Bison Weights Over Time

Refer to the data on the bison weights taken from 2010 – 2015 and answer the questions below:

1. What is the average weight of the female calves in 2010?
   = 256.25 lbs.

2. What is the average weight of male calves in 2010?
   = 291.5 lbs.

3. What is the difference between the average female calf weight and the average male calf weight? Why do you think there is a difference?
   = 291.5 - 256.25 = 35.25 lbs.

   Possible explanations:
   - *male calves may be normally larger than female calves*
   - *some of the male calf mothers may be older and more experienced and, thus, able to provide more food and energy to their calves.*
   - *Male calves may be more likely to be born early in the year while more female calves are born later in the year. Calves born earlier in the year have more time to grow and gain weight.*

4. How many calves disappeared from the data after their first year?
   = 2 calves were missing from their second year weigh-in but one returned for their third year. Male calf #O-057 disappeared and never returned.

5. Hypothesize on what you think happened to the missing calves:
   = Calves sometimes die because they get separated from their mother or get ill. The bison herd does not have veterinary care so any number of things could happen to a young and naïve calf that could result in its death.

   Female calf #O-044 was not present for her second year of weigh-in probably because she was with her mother and her mother probably did not come in for roundup (when they would be weighed). Smart bison get accustomed to our tricks to lure them in for roundup and they simply learn to hide and avoid coming in altogether.

6. How old is adult cow #Y-411 in 2010?

   = Y-411's ear tag indicates that she was born in 2004 (she was the 11th new calf to get her ear tags in 2004). In 2010 she would be 6 years old.

7. Adult cow #Y-328 lost weight between 2011 and 2012. Hypothesize as to why you think that happened? How much weight did she lose?

   = Y-328 lost 40 lbs. between 2011 and 2012. Some possible reasons for this:

   - *Illness*
   - *Low rainfall (= less food)*
   - *The scale didn't work properly*

8. Find the maximum weight of an adult cow. Then find the minimum weight of an adult cow. Hypothesize on why adult cows might be of different weights.

   = The heaviest cow was Y-324 in 2011 who weighed 1,098 lbs. The lightest cow was Y-918 who weighed 420 lbs. in 2010. Note that Y-918 was only one year old in 2010, so she really would not be considered an adult. A more accurate number for her would be 690 lbs. in 2011. The difference between her weight and the heaviest cow is 408 lbs.

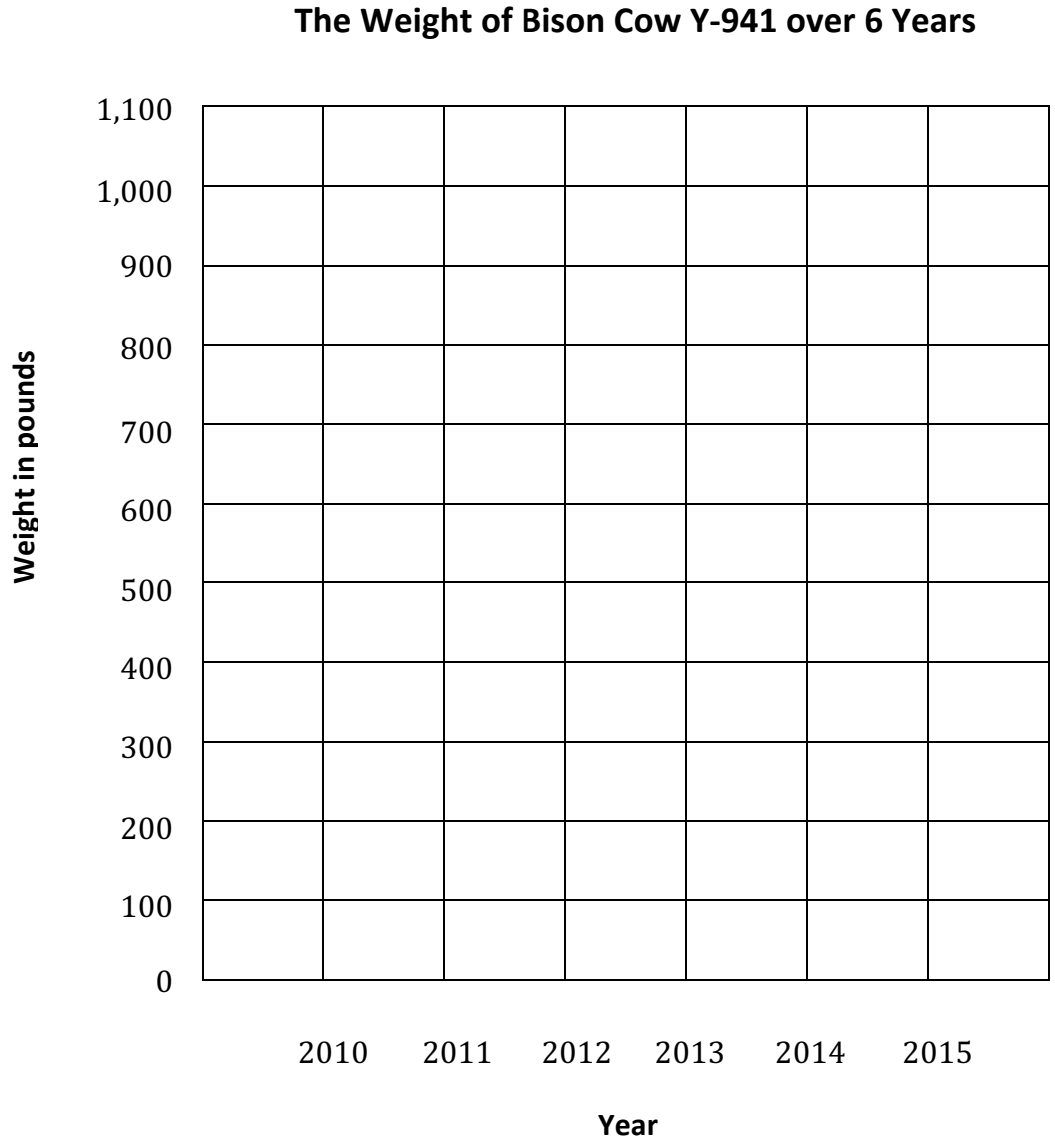
9. Do the bulls continue to gain weight as they age?

   = Yes, bison bulls consistently gain weight until they reach 15 years of age. One reason Konza Prairie sells our bison bulls once they reach 7 years of age is that they get too big for our corral and become very difficult to handle.

10. If you were the manager of the Konza Prairie bison herd would you keep bison cows that were losing weight or would you sell them?

    = Konza Prairie uses the sale of bison each year to raise money that is needed to run the station. It is our largest source of funds and is important to keep Konza Prairie functioning as a research station. Just like a cattle rancher, if a cow quits producing healthy calves she is no longer contributing to the herd and needs to be sold. We have to think of the big picture and we make decisions based on what is needed to keep Konza Prairie functioning.

11. Refer to the weight of Y-941. Graph how the weight of this cow changes over the years on the table below:



12. After looking at the data you graphed, what prediction can you make about the weight of Y-941 in 2016?

– Y-941 consistently gained weight each year until 2015, when she lost 25 lbs. This could have been due to poor, dry growing conditions for the grass and it would be wise for a prairie manager to look at the weights of all of the bison to see if they dropped too. However, an adult bison cow will start to consistently lose weight as she ages and it would be a good decision for a prairie manager to sell her because she would probably quit producing calves.