Math 122 Worksheet: Sections 1.1-1.2

Instructions: Answer all questions. Show all work and justify all your answers in **complete sentences.** Unless otherwise specified, **include the appropriate units in your answers** whenever units are included in the problem statement.

1 Section 1.1

Problem 1) The concentration of carbon dioxide, $C = f(t)$, in the atmosphere, in parts per million (ppm), is a function of years, t, since 2000.

(a) Interpret $f(15) = 400$ in terms of carbon dioxide.

(b) What is the meaning of $f(20)$?

Problem 2) Let $W = f(t)$ represent wheat production in Argentina, in millions of metric tons, where t is the number of years since 2010. Interpret $f(5) = 49.2$.

Problem 3) The population of Washington DC grew from 1900 to 1950, stayed approximately constant during the 1950sm and decreased from 1960 to 2005. Graph the population as a function of years since 1900. **Clearly label your axes with the appropriate units.**

Problem 4) In the Andes mountains in Peru, the number, N, of a species of bas is a function of the elevation h, in feet above sea level. So $N = f(h)$.

(a) Interpret the statement $f(500) = 100$ in terms of bat species.

(b) Determine whether $f(0)$ corresponds to the vertical intercept or horizontal intercept. Next, interpret $f(0)$ in terms of bat species.

(c) Determine whether $f(h) = 0$ corresponds to the vertical intercept or horizontal intercept. Next, interpret $f(h) = 0$ in terms of bat species.

2 Section 1.2

Problem 5) Find an equation for the line that passes through the given points.

(a) $(-2, 1)$ and $(2, 3)$

(b) $(4, 5)$ and $(2, -1)$

Problem 6) Determine the slope and y-intercept of the line whose equation is given.

(a) $7y + 12x - 2 = 0$

(b) $12x = 6y + 4$

Problem 7) A car rental company charges a daily fee of \$35 plus \$0.20 per mile driven. Find a formula for the daily charge, C, in dollars, as a function of the number of miles, m, driven that day.

Problem 8) A company rents cars at \$40 a day and \$0.15 per mile. Its competitor's cars are \$50 a day and \$0.10 per mile.

(a) For each company, give a formula for the cost of renting a car for a day as a function of the distance traveled.

(b) Graph both functions on the same axes. **Clearly label your axes, including units.**

(c) How should you decide which company is cheaper?

Problem 9) Which of the following tables could represent linear functions? Justify your answers.

x	0	1	2	3
y	27	25	23	21

x	1	2	3	4
y	5	10	18	27

x	15	20	25	30
y	62	72	82	92