

What is an Exchange/Market?

Lesson Summary

What Is an Exchange/Market? discusses the functions of stock exchanges, and the advantages or disadvantages of listing on one stock exchange over another.

Lesson Objectives

- Explain the role of exchanges in shaping the market place.
- Compare and contrast standard listing requirements for each exchange.
- Understand the advantages and disadvantages of listing with the NYSE, NASDAQ and AMEX.
- Describe the differences between a dealers market and an auction market.
- Draw conclusions as to whether the exchange on which a stock is listed should impact the choices made by SMG teams.
- Draw conclusions as to the role technology has played in changing the work and impact of the stock market.

NCTM Standards

1A - Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

5A - Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

5C - Develop and evaluate inferences and predictions that are based on data.

5D - Understand and apply basic concepts of probability.

9C - Recognize and apply mathematics in contexts outside of mathematics.

10A - Create and use representations to organize, record, and communicate mathematical ideas.

10B - Select, apply, and translate among mathematical representations to solve problems.

Mathematical Strands

	Thinking Algebraically	Students practice using currency conversion tables. When students achieve fluency, they may choose to use one of many online currency converters.	
	Interpreting Statistics	Students identify trends in the data from a table. Students will then look at more concrete examples to see how the buying power of the dollar changes in foreign markets.	
	Communicating Quantitative Information	Students create a brief analysis of where the most economical place to travel would be based on the information provided.	
	Tackling Complex Problems	Students follow the buying and selling of stocks by a foreign investor. Even though the stock's price rose over the time period given, the investor lost money because the exchange rate changed against his favor over the course of his investment. Students are asked to explain this phenomenon in a brief paragraph.	

THINKING ALGEBRAICALLY

Converting Currency Quickly

Currency	U.S. \$	¥en	Euro	Can \$	U.K. £	AU \$	Swiss Franc
1 U.S. \$ =	1	121.8500	0.7688	1.1714	0.5036	1.2877	1.2475
1 ¥en =	0.008207	1	0.006309	0.009613	0.004133	0.010568	0.010238
1 Euro =	1.3007	158.4962	1	1.5237	0.6551	1.6750	1.6227
1 Can \$ =	0.8537	104.0208	0.6563	1	0.4299	1.0993	1.0650
1 U.K. £ =	1.9856	241.9488	1.5265	2.3260	1	2.5570	2.4771
1 AU \$ =	0.7765	94.6226	0.5970	0.9096	0.3911	1	0.9687
1 Swiss Franc =	0.8016	97.6754	0.6163	0.9390	0.4037	1.0323	1

Use the table above to convert the currency below into the appropriate denomination.

1. 30 U.S. dollars = Yen
2. 400 Euro = Canadian \$
3. 1,000,000 £ = U.S. \$
4. 4 ¥ = Australian dollars
5. 50 Canadian dollars = Australian dollars
6. \$100,000 U.S. = Swiss Francs
7. 805,000 Yen = Euro
8. 500,000 Swiss Francs = U.S. \$
9. 35,142 Canadian dollars = U.S. \$
10. 5240.80 Euro = £



INTERPRETING STATISTICS

Exchange Rates

Below is a table of monthly averages of the value of the euro (€, the currency used in European Union nations) against the U.S. dollar (USD).

Month	USD per 1 Euro
January 2006	1.21032 USD
February 2006	1.19393 USD
March 2006	1.20284 USD
April 2006	1.22733 USD
May 2006	1.27662 USD
June 2006	1.26606 USD
July 2006	1.26806 USD
August 2006	1.28105 USD
September 2006	1.27274 USD
October 2006	1.26164 USD
November 2006	1.28895 USD
December 2006	1.32013 USD

1. Describe the trend you see in the data above. Did the dollar get weaker against the Euro over 2006 or stronger? How can you tell?
2. How much was \$1 million worth in Euros in October 2006?
3. How much was \$1 million worth in Euros in November 2006?
4. If you had stock worth 120,540€ in November of 2006, how much was that worth in U.S. dollars?
5. If you had an investment valued at 30,250€ in March 2006, how much was that worth in USD?
6. If you had 250,250€ in April 2006, how much U.S. currency could you buy?
7. If you wanted to buy 200 shares of DaimlerChrysler (DCX.BE) on the Berlin stock exchange at 49.43 Euro each, how much would this cost you in July 2006 in U.S. dollars?



INTERPRETING STATISTICS

Below is a table of monthly averages of the value of the Japanese Yen (¥, the currency used in Japan) against the U.S. dollar (USD).

Month	USD per Yen
January 2006	0.00865239 USD
February 2006	0.00848665 USD
March 2006	0.00852716 USD
April 2006	0.00854353 USD
May 2006	0.00894797 USD
June 2006	0.00872543 USD
July 2006	0.00863886 USD
August 2006	0.00862683 USD
September 2006	0.00853158 USD
October 2006	0.00843055 USD
November 2006	0.00852645 USD
December 2006	0.00851937 USD

Describe the trend you see in the data above. Did the dollar get weaker against the Yen over 2006 or stronger? How can you tell?



COMMUNICATING QUANTITATIVE INFORMATION

Traveling Abroad

Below is a table that shows the currency conversions between major world currencies. For example, it tells us that on a certain day one U.S. dollar was worth 1.17 Canadian dollars.

Major Currency Cross Rates

Currency Last Trade	U.S. \$	¥en	Euro	Can \$	U.K. £	AU \$	Swiss Franc
1 U.S. \$ =	1	121.8500	0.7688	1.1714	0.5036	1.2877	1.2475
1 ¥en =	0.008207	1	0.006309	0.009613	0.004133	0.010568	0.010238
1 Euro =	1.3007	158.4962	1	1.5237	0.6551	1.6750	1.6227
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1 Swiss Franc =	0.8016	97.6754	0.6163	0.9390	0.4037	1.0323	1

(Source: <http://finance.yahoo.com/currency>, February 11, 2007)

1. How many British Pounds (£) could be purchased with 1 Australian dollar?
2. How many British Pounds could be bought with 20 Australian dollars?
3. How many U.S. dollars could be exchanged for 400 Swiss Francs?
4. How many British Pounds could be exchanged for 200,000 Japanese Yen (¥)?

One of your U.S. relatives has decided to see more of the world and wants to travel to some foreign countries. Knowing that you have been studying stock markets and exchanges, the relative asks you what countries would provide the best exchange rates.

5. In which countries does the U.S. dollar have the most buying power?
6. In which countries does the U.S. dollar have the weakest buying power?
7. Given the exchange rates above, where would you advise your relative to travel? Why?
8. What other information would you want to know about buying power before you traveled?



TACKLING COMPLEX PROBLEMS

Foreign Investors

A Chinese investor named Min bought 2,000 shares of Yahoo! Inc. (YHOO), at \$25.54 per share.

- How much did he pay in U.S. dollars?
- Given the exchange rate below, how much did he pay in Chinese Yuan?

US Dollar	Chinese Yuan
1	7.8041

- About two months later, he decided to sell all his Yahoo! Inc. stock, when it was valued at \$29.74 per share. How much was his investment worth in U.S. dollars when he sold it?
- In American dollars, did Min make a profit or a loss?
- Given the exchange shown below for the date on which he sold his Yahoo! Inc. stock, how much was Min's investment worth in Chinese Yuan?

US Dollar	Chinese Yuan
1	6.5533

- Was this a profit or a loss for Min in Chinese Yuan?
- Explain what happened to Min.



TACKLING COMPLEX PROBLEMS

Foreign Investing

Over the two year period shown, in which of these stocks would a European investor have made money? In which would he have taken a loss?

January 3, 2005

Stock	Price
Sony Corp (SNE)	\$38.71
Eastman Kodak Company (EK)	\$32.48
Sprint Nextel Corp. (S)	\$24.85
Staples, Inc (SPLS)	\$32.85
Google, Inc. (GOOG)	\$202.71

U.S. Dollar (\$)	Euro (€)
1	0.74206

January 3, 2007

Stock	Price
Sony Corp (SNE)	\$42.91
Eastman Kodak Company (EK)	\$25.91
Sprint Nextel Corp. (S)	\$19.04
Staples, Inc (SPLS)	\$26.40
Google, Inc. (GOOG)	\$467.59

U.S. Dollar (\$)	Euro (€)
1	0.76894



What Is an Exchange/Market?

ANSWER KEY

Please Note: 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

Converting Currency Quickly

Currency	U.S. \$	¥en	Euro	Can \$	U.K. £	AU \$	Swiss Franc
1 U.S. \$ =	1	121.8500	0.7688	1.1714	0.5036	1.2877	1.2475
1 ¥en =	0.008207	1	0.006309	0.009613	0.004133	0.010568	0.010238
1 Euro =	1.3007	158.4962	1	1.5237	0.6551	1.6750	1.6227
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1 Swiss Franc =	0.8016	97.6754	0.6163	0.9390	0.4037	1.0323	1

Use the table above to convert the currency below into the appropriate denomination.

- 30 U.S. dollars = *3,655.50* Yen
- 400 Euro = *609.48* Canadian \$
- 1,000,000 £ = *1,985,600* U.S. \$
- 4 ¥ = *.042272* Australian dollars
- 50 Canadian dollars = *54.965* Australian dollars
- \$100,000 U.S. = *124,750* Swiss Francs
- 805,000 Yen = *5,078.75* Euro
- 500,000 Swiss Francs = *400,800* U.S. \$
- 35,142 Canadian dollars = *30,000.73* U.S. \$
- 5240.80 Euro = *3,433.25* £



Exchange Rates

Below is a table of monthly averages of the value of the Euro (€, the currency used in European Union nations) against the U.S. dollar (USD).

Month	USD per 1 Euro
January 2006	1.21032 USD
February 2006	1.19393 USD
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August 2006	1.28105 USD
September 2006	1.27274 USD
October 2006	1.26164 USD
November 2006	1.28895 USD
December 2006	1.32013 USD

- Describe the trend you see in the data above. Did the dollar get weaker against the Euro over 2006 or stronger? How can you tell?
Answer: From January 2006 through December 2006, the U.S. dollar weakened against the Euro. In January, one needed \$1.21 to buy one Euro. In December it took \$1.32 to buy one Euro.
- How much was \$1 million worth in Euros in October 2006?
Answer: $\$1,000,000.00 \div 1.26164 = 792,619.13$ Euros
- How much was \$1 million worth in Euros in November 2006?
Answer: $\$1,000,000.00 \div 1.28895 = 775,825.28$ Euros
- If you had stock worth 120,540€ in November of 2006, how much was that worth in U.S. dollars?
Answer: $120,540 \times 1.28895 = \$155,370.03$
- If you had an investment valued at 30,250€ in March 2006, how much was that worth in USD?
Answer: $30,250 \times 1.20284 = \$36,385.91$ USD
- If you had 250,250€ in April 2006, how much U.S. currency could you buy?
Answer: $250,250 \times 1.22733 = \$307,139.33$ USD
- If you wanted to buy 200 shares of DaimlerChrysler (DCX.BE) on the Berlin stock exchange at 49.43 Euro each, how much would this cost you in July 2006 in U.S. dollars?
Answer: DCX.BE in Euros: $200 \times 49.43 = 9,886.00 \times 1.26806 = \$12,536.04$ USD



INTERPRETING STATISTICS

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August 2006	0.00862683 USD
September 2006	0.00853158 USD
October 2006	0.00843055 USD
November 2006	0.00852645 USD
December 2006	0.00851937 USD

Describe the trend you see in the data above. Did the dollar get weaker against the Yen over 2006 or stronger? How can you tell?

Answer: The U.S. dollar weakened slightly.



COMMUNICATING QUANTITATIVE INFORMATION

Traveling Abroad

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(Source: <http://finance.yahoo.com/currency>, February 11, 2007)

- How many British Pounds (£) could be purchased with 1 Australian dollar?

Answer: 0.3911 British Pounds.

- How many British Pounds could be bought with 20 Australian dollars?

Answer: $20 \times .3911 = 7.822$ British Pounds.

- How many U.S. dollars could be exchanged for 400 Swiss Francs?

Answer: $400 \times 0.8016 = 320.64$ U.S. dollars.

- How many British Pounds could be exchanged for 200,000 Japanese Yen (¥)?

Answer: $200,000 \times 0.004133 = 826.60$ British Pounds.

One of your U.S. relatives has decided to see more of the world and wants to travel to some foreign countries. Knowing that you have been studying stock markets and exchanges, the relative asks you what countries would provide the best exchange rates.

- In which countries does the U.S. dollar have the most buying power?

The U.S. dollar has the most buying power in Japan, Australia, & Sweden.

- In which countries does the U.S. dollar have the weakest buying power?

Answer: The U.S. dollar is weakest in Europe and the U.K.

- Given the exchange rates above, where would you advise your relative to travel? Why?

Answers may vary. It appears that we have our best rate with Japan at one dollar = 121.85 Yen.

- What other information would you want to know about buying power before you traveled?

Answers will vary. Possible things to consider are: Cost of living; What kind of turmoil do they have?; How expensive is this country?; Airfare; etc.



TACKLING COMPLEX PROBLEMS

Foreign Investors

A Chinese investor named Min bought 2,000 shares of Yahoo! Inc. (YHOO), at \$25.54 per share.

- How much did he pay in U.S. dollars?
Answer: (2,000) (\$25.54) = \$51,080
- Given the exchange rate below, how much did he pay in Chinese yuan?

US Dollar	Chinese Yuan
1	7.8041

$$\frac{\$51,080}{\$1} = \frac{\text{investment_in_Yuan}}{7.8041}$$

Answer: (\$51,080) (7.8041) = 398,633.43 Yuan

- About two months later, he decided to sell all his Yahoo! Inc. stock, when it was valued at \$29.74 per share. How much was his investment worth in U.S. dollars when he sold it?
Answer: (2,000) (\$29.74) = \$59,480
- In American dollars, did Min make a profit or a loss?
Answer: He made an \$8,400 profit. (\$59,480 - \$51,080 = \$8,400)
- Given the exchange shown below for the date on which he sold his Yahoo! Inc. stock, how much was Min's investment worth in Chinese Yuan?

US Dollar	Chinese Yuan
1	6.5533

$$\frac{\$59,480}{\$1} = \frac{\text{investment_in_Yuan}}{6.5533}$$

Answer: (\$59,480) (6.5533) = 389,790.28 Yuan

- Was this a profit or a loss for Min in Chinese Yuan?
Answer: Min suffered a loss of 8,843.15 Chinese Yuan.
- Explain what happened to Min.
Answer: Although the stock price rose in U.S. dollars, when it came time to sell, the American dollar was not worth as much as it was when Min bought the stock. Because an American dollar lost value relative to the Yuan, Min took a loss on his investment.



Foreign Investing

Over the two year period shown, in which of these stocks would a European investor have made money? In which would he have taken a loss?

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Google, Inc. (GOOG)	\$202.71

U.S. Dollar (\$)	Euro (€)
1	0.74206

January 3, 2007

Stock	Price
Sony Corp (SNE)	\$42.91
Eastman Kodak Company (EK)	\$25.91
Sprint Nextel Corp. (S)	\$19.04
Staples, Inc (SPLS)	\$26.40
Google, Inc. (GOOG)	\$467.59

U.S. Dollar (\$)	Euro (€)
1	0.76894

Answer:

Sony \$38.71 x 0.74206 = 28.73 Euro

Sony \$42.91 x 0.76894 = 33.00 Euro

Made money on Sony.

Eastman Kodak: \$32.48 x 0.74206 = 24.10 Euro

Eastman Kodak: \$25.91 x 0.76894 = 19.92 Euro

Lost money on Kodak.

Sprint: \$24.85 x 0.74206 = 18.44 Euro

Sprint: \$19.04 x 0.76894 = 14.64 Euro

Lost money on Sprint.

Staples: 32.85 x 0.74206 = 24.38 Euro

Staples: 26.40 x 0.76894 = 20.30 Euro

Lost money on Staples.

Google: \$202.71 x 74206 = 150.42 Euro

Google: \$467.59 x 0.76894 = 359.55 Euro

Made money on Google.

