Zombie Apocalypse

Zombies Vs. Time

Time	Zombies

Part 1: 2 Zombies Vs. 10 Villagers (Small)

1. Break down the video as a class. Record the quantities of zombies and the time when a villager is changed to a zombie. Record you information on the table to the right.
2. On a calculator, create a scatterplot of the data over an appropriate domain and range for the problem situation.
3. What is the Domain and Range of the situation?

4. Is the situation Discrete or Continuous? Justify your answer.

5. Using technology, create a linear and exponential regression to analyze the data.

Linear Analysis

a. What is the Linear Regression Equation?

b. What is the Rate of Change (**m**) in terms of the situation?

c. What is the initial point in terms of the situations?

d. What is the Correlation Coefficient (**r**)?

e. What is the Linear Association based on the **r** value?

Exponential Analysis

f. What is the Exponential Regression Equation?

g. What is the Common Ratio (**b**) in terms of the situation?

h. What is the Initial Value (a) in terms of the situations?

i. What is the Correlation Coefficient (**r**)?

j. What is the Exponential Association based on the **r** value?

6. The Coefficient of Determination ($\mathbf{r^2}$) is a measure of the proportion of variance of a predicted outcome. In this exercise, it can be used to determine which analysis better represents the data.
   a. What is the $\mathbf{r^2}$ of the Linear Regression?

   b. What is the $\mathbf{r^2}$ of the Exponential Regression?

   c. Which Regression better represents the situation? Justify your answer.

Part 2: Independent Analysis

Each student group will be assigned a different Zombie Scenario. Using your preferred device, break down your assigned video to complete the table on the right. From the table, complete the attached questions. Be prepared to discuss your group's findings.

Zombies Vs. Time

Time	Zombies

7. Scenario: _____ Zombies Vs. _____ Villagers

8. What is the Domain and Range of the situation?

9. What is the Exponential Regression Equation?

10. What is the Common Ratio (**b**) in terms of the situation?

11. What is the Initial Value (a) in terms of the situations?

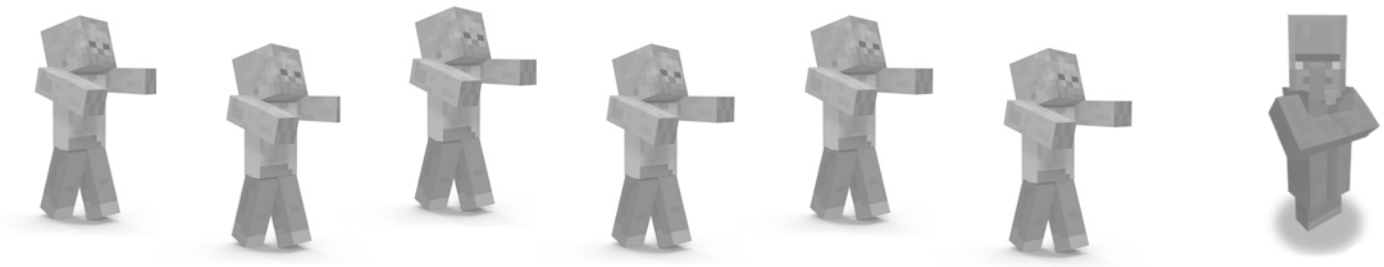
12. What is the Coefficient of Determination (**r^2**) for your situation?

13. Using your regression equation in an open situation, how long would it take to infect 100 villagers?

14. Using your regression equation in an open situation, how many zombies would you have in an hour?

Conclusion:

1. From the exponential regression equation, what is the purpose of the **a** value? How did it compare to the observed data?

2. From the exponential regression equation, what is the purpose of the **b** value? How did your b value compare to that of the other groups?

3. Make a general statement describing a Zombie Apocalypse in Algebraic terms.