the time value of money and explain how small amounts of money invested regularly over time grow exponentially.	1			
	▪ Calculate and compare simple interest and compound interest earnings and explain the benefits of a compound rate of return.	1			
Standard 3 Evaluate investment alternatives	Expectations – 4th Grade				
	▪ List the advantages of investing money with a financial institution.	1			
	▪ Compare the main features of interest-earning accounts at local financial institutions.	1			

For additional information on National Standards for K-12 Personal Finance Education, visit: www.jumpstart.org

Correlation of *Money Math: Lessons for Life* to Principles and Standards for School Mathematics

National Council of Teachers of Mathematics

Numbers and Operation Standards for Grades 6-8		Lessons			
Content Standard <i>Instructional goals for all grades</i>	<i>Specific expectations for students in grades 6-8</i>	1	2	3	4
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	▪ work flexibly with fractions, decimals, and percents to solve problems	1		3	4
	▪ develop meaning for percents greater than 100 and less than 1	1		3	4
	▪ develop an understanding of large numbers and recognize and appropriately use exponential, scientific, and calculator notation	1		3	
	▪ use factors, multiples, prime factorization, and relatively prime numbers to solve problems			3	4
Understand meanings of operations and how they relate to one another	▪ understand the meaning and effects of arithmetic operations with fractions, decimals, and integers	1		3	4
	▪ use the associative and commutative properties of addition and multiplication and the distributive property of multiplication over addition to simplify computations with integers, fractions, and decimals	1		3	4
	▪ understand and use the inverse relationships of addition and subtraction, multiplication and division, and squaring and finding square roots to simplify computations and solve problems	1			4
Compute fluently and make reasonable estimates	▪ select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers, and paper and pencil, depending on the situation, and apply the selected methods	1		3	4
	▪ develop and analyze algorithms for computing with fractions, decimals, and integers and develop fluency in their use	1		3	4
	▪ develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results	1		3	4

Correlation of Money Math: Lessons for Life to Principles and Standards for School Mathematics

National Council of Teachers of Mathematics

Algebra Standard for Grades 6-8		Lessons			
Content Standard <i>Instructional goals for all grades</i>	<i>Specific expectations for students in grades 6-8</i>	1	2	3	4
Understand patterns, relations, and functions	▪ represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules	1		3	4
	▪ relate and compare different forms of representation for a relationship	1		3	4
Represent and analyze mathematical situations and structures using algebraic symbols	▪ develop an initial conceptual understanding of different uses of variables	1		3	4
	▪ use symbolic algebra to represent situations and to solve problems, especially those that involve linear relationships	1		3	4
	▪ recognize and generate equivalent forms for simple algebraic expressions and solve linear equations			3	4
Use mathematical models to represent and understand quantitative relationships	▪ model and solve contextualized problems using various representations, such as graphs, tables, and equations	1	2	3	4

Geometry Standards for Grades 6-8		Lessons			
Content Standard <i>Instructional goals for all grades</i>	<i>Specific expectations for students in grades 6-8</i>	1	2	3	4
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	▪ precisely describe, classify, and understand relationships among types of two- and three-dimensional objects using their defining properties		2		
	▪ understand relationships among the angles, side lengths, perimeters, areas, and volumes of similar objects		2		
Apply transformations and use symmetry to analyze mathematical situations	▪ describe sizes, positions, and orientations of shapes under informal transformations such as flips, turns, slides, and scaling		2		
Use visualization, spatial reasoning, and geometric modeling to solve problems	▪ draw geometric objects with specified properties, such as side lengths or angle measures		2		
	▪ use two-dimensional representations of three-dimensional objects to visualize and solve problems such as those involving surface area and volume		2		
	▪ use geometric models to represent and explain numerical and algebraic relationships		2		
	▪ recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and everyday life		2		

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National Council of Teachers of Mathematics

Measurement Standards for Grades 6-8		Lessons			
Content Standard <i>Instructional goals for all grades</i>	<i>Specific expectations for students in grades 6-8</i>	1	2	3	4
Understand measurable attributes of objects and the units, systems, and processes of measurement	▪ understand relationships among units and convert from one unit to another within the same system		2		
	▪ understand, select, and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume		2		
Apply appropriate techniques, tools, and formulas to determine measurements	▪ select and apply techniques and tools to accurately find length, area, volume, and angle measures to appropriate levels of precision		2		
	▪ develop and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles and develop strategies to find the area of more-complex shapes		2		
	▪ solve problems involving scale factors, using ratio and proportion		2		

Data Analysis and Probability Standards for Grades 6-8		Lessons			
Content Standard <i>Instructional goals for all grades</i>	<i>Specific expectations for students in grades 6-8</i>	1	2	3	4
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	▪ Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population		2	3	4
Select and use appropriate statistical methods to analyze data	▪ find, use, and interpret measures of center and spread, including mean and interquartile range		2		4
Develop and evaluate inferences and predictions that are based on data	▪ use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken			3	4
	▪ use conjectures to formulate new questions and plan new studies to answer them			3	4

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National Council of Teachers of Mathematics

Problem-Solving Standard for Grades 6-8	Lessons			
Process Standard <i>Instructional goals for all grades</i>	1	2	3	4
▪ build new mathematical knowledge through problem solving	1	2	3	4
▪ solve problems that arise in mathematics and in other contexts	1	2	3	4
▪ apply and adapt a variety of appropriate strategies to solve problems	1	2	3	4
▪ monitor and reflect on the process of mathematical problem solving	1	2	3	4

Reasoning and Proof Standard for Grades 6-8	Lessons			
Process Standard <i>Instructional goals for all grades</i>	1	2	3	4
▪ make and investigate mathematical conjectures	1	2	3	4
▪ develop and evaluate mathematical arguments and proofs	1	2	3	4
▪ select and use various types of reasoning and methods of proof	1	2	3	4

Communication Standard for Grades 6-8	Lessons			
Process Standard <i>Instructional goals for all grades</i>	1	2	3	4
▪ organize and consolidate their mathematical thinking through communication	1	2	3	4
▪ communicate their mathematical thinking coherently and clearly to peers, teachers, and others	1	2	3	4
▪ analyze and evaluate the mathematical thinking and strategies of others	1	2	3	4
▪ use the language of mathematics to express mathematical ideas precisely	1	2	3	4

Connections Standard for Grades 6-8	Lessons			
Process Standard <i>Instructional goals for all grades</i>	1	2	3	4
▪ recognize and use connections among mathematical ideas	1	2	3	4
▪ understand how mathematical ideas interconnect and build on one another to produce a coherent whole	1	2	3	4
▪ recognize and apply mathematics in contexts outside of mathematics	1	2	3	4

Representation Standard for Grades 6-8	Lessons			
Process Standard <i>Instructional goals for all grades</i>	1	2	3	4
▪ create and use representations to organize, record, and communicate mathematical ideas	1	2	3	4
▪ select, apply, and translate among mathematical representations to solve problems	1	2	3	4
▪ use representations to model and interpret physical, social, and mathematical phenomena	1	2	3	4

For additional information on Principles and Standards for School Mathematics, visit: www.nctm.org