

**Algebra 1: 2.2 Homework**  
**Analyzing Linear Functions**  
**SHOW YOUR WORK!**

Name \_\_\_\_\_ Period \_\_\_\_\_

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.

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

IQ = time (days)

DQ = amount of food (pounds)

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

$$F(t) = 20t + 225$$

$\uparrow$                        $\uparrow$   
 ROC                      starting point

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

slope =  $\frac{20 \text{ pounds}}{\text{day}}$

The slope is the rate at which food is collected each day.

y-intercept = 225

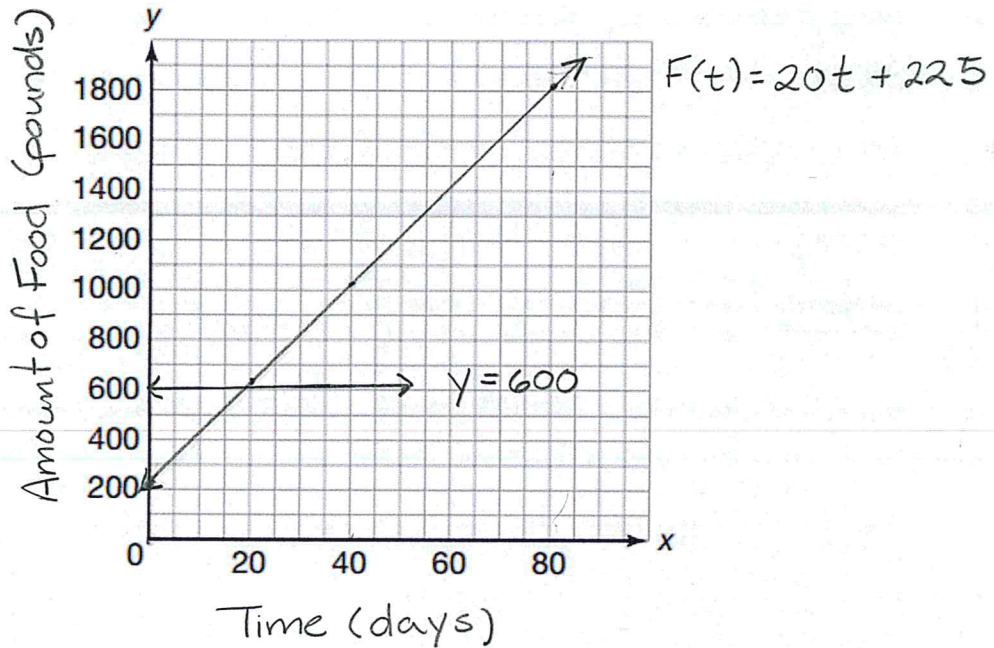
The y-intercept is the amount of food they start with.

	Independent Quantity	Dependent Quantity
Quantity	Time	Amount of Food
Units	Days	Pounds
	0	225
	10	$10 \times 20 + 225$ 425
	15	525
	25	725
	48	1185
	50	1225
	64	1505
	t	$20t + 225$

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

It will take between 15 and 20 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 looks like it will take slightly less than 20 days to collect 600 pounds of food.

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

$$F(t) = 20t + 225, \text{ let } F(t) = 600$$

$$600 = 20t + 225$$

$$\begin{array}{r} -225 \\ \hline 375 = \frac{20t}{20} \\ 18.75 = t \end{array}$$

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.

The graph produces an approximate solution. The function produces an exact solution.