

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

# Turkey Trouble

Adapted from [Project Wild](#) activity

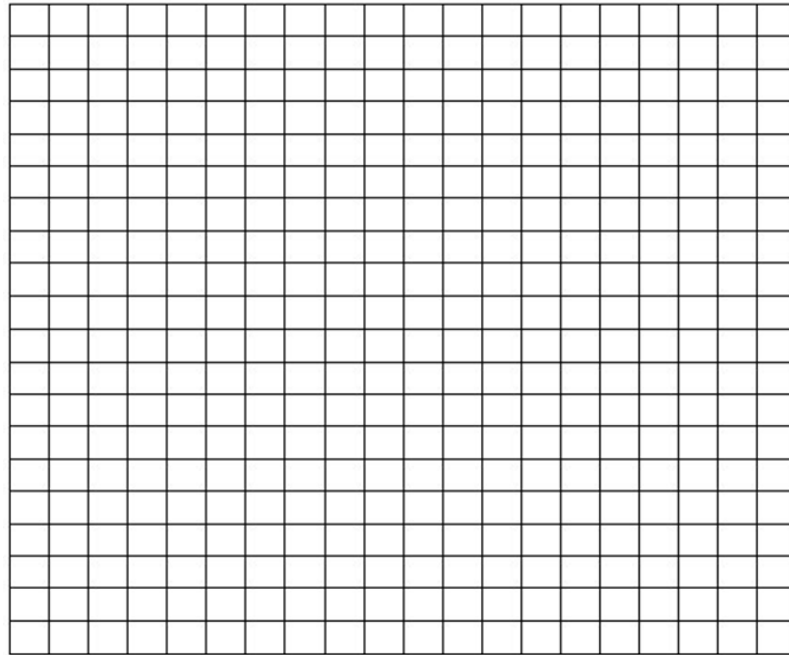
## Introduction

In 1935, a decision was made to release 46 Merriam's turkeys within the state of Wyoming. Prior to this decision, none of these turkeys existed within the state. You will predict how the population of these turkeys grows and changes under different conditions.

## Linear Growth Model

1. Compute the size of the population of these turkeys in Wyoming using the following assumptions:
  - a. Every year, 250 offspring are produced by the turkey population.
  - b. No turkeys emigrate, or leave the area.
  - c. There were no diseases, shortages of food, or shortage of space that limited the population.
2. Graph the turkey population over the nine generations. Generation is on the x-axis, population on the y-axis.

Turkey Population Data			
Generation	Starting Population	+ Increase	Final Population
1	46	250	296
2	296	250	
3			
4			
5			
6			
7			
8			
9			



3. Do you believe this is an accurate model of the growth of these models? Look at the three assumptions above. Give a reason why each assumption is flawed. What are two other possible variables that are not accounted for in this model?

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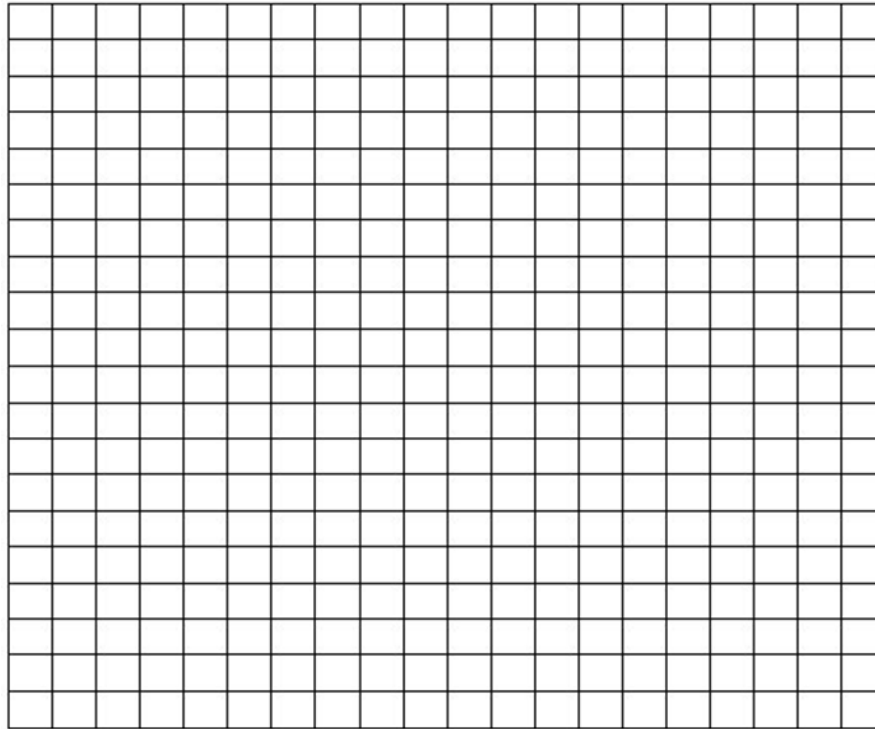
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### Exponential Growth Model

1. Compute the size of the population of these turkeys in Wyoming using the following assumptions:
  - a. No turkeys left the general area during the first five years.
  - b. There was no disease, shortage of food or habitat limiting the population.
  - c. There were equal numbers of females and males in each hatch.
  - d. Each mature female produces 10 eggs per year. Each egg survives.
  - e. Turkeys do not reach sexual maturity until they are one year old.
  - f. All turkeys only survive five years.
  - g. The original population of turkeys were each 1 years old and sexually mature.
  - h. There were 23 females and 23 males originally introduces into the population.
  
2. Graph the turkey population over the ten generations. Generation is on the x-axis, population on the y-axis.

Turkey Population Data							
Generation	Starting Population	- Five year olds (die of old age)	- Last Year's Hatch (sexually immature)	= Total breeding population	Total Breeding Pairs (Divide by 2)	Offspring Hatched (10 eggs/pair)	New Total Population = Offspring + breeding population + last year's hatch
1	46	0	n/a	46	23	230	276
2	276	0	230	46	23	230	506
3	506						
4							
5							
6							

3. Graph your results from the second turkey population model. Remember, generation is the x-axis, population the y-axis.



4. Do you believe this is a more or less accurate model than the linear growth model? Explain why.

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5. If this level of population growth within this same area were to continue, what would eventually happen to the turkeys?

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6. List three possible variables or limiting factors that could affect this population's growth that were not included in this model.

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