

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

**Chapter 6 Tiered Problems**

**Show all Work!**

**Objectives**

- B.S.ID.C.4 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data
- B.F.IF.C.4 Graph linear, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones.
- B.N.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- B.A.CED.A.3 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations
- B.A.REI.C.3 Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations.
- 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. (20 points) Suppose the equation  $y = 12 + 10x$  represents the amount of money you have in your wallet, where  $y$  is the amount in dollars and  $x$  is the number of weeks from today.
  - a. What does the slope represent in this situation?
  - b. What does the  $y$ -intercept represent in this situation?
  - c. Is the equation in slope-intercept form? If not, write the equation in slope intercept form.
  - d. Determine how much money you will have in your wallet after eight weeks.

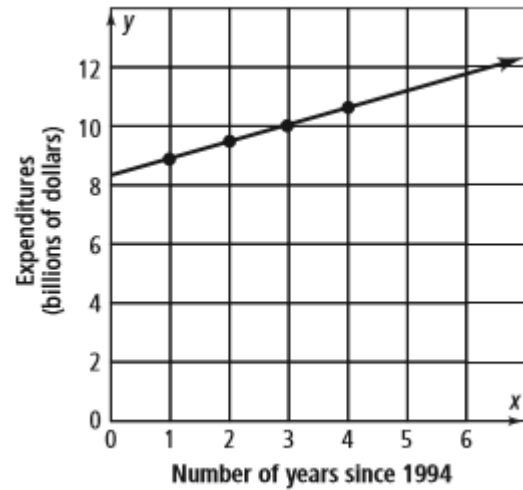
2. (20 points) The equation  $e = 1000 - 12m$  represents Mariah's elevation  $e$  in feet for each minute  $m$  she hikes on Laurel River Canyon.
- What does the slope represent in this equation?
  - What does the y-intercept represent in this situation?
  - Is Mariah hiking uphill or downhill? Explain.
  - Solve the equation to determine after how many minutes Mariah will reach 490 feet.
3. (30 points) CHS is selling tickets for the homecoming dance. The tickets are \$5 if purchased early, but \$7 at the door. The school made \$835 by selling 137 tickets. How many tickets were sold at the door? How many were purchased early?
- Define your variables and create a system of equations that represents the situation.
  - Choose an appropriate method and solve the system of equations. Explain why this method was chosen.
  - State your solution in the context of the problem.
4. (15 points) Jason sold 3 CD's and 4 DVD's for \$47 on Tuesday. Wednesday he sold 3 CD's and 3 DVD's for \$39. How much is each CD? How much is each DVD?
- Define your variables and create a system of equations that represents the situation.
  - Choose an appropriate method and solve the system of equations. Explain why this method was chosen.
  - State your solution in the context of the problem.

5. (15 points) Analyze the data in the table and the scatterplot provided. A trend line has been drawn.

**U.S. Health Expenditures  
Drug and Other Medical  
Nondurables**

Year	Expenditures (billions of dollars)
1995	8.9
1996	9.4
1997	10.0
1998	10.6

SOURCE: *The World Almanac and Book of Facts, 2001*



- What is the equation of the trend line in slope intercept form, if the trend line is using a slope of 0.6 and the point (1, 8.9)?
- During what year did the U.S. spend \$10 billion in health expenditures?
- Using the points for 1995 and 1997, What is the slope of the trend line? Round to the nearest hundredth.
- Use your equation from part a, where  $x = 0$  is 1994. About how many billion dollars would the U.S. have spent on health expenditures in the year 2001, rounded to the nearest tenth?