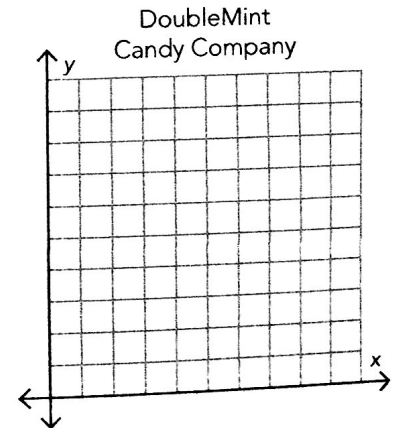
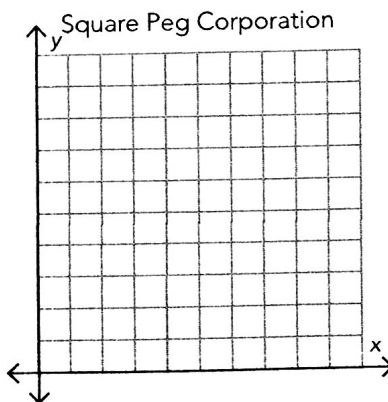
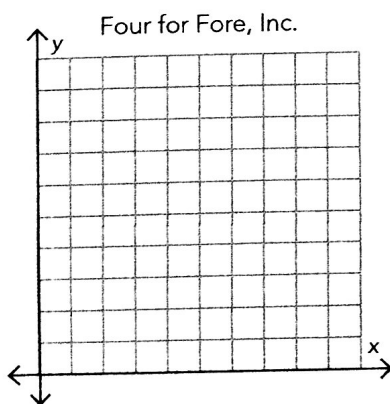


Introduction to Quadratic Functions: Randy's Raises

This past year Randy graduated from a prestigious university where he was heavily recruited by three large companies. His goal is to retire early and pursue other careers. Each company proposed very different compensation, or payment, plans. The table below includes the three companies and the compensation plans they will give him if he meets his monthly performance goals.

Company	Four for Fore, Inc.	Square Peg Corp.	DoubleMint Candy Co.
Compensation Plan	Starting Salary of \$4,000 with a monthly pay raise of \$400	Starting Salary of \$100 the first month, with an increase to \$400 in month 2, to \$900 in month 3, \$1600 in month 4, and so on	Starting Salary of \$1 the first month, \$2 the second month, \$4 the third month, \$8 the fourth month, and so on

Help Randy decide which job offer to take. In advising Randy, consider both monthly and cumulative earnings given that his major goal is early retirement. Represent each compensation plan with a table, equation, and graph to support your recommendation. Identify the function family used to model each plan and the reason for your decision.



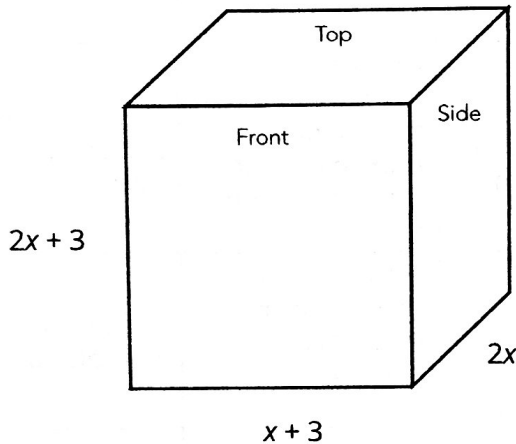
Your work should include:

- A table to model each compensation plan. (3 points)
- An equation to model each compensation plan. (3 points)
- A graph to model each compensation plan. (3 points)
- The function family used to model each compensation plan with supportive reasoning. (3 points)
- Recommendation for the offer Randy should take after comparison of the three offers. (3 points)

Solving Quadratic Equations: Package Delivery

Angela owns a business that ships packages overseas. The size of the boxes varies, but all sides are rectangular and are made to order. All dimensions are in inches.

Box A:



Box B:

Dimensions:

$$\text{Height} = 4x$$

$$\text{Width} = x + 2$$

$$\text{Length} = x + 5.$$

1. Which box can hold more? How much larger is its capacity than the capacity of the other box? Show your work.
2. Which box requires more cardboard to construct it (if there is no overlap between sides of the box)? How much more cardboard is required to make the larger box than the smaller box? Show your work.

Your work should include:

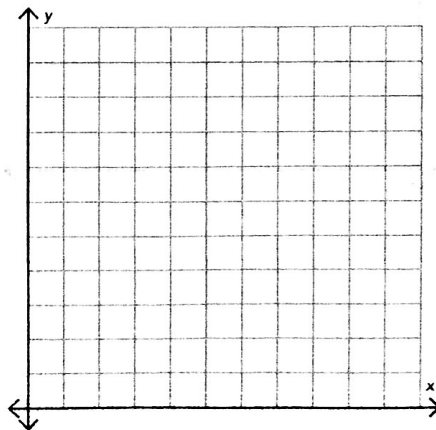
- The box that can hold more, with a comparison to the other box. (3 points)
- Calculations for Box A for Question 1. (3 points)
- Calculations for Box B for Question 1. (3 points)
- The box that requires more cardboard to construct, with a comparison to the other box. (3 points)
- Calculations for Box A for Question 2. (3 points)
- Calculations for Box B for Question 2. (3 points)

Applications of Quadratics: Play Ball!

Baseball tickets for the Pittsburgh Pirates 2018 Season are now on sale! The following table displays possible ticket prices and projected numbers of ticket sales for the home opener.

Type of Seating	Ticket Prices	Number of Tickets Sold
L/R Field Grandstand, General Admission, Bleacher	\$32	2090
Deck Seating	\$35	2010
Bleacher Reserved	\$37	1890
Grandstand, Pirate Cove	\$39	1800
Outfield Reserved	\$40	1930
Outfield Box	\$43	1840
L/R Field Box	\$47	1800
Baseline Box	\$49	1855
Infield Box	\$50	1860
Dugout Box	\$58	1770
Pittsburgh Baseball Club	\$83	1530
Special Guest Passes	\$173	620
Home Plate Club	\$233	30

1. Create a scatter plot of the data from the table above. Use ticket prices as the independent variable and number of tickets sold as the dependent variable.



PT3

2. Consider an equation to model the data.
 - a. Use a graphing calculator to determine the regression equation for the scatter plot.
 - b. What is the y -intercept for this function? What does it mean in this situation?
 - c. What is the maximum value of the function? What does it mean in this situation?
3. Complete the table below by calculating the total amount of money the ballpark generated for each type of seat.

Ticket Prices	Number of Tickets Sold	Total Amount of Money
\$32	2090	
\$35	2010	
\$37	1890	
\$39	1800	
\$40	1930	
\$43	1840	
\$47	1800	
\$49	1855	
\$50	1860	
\$58	1770	
\$83	1530	
\$173	620	
\$233	30	

4. Create a scatter plot of the data from the table above. Use ticket prices as the independent variable and total amount of money as the dependent variable.

