

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Chapter 2 Tiered Problems**

**Show all Work!**

**Objectives**

- B.F.IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$ .
- B.F.IF.B.3 Recognize functions as mappings of an independent variable into a dependent variable.
- B.A.CED.A.1 Create equations and inequalities in one variable and use them to solve real world problems.
- B.A.CED.A.2 Create equations in two or more variables to represent relationships between quantities.
- B.A.REI.D.5 Solve a linear inequality using multiple methods and interpret the solution as it applies to the context.

**Tier 1 (up to 70 pts) Complete #1-3 Do not move to tier 2 if you have not completed tier 1.**

**Tier 2 (up to 85 pts) Complete #1-4 Do not move to tier 3 if you have not completed tier 2.**

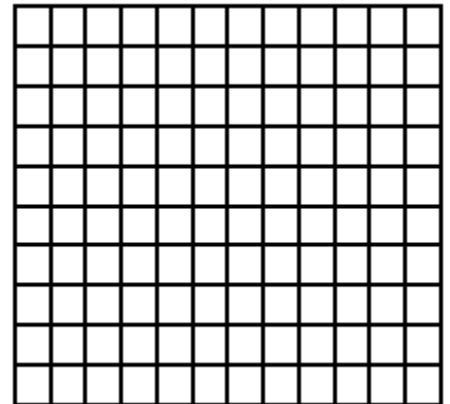
**Tier 3 (up to 100 points) Complete #1-5**

1. (30 points) A motion detector tracks an egg as it drops from 10 ft above the ground. The table shows the height at various times. Represent the data using each of the following:
  - a. a mapping diagram

Time (seconds)	Height (feet)
0.0	10
0.1	9.8
0.2	9.4
0.3	8.6
0.4	7.4

- b. ordered pairs

- c. a graph on the coordinate plane



2. (20 points) A cable company charges a monthly fee of \$24.50 for cable service. There is an additional monthly fee of \$3 for each premium channel.
  - a. Write a function to find the monthly cost of George's cable service as a function of the number of premium channels.

- b. Evaluate the function to find the cost of George's cable service with 4 premium channels.
3. (20 points) You hire a transcription assistant at the rate of \$4/page of typed copy. You also pay her a base salary of \$25 per day. Her total earnings is represented by  $e = 4p + 25$ , where  $e$  is the total earnings and  $p$  is the number of pages. If you can afford to pay her up to \$150 for one day, how many pages of copy can you ask her to type? Solve your equation algebraically.
4. (15 points) Juan bought 4 T-shirts and a leather jacket. The T-shirts were all the same price and the price of the leather jacket was 6 times the cost of one T-shirt.
- Write an equation that represents this situation.
  - If the total cost of the T-shirts and the leather jacket was \$209.00, what was the price of one T-shirt?
  - What is the price of the leather jacket?
5. (15 points) The table gives prices two different bowling alleys charge. You plan to rent shoes and play some games.

Bowling Alley	Shoe rental	Cost per game
Bob's Bowling Alley	\$2.50	\$4.00
Midtown Bowling Alley	\$3.50	\$3.75

- Write an equation to find the number of games  $g$  for which the total cost to bowl at each alley would be equal. Solve the equation showing each step.
- For how many games will Bob's Bowling Alley be cheaper? Write an equation to show the number of games where Midtown Bowling Alley will be cheaper.