

MAT 150 – Homework 6
Sections 2.1 and 2.2

NAME _____

Directions: Show all work and write your final answer in the space provided.

1. Suppose that the quantity supplied S and the quantity demanded D of hot dogs at a basketball game are given by the functions $S(p) = -3000 + 4000p$ and $D(p) = 11000 - 2000p$ where p is the price in dollars. Find the equilibrium price for hot dogs sold at a basketball game. How many hot dogs will be sold at this price?
- Price = _____
Sold = _____

2. Use your calculator to find the “line of best fit” for the data below. 2. _____

x	-2	-1	0	1	2
y	7	6	3	2	0

3. The monthly cost C , in dollars, of a cell phone plane is given by the function $C(x) = 0.37x + 4.50$, where x is the number of minutes used. If you have a budget of \$65 per month, what is the maximum number of minutes you can talk? 3. _____

4. The monthly payment p on a mortgage varies directly with the amount borrowed B . If the monthly payment on a 30-year mortgage is \$6.98 for every \$1000 borrowed, find a linear function that relates the monthly payment p to the amount borrowed B for a mortgage payment with the same terms. 4. _____

5. A car rental company rents a car for one day by charging \$27 plus \$0.08 per mile. Write a linear function that relates the cost C , in dollars, of renting the car to the number x of miles driven. 5. _____

6. Use your calculator to find the “line of best fit” for the data below. 6. _____

x	-30	-27	-25	-20	-14
y	10	12	13	13	18

7. If a companies revenue, R , is given by the equation $R(x) = 12x$ and the costs, C , is given by the equation $C(x) = 10x + 12000$. Find the companies break-even point; that is, find x so that revenue is equal to cost. 7. _____

8. The velocity v of a falling object is directly proportional to the time t of the fall. If, after 3 seconds, the velocity of the object is 96 feet per second, what will its velocity be after 5 seconds. 8. _____
9. The total health expenditures H , in billions of dollars, is given by the function $H(t) = 26t + 41$ where t is the number of years since 1995. In what year will total private health expenditures be \$864 billion? 9. _____
10. A doctor wanted to estimate a linear function that relates a child's height, h , to their head circumference, C . He randomly selects 9 children and measures their height and head circumference to obtain the data shown below. Find the best fit line and use equation to predict the height of a child, in inches, with a head circumference of 17.4 inches. 10. _____

Height (in inches)	25.25	25.75	25	27.75	26.5	27	26.75	26.75	27.5
Head Cir (in inches)	16.4	16.9	16.9	17.6	17.3	17.5	17.3	17.5	17.5