

## *How Successful Was My Investment Strategy?*

### *Lesson Summary*

*How Successful Was My Investment Strategy?* asks students to reflect on the investment decisions their team made during the course of The Stock Market Game.

### *Lesson Objectives*

- Draw supported conclusions as to whether their strategy in preparing their portfolio was successful, and what investment changes they might have made to improve portfolio performance.
- Generate a detailed report including support material.
- Deliver a convincing presentation.
- Give and receive constructive criticism.
- Evaluate the work of other team members and other students.

### *NCTM Standards*

- 1A - Understand numbers, ways of representing numbers, relationships among numbers, and number systems.  
 2A - Understand patterns, relations, and functions.  
 5A - Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.  
 5B - Select and use appropriate statistical methods to analyze data.  
 5C - Develop and evaluate inferences and predictions that are based on data.  
 5D - Understand and apply basic concepts of probability.  
 7B - Make and investigate mathematical conjectures.  
 7C - Develop and evaluate mathematical arguments and proofs.  
 8A - Organize and consolidate mathematical thinking through communication.  
 8C - Analyze and evaluate the mathematical thinking and strategies of others.  
 8D - Use the language of mathematics to express mathematical ideas precisely.  
 9A - Recognize and use connections among mathematical ideas.  
 9B - Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.  
 9C - Recognize and apply mathematics in contexts outside of mathematics.  
 10A - Create and use representations to organize, record, and communicate mathematical ideas.  
 10C - Use representations to model and interpret physical, social, and mathematical phenomena.

### *Mathematical Strands*

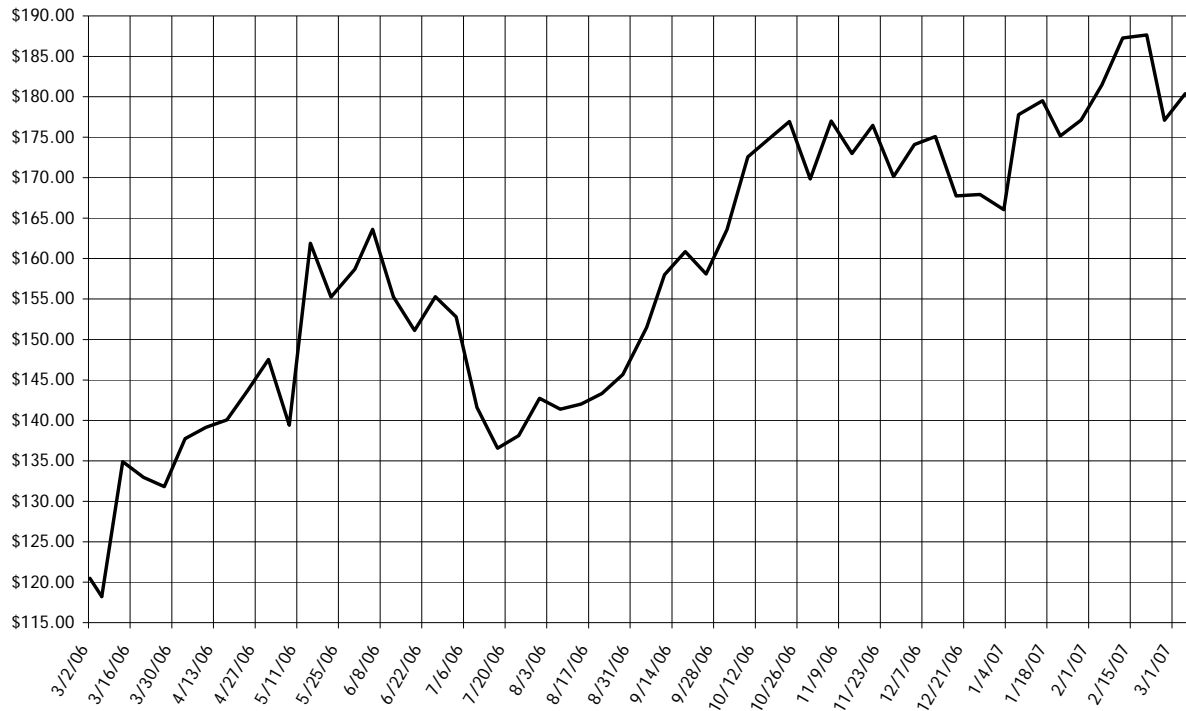
	<b>Thinking Algebraically</b>	Students calculate percentage change in stock price for each stock they held in their portfolio in order to compare the gains and losses.	
	<b>Interpreting Statistics</b>	Students advise whether to buy, sell, or hold stock at specific points in time.	
	<b>Communicating Quantitative Information</b>	Students are asked to compare a team's portfolio performance to major indices. They will then write a letter assessing the fictional team's performance in light of major market indices as well as the fictional team's rankings.	
	<b>Tackling Complex Problems</b>	Students will choose three stocks and chart their performance over the course of the ten-week investment period. They will then compare the stocks' performances to the performance of the same stocks one year previous.	



## INTERPRETING STATISTICS

### Deciding When to Sell

Sears Holding Corporation (SHLD)



A group playing *The Stock Market Game™* bought 300 shares of Sears Holding Corporation (SHLD) during the first day of the game on December 29, 2006. Over the previous year, its stock ranged in price from a low of \$116.50 to a high of \$189.97.

For each date below, use the graph above to state what your advice to the group would have been (buy, sell, or hold, and why), given how much information you would have had at the time.

1. January 4, 2007
2. January 18, 2007
3. February 15, 2007
4. February 23, 2007
5. Many financial advisors encourage investors to invest for the “long-haul,” instead of buying and selling over short periods of time. Why do you think they give this advice?



## COMMUNICATING QUANTITATIVE INFORMATION

### What is Successful?

Below are the values of a team's portfolio over a ten week period.

Week	Value
0	\$100,000
1	\$101,248
2	\$102,429
3	\$117,320
4	\$116,487
5	\$117,974
6	\$121,338
7	\$106,429
8	\$104,355
9	\$108,656
10	\$108,449

The team was ranked last in their class, seventh (out of 18) in their grade, and 64<sup>th</sup> (out of 70) in their school. The Dow Jones Industrial Average started at 12,191.13 at the beginning of their investment and reached 12,276.33 by the end of the tenth week of the game. The S&P 500 Index started at 1,396.71 and finished at 1,402.84. The NASDAQ composite went from 2,413.21 on the first day of the game to 2,387.55 on the last day of the game.

Several members of the team feel badly about their performance, and some members of the team feel very good about their performance.

1. *Describe the trend in the value of the portfolio over the ten-week period.*
2. *Show calculations of the percentage change in the portfolio and percentage changes in the indices.*
3. *How did the portfolio perform in relation to the performance of the major indices listed?*
4. *Write the team a brief letter putting their performance in context and telling them your honest assessment. Use your own experience and some of the above information to support your evaluation of their portfolio.*

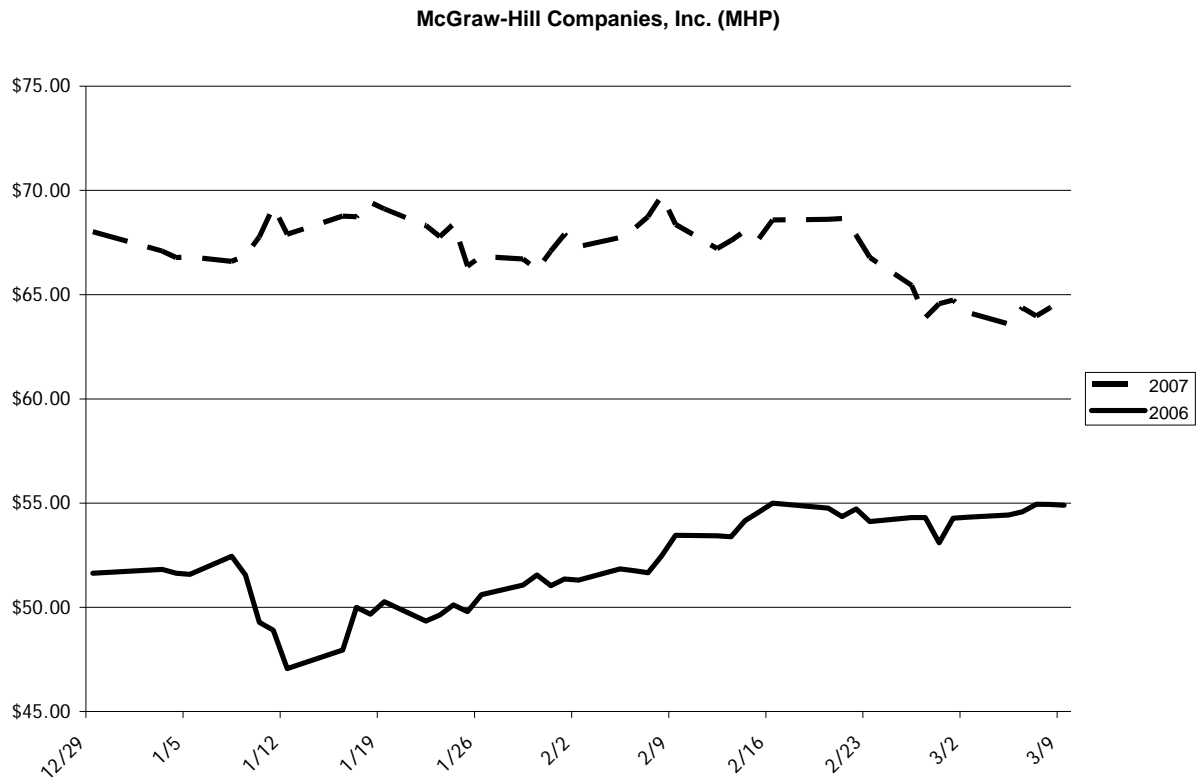


## TACKLING COMPLEX PROBLEMS

### Looking at Past Performance

Choose three stocks from your portfolio and chart each of their share prices over the ten weeks.

Use online financial information to look up the historical prices of those same stocks during the same ten-week period last year. Chart the previous history on the same graph for each company. (An example is shown below.)



- Given the information, did each stock outperform or underperform their history?
- Why might it be important that you compare the same weeks in previous years?



## How Successful Was My Investment Strategy?

### ANSWER KEY

#### Biggest Gainers and Biggest Losers

- For each of the stocks that you had in your portfolio, calculate the % gain/loss per share over the course of time you held the stock.

Remember the formula for calculating percent change is:

$$\% \text{ change} = \frac{\text{current\_price} - \text{Net\_cost / share\_price}}{\text{Net\_cost / share\_price}} \cdot 100\%$$

Here is a sample of finding the percentage change in the price of a stock.  
 $[(\$38.53 - \$35.20) \div \$35.20] \times 100\% = 9.46\%$

<i>Ticker symbol</i>	<i>Net Cost/Share</i>	<i>Current price</i>	<i>Unrealized Gains Losses %</i>
<i>GE</i>	<i>\$35.20</i>	<i>\$38.53</i>	<i>+9.46%</i>
<i>GLW</i>	<i>\$22.80</i>	<i>\$25.90</i>	<i>+13.60%</i>
<i>AAPL</i>	<i>\$95.00</i>	<i>\$126.55</i>	<i>+33.21%</i>
<i>SYK</i>	<i>\$67.50</i>	<i>\$63.50</i>	<i>-5.93%</i>

- Calculate how much money you earned/lost from each investment in dollar amounts.

*GE net gain = +\$3.10 per share*  
*GLW net gain = +\$3.10 per share*  
*AAPL net gain = +\$31.55 per share*  
*SYK net gain = -\$4.00 per share*

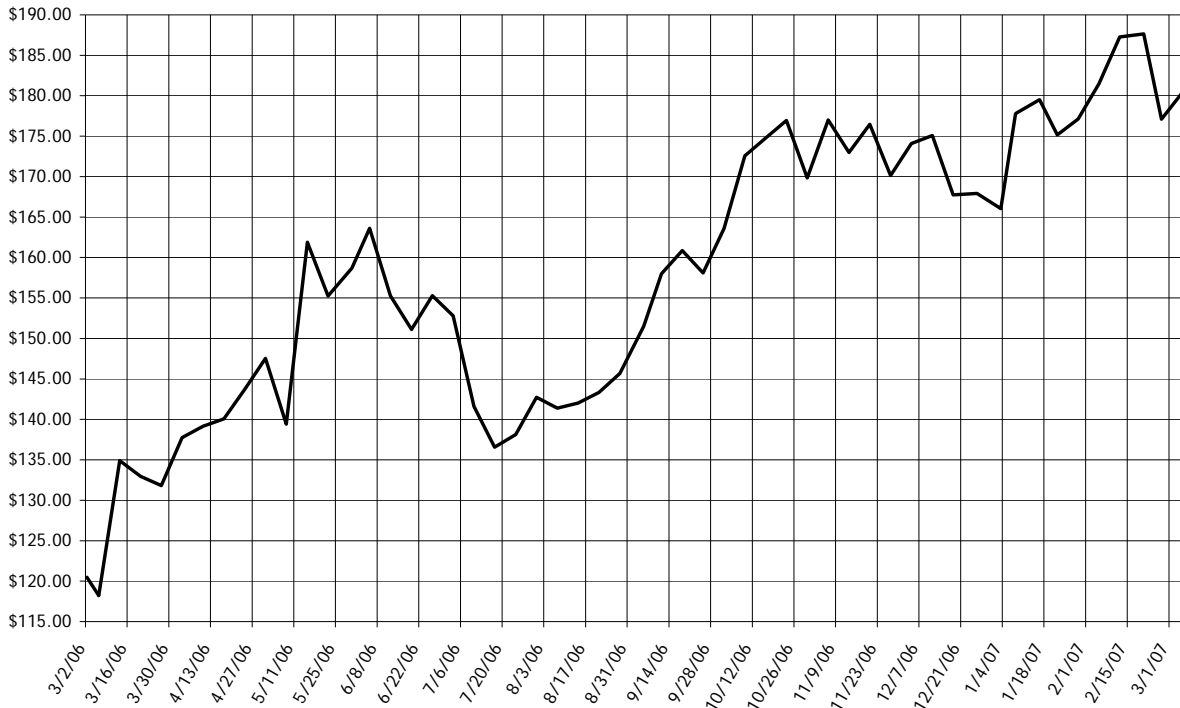
When you are done with your calculations, answer the following questions:

- Which stock was the biggest gainer in terms of percentages?  
*Answer: AAPL*
- Which was the biggest loser in terms of percentages?  
*Answer: SYK*
- Were there any stocks that were great gainers in terms of percentages but did not earn your team much money overall? Why would that be?  
*Answer: GLW gained 13.60% per share which is an increase of \$3.10 per share. A large percentage change based on a low price creates a relatively low dollar increase.*



Deciding When to Sell

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For each date below, use the graph above to state what your advice to the group would have been (buy, sell, or hold, and why), given how much information you would have had at the time.

1. January 4, 2007

*Answer: You bought the stock a week ago and its price has declined. It probably is too soon to sell.*

2. January 18, 2007

*Answer: After a declining period, the stock price has gone up about \$15.00 (9.1%) in the past week. If you feel the stock is going to continue to rise, you will want to hold the stock. If you think the stock will decline again, you should consider selling the stock.*

3. February 15, 2007

*Answer: The stock has risen about \$19.00 or 11%. At this point, you have made about \$5,700 on this stock. The stock has been in your portfolio for about 7 weeks. Not a bad idea to hold onto it and keep a close eye on it.*



4. February 23, 2007

*Answer: The stock price fell a little bit during the most recent week. Even if you do not sell, you still have made about \$15.00 per share (a gain of 9.1%).*

5. Many financial advisors encourage investors to invest for the “long-haul,” instead of buying and selling over short periods of time. Why do you think they give this advice?

*Answer: The Sears chart shows the price of a stock can vary from week to week, but that the overall trend is upward over time. If you buy stock in a solid company, you should expect its price to increase over time, even though there can be minor ups and downs along the way.*



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Several members of the team feel badly about their performance, and some members of the team feel very good about their performance.

1. Describe the trend in the value of the portfolio over the ten week period.

*Answer: The team made a profit of 17.3% in the first three weeks, and another gain of 3.4% in the next three weeks. In the first 6 weeks they made a profit of 21.3%. Between weeks 6 and 7 the portfolio's value dropped by 12.3%. The value recovered some before the end of the game.*
2. Show calculations of the percentage change in the portfolio and percentage changes in the indices.

*The team's change =  $[(\$108,449 - \$100,000) \div \$100,000] \times 100\% = +8.45\%$*   
*DOW's change =  $[(12,276.33 - 12,191.13) \div 12,191.13] \times 100\% = +0.70\%$*   
*S&P 500's change =  $[(1,402.84 - 1,396.71) \div 1,396.71] \times 100\% = +0.44\%$*   
*NASDAQ's change =  $[(2,387.55 - 2,413.21) \div 2,413.21] \times 100\% = -1.06\%$*
3. How did the portfolio perform in relation to the performance of the major indices listed?

*Answer: It did very well and beat all of the major indices.*
4. Write the team a brief letter putting their performance in context and telling them your honest assessment. Use your own experience and some of the above information to support your evaluation of their portfolio.

*Possible answer: Overall this team did very well. Having an increase of 8.45% in portfolio value is excellent.*



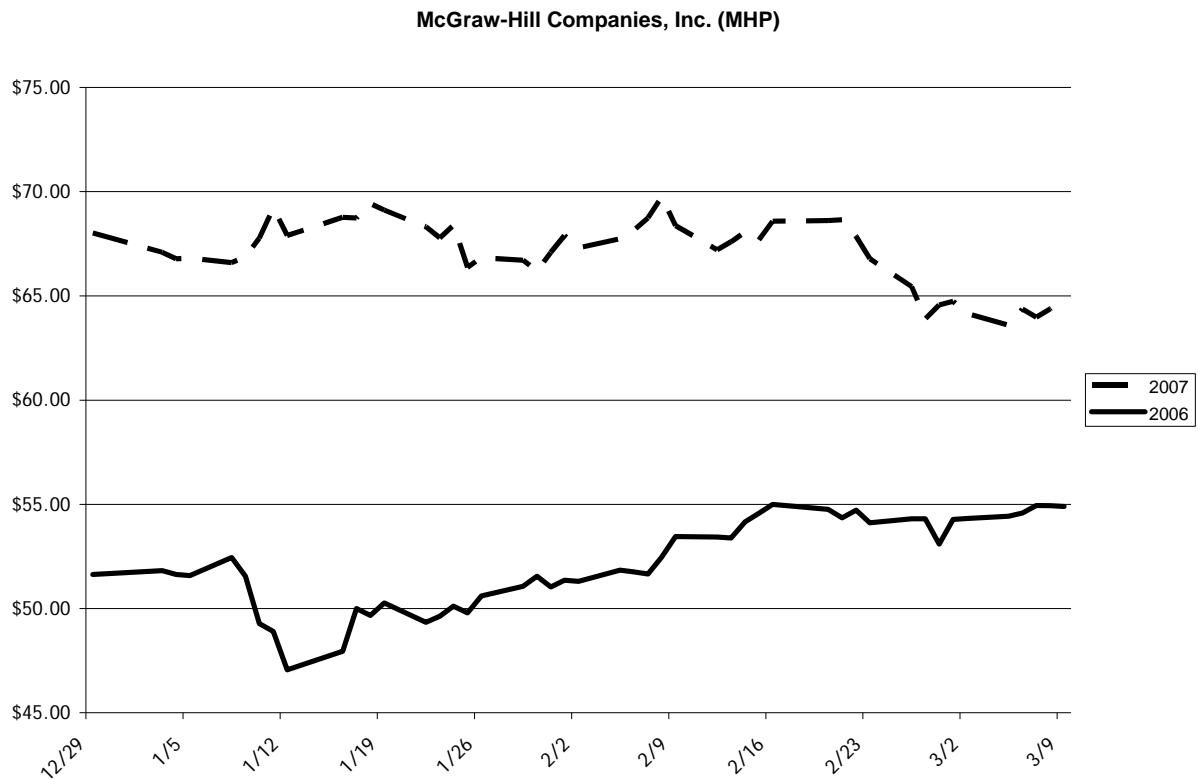
## TACKLING COMPLEX PROBLEMS

### Looking at Past Performance

Choose three stocks from your portfolio and chart each of their share prices over the ten weeks.

*Answers may vary.*

Use an online financial information source to look up the historical prices of those same stocks during the same ten-week period last year. Chart the previous history on the same graph for each company. (An example is shown below.)



- Given the information, did each stock outperform or underperform their history?  
*Answers may vary.*
- Why might it be important that you compare the same weeks in previous years?  
*Answer: If it is a seasonal company, it might give you an idea of what to expect. If it is a cyclical company it might help an investor decide when to buy stock of such a company.*

Disclaimers: 1. Prices included in lesson are not representative of actual market data and are for instructional purposes only. 2. Discrepancies may occur between student responses and the answer keys as a result of how far calculations were taken past the decimal point. In most instances, numbers were rounded from the thousandth or ten thousandth place.



How Successful was my Investment Strategy?  
Answer Key