REALLY? REALLY! REVISITED

The 6 by 5 grids that students draw should take up an entire page. In the corner of each box, have them put the date in June that the box refers to. Leave most of the room in the box for the dollar amounts.

Make sure students realize that they can just multiply the last calculator entry by 2 to get the next entry.

5. Contact a local stockbroker. Talk to your teacher about setting up a class session featuring the stockbroker as a guest speaker. During the broker's presentation, conduct a question-and-answer session.
6. Contact the New York Stock Exchange by mail or through its website. Request a list of publications that the Exchange offers.
7. Use the library or Internet to research a corporation. Prepare a poster board about the corporation. Include how and when the corporation was founded, where it got its name, major developments in its history, and why you may or may not want to invest in this company.
8. Work with a small group of classmates to select 5 to 10 stocks that will form a stock portfolio. Set up an online portfolio using any financial website such as yahoo.com or nyt.com with an initial investment of $10,000. Track the gains and losses of your entire portfolio for a month. Compare your total profit or loss with that of other groups.

Dollars and Sense — Your Financial News Update

Go to www.cengage.com/school/math/financialalgebra where you will find a link to a website containing current issues about the stock market.

Really? Really! REVISITED

The power of this activity is seeing the payment amounts increase slowly at first. Even after 2 weeks, the daily pay is relatively low. Students will see the power of exponents unfurl gradually as they complete this activity.

An extension of this activity is to have students fold a single sheet of paper in half several times. They can watch the thickness of the folded paper increase as they fold. After about 5 to 8 folds, they won't be able to physically fold the paper any longer. How many folds would it take to have the paper's thickness reach from the Earth to the Sun (about 93 million miles)? Although paper thicknesses vary, it is typically around 50 folds!

GOOGLE.COM® is derived from the number googol which is a 1 with 100 zeros following it. This is equivalent to 10^{100}. The change in spelling (but not pronunciation) still elicits the feel of something very large. How large is 10^{100}? There isn't a googol of anything on the planet!

Given that 1,000,000 pennies stacked one on top of another reaches about one mile high, how high will 1 googol pennies reach?

To get an idea of the "power" of exponents, investigate a famous problem in math. Imagine your teacher asks you to work at school for all of June. You can choose to be paid in one of two ways.

- One payment of $5,000, which you will receive on June 30.
- On the first day you get paid 1¢. On the second day you receive double that amount, which is 2¢. On the third day you receive 4¢, on the fourth day 8¢, and so on. Each day you get paid twice the amount you were paid the day before.

Draw a grid with six columns and five rows to represent the 30 days. Fill in the amount you are paid each day.

1. How much do you receive on June 14? June 27? June 30? $81.92; 671,088.64; 5,368,709.12
2. Another way to think of the payment on June 30 is 1 cent multiplied by 2 twenty-nine times. What is the product of 0.01 and 2^{29}? $5,368,709.12

Think about how much 29 multiplications by 2 inflated the original 1 cent! Imagine raising 10 to the 100th power! The stock market deals in billions and sometimes trillions of dollars, but remember that 1 billion = 10^9 and 1 trillion = 10^{12}. Nothing close to a googol. And that's reality!

Applications

1. Nick and Matt are the partners in a local health food store. They needed $73,000 to start the business. They invested in the ratio 3:7, Nick to Matt.
   a. How much money did each invest? Nick $21,900; Matt $51,100
   b. What percent of the business was owned by Matt? Round to the nearest tenth of a percent. 70%

2. Tom purchased shares of DuPont for $47.65 per share. He plans to sell the shares when the stock price rises 20%. At what price will he sell his shares? $57.18

3. The top three shareholders in a certain corporation each own s shares of a certain stock. The corporation's ownership is represented by a total of x shares of stock. Express the percent of the corporation owned by the top three shareholders algebraically. $\frac{3s}{x}100$

4. Marilyn purchased 2,000 shares of stock for $25.43 per share. She sold them for $44.10 per share. Express her capital gain to the nearest tenth of a percent. 73.4%

5. A local hairdresser bought 450 shares of a cosmetics corporation for $33.50 per share. He sold the shares for $39.01 per share.
   a. What was the percent increase in the price per share? Round to the nearest tenth of a percent. 16.4%
   b. What was the total purchase price for the 450 shares? $15,075
   c. What was the total selling price for the 450 shares? $17,554.50
   d. What was the percent capital gain for the 450 shares? Round to the nearest tenth of a percent. 16.4%

6. Deanna purchased $24,000 worth of stock and paid her broker a 1% broker fee. She sold the stock when it increased to $29,100 three years later and used a discount broker who charged $35 per trade. Compute her net proceeds after the broker fees were taken out. $4,825

7. The Bootle Corporation paid Leslie a quarterly dividend check for $828. Leslie owns 450 shares of Bootle. What was the quarterly dividend for one share of Bootle? $1.84

8. Aaron owned x shares of a corporation and received an annual dividend of y dollars. Express the quarterly dividend for one share algebraically. $\frac{y}{4}$

9. The Zyco Corporation pays an annual dividend of $2.10 per share. On Tuesday it closed at $72 per share with a net change of +0.95. The dividend remained at $2.10 for several months.
   a. What was the yield on Tuesday? Round to the nearest tenth of a percent. 2.9%
   b. At what price did Zyco close on Monday? $71.05
   c. What was the yield at Monday's close? Round to the nearest tenth of a percent. 3%

Market Data, Close on June 20

52-week High	52-week Low	Symbol	Stock	Last	Change	Sales 100s	High	Low
143.25	73.25	PCU	Southern Copper Corp.	108.88	3.61	2643.7	110.68	105.68
42.97	32.95	T	AT&T, Inc.	34.43	−0.72	43386.8	35.59	34.41
131.82	42.24	ESI	ITT Ed Services	88.40	3.91	3429.5	90.71	82.06
50.48	36.01	JPM	JPMorgan Chase & Co.	37.86	−0.79	553772	39.19	36.95

11. Use the table above to answer the following questions.

a. What was the difference between the 52-week high and the 52-week low for one share of AT&T? $10.02

b. What was the difference between the day's high and low for one share of Southern Copper? $5.00

c. Which stock had a close that was furthest from the day's low? ITT Ed Services

d. Determine the close on June 19 for JPMorgan Chase. $38.65

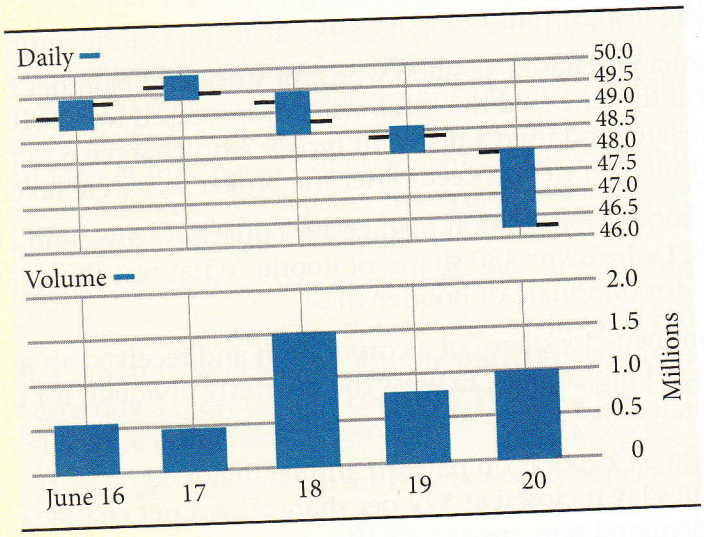
e. How many shares of ITT were traded on June 20? 342,950

f. What was the percent net change from June 19 to June 20 for AT&T? Round to the nearest hundredth of a percent. −2.05%

g. Which stock had a day's high that was approximately 30% less than its 52-week high? ITT

h. On June 19, there were 59,945,400 shares of JPM traded. What was the difference in the number of shares traded from June 19 to June 20? 4,568,200

12. Use the stock bar chart to answer questions below.



a. What was the day's open on June 17? about $49.60

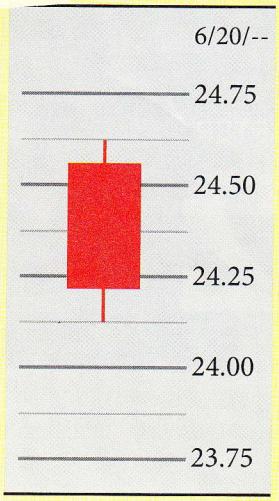
b. What was the approximate difference between the day's high and low on June 18? approximately $49.45 − $48.50 = $0.95

c. On what day was the close also the day's low? June 20

d. Write the approximate volume for June 19. 750,000

p. 59

13. Use the candlestick chart to answer the questions



- **a.** What was the approximate low on June 20? $24.13
- **b.** What was the approximate high on this date? $24.62
- **c.** What was the difference between the opening price and the close? $0.49
- **d.** What does the red candlestick color indicate? The opening price was greater than the closing price.

14. Lea owns 800 shares of ABC, Incorporated. On April 6 the corporation instituted a 5-for-2 stock split. Before the split, each share was worth $42.60.

- **a.** How many shares did Lea hold after the split? 2,000
- **b.** What was the post-split price per share? $17.04
- **c.** Show that the split was a monetary non-event for Lea. Pre-split value was $34,080; post-split value is $34,080.

15. Gene owns 1,200 shares of XYX Corporation. The company instituted a 1-for-10 reverse stock split on November 7. The pre-split market price per share was $1.20.

- **a.** How many shares did Gene hold after the split? 120
- **b.** What was the post-split price per share? $12.00
- **c.** Show that the split was a monetary non-event for Gene. Pre-split market value was $1,440; post-split market value is $1,440.

16. Use the table of closing prices for Microsoft. Round answers to the nearest cent. See margin.

- **a.** Determine the 3-day moving averages.
- **b.** Determine the 10-day moving averages.

Date	Close	3-day Averages	10-day Averages
23-May	28.05		
27-May	28.44		
28-May	28.18		
29-May	28.31		
30-May	28.32		
2-Jun	27.80		
3-Jun	27.31		
4-Jun	27.54		
5-Jun	28.30		
6-Jun	27.49		
9-Jun	27.71		
10-Jun	27.89		
11-Jun	27.12		
12-Jun	28.24		
13-Jun	29.07		
16-Jun	28.93		

Use the following stock market ticker to answer Exercises 17 and 18.

GE 12.5K@26.13▲1.13 F .67K@5.01▼0.38 C 3K@16.19▲ 1.47 T 1.6K@26.14▼1.08

17. Nick bought some shares of Ford Motor Company (F).

- **a.** How many shares did Nick buy? 670
- **b.** How much did each share cost? $5.01
- **c.** What was the value of Nick's trade? $3,356.70

18. Patrick sold his shares of AT&T (T).

- **a.** How many shares did he sell? 1,600
- **b.** For how much did each share sell? $26.14
- **c.** Based on Patrick's sale, what was the closing price of T on the previous trading day? $27.22

19. The stock in a real estate corporation was selling for $78 per share with an annual dividend of $1.86. It underwent a 3-for-2 split.

- **a.** What was the value of one share of the stock after the split? $52
- **b.** What was the annual dividend after the split? $1.24

20. A stock that was selling for $\$x$ per share underwent a y-for-p split. It was originally paying an annual dividend of $\$d$ per share. Express the annual dividend after the split algebraically. $\frac{pd}{y}$

21. Suki purchased $9,600 worth of stock and paid her broker a 1.75% broker fee. She had an immediate need for cash and was forced to sell the stock when it was worth $8,800. She used a discount broker who charged $32.50 per trade. Compute Suki's net loss after the broker fees were taken out. $1,000.50

ANSWERS

16a. 3-day averages: 28-May: 28.22; 29-May: 28.31; 30-May: 28.27; 2-Jun: 28.14; 3-Jun: 27.81; 4-Jun: 27.55; 5-Jun: 27.72; 6-Jun: 27.78; 9-Jun: 27.83; 10-Jun: 27.70; 11-Jun: 27.57; 12-Jun: 27.75; 13-Jun: 28.14; 16-Jun: 28.75

16b. 10-day averages: 6-Jun: 27.97; 9-Jun: 27.94; 10-Jun: 27.89; 11-Jun: 27.78; 12-Jun: 27.77; 13-Jun: 27.85; 16-Jun: 27.96