SHOW ON THE GRAPH (BY DRAWING LINES WITH ARROWS) HOW YOU DETERMINED YOUR ANSWERS OR RECEIVE NO CREDIT

1. Are the scales on the graph linear or logarithmic? How do you know this (other than that is how the axes are labeled)?

2. What is the body mass of the Mountain zebra?

3. What is the actual gestation length of the Mountain zebra?

4. What is the expected gestation length of the Mountain zebra?

5. What is the expected gestation period of a 20 kg mammal?

6. If the relationship between gestation period and body mass is linear (not allometric as in the above graph), what is the expected gestation period of a 500 kg African buffalo versus a 20 kg (i.e., 25 times heavier)? Hint: the answer is not on the graph

7. What is the actual gestation period of a 500 kg mammal as predicted by the graph?

8. The difference between 6 and 7, indicates the relationship between gestation period and body mass is an example of (positive, negative, or no)

___________ allometry.
9. Determine the values for the relationship between gestation period (G) and body mass (M)
   a. Convert the scales to log values
   b. Determine the slope of the line (b)
   c. Determine the log of the y intercept (log a)
   d. What is the equation in the form of \( \log Y = \log a + b \log X \)

10. Convert the answer from 9 to an equation in the form of \( Y = aX^b \)

11. Use equation 10 to predict the gestation period of a 3500 kg elephant

12. Use Wikipedia to find out what the actual gestation period of an elephant

13. What does this indicate about the accuracy of the equation for elephants?

14. What about the actual versus predicted for a 50 kg human? Why the similarity with elephants?
NEED HELP???
SHOW ON THE GRAPH HOW YOU DID THIS. SHOW YOUR CALCULATIONS
Use the graph to determine the values for relationship between gestation period (G) and body mass (M) using the equation in the form of \( \log Y = \log a + b \log X \)

1. Step 1: On the graph, convert the X and Y values to their log values. (If X = 100, \( \log X = 2 \); if Y = 40, \( \log Y = 1.6 \)). Do this for the values on both axes.

2. Step 2. Pick two points on the X axis that are far apart and have easy to use values (e.g., whole numbers). Determine their corresponding values on the Y axis. Remember to use the log values.

3. Step 3: Calculate the slope (b) of the line. From high school remember: Slope = rise/run. The rise is the difference between the two Y values; the run the corresponding two X values.

4. Step 4: Calculate the Y intercept (a). a is the value of Y when X = 0, or rather in this case \( \log a \) is the value of \( \log Y \) when \( \log X = 0 \).
   
   \[
   \frac{\log Y_2 - \log a}{\log X_2 - 0} = b 
   \]

5. Step 5: Calculate a from \( \log(a) \)

6. Use this information to present the equation in the form of \( \text{Gestation period} = a \times \text{Mass}^b \)