

Digital Lesson.com Presents

Marvelous

Middle School

Math

Money Math Activities



By Mark P. Tully

Preface

Digital Lesson.com is dedicated to being a valuable resource for middle school math teachers who not only want to excel in the teaching of mathematics, but also want to deliver the mathematical curriculum in a manner that engages and involves students. The collection of lessons and projects in this book strive to place mathematics into an active context that is inherently interesting.

Instant

The lessons and projects at Digital Lesson.com are instantly available. Upon receipt of payment, your lesson or project is automatically sent to you via e-mail. Save your lesson file to your computer for later use. Then, just “Print and Present” your lesson. No more waiting for delivery and no shipping costs.

Engaging

Our math lessons and projects offer students an interesting way to connect to the mathematics prescribed by your required curriculum. Hands-on activities and contextual lessons heighten the sense of usefulness and purpose students find in their mathematics.

Teacher Friendly

All blackline masters for the math lessons and projects are included. We have seen far too many great ideas for lessons on the internet that would take hours of time and effort to format before actually being able to use them. All of our lessons come ready to implement in your classroom immediately. Just make a few copies and get ready to inspire your students!

Teacher Tips are provided with each lesson to eliminate as many of the “Oh, I’ll do that differently next time,” moments as possible. The goal of the *Teacher Tips* is to make you an expert in the lesson BEFORE you teach it, not after. Too many lesson plans and projects that we have seen and received over the years leave it up to teachers to use trial and error before they ever teach the lesson effectively. The tips will immediately empower the teacher to teach the lesson more effectively.

Standards Based

Finally, the math lessons and projects on Digital Lesson.com have been designed to specifically meet the NCTM math standards and state math standards that teachers are expected to teach. Our intent is to provide more engaging activities, while still covering the same mathematical standards as the textbook. The lessons are intended to be served a la carte, to fill in curriculum holes or just to infuse some excitement and activity into your classroom as you teach a familiar math standard.

Wishing you inspiration and motivation to be the best math teacher you can be!

Mark Tully

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The Stock Market Contest is designed to teach students the basics of investing in the stock market. Students read two pages for basic background knowledge, choose two companies to invest in, track and graph their stocks using the worksheets provided, and reflect upon the learning that has taken place during the year. Promote this fun and educational contest with your students and award prizes to the top investors.

2. Classroom Money System.....23

The Classroom Money System is a fun, educational way to help manage a classroom and at the same time provide students with foundational experiences of applying for jobs, holding a job, saving money, spending money, and using a checking account.

3. Tipping Lesson.....40

Tipping is a lesson designed to teach students how to mentally compute common tips (10%, 15%, and 20%) that are traditionally left when dining in a restaurant. It teaches students how to figure these tips, presents them with realistic restaurant tipping exercises, and looks at the earnings of a waiter working an evening shift at a first-class restaurant.

4. Making Change Lesson.....48

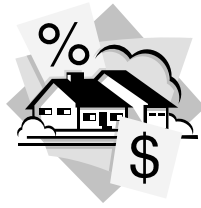
Making Change is a lesson designed to teach students how to mentally compute the correct change that should be returned after a purchase. It explains how to compute change mentally and includes two speed drills (called “Changing Speed”) to reinforce this concept.

Money Math



Stock Market Contest

Money Math Stock Market



The Basics (1 of 2)

Why Invest in Stocks?

People invest in the stock market in order to get a return on their money. By investing in a company with excellent future growth prospects, individuals hope to increase the size of their assets in order to fund their retirement or other expenses. Stocks have traditionally provided a better return than parking your money in a savings account.

When you own stock in a company, you are actually a part-owner of that company. You may become an owner of McDonalds, Starbucks, eBay, Amazon.com, or any other publicly traded company. When you own the stock of a company you have the right to vote on certain company issues and you may also share in the profits of your company if they pay a dividend. A dividend is a portion of the profits of a company that are distributed to the shareholder for each share owned. Most stocks are traded on either the New York Stock Exchange (NYSE) or the NASDAQ market.

Supply and Demand in the Stock Market

The price of a stock is determined by supply and demand. When a company is doing well and its future outlook is bright, many investors may want to buy the stock and demand for the stock will increase. Since there are a limited number of shares available, the price will rise. Often times those who follow the company will see the price rising and will want to purchase the stock to get in on the action. This pushes the price even higher.

If the company reports problems or company earnings decline, investors often sell their stock and take their money elsewhere. In such cases, demand decreases while the supply of available shares will increase. The price naturally will fall. This often leads to further selling as other investors watch the price fall and decide to get out. The price falls even further.

Risk and Reward in the Stock Market

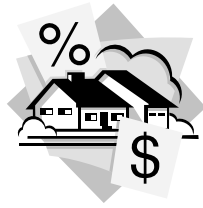
You could have bought eBay stock in 2001 at a split-adjusted price of under \$20.00 per share. At the time of this writing eBay was trading at about \$80.00 per share. Therefore, an investment of \$2,000.00 (100 shares) in 2001 would have been worth about \$8,000 in July of 2004. A return of \$6,000, or 300%, in 3 years is terrific! However, many people who had heard of eBay chose not to buy the stock in 2001. Investing would be simple if we could see the future.

The truth is that investing in the stock market is risky business. Sure, companies like eBay show us the profit that can be made when we choose to invest in a company that skyrockets in price. The other side of the coin is that many people invest in companies whose stocks earn a smaller profit, stay about the same price, or even lose money. If a company goes bankrupt your shares of stock in that company could become worthless. Even professionals are often unsuccessful in picking which stocks will rise in price. High risk stocks may offer a great potential reward, but you may also suffer a great loss.



Money Math

Stock Market



Ticker Symbols

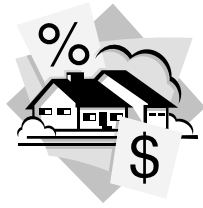
Below is a list of ticker symbols that are used when searching for the price of a share of stock. Ticker symbols with 1-3 characters represent companies listed on the New York Stock Exchange (NYSE). Four characters are used for symbols listed on the NASDAQ stock exchange. Identify the company represented by each stock market ticker symbol.

- | | | |
|----------------|----------------|----------------|
| 1. EBAY _____ | 16. SBUX _____ | 31. ZQK _____ |
| 2. WMT _____ | 17. PEP _____ | 32. GPS _____ |
| 3. DELL _____ | 18. SPLS _____ | 33. LUV _____ |
| 4. NFLX _____ | 19. GE _____ | 34. VZ _____ |
| 5. YHOO _____ | 20. NKE _____ | 35. HOG _____ |
| 6. COST _____ | 21. MSFT _____ | 36. JNJ _____ |
| 7. BKS _____ | 22. XRX _____ | 37. YUM _____ |
| 8. FDX _____ | 23. GOOG _____ | 38. ANF _____ |
| 9. HD _____ | 24. MCD _____ | 39. UPS _____ |
| 10. DIS _____ | 25. INTC _____ | 40. WEN _____ |
| 11. F _____ | 26. AMZN _____ | 41. HSY _____ |
| 12. AAPL _____ | 27. TWX _____ | 42. PZZA _____ |
| 13. T _____ | 28. KO _____ | 43. BBY _____ |
| 14. K _____ | 29. NOK _____ | 44. AXP _____ |
| 15. AMZN _____ | 30. IBM _____ | 45. TGT _____ |



Money Math

Stock Market



Company Spotlight

1. Company Name: _____

2. What is the ticker symbol for this company? _____

3. Does this company primarily provide a product or service? _____

4. In a short paragraph, describe the product or service provided by this company? _____

5. Last Trade: _____

6. 52-Week Range: _____

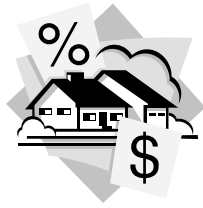
7. Average Volume: _____

8. Price/Earnings Ratio (P/E): _____

9. Earnings Per Share (EPS): _____

10. Why did you decide to invest in this company? Be specific and give more than one reason.





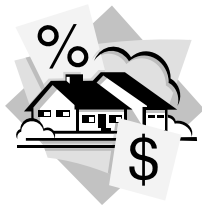
The Stock Market Contest Rules

- * You have **\$10,000** to invest in two stocks that you will track throughout the contest.
- * You must spend at least \$9,900 including commissions (have less than \$100 remaining).
- * You must spend at least \$2,000 on each of the two stocks.
- * Once you have made your stock purchases (Part I of the Stock Picks sheet) complete an extra copy for the teacher.
- * There is no trading for other stocks during this contest. You must keep the stocks you pick to start with, so choose carefully!
- * A good website that you may use in your stock research is <http://finance.yahoo.com>. Enter the ticker symbol of your stock to find the information you need. Use the Symbol Lookup feature if you do not know the ticker symbol.
- * You will check and record your stock performances on their Stock Performance Line Graphs and on your Stock Picks recording sheets.
- * **Prizes** will be awarded for the **Top Stock Pickers**.



Money Math

Stock Market



Stock Picks (2 of 2)

III. Final Stock Sales:

Date: _____

	Company Name	Ticker Symbol	Price	# of Shares	
1)	_____	_____	_____	x _____	= _____
2)	_____	_____	_____	x _____	= _____

Commission (\$15.00 each trade) - _____

Remaining Cash (see above) + _____

Total Cash _____

Final Investment Profit or Loss:

Total Cash - Beginning Cash = Profit (Loss)

_____ - _____ =

IV. Stock Performance:

	Company Name	Buy Day Price	Sell Day Price	Percent Change
1)	_____	_____	_____	_____
2)	_____	_____	_____	_____

V. Comparison to Benchmark:

1) S & P 500 Stock Index (^SPX) _____

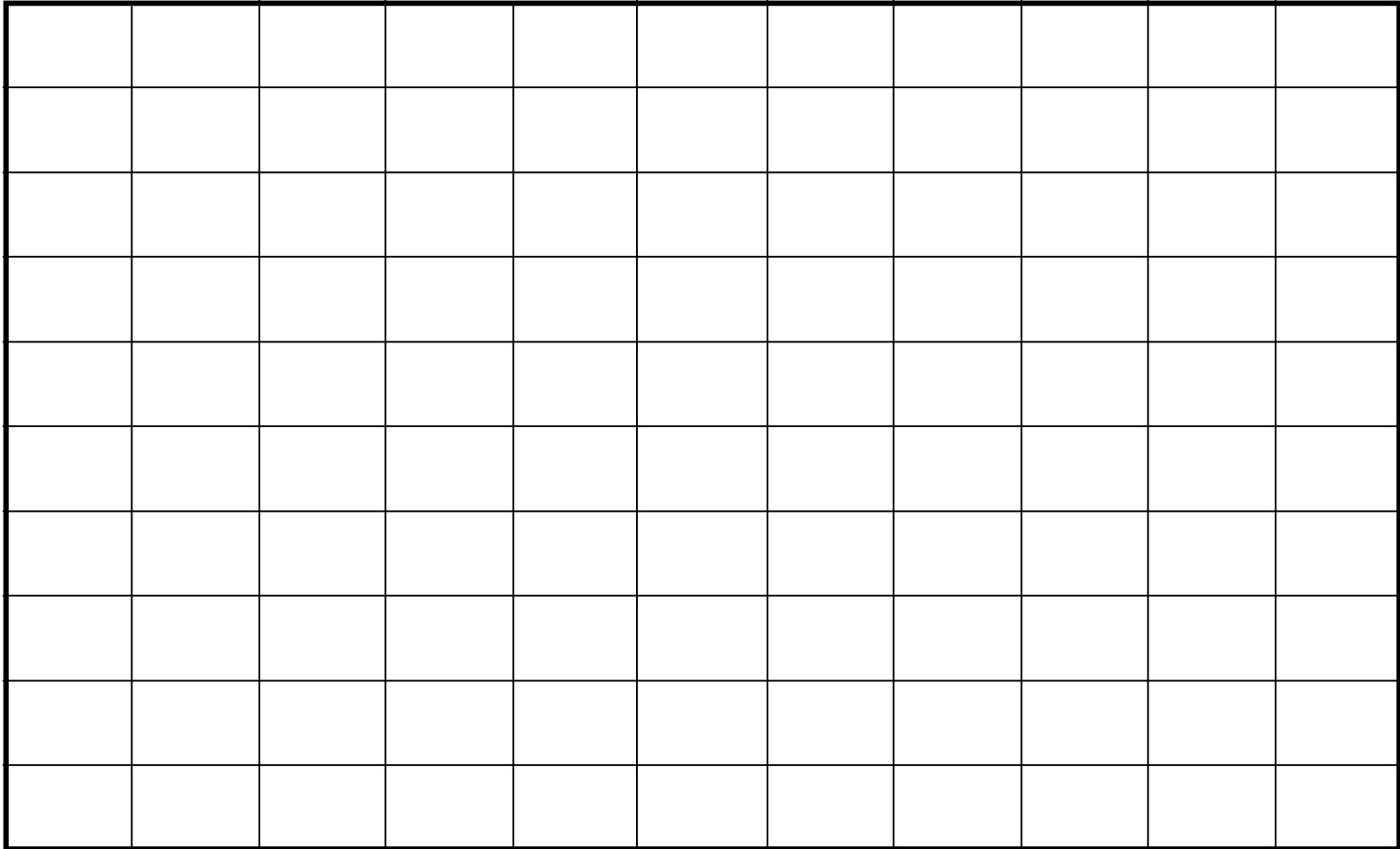


Stock Performance Line Graph

Company Name _____

Dates: From _____ to _____

Share Price

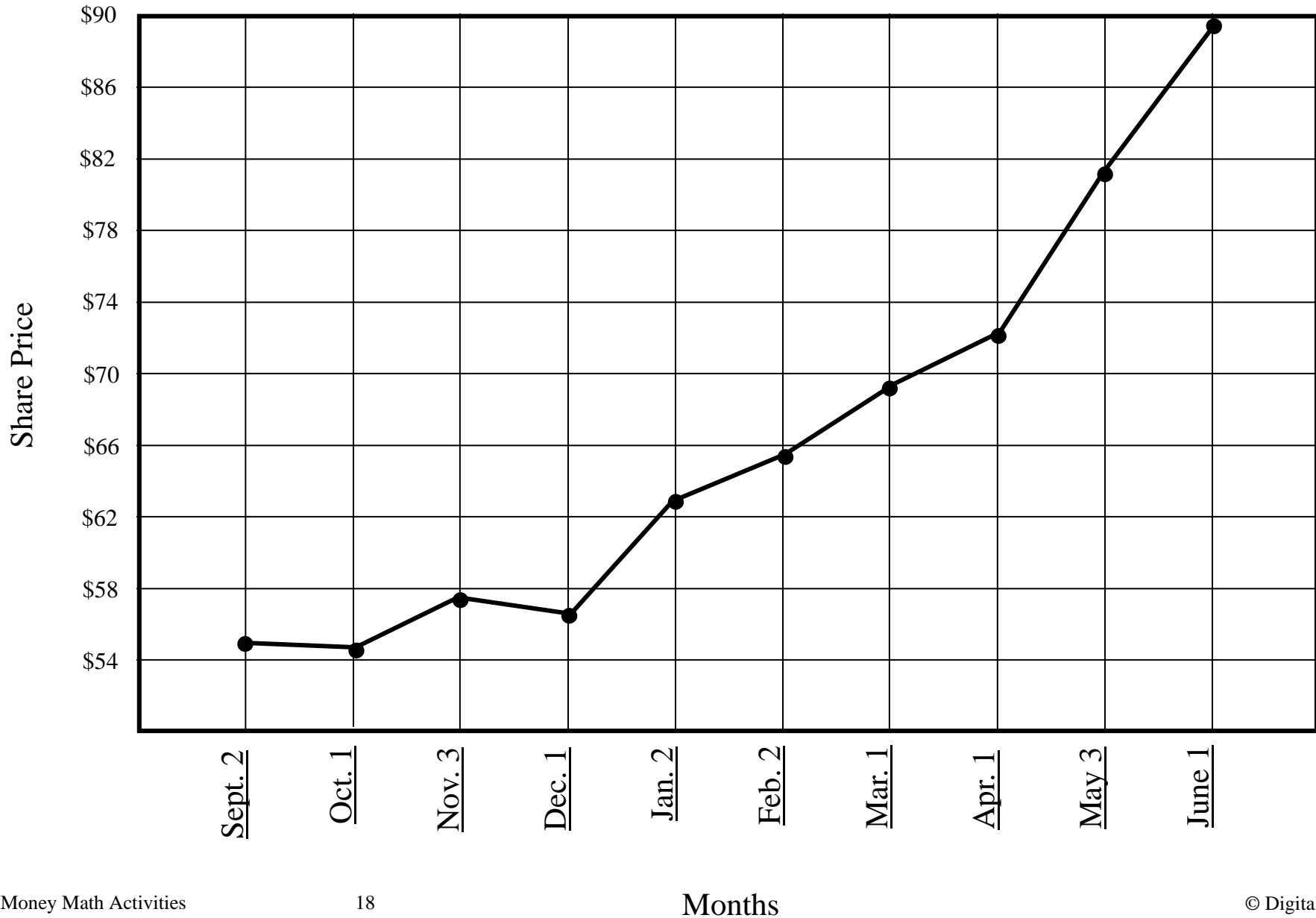


Time

Stock Performance Line Graph - Sample Key

Company Name eBay

Dates: From 9/2/2003 to 6/1/2004



Money Math

Stock Market



Performance Evaluation

Answer the following questions to help you evaluate the performance of the stocks, mutual funds, or ETFs that you chose to invest in.

1. How did each of your investments perform compared to the S&P 500 index? _____

2. What reasons can you identify to explain the performance of each investment? _____

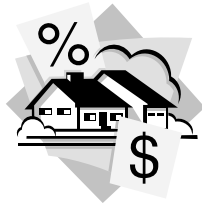
3. What have you learned about investing in the stock market? Be specific and discuss at least 3 lessons learned. _____

4. If you were going to invest again would you do anything differently? Would you invest in the same stocks? Are there any other specific stocks you might invest in? Why? _____



Money Math

Stock Market



Teacher Tips

(1 of 3)

Lesson Description: The Stock Market Contest is designed to teach students the basics of investing in the stock market. Students read two pages for basic background knowledge, choose two companies to invest in, track and graph their stocks using the worksheets provided, and reflect upon the learning that has taken place during the year. Students may work individually or in groups of two. Promote this fun and educational contest with your students and award prizes to the top investors.

Math Content: Percents, Decimals, Line Graphs

Time Required: 1-2 hours spent in class and at home throughout the year

Stock Market includes:

- * 2 Stock Market Basics sheets
- * 1 Stock Market Ticker Symbols sheet and 1 Answer Key
- * 1 Stock Market Company Spotlight and 1 sample Company Spotlight
- * 2 Stock Picks recording sheets and 1 Stock Market Contest Rules sheet
- * 2 Stock Performance Line Graphs (one not labeled) and 1 Sample Graph
- * 1 Stock Market Performance Evaluation sheet
- * 3 Stock Market Teacher Tips sheets

Materials Needed: None

Suggested Grade Level: 5th - 8th +

Teacher Testimonial:

The Stock Market lesson teaches students the mechanics of stock market investing and allows them to watch, track, graph, and evaluate their investment choices. Students enjoy investing in some of their favorite companies and I try to reward those whose stocks have outperformed the rest.

Teacher Tips:

- * The Stock Market lesson is designed to be used at the beginning, middle, and end of the year.
- * Use all of the components of the Stock Market lesson or just choose the parts that seem most useful to you.
- * Use the Stock Market Basics pages to provide investment background as necessary.
- * The Stock Market Ticker Symbols sheet is a fun activity that will introduce students to the idea of representing company stocks with ticker symbols. I usually allow students to work in groups to try and figure out the name of the company from its symbol. Many of the companies can be guessed from their symbols. I then allow students to share their answers and I reveal to them any that they cannot figure out (or give them hints). This activity is optional but the students have always enjoyed it. Use this activity after The Basics pages.



Money Math



Classroom Money System

Money Math

Class Money System



Money System

Teacher Notes

I use a money system in my classroom as part of my classroom management system. The money system helps motivate the students, is used to teach math concepts in a realistic context, and instills in the students some of the financial foundations that they will need to be successful in life. The students receive a monthly salary for their job (being a math student). The first month I tell them that they will receive a salary of \$3,700 per month, which they are pretty excited about. Then they discover that they will have to pay \$1,036 in federal and state income taxes (28%), rent of \$600 per month (perhaps sharing an apartment), and \$64 for utilities (probably on the low side, but it makes my numbers work).

This leaves them with **\$2,000 a month** to save and later spend. In subsequent months I just pay them \$2,000 a month and remind them of the other costs. Adjust these numbers as you see fit. Note: I write them a check for their salary (which they will deposit) and have them write me checks for the other three expenses reviewed above. More about that later in the checking segment of the money system.

There are many ways that students can earn money. I pay students for good grades on tests or quizzes, excellent citizenship, class participation, student of the month, working diligently in class, classroom jobs, bringing in class supplies, and so on. I am sure that you will think of additional reasons to reward students with class cash.


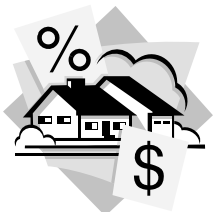
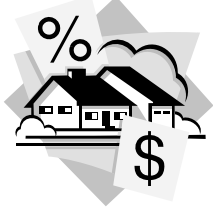
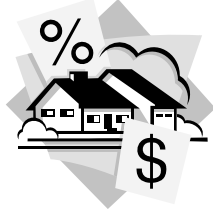






The key to a successful classroom money system is giving students meaningful opportunities to spend the money that they have earned. If students are not excited about some of the ways that they can spend their money then the system will not be nearly as effective or enjoyable. Use your imagination and your particular circumstances to devise opportunities for the students to spend their money. Some possible student spending opportunities include homework, bathroom, and late passes (limited number), school supplies (if available), candy, entry into a raffle or contest (such as a basketball shot with prizes), special privileges, early lunch, small auctions, and a final End-of-the-Year Auction (see details about this auction later in this packet). I also pay students for their Stock Market profits and Real Estate investments. These lessons are or will soon be available on Digital Lesson.com.


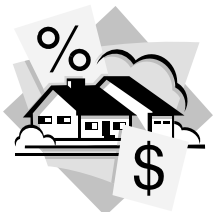
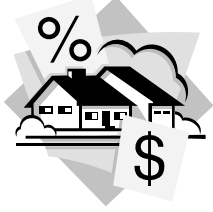
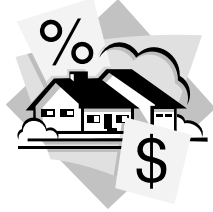






I use mainly \$50 and \$100 bills, although I have included \$500 bills in this packet, because the students respond more to the idea of larger amounts of money. By the end of the year, counting \$20,000 in monthly salaries, most students end up with between \$25,000 and \$40,000. If students have participated in bringing in auction items, the final End-of-the-Year Auction is a blast!!

Protect your money from being copied. I recommend using a unique stamp, with a different color ink, to differentiate your money. Stamp your money on the right side of the bill and explain that unstamped money is worthless. Have the Treasurer (see Classroom Jobs later in this packet) cut and stamp your money before using it. I also recommend using a different color paper for the \$50, \$100 and \$500 bills. You can change the picture on the bills also if you desire.

Finally, two sets of money templates are included in this packet. One set of bills is called “Class Cash” and the other set is called “Math Money”. Choose the one you like best.



500	Class Cash	500	500	Class Cash	500
					
500	Five Hundred	500	500	Five Hundred	500
500	Class Cash	500	500	Class Cash	500
					
500	Five Hundred	500	500	Five Hundred	500
500	Class Cash	500	500	Class Cash	500
					
500	Five Hundred	500	500	Five Hundred	500
500	Class Cash	500	500	Class Cash	500
					
500	Five Hundred	500	500	Five Hundred	500
500	Class Cash	500	500	Class Cash	500
					
500	Five Hundred	500	500	Five Hundred	500

100	Math Money	100	100	Math Money	100
					
100	One Hundred	100	100	One Hundred	100
100	Math Money	100	100	Math Money	100
					
100	One Hundred	100	100	One Hundred	100
100	Math Money	100	100	Math Money	100
					
100	One Hundred	100	100	One Hundred	100
100	Math Money	100	100	Math Money	100
					
100	One Hundred	100	100	One Hundred	100
100	Math Money	100	100	Math Money	100
					
100	One Hundred	100	100	One Hundred	100

Money Math

Class Money System



Classroom Checks

Teacher Notes

Checks and a Check Register to use within the classroom are included in our classroom money system packet. A **Sample Check Register** is also included. Copy them and use them with the class.

The students are encouraged to use checks to pay for any major expenses or if they do not have any cash on hand. After teaching students how to write out checks, they can use them to pay another student or to pay the teacher for any purchase.

I start out the year, as discussed briefly in the Money System Teacher Notes, **writing each student a check for \$3,700** for their first month's salary. Then I have students write me a check for federal and state taxes (just have students make out one check to the IRS) for \$1,036 (28%), a check for \$600 for rent, and a check for \$64 for utilities. This leaves them with \$2,000 and an eye-opening understanding that you do not get to keep all the money that you make. You may also want to briefly discuss taxes at this point

Helpful Hint: If you fill in their paychecks, without name, before you copy them off, then you can just have the students fill in their names and write out the remaining three checks on the same sheet of paper before handing them in. This avoids the time and mess of cutting all of the checks up. Just give them to the bankers (see Classroom Jobs) to deposit. After the first month I just pay the students \$2,000 per month and remind them of the other costs that have been paid "automatically". Sometimes I will wait and pay the students their salaries every 2-3 months (with one check) in order to decrease the bankers' paperwork.

Pass out the Check Register and the Sample Check Register when you give the students their first monthly paycheck. Teach them how to record their deposits and withdrawals on the Check Register and have them keep these sheets in their notebooks. Remind students to record all of their transactions during the year, including cash deposits. Make extra Check Register sheets available as needed.

Create a Bank Book for each class (3-ring notebook) with a page for each student. Put the student Check Register sheets in alphabetical order. The bankers will record any deposits and withdrawals made by a student in this book. Remind them that if a student writes a check to another student, the money amount should be subtracted from the account of the student who wrote the check and added into the account of the person who received the check. The student Check Register and the official bank Check Register should always be the same if the student is keeping track of his transactions. Keep careful track of the official Bank Book!

Class Cash that is deposited into the bank should be returned to the teacher by the bankers to be used again.

Do Not Allow students to use their Class Cash or Class Checks to buy items from other students or to make other transactions outside of the classroom. This could end up causing problems and bringing up questions of fairness.



_____ (Print Name) 0001

_____ (Class) _____ 20 _____

PAY TO THE _____ **\$**

ORDER OF _____

_____ DOLLARS

Financial Foundations Bank
P.O. Box 1
Any City, USA

FOR _____

_____ (Print Name) 0001

_____ (Class) _____ 20 _____

PAY TO THE _____ **\$**

ORDER OF _____

_____ DOLLARS

Financial Foundations Bank
P.O. Box 1
Any City, USA

FOR _____

_____ (Print Name) 0001

_____ (Class) _____ 20 _____

PAY TO THE _____ **\$**

ORDER OF _____

_____ DOLLARS

Financial Foundations Bank
P.O. Box 1
Any City, USA

FOR _____

_____ (Print Name) 0001

_____ (Class) _____ 20 _____

PAY TO THE _____ **\$**

ORDER OF _____

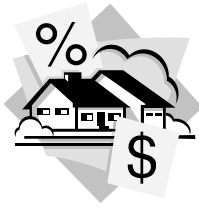
_____ DOLLARS

Financial Foundations Bank
P.O. Box 1
Any City, USA

FOR _____

Money Math

Class Money System



Classroom Jobs

Teacher Notes

I assign classroom jobs each semester. Students fill out the Classroom Job Application (see next page) and turn it in to the teacher by a certain date. Late applications are only considered if a position has not been filled by another application or if those applications turned in on time are not satisfactory. I tell students that the neatness and completeness of the application will be the difference in otherwise equally qualified candidates. Second semester I try to give priority to those students without a job during the first semester.

The jobs that I have made available in my classroom include Chief Executive Officer (CEO), Chief Financial Officer (CFO), Banker, Treasurer, Attendance, Points Person, Teachers Assistant, File Clerk, Paper Passer, Custodian, Stock Broker, Librarian, and Real Estate Agent. The number positions for each job, monthly salary, and basic responsibilities are listed below to serve as a resource. Of course you should add or subtract job positions and adjust salaries to accommodate your own classroom.

<u>Job Title</u>	<u># of Positions</u>	<u>Monthly Salary</u>	<u>Responsibilities</u>
CEO	1	\$1,000	Oversees all classroom employees.
CFO	1	\$1,000	Oversees Bankers, Treasurers, and money.
Banker	2	\$1,200	Keeps classroom bank book.
Treasurer	2	\$700	Stamp and cut classroom money.
Attendance	1	\$700	Take attendance sheet to clip each day.
Points Person	1	\$1,000	Records classroom points for teacher.
Teachers Assist.	2	\$500	Assist teacher in errands or tasks.
File Clerk	2	\$1,000	File tests and quizzes in file cabinet.
Paper Passer	2	\$700	Pass out papers for teacher.
Custodian	2	\$700	Pick up trash off of the floor.
Stock Broker	2	\$700	Help students look up stocks at computer.
Librarian	2	\$1,000	Put away books at the end of the period.
Real Estate Agent	2	\$1,000	Sell real estate and record transactions.

You may want to have some sort of Performance Review before paying a full salary to the classroom employees. Some students apply for jobs and then never end up doing them. Perhaps the CEO could complete a short form on each employee or the students could turn in a self-evaluation.

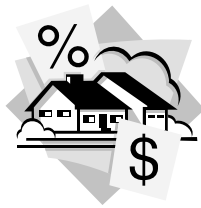
I choose new jobs at the semester and usually pay the employees their total salary near the end of their job term (usually about four months). Thus, I would pay the Treasurers \$2,800 ($\700×4 months) at the end of their job.

These jobs allow the students to earn classroom money for in-class privileges and to spend at the class auction that I hold at the end of the school year. See the auction information later in this packet. The jobs also give students the experience of filling out applications, assuming responsibilities, and working to complete their assigned duties.



Money Math

Class Money System



End-of-the-Year Auction

Teacher Notes

At the end of the year each of my classes has an auction to give the students a chance to spend the classroom money that they have earned throughout the year. (I try to give them other opportunities to spend their money during the year also, because students often need some immediate gratification as well.) (Students can also bring in items from home for small auctions during the year, if desired.)

Each class holds their own auction, bidding only on those items that have been donated specifically for the auction of that particular class. If a higher value item has been donated generally I allow all of the students, in any class, a chance to bid on the item on a day before the main auction.

We collect items for the End-of-the-Year Auction throughout the year, relying on the donations of parents, businesses, and the students themselves. I pass out a letter about the auction at Open House (see sample letter on the next page) and make copies of these letters available to students during the year. Make sure that these letters are on official school stationery in order to create a greater impact. I require a signed parent form for all donations brought from home. I also pay the students with class money for auction items that they bring in or donations they attract. Participation is key!

Another great idea that I have heard teachers use is to have students write letters to businesses at the beginning of the school year explaining our classroom money system and inviting the businesses to donate an item for our auction. Imagine the packages that might arrive at the school and the excitement that could be created! Then, find a place to store the items until the end of the year.

Some of the auction items donated in my classes this year were a Kit-Cat clock, gift certificates from Starbucks, Baskin Robbins, Jamba Juice, Burger King, etc., giant candy bars, games, CDs, DVDs, watches, movie tickets, and more. In short, anything appropriate that a middle school student would like is acceptable.

Before the auction I make sure that all money has been banked and that the bankers have notified each student with the money amount that is in their account. The bankers also keep track of the money spent during the auction, subtracting the amounts spent, and making sure that no student bids more than the amount that they actually have.

During the auction I start with the most expensive or most in-demand items and work my way toward the less expensive items. In this way students don't end up waiting for that big item at the end, lose the bidding, and end up with nothing.

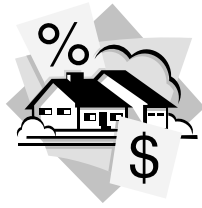
Bidding is done silently. I simply hold up an auction item and state the starting bid. Students that are interested raise their hand and keep it up as the bid price continues to climb. As the bid increases hands will begin to go down until only one is left--the winner. This method avoids a lot of chaos.

Finally, remind students that if they get the item they want it is OK to spend their whole savings if necessary. At the end of the auction their hard-earned classroom money will be worthless.



Money Math

Class Money System



Teacher Tips

Lesson Description: The Classroom Money System is a fun, educational way to help manage a classroom and at the same time provide students with foundational experiences of applying for jobs, holding a job, saving money, spending money, and using a checking account.

Math Content: Money Skills

Time Required: To be used throughout the school year

The Classroom Money System includes:

- * 7 Class Cash pages including **two** sets of class money and Money System Teacher Notes
- * 4 Check pages including classroom checks, check registers, and Checking Teacher Notes
- * 2 Classroom Jobs pages including a job application and Classroom Jobs Teacher Notes
- * 2 Auction pages including Sample Auction Letter and Auction Teacher Notes
- * 1 Classroom Money System Teacher Tips page
- * 1 Classroom Money System Cover Sheet

17 pages in all!!

Materials Needed: Colored paper (recommended)

Suggested Grade Level: 5th - 8th

Teacher Testimonial:

The Classroom Money System is part of a classroom management system that helps motivate students, reinforce math concepts in a realistic context, and instill in the students some of the financial foundations needed for success in life. The students enjoy having jobs, earning money, and especially spending money in classroom situations and at the much anticipated End-of-the-Year Auction.

Teacher Tips:

The Teacher Tips are all included in the Teacher Notes presented within this packet.

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Mark

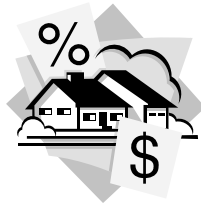


Money Math



Tipping

Money Math Tipping



- I. The Basics: When dining at a sit-down restaurant, it is customary to leave a tip for the waiter who has served you during the meal. Traditionally, this tip is understood to be 15%. For superior service a diner may tip 20% or more and inferior service may lead to a tip of 10% or less.

Remember that waiters depend on tips for a large part of their income. They often make a minimum hourly wage, with the majority of their pay coming from tips.

Since most people do not carry a calculator when they go out to eat, it is helpful to know how to figure out a tip using mental math. Suppose that a restaurant bill, for a family of four, was \$29.82 before tax.

Estimate a 10% tip mentally:

It is actually quite easy to determine 10% of the bill. Since tips do not need to be exact numbers, first round \$29.82 off to \$30.00. To find 10% of this number, simply move the decimal point one place to the left. What you are actually doing is dividing the number by 10. Thus, 10% of \$30.00 is \$3.00.

Estimate a 15% tip mentally:

To find a 15% tip, take the amount of a 10% tip and add another 5% (half of the 10% amount) to this amount. In the above example, 10% of a \$30.00 meal is \$3.00. Another 5% of \$30.00 would be half of \$3.00, or \$1.50. Adding 10% (\$3.00) and another 5% (\$1.50) gives you a total of 15% or \$4.50.

Estimate a 20% tip mentally:

To find a 20% tip simply figure 10% of the bill and then double that amount. Since 20% is twice as much as 10%, it follows that a 20% tip will be twice as much as a 10% tip. In like manner, a 30% tip can be found by determining a 10% tip and then multiplying this amount by three.

- II. Work through the following example using the “tips on tips” above.

The Johnson family had dinner at a fancy restaurant. Before taxes, the bill was \$118.64. In the space below round off the bill and then determine an appropriate estimate for a 10% tip, a 15% tip, and a 20% tip.

Round off the bill.

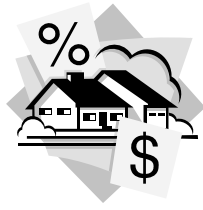
10% Tip

15% Tip

20% Tip



Money Math Tipping



Jon Bell is a waiter at The Royal Crown, a popular five-star restaurant. This first-class restaurant serves expensive meals and Jon was thrilled to have gotten a job there. He knows that 15% of a meal at The Royal Crown will earn him significantly more money than 15% of a meal at his former restaurant, The Burger Barn. Jon is paid \$5 per hour plus tips.

On a recent 4-hour evening shift at The Royal Crown, Jon served the following tables. Use mental math to estimate the tip he received from each party he served. Then calculate his total tip earnings that night. He leaves 10% of his tip for the busboys and takes home the rest.

<u>Table Number</u>	<u>Bill before tax</u>	<u>% Tip</u>	<u>Tip Amount (\$)</u>
Table 1	\$84.32	20%	_____
Table 2	\$99.75	15%	_____
Table 3	\$63.60	15%	_____
Table 4	\$77.89	10%	_____
Table 1	\$109.72	15%	_____
Table 2	\$53.42	20%	_____
Table 3	\$87.91	5%	_____
Table 4	\$47.59	15%	_____
Table 2	\$36.24	15%	_____
Table 4	\$132.14	20%	_____

Total amount of tips earned by Jon: _____

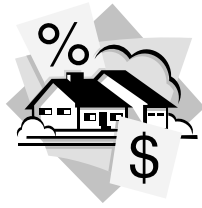
Less 10% of tips left for busboys: _____

Jon's take home tip total: _____

Including tips, about how much did Jon make per hour that evening? _____



Money Math Tipping



Teacher Tips

Lesson Description: Tipping is a lesson designed to teach students how to mentally compute common tips (10%, 15%, and 20%) that are traditionally left when dining in a restaurant. It teaches students how to figure these tips, presents them with realistic restaurant tipping exercises, and looks at the earnings of a waiter working an evening shift at a first-class restaurant.

Math Content: Mental Math, Percents

Time Required: 1 class period or homework assignment

Tipping includes:

- * 3 Tipping worksheets
- * 3 Tipping worksheet Answer Keys
- * 1 Tipping Teacher Tips page

Materials Needed: None

Suggested Grade Level: 5th - 8th

Teacher Testimonial:

Teaching students mathematics in a practical context, such as leaving an appropriate tip at a restaurant, will increase the financial literacy and life skills of students. Student number sense will also increase as they mentally calculate 10, 15, and 20 percent tips. As we have discussed high school and college jobs, many students are surprised to see the potential earning power of a waiter at a nice restaurant. For all of these reasons, Tipping is a lesson that will serve your students well.

Teacher Tips:

- * Review and discuss Tipping page 1 with students.
- * As an extension activity, have the students find the total cost of a meal with tax and tip.
- * Make the lesson relevant to students by discussing their experiences in restaurants with waiters. Have they experienced terrible or excellent service? Discuss tips.

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**Enjoy your lesson!
Mark**



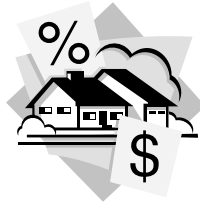
Money Math



Making Change

Money Math

Making Change



The Basics

The Basics:

Whenever you purchase an item or group of items, and pay with cash, you will probably receive change. People often receive incorrect change and may not even realize it. In order to become a confident consumer, it is important to understand how to mentally calculate the change that you should receive. There are several ways to do this. One method of calculating change is explained here.

First, add the number of dollars to the purchase price that are required to equal one dollar less than the amount you give to the cashier. Then, calculate the number of cents that must be added to the cents of the purchase price to make the final dollar. Finally, add these two amounts together.

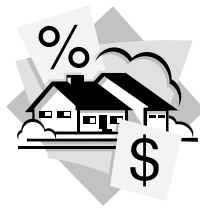
For example, let's say you go to the supermarket and spend \$12.43. You give the cashier a \$20 bill. In order to calculate your change figure out how many dollars you would add to \$12 to get one less than \$20, or \$19. The answer is \$7. Then calculate the number of cents that need to be added to 43 cents to make the final dollar. The answer is 57 cents. Therefore, the change that you will receive from a \$20 bill, when you spend \$12.43, is \$7.57.

Purchase Price	Size Bill Paid With	Dollars To Add	Cents To Add	Change Received
\$8.71	\$10.00	1	29	\$1.29
\$14.26	\$20.00			
\$3.59	\$10.00			
\$17.38	\$20.00			



Money Math

Making Change



Changing Speed (1 of 2)

For each purchase price below determine the change that should be received.

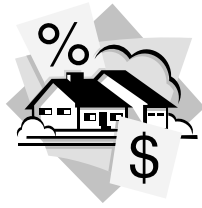
	<u>Purchase Price</u>	<u>Size Bill</u>	<u>Change</u>		<u>Purchase Price</u>	<u>Size Bill</u>	<u>Change</u>
1.	\$7.18	\$10	_____	11.	\$6.09	\$10	_____
2.	\$5.42	\$20	_____	12.	\$18.63	\$20	_____
3.	\$16.89	\$20	_____	13.	\$2.48	\$5	_____
4.	\$1.24	\$5	_____	14.	\$15.22	\$20	_____
5.	\$12.91	\$20	_____	15.	\$18.97	\$20	_____
6.	\$9.56	\$20	_____	16.	\$0.19	\$10	_____
7.	\$0.72	\$1	_____	17.	\$8.76	\$10	_____
8.	\$14.14	\$20	_____	18.	\$3.82	\$20	_____
9.	\$8.51	\$10	_____	19.	\$11.11	\$20	_____
10.	\$3.37	\$5	_____	20.	\$9.21	\$10	_____

Bonus Buy: \$873.56 \$1,000 _____



Money Math

Making Change



Teacher Tips

Lesson Description: Making Change is a lesson designed to teach students how to mentally compute the correct change that should be returned after a purchase. It explains how to compute change mentally and includes two speed drills (called “Changing Speed”) to reinforce this concept.

Math Content: Mental Math, Decimals, Money

Time Required: Part of 1 class period or
1 homework assignment

Tipping includes:

- * 1 Making Change basics worksheet and 1 Making Change basics answer key
- * 2 Making Change speed drills and 2 Making Change speed drill answer keys
- * 1 Making Change Teacher Tips page

Materials Needed: None

Suggested Grade Level: 5th - 8th

Teacher Testimonial:

Teaching students mathematics in a practical context, such as calculating the correct change expected after a purchase, will increase the financial literacy and life skills of students. Student number sense will also increase as they mentally calculate the correct change. We have all had experiences with employees incorrectly returning change to us. IT PAYS to be able to calculate correct change mentally!

Teacher Tips:

- * Review and discuss the Making Change basics page with students.
- * Use one or both of the speed drills to complete your lesson. Award speed prizes if you want.
- * Make the lesson relevant to students by discussing their experiences in receiving change.
Have they ever gotten too little back? Too much back?
- * There is more than one way to compute change. Discuss others ways as needed.

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Mark

