Name _____
Pd _____ Date _____

Nalu is training for the upcoming wrestling season. His coach told him that sit-ups are a good conditioning exercise. After one day of conditioning, Nalu was able to perform 40 sit-ups without stopping. By the end of the second day of conditioning this number improved to 45. By the end of each consecutive day, Nalu improved the number of continuous sit-ups by 5.

d	$N(d)$
0	
1	40
2	45
3	
6	
10	
37	

1. Complete the table for the function $N(d)$ which represents the number of sit-ups Nalu is able to perform without stopping at the end of the d^{th} day of training.

2. Provide a brief explanation of what d = 0 and what N(0) means in this situation?

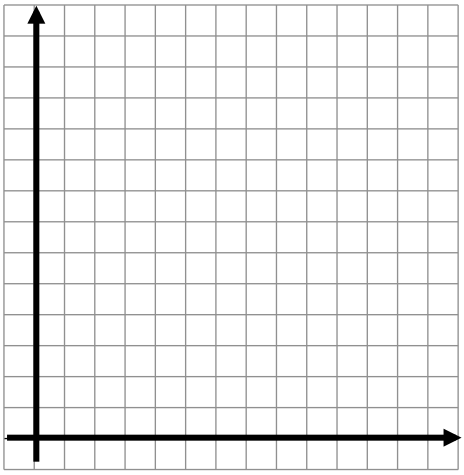
3. To complete the table, Nalu felt it would take way too long to keep adding 5 over and over again in order to find the value of $N(37)$. Instead, to find N(37) more efficiently, he used the following expression: $5 \bullet 37 + 35$.

   Fill in each blank to indicate what each part of Nalu's expression represents in the context of this situation.

   In Nalu's expression, $5 \bullet 37 + 35$ ➔
   - the "5" represents _____
   - the "37" represents _____
   - the "35" represents _____

4. Determine the linear function, *N(d)*, that represents this situation. Since it's linear, it should be in the form $y = mx + b$, or in this case, $N(d) = md + b$.

   $N(d) =$



5. Graph $N(d)$. Label and identify the scale for each axis.

6. Confirm that your function is correct by determining the value of *N(0)* and *N(6)* and then comparing it to the table of values in question 1 (above).

7. How many sit-ups would Nalu be able to do at the end of the 50th day? Show or explain how you arrived at your answer.

8. How many days would he need to train in order to be able to do 1000 sit-ups without stopping? Show or explain how you arrived at your answer.

Name _____
Pd _____ Date _____

Kina Kealoha decided to set up a liliko'i-orange juice stand at the community farmer's market held on the first Saturday of each month. The Kealohas have several orange trees, and the liliko'i vine – well let's just say you can no longer see the ohi'a tree it's climbing up, so it cost her nothing for the fruit. She did, however, need to borrow $6 from her dad to purchase the cups needed for this entrepreneurial endeavor. She decided to sell her juice for $0.50 a cup.

9. Kina wants to pay her dad back as soon as possible. How many cups must she sell in order to have enough money to pay back her dad? Show or explain how you determined your answer.

10. Create a table of values representing her profit, ***P***, as a function of the number of cups, ***c***, that Kina sells.
    - Remember, Kina first had to borrow money from her dad. Therefore, in the beginning, she had a negative profit.
    - Select 3 additional values for ***c*** and add them to the table (in the empty rows). Be sure to include your answer to question 9 (above) in the table as well.

c	$P(c)$
0	
4	
14	
188	

11. Think about the process that you used to determine each of the values in the P(c) column in the table. Use that process to create a linear function that represents this situation. Since it's linear, it should be in the form $y = mx + b$, or in this case, $P(c) = mc + b$.

12. Confirm that your function is correct by determining the value of *P(0)* and *P(14)* and then comparing it to the table of values in question 10 (above).

13. Graph your function ***P(c)***.