Algebra 1 (2.2 HW) **Name** Answer Key **Class Period** _____

Analyzing Linear Functions

1. Lin and her friend Thomas are collecting food for the local food bank. Their goal is to collect a total of 1785 pounds of food. They start with 225 pounds donated by a local grocery store. Their goal is to collect 20 pounds of food per day. (starting pt.; rate of change)

a. Identify the independent and dependent quantities and their units in this situation. Then complete the table.

I: Time measured in days
D: Amount of food measured in pounds

b. Write a function f(t) to represent this problem situation.

$f(t) = 20t + 225$

c. Identify the slope and y-intercept. Then interpret their meanings in terms of the problem situation.

slope = 20
y-intercept = 225
The slope is the rate at which food is collected on a daily basis.
The y-intercept is the amount of food they initially collected.

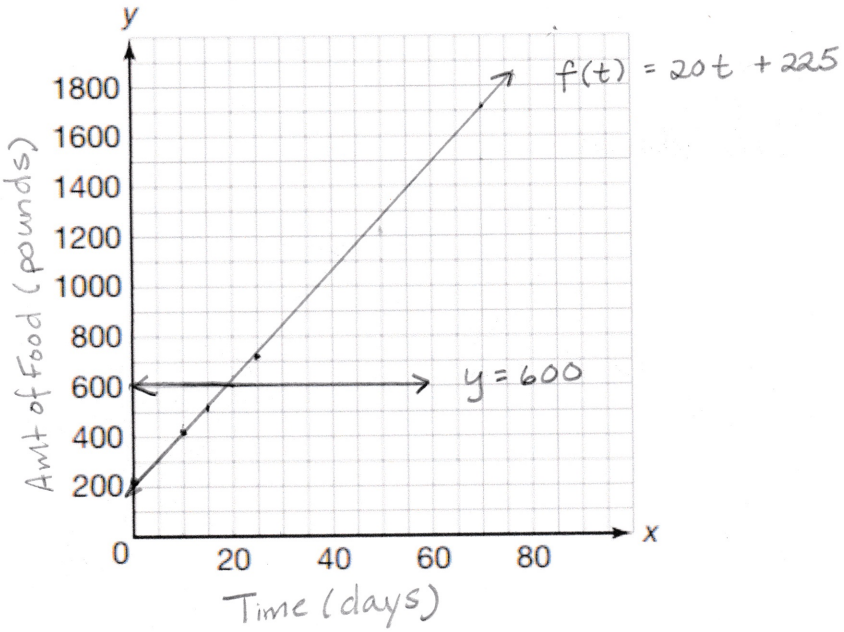
Quantity	Independent Quantity	Dependent Quantity
	Time	Amount of food
Units	days	pounds
	0	225
	10	425
+5	15	525
+10	25	725
23	48	1185
+2	50	1225
	64	1505
	t	$20t + 225$

$20t + 225 = 1225,\ t = 50$
$20t + 225 = 1505,\ t = 64$

d. Estimate the number of days it will take to collect 600 pounds of food.

It will take between 15 and 25 days to collect 600 pounds of food.

e. Graph the function f(t) representing this problem situation on the coordinate plane. Don't forget to label your x and y-axis.



f. Estimate the number of days it will take to collect 600 pounds of food using the graph.

Using the graph, it appears that it will take between 15 and 20 days to collect 600 pounds of food.

g. Algebraically determine the number of days it will take to collect 600 pounds of food.

$f(t) = 20t + 225$

$f(t) = 600 = 2t + 225$

$-225 \quad -225$

$\frac{375}{2} = \frac{2t}{2}$

$18.75 = t$

It will take 18.75 days to collect 600 pounds of food.

h. Compare and contrast your solutions using the graph and the function. What do you notice? Explain your reasoning.

Using the graph, I could only find an approximate number of days that it would take to collect the food. Using a function, I could determine the exact number of days it would take to collect the food.