**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_**

**U9 CW #3** *Who Will Win?*

1. Kevin and Nina are competing in a bike race. When Kevin is ninety miles into the race, he is in first place. Nina is in second place and is 15 miles behind Kevin.
   1. From this point, Kevin continues the race at a constant rate of 25 mph and Nina continues the race at a constant rate of 30 mph. When will Nina catch Kevin? Solve this problem.

|  |  |
| --- | --- |
| **Picture:**  Kevin  Nina | **Graph:** |
| **Table:**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Time (hours)** |  |  |  |  |  | | **Kevin** |  |  |  |  |  | | **Nina** |  |  |  |  |  | |

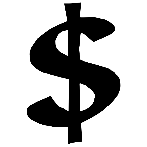
* 1. If the race is 150 miles long, who will win? Assume Nina and Kevin bike at the speeds given in part a).
  2. Now suppose the following: Ninety miles into the race, Kevin is still in first place and Nina is still in second place, 15 miles behind Kevin. But now Kevin and Nina both finish out the race at a constant speed of 30 mph. When will Nina catch Kevin? If the race is 150 miles long, who will win?

1. The graph below shows the amount of money Alexia and Brent have in savings.
   1. Write an equation to represent the amount *y* that each person has in savings after *x* weeks:

Alexia: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Brent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

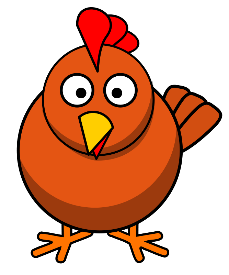
b. Tell the story of the graph. Be sure to include what the point of intersection means.





**Brent**

**Alexia**

1. A farmer saw some chickens and pigs in a field. He counted 30 heads and 84 legs. Determine exactly how many chickens and pigs he saw.
   1. Write the system of linear equations that will help you solve this problem.
   2. Graph the system of equations. Be sure to label your graph and each line.
   3. What is the solution in this context in complete sentences?

