

MATH BEHIND THE MARKET

Teaching Tools for The Stock Market Game

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Math Behind the Market

UNIT ONE:

Comparing, Ordering, and Converting
Fractions, Mixed Numbers, and Decimals

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INTRODUCTION

The purpose of *Math Behind the Market* is to provide a tool for teachers to reinforce mathematical concepts using The Stock Market Game™ (SMG) Program. Designed to be flexible and easy to use, this module on *Fractions and Decimals* is divided into two units based on mathematical content:

Unit 1: Comparing, Ordering and Converting Fractions, Mixed Numbers, and Decimals

Unit 2: Single-Step Problem Solving

ACTIVITIES

The activities may be used separately or together. Each activity allows for flexibility in its use. The following are examples of how to use the activities:

As a Class: The teacher or a student can complete the answers using a transparency.

In a Group: Have students work in cooperative learning groups to complete the activity. The group may or may not be organized according to SMG teams.

On Their Own: Students can complete the activity on their own either in class or as a homework assignment.

Each unit contains specific information on its activities including:

- Description
- Math Objectives
- SMG Concepts
- Connections and Extensions

Definitions of SMG concepts are included in the Glossary at the end of the module. As needed, answer keys are included directly following the corresponding activity. Answer keys are not provided for the *Figure it Out!* activities. Use of a calculator has been left to the teacher's discretion.

Within each unit there is at least one *Figure it Out!* activity. These activities are intended to provide the teacher with maximum flexibility. The following are examples of how the *Figure it Out!* activities may be used:



As a Class: Find the information needed using a newspaper or the Internet. Complete the activity as a class or assign various groups to complete specific problems or sections.

In a Group: Have teams of students use the information from their SMG portfolio or other stocks of interest to complete the activity.

On Their Own: Have students select the stocks or other information needed based on their interests or ones they have researched for SMG.

If the class is not actively making trades in their SMG portfolios, another option is to assign a stock category to each team. For example, the teacher may assign one group to use information from "NASDAQ companies only" while another group may have a "technology companies only" assignment. Other categories may include:

- NYSE companies
- Companies that make foods or drinks we like
- Companies on the Dow Jones Industrial Average
- Local companies

Let your creativity inspire you or allow students to determine their own list of categories.

CORRELATION TO MATH CONCEPTS

	Unit 1									Unit 2							
Math Concepts	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	
Decimals:																	
• Add										❖							
• Compare		❖		❖		❖	❖						❖				
• Convert								❖	❖								
• Divide																❖	
• Multiply															❖	❖	❖
• Number Line			❖		❖												
• Order		❖	❖	❖	❖	❖	❖										
• Integers		❖	❖	❖	❖												
• Rounding								❖	❖							❖	❖
• Subtract											❖	❖	❖				
Fractions:																	
• Compare	❖						❖										
• Convert								❖	❖								
• Mixed Numbers							❖		❖								
• Number Line	❖																
• Order	❖						❖										
Problem Solving:																	
• Solve Word Problems										❖		❖	❖	❖			❖
• Use Formulas															❖	❖	❖
• Write Word Problems														❖			
• Tables																	
• Complete				❖	❖								❖				
• Interpret	❖	❖	❖	❖	❖								❖			❖	
• Writing Mathematically		❖		❖			❖					❖		❖			
Math Concepts	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	
	Unit 1									Unit 2							

CORRELATION TO SMG CONCEPTS

	<i>Unit 1</i>									<i>Unit 2</i>						
SMG Concepts	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G
52-Week Highs and Lows		❖	❖	❖	❖						❖	❖	❖			
Annual Earnings															❖	
Basic Cost																
Broker's Fee																
Daily Highs and Lows											❖					
Decimalization						❖	❖									
Dividends		❖	❖	❖	❖									❖		
Earnings per Share															❖	
Equity																
Foreign Currency																❖
Gains & Losses																
Long Positions																
Market Capitalization															❖	
Net Change (Daily)	❖	❖	❖	❖	❖			❖				❖				
Net Cost																
P/E		❖	❖	❖	❖											
Shares Outstanding															❖	
Short Positions																
Stock Prices		❖	❖	❖	❖	❖	❖		❖	❖		❖	❖		❖	❖
Unrealized Gains & Losses																
Volume		❖		❖	❖											
Yield		❖	❖	❖	❖											
SMG Concepts	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G
	Unit 1									Unit 2						

CORRELATION TO CONNECTIONS AND EXTENSIONS

	Unit 1									Unit 2						
Connections and Extensions	A		C	D	E	F	G	H	I	A	B	C	D	E	F	G
Creative Writing		1	1	1	1											
Economics																1
Guest Speaker															1	
Math		1	1	1	2		1			1				2	2	2
Personal Finance														1		
Research	2	1	1	1	1		1									2
SMG	1							1					1	1	2	2
Technology																1
Writing	1		1		1	1	1		1	1	2	5	1	1	2	
SMG Concepts	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G
	Unit 1									Unit 2						

UNIT 1: COMPARING, ORDERING AND CONVERTING FRACTIONS, MIXED NUMBERS AND DECIMALS

UNIT FOCUS

This Unit provides activities for use in comparing, ordering, and converting rational numbers (fractions, mixed numbers, and decimals).

UNIT CONTENTS

- 1A *Those Changing Changes* (Comparing & Ordering Fractions)
- 1B *Highs and Lows* (Comparing and Ordering Decimals)
- 1C *All Lined Up* (Number Lines)
- 1D *Highs and Lows - Figure it Out!* (Comparing & Ordering Decimals)
- 1E *All Lined Up - Figure it Out!* (Number Lines)
- 1F *Price Comparison* (Comparing and Ordering Decimals)
- 1G *Then and Now* (Comparing and Ordering Mixed Numbers & Decimals)
- 1H *Fractions of a Dollar* (Converting Fractions to Decimals)
- 1I *Price is Right* (Converting Mixed Numbers to Decimals)

ACTIVITY 1A: THOSE CHANGING CHANGES

Description

Students compare and order net changes of stock prices in fraction form and place values on a number line.

Math Objectives

The student will be able to:

- Compare fractions
- Order fractions
- Interpret and apply information from a table*
- Label a number line with fractions of 1
- Place fractions on a number line

SMG Concepts

Net Change (Daily)

Connections and Extensions

Writing: Students write a letter to John explaining how to compare fractions.

Research: Students research the origins of stock prices including why fractions were originally used. Research results may be presented to the class or written in an essay.

Students research the origins of fractions including cultures that first developed systems for mathematically comparing “parts of a whole” before the invention of the decimal system.

SMG: Use “The Point of Decimals” (*Stock Talk* Volume 6, Issue 2) to further explore the switch from fractions to decimals in U.S. stock markets.

ACTIVITY 1B: HIGHS AND LOWS

Description

Students order and compare data from a stock table.

Math Objectives

The student will be able to:

- Compare decimals to the hundredths place
- Order decimals
- Order negative and positive numbers
- Interpret and apply information from a table

SMG Concepts

52-Week Highs and Lows

Dividends

Net Change (Daily)

P/E

Stock Prices

Volume

Yield

Connections and Extensions

Math: Use Activity 1C as a follow-up to reinforce placement of numbers on a number line.

Creative Writing: Students select one of the stock symbols used in the lesson. Each student creates a company name based on the chosen symbol and then write a paragraph explaining the company. The teacher may provide the following questions to guide their writing:

- What goods or services does the company provide?
- Who are the company’s customers?
- Does the company have a specialty?
- How did the company get its start?

Research: Have students research the origins of stock prices including why fractions were originally used.

ACTIVITY 1C: ALL LINED UP

Description

Students place values from a stock table on a number line.

Math Objectives

The student will be able to:

- Order decimals
- Order negative and positive numbers
- Determine the appropriate scale for a number line
- Label a number line
- Determine the placement of numbers on a number line
- Interpret and apply information from a table

SMG Concepts

52-Week Highs and Lows
Dividends
Net Change (Daily)
P/E
Stock Prices
Yield

Connections and Extensions

Math: Use before or after Activity 1B.

Writing: Students respond to the prompt, "Which was the most difficult number line to create? Why?"

Creative Writing: See Activity 1B.

Research: See Activity 1B.

ACTIVITY 1D: HIGHS AND LOWS - FIGURE IT OUT!

Description

Students locate stock data using a newspaper or the Internet, complete a stock table, and compare and order the data.

Math Objectives

The student will be able to:

- Compare decimals to the hundredths place
- Order decimals
- Order negative and positive numbers
- Complete a table with information gathered from other sources
- Interpret and apply information from a table

SMG Concepts

52-Week Highs and Lows
Dividends
Net Change (Daily)
P/E
Stock Prices
Volume
Yield

Connections and Extensions

See suggestions for Activity 1B.

ACTIVITY 1E: ALL LINED UP - FIGURE IT OUT!

Description

Students place values from a stock table on a number line.

Math Objectives

The student will be able to:

- Order decimals
- Order negative and positive numbers
- Determine the appropriate scale for a number line
- Label a number line
- Determine the placement of numbers on a number line
- Complete a table with information gathered from other sources
- Interpret and apply information from a table

SMG Concepts

52-Week Highs and Lows
Dividends
Net Change (Daily)
P/E
Stock Prices
Volume
Yield

Connections and Extensions

Math: Use before or after Activity 1D. Number 8 may be made optional or a “challenge” problem.

Writing: Students respond to the prompt, “Which was the most difficult number line to create? Why?”
Creative Writing: See Activity 1B.

Research: See Activity 1B.

ACTIVITY 1F: PRICE COMPARISON

Description

Students compare and order stock prices.

Math Objectives

The student will be able to:

- Compare decimals to the hundredths place
- Order decimals

SMG Concepts

Decimalization

Stock Prices

Connections and Extensions

Writing: Students respond to the prompt, "Identify a situation in which it is beneficial to know which stock price is greatest (or least) and write a paragraph explaining the situation."

ACTIVITY 1G: THEN AND NOW

Description

Students compare and order stock prices in fraction and decimal forms.

Math Objectives

The student will be able to:

- Compare decimals to mixed numbers
- Order decimals and mixed numbers
- Express a statement using appropriate mathematical symbols

SMG Concepts

Decimalization

Stock Prices

Connections and Extensions

Math: Students write their own mathematical expressions in word (expanded) form then exchange with another student who will translate the expression into numerical form. Students exchange again and discuss the accuracy of the expressions. (Example: one and one-third is greater than one would be translated to $1\frac{1}{3} > 1$.)

Writing: Students respond to the prompt, "Would you prefer to have stock prices listed in fraction or decimal form? Why?"

Research: Students research the origin of the base 10 decimal system and other numbering systems. Potential questions to answer include:

Who developed it?

When was it developed?

Why was it developed?
How was it used?
Is it still used today? If so, how?

ACTIVITY 1H: FRACTIONS OF A DOLLAR

Description

Students determine the decimal value of fractional portions of a dollar.

Math Objectives

The student will be able to:

- Convert fractions to decimals
- Round a decimal to the nearest hundredth

SMG Concept

Net Change

Connections and Extensions

SMG: Use "The Point of Decimals" (*Stock Talk* Volume 6, Issue 2) to further explore the switch from fractions to decimals in U.S. stock markets

ACTIVITY 1I: PRICE IS RIGHT

Description

Students determine the decimal equivalent of stock prices in mixed number form.

Math Objectives

The student will be able to:

- Convert fractions to decimals
- Round decimals to the nearest hundredth

SMG Concepts

Stock Prices

Connections and Extensions

Writing: Students respond to the prompt, "The decision for the United States' stock markets to convert stock prices from fractions to decimals was a difficult one. Do you think people and businesses would want the stock prices to remain in fractions or change to decimals? Why?" The teacher may provide the following as examples of people or businesses that may have an interest in this topic:

Stockbrokers
New Investors
Math Teachers
Newspaper Publishers

ACTIVITY 1A: THOSE CHANGING CHANGES

John created the table below using information from an old newspaper he found in his grandparents' attic. He has been studying the stock market in his class and was surprised by how different the stock pages looked compared to what he has seen recently in his local paper. All the stock prices are listed in *fractions!*

STOCK (SYMBOL)	Net Change
Dusty Newspapers, Inc. (DN)	$+\frac{1}{2}$
Air Tight Attics (ATA)	$+\frac{1}{8}$
Frumpy Dresses for All (FRUMP)	$+\frac{5}{8}$
Old Things Are Good (OTAG)	$+\frac{3}{8}$
We Sell Records (WSR)	$+\frac{1}{4}$

John hasn't studied fractions yet in his math class. Help him answer the questions below using your knowledge of fractions.

1. Which stock's net change was least?

Stock Symbol: _____ Net Change: _____

2. Which stock's net change was the greatest?

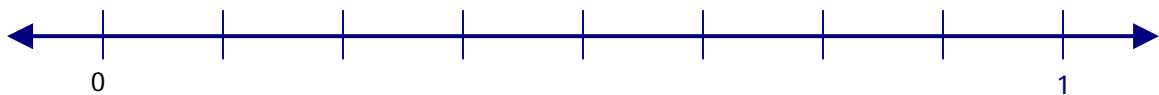
Stock Symbol: _____ Net Change: _____

3. List the net changes in order from *least to greatest*?

Stock Symbols: _____, _____, _____, _____, _____

Net Changes: _____, _____, _____, _____, _____

4. Label the number line below and place the net changes in their appropriate places.



John found other stock changes throughout the paper that looked similar. Help him determine which price change is greater by filling in the blanks with a < or > symbol.

5. $\frac{1}{2}$ _____ $\frac{1}{4}$

8. $\frac{5}{8}$ _____ $\frac{1}{2}$

6. $\frac{1}{4}$ _____ $\frac{3}{4}$

9. $\frac{1}{2}$ _____ $\frac{3}{8}$

7. $\frac{3}{4}$ _____ $\frac{7}{8}$

10. $\frac{1}{8}$ _____ $\frac{1}{4}$

ACTIVITY 1A: THOSE CHANGING CHANGES (ANSWER KEY)

John created the table below using information from an old newspaper he found in his grandparents' attic. He has been studying the stock market in his class and was surprised by how different the stock pages looked compared to what he has seen recently in his local paper. All the stock prices are listed in *fractions!*

Stock (Symbol)	Change
Dusty Newspapers, Inc. (DN)	$+\frac{1}{2}$
Air Tight Attics (ATA)	$+\frac{1}{8}$
Frumpy Dresses for All (FRUMP)	$+\frac{5}{8}$
Old Things Are Good (OTAG)	$+\frac{3}{8}$
We Sell Records (WSR)	$+\frac{1}{4}$

John hasn't studied fractions yet in his math class. Help him answer the questions below using your knowledge of fractions.

1. Which stock's price change was least?

Stock Symbol: ATA Net Change: $+\frac{1}{8}$

2. Which stock's price change was the greatest?

Stock Symbol: FRUMP Net Change: $+\frac{5}{8}$

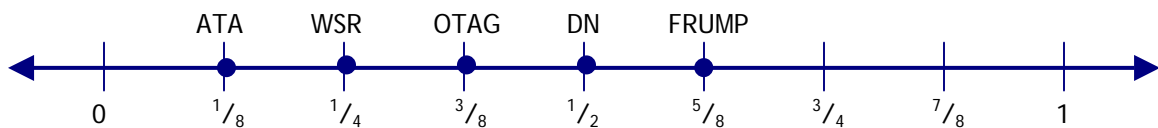
3. List the stock price changes in order from *least to greatest?*

Stock Symbols: ATA, WSR, OTAG, DN, FRUMP

Price Changes: $+\frac{1}{8}, +\frac{1}{4}, +\frac{3}{8}, +\frac{1}{2}, +\frac{5}{8}$

4. Label the number line below and place the net changes in their appropriate places.

ANSWERS MAY VARY



John found other stock changes throughout the paper that looked similar. Help him determine which price change is greater by filling in the blanks with a < or > symbol.

5. $\frac{1}{2} > \frac{1}{4}$

8. $\frac{5}{8} > \frac{1}{2}$

6. $\frac{1}{4} < \frac{3}{4}$

9. $\frac{1}{2} > \frac{3}{8}$

7. $\frac{3}{4} < \frac{7}{8}$

10. $\frac{1}{8} < \frac{1}{4}$

ACTIVITY 1B: HIGHS AND LOWS

Use the stock table below to answer the questions that follow.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						
APES	20.87	12.50	.49	2.73	8	824	18.50	-1.24
POOR	24.50	16.05	.82	3.70	13	2134	22.14	-0.92
MUSIC	20.40	11.30	.20	1.57	12	4118	12.77	+0.01
DOGZ	20.98	11.53	.27	1.30	18	1348	20.70	+0.76

1. Which stock had the greatest 52-Week High?

Stock Symbol: _____ 52-Week High: _____

2. Which stock has the lowest 52-Week Low?

Stock Symbol: _____ 52-Week Low: _____

3. Which stock had the highest Volume?

Stock Symbol: _____ Volume: _____

4. Which stock had the lowest Volume?

Stock Symbol: _____ Volume: _____

5. Which stock had the greatest Dividend?

Stock Symbol: _____ Dividend: _____

6. List the Closing Prices in order from *least to greatest*.

Closing Prices: _____, _____, _____, _____

7. List the PE Ratios in order from *greatest to least*.

PE Ratios: _____, _____, _____, _____

8. List the Net Changes in order from *least to greatest*.

Net Changes: _____, _____, _____, _____

9. List the Yields in order from *least to greatest*.

Yields: _____, _____, _____, _____

10. Which of the above (6-9) was the most difficult to order? _____

Why? _____

ACTIVITY 1B: HIGHS AND LOWS (ANSWER KEY)

Use the stock table below to answer the questions that follow.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						
APES	20.87	12.50	.49	2.73	8	824	18.50	-1.24
POOR	24.50	16.05	.82	3.70	13	2134	22.14	-0.92
MUSIC	20.40	11.30	.20	1.57	12	4118	12.77	+0.01
DOGZ	20.98	11.53	.27	1.30	18	1348	20.70	+0.76

1. Which stock has the greatest 52-Week High?

Stock Symbol: POOR 52-Week High: 24.50

2. Which stock has the lowest 52-Week Low?

Stock Symbol: MUSIC 52-Week Low: 11.30

3. Which stock had the highest Volume?

Stock Symbol: MUSIC Volume: 4118

4. Which stock had the lowest Volume?

Stock Symbol: APES Volume: 824

5. Which stock had the greatest Dividend?

Stock Symbol: POOR Dividend: .82

6. List the Closing Prices in order from *least to greatest*.

Closing Prices: 12.77, 18.50, 20.70, 22.14

7. List the PE Ratios in order from *greatest to least*.

PE Ratios: 18, 13, 12, 8

8. List the Net Changes in order from *least to greatest*.

Net Changes: -1.24, -0.92, +0.01, +0.76

9. List the Yields in order from *least to greatest*.

Yields: 1.30, 1.57, 2.73, 3.70

10. Which of the above (6-9) was the most difficult to order? Why?

ANSWERS WILL VARY

Sample Answer: Ordering Net Changes was most difficult because of the negative numbers.

ACTIVITY 1C: ALL LINED UP

Use the stock table below to create and label a number line for each of the values below.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						
APES	20.87	12.50	.49	2.73	8	824	18.50	-1.24
POOR	24.50	16.05	.82	3.70	13	2134	22.14	-0.92
MUSIC	20.40	11.30	.20	1.57	12	4118	12.77	+0.01
DOGZ	20.98	11.53	.27	1.30	18	1348	20.70	+0.76

1. 52-week Highs

2. 52-week Lows

3. Dividends

4. Yields

5. Price to Earnings Ratios

6. Closing Prices.

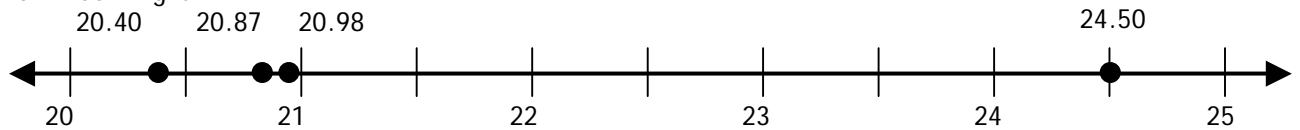
7. Net Changes.

ACTIVITY 1C: ALL LINED UP (ANSWER KEY)

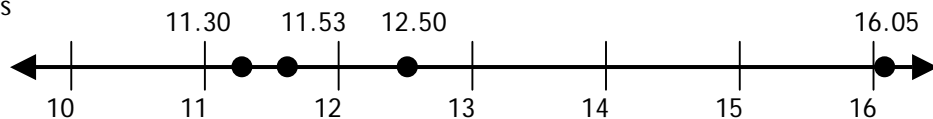
Use the stock table below to create the number lines described below.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						
APES	20.87	12.50	.49	2.73	8	824	18.50	-1.24
POOR	24.50	16.05	.82	3.70	13	2134	22.14	-0.92
MUSIC	20.40	11.30	.20	1.57	12	4118	12.77	+0.01
DOGZ	20.98	11.53	.27	1.30	18	1348	20.70	+0.76

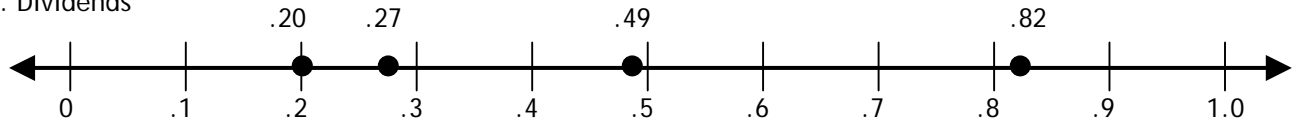
1. 52-Week Highs



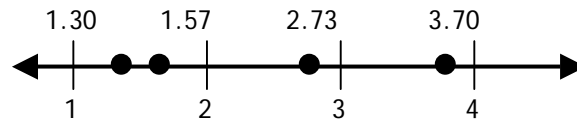
2. 52-Week Lows



3. Dividends

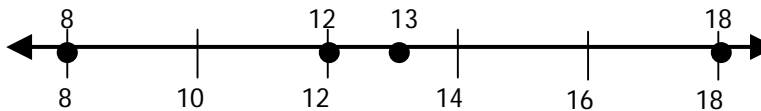


4. Yields

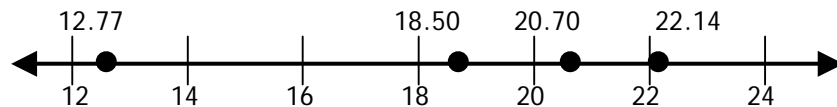


Teachers Note: Answers will vary. Sample answers have been provided for your use.

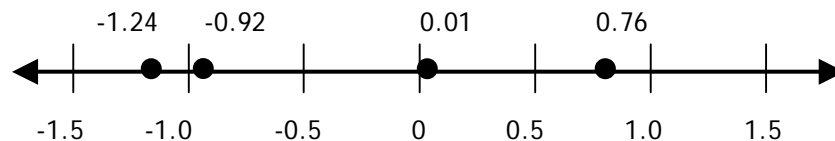
5. Price to Earnings Ratios



6. Closing Prices



7. Net Changes



ACTIVITY 1D: HIGHS AND LOWS – FIGURE IT OUT!



Complete the table with information from four stocks of your choosing then answers the questions below.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						

- Which stock had the greatest 52-Week High?
Stock Symbol: _____ 52-Week High: _____
- Which stock has the lowest 52-Week Low?
Stock Symbol: _____ 52-Week Low: _____
- Which stock had the highest Volume?
Stock Symbol: _____ Volume: _____
- Which stock had the greatest Dividend?
Stock Symbol: _____ Dividend: _____
- List the Closing Prices in order from *least to greatest*.
Closing Prices: _____, _____, _____, _____
- List the PE Ratios in order from *greatest to least*.
PE Ratios: _____, _____, _____, _____
- List the Net Changes in order from *least to greatest*.
Net Changes: _____, _____, _____, _____
- List the Yields in order from *least to greatest*.
Yields: _____, _____, _____, _____
- Which of these was the most difficult to order? Why?

ACTIVITY 1E: ALL LINED UP - FIGURE IT OUT!



Complete the table with information from four stocks of your choosing then create the number lines described below.

Stock Symbol	52-Wk		Div	Yield %	P/E	Vol 100s	Close	Net Change
	Hi	Lo						

1. 52-week Highs

2 52-week Lows

3. Dividends

4. Yields

5. Price to Earnings Ratios

6. Closing Prices

7. Net Changes

8. Volumes (Remember that the actual value is 100 times the number shown.)

ACTIVITY 1F: PRICE COMPARISON

Compare the current stock prices below by filling the blank with either a < or > symbol.

1. \$56.23 _____ \$56.32

2. \$8.75 _____ \$8.70

3. \$9.21 _____ \$8.91

4. \$15.15 _____ \$15.51

5. \$27.27 _____ \$27.26

Place the following stock prices in order from *least to greatest*.

6. \$9.00, \$8.95, \$9.05

7. \$13.03, \$13.30, \$13.00, \$13.33

8. \$42.10, \$42.05, \$42.01, \$42.50

9. \$16.18, \$16.08, \$16.00, \$15.98, \$15.88

10. \$64.80, \$63.08, \$64.23, \$63.88, \$62.98

ACTIVITY 1F: PRICE COMPARISON (ANSWER KEY)

Compare the current stock prices below by filling the blank with either a < or > symbol.

1. \$56.23 < \$56.32

2. \$8.75 > \$8.70

3. \$9.21 > \$8.91

4. \$15.15 < \$15.51

5. \$27.27 > \$27.26

Place the following stock prices in order from *least to greatest*.

6. \$8.95, \$9.00, \$9.05

7. \$13.00, \$13.03, \$13.30, \$13.33

8. \$42.01, \$42.05, \$42.10, \$42.50

9. \$15.88, \$15.98, \$16.00, \$16.08, \$16.18

10. \$62.98, 63.08, \$63.88, \$64.23, \$64.80

ACTIVITY 1G: THEN AND NOW

Many investors purchased stocks when prices were listed in fractions. Now they must compare these prices to the current decimal version. Determine which stock price is greater in each pair below by completing each statement with the appropriate symbol ($<$, $>$, or $=$).

1. $32\frac{1}{2}$ _____ 32.5
2. $3\frac{5}{8}$ _____ 3.6
3. 12.4 _____ $12\frac{3}{16}$
4. $19\frac{3}{8}$ _____ 19.6
5. 21.75 _____ $21\frac{3}{4}$
6. $72\frac{1}{4}$ _____ 72.25
7. $26\frac{1}{8}$ _____ 26.10

Place the stock prices below in order from *least to greatest*.

8. $\$32.50$, $\$32\frac{1}{3}$, $\$31\frac{5}{8}$, $\$35\frac{1}{4}$
9. $\$4\frac{1}{4}$, $\$3.95$, $\$3\frac{7}{16}$, $\$4.30$
10. $\$27.30$, $\$27.34$, $\$27\frac{1}{3}$
11. $\$100\frac{1}{8}$, $\$100.10$, $\$100\frac{1}{5}$

Re-write the statements below using the appropriate mathematical symbols.

12. A stock's old price of $\$42\frac{1}{8}$ is more than the current price of $\$41.10$
13. A stock selling for $\$33.50$ has the same value as one that used to be $\$33\frac{1}{2}$.

ACTIVITY 1G: THEN AND NOW (ANSWER KEY)

Many investors purchased stocks when prices were listed in fractions. Now they must compare these prices to the current decimal version. Determine which stock price is greater in each pair below by completing each statement with the appropriate symbol ($<$, $>$, or $=$).

1. $32\frac{1}{2} = 32.5$
2. $3\frac{5}{8} > 3.6$
3. $12.4 > 12\frac{3}{16}$
4. $19\frac{3}{8} < 19.6$
5. $21.75 = 21\frac{3}{4}$
6. $72\frac{1}{4} = 72.25$
7. $26\frac{1}{8} > 26.10$

Place the stock prices below in order from *least to greatest*.

8. \$32.50, $\$32\frac{1}{3}$, $\$31\frac{5}{8}$, $\$35\frac{1}{4}$ Answer: $\$31\frac{5}{8}$, $\$32\frac{1}{3}$, \$32.50, $\$35\frac{1}{4}$
9. $\$4\frac{1}{4}$, \$3.95, $\$3\frac{7}{16}$, \$4.30 Answer: $\$3\frac{7}{16}$, \$3.95, $\$4\frac{1}{4}$, \$4.30
10. \$27.30, \$27.34, $\$27\frac{1}{3}$ Answer: \$27.30, $\$27\frac{1}{3}$, \$27.34
11. $\$100\frac{1}{8}$, \$100.10, $\$100\frac{1}{5}$ Answer: \$100.10, $\$100\frac{1}{8}$, $\$100\frac{1}{5}$

Re-write the statements below using the appropriate mathematical symbols.

12. A stock's old price of $\$42\frac{1}{8}$ is more than the current price of \$41.10.

Answer: $\$42\frac{1}{8} > \41.10

13. A stock selling for \$33.50 has the same value as one that used to be $\$33\frac{1}{2}$.

Answer: $\$33.50 = \$33\frac{1}{2}$

ACTIVITY 1H: FRACTIONS OF A DOLLAR

How much is each fraction of a dollar worth? Convert each fraction to a decimal to find out. Round answers to the nearest hundredth.

1. $\frac{1}{2} =$ _____

9. $\frac{1}{7} =$ _____

2. $\frac{1}{8} =$ _____

10. $\frac{5}{6} =$ _____

3. $\frac{3}{8} =$ _____

11. $\frac{1}{32} =$ _____

4. $\frac{1}{4} =$ _____

12. $\frac{3}{4} =$ _____

5. $\frac{2}{3} =$ _____

13. $\frac{1}{9} =$ _____

6. $\frac{1}{5} =$ _____

14. $\frac{1}{10} =$ _____

7. $\frac{1}{6} =$ _____

15. $\frac{1}{16} =$ _____

8. $\frac{2}{5} =$ _____

16. $\frac{1}{64} =$ _____

ACTIVITY 1H: FRACTIONS OF A DOLLAR (ANSWER KEY)

How much is each fraction of a dollar worth? Convert each fraction to a decimal to find out. Round answers to the nearest hundredth.

1. $\frac{1}{2} =$.5

9. $\frac{1}{7} =$.14

2. $\frac{1}{8} =$.13

10. $\frac{5}{6} =$.83

3. $\frac{3}{8} =$.38

11. $\frac{1}{32} =$.03

4. $\frac{1}{4} =$.25

12. $\frac{3}{4} =$.75

5. $\frac{2}{3} =$.67

13. $\frac{1}{9} =$.11

6. $\frac{1}{5} =$.2

14. $\frac{1}{10} =$.1

7. $\frac{1}{6} =$.17

15. $\frac{1}{16} =$.06

8. $\frac{2}{5} =$.4

16. $\frac{1}{64} =$.02

ACTIVITY 1I: PRICE IS RIGHT

Stocks traded in the United States have been priced differently over time. Until 2001, stocks were priced using fractions. Now all stocks are priced in decimals. To compare stock prices from before 2001, convert the old price to a decimal.

What is the decimal price of each of the old stock prices below? Round to the nearest cent or hundredth.

- | | | | | | | | |
|----|------------------|---|-------|-----|------------------|---|-------|
| 1. | $26\frac{3}{4}$ | = | _____ | 7. | $5\frac{3}{8}$ | = | _____ |
| 2. | $9\frac{1}{2}$ | = | _____ | 8. | $38\frac{5}{8}$ | = | _____ |
| 3. | $14\frac{3}{16}$ | = | _____ | 9. | $12\frac{1}{16}$ | = | _____ |
| 4. | $27\frac{9}{16}$ | = | _____ | 10. | $42\frac{3}{8}$ | = | _____ |
| 5. | $58\frac{3}{4}$ | = | _____ | 11. | $8\frac{1}{4}$ | = | _____ |
| 6. | $93\frac{1}{8}$ | = | _____ | 12. | $19\frac{7}{8}$ | = | _____ |

ACTIVITY 1I: PRICE IS RIGHT (ANSWER KEY)

Stocks traded in the United States have been priced differently over time. Until 2001, stocks were priced using fractions. Now all stocks are priced in decimals. To compare stock prices from before 2001, convert the old price to a decimal.

What is the decimal price of each of the old stock prices below? Round to the nearest cent or hundredth.

$$1. \quad 26\frac{3}{4} = 26.75$$

$$7. \quad 5\frac{3}{8} = 5.38$$

$$2. \quad 9\frac{1}{2} = 9.50$$

$$8. \quad 38\frac{5}{8} = 38.63$$

$$3. \quad 14\frac{3}{16} = 14.19$$

$$9. \quad 12\frac{1}{16} = 12.06$$

$$4. \quad 27\frac{9}{16} = 27.56$$

$$10. \quad 42\frac{3}{8} = 42.38$$

$$5. \quad 58\frac{3}{4} = 58.75$$

$$11. \quad 8\frac{1}{4} = 8.25$$

$$6. \quad 93\frac{1}{8} = 93.13$$

$$12. \quad 19\frac{7}{8} = 19.88$$

APPENDIX A

 THE STOCK MARKET GAME™

0010

Date _____

Pay to the order of _____

_____ dollars

For _____ 

000000000: 0000000000000000: 0010

 THE STOCK MARKET GAME™

0011

Date _____

Pay to the order of _____

_____ dollars

For _____ 

000000000: 0000000000000000: 0011

APPENDIX B

Correlation of *Math Behind the Market* to *Principles and Standards for School Mathematics* by the National Council of Teachers of Mathematics, 2000

Standards	Unit 1									Unit 2						
	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G
Number and Operations																
Understand numbers, ways of representing numbers, relationships among numbers, and number systems																
Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals <i>(Gr. 3-5)</i>		❖		❖		❖	❖							❖		
Recognize equivalent representations for the same number and generate them by decomposing and composing numbers <i>(Gr. 3-5)</i>									❖	❖						
Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers <i>(Gr. 3-5)</i>	❖															
Recognize and generate equivalent forms of commonly used fractions, decimals, and percents <i>(Gr. 3-5)</i>									❖	❖						
Work flexibly with fractions, decimals, and percents to solve problems <i>(Grades 6-8)</i>											❖	❖	❖	❖	❖	❖
Compare and order fractions, decimals, and percents efficiently and find their approximate locations on a number line <i>(Grades 6-8)</i>	❖	❖	❖	❖	❖	❖	❖									
Develop an understanding of large numbers and recognize and appropriately use exponential, scientific, and calculator notation <i>(Grades 6-8)</i>																❖
Develop a deeper understanding of very large and very small numbers and of various representations of them <i>(Grades 9-12)</i>																❖
Understand meanings of operations and how they relate to one another																
Understand the meaning and effects of arithmetic operations with fractions, decimals, and integers <i>(Grades 6-8)</i>											❖	❖	❖	❖	❖	❖
Judge the effects of such operations as multiplication, division, and computing powers and roots on the magnitudes of quantities <i>(Grades 9-12)</i>																
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 <i>(Grades 6-8)</i>											❖	❖	❖	❖	❖	❖
Develop and analyze algorithms for computing with fractions, decimals, and integers and develop fluency in their use <i>(Grades 6-8)</i>											❖	❖	❖	❖	❖	❖
ALGEBRA																
Represent and analyze mathematical situations and structures using algebraic symbols																
Express mathematical relationships using equations <i>(Gr. 3-5)</i>															❖	❖
Use mathematical models to represent and understand quantitative relationships																
Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions <i>(Gr. 3-5)</i>	❖	❖	❖	❖	❖									❖		❖
Data Analysis and Probability																
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them																
Represent data using tables and graphs such as line plots, bar graphs, and line graphs <i>(Gr. 3-5)</i>				❖	❖									❖		

Standards	Unit 1									Unit 2							
	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	
Problem Solving																	
Build new mathematical knowledge through problem solving											❖		❖	❖	❖		❖
Solve problems that arise in mathematics and in other contexts											❖		❖	❖	❖		❖
Apply and adapt a variety of appropriate strategies to solve problems											❖		❖	❖			❖
Communication																	
Organize and consolidate their mathematical thinking through communication		❖		❖			❖						❖		❖		
Communicate their mathematical thinking coherently and clearly to peers, teachers, and others		❖		❖			❖						❖		❖		
Use the language of mathematics to express mathematical ideas precisely.		❖		❖			❖						❖		❖		
Connections																	
Understand how mathematical ideas interconnect and build on one another to produce a coherent whole																	
Recognize and apply mathematics in contexts outside of mathematics	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖
Representation																	
Create and use representations to organize, record, and communicate mathematical ideas				❖	❖									❖			

