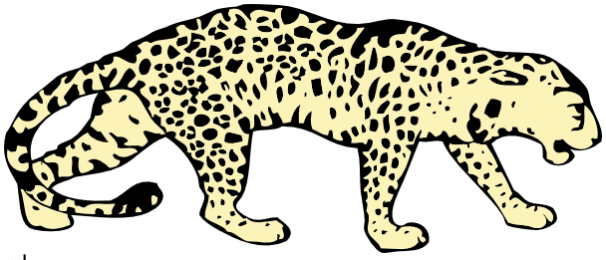
Honors Biology
Unit 6: Evolution

Due Tuesday April 18th

Name: _____ Period: _____

THE HUNGRY GAMES:
A GAME OF NATURAL SELECTION



INTRO INFO:

1. Class Represents *Panthera peoplus* gene pool
   Six Groups = Six possible variations in the gene pool
   In each group, 1 person = 10 leopards
   (i.e. 5 people in group = 50 leopards)
2. Mrs. H = Gamemaker
   Will pick a card to determine which environmental change occurs in the jungle
   Depending on the change, your group will receive a Grim Card or Sponsor Card
3. Grim Card = your leopard variation does not save you,
   Reduces your population by 20%;
   If your population reaches fewer than 20 leopards,
   Then reduces your population by 50%
4. Sponsor Card = your leopard variation helps you survive, reproduce,
   & pass on the variation to offspring,
   Increases your population by 20%

STEPS:

1. Determine your starting population numbers
2. Mrs. H draws a card and reads the environmental change.
3. Determine if your population will increase (Sponsor Card) or decrease (Grim Card)
4. Do the math using the equations below to determine # of individuals for next round

Grim Card Math (More than 20 individuals in your population)

# of leopards from previous round x 0.20 = x
# of leopards from previous round – x = # of leopards for next round

Example: 50 leopards x 0.20 = 10 leopards
50 leopards – 10 leopards = 40 leopards for next round

Grim Card Math (20 individuals or LESS in your population)

# of leopards from previous round x 0.50 = x
# of leopards from previous round – x = # of leopards for next round

Example: 20 leopards x 0.50 = 10 leopards
20 leopards – 10 leopards = 10 leopards for next round

Grim Card Math (More than 20 individuals in your population)

# of leopards from previous round x 0.20 = x
# of leopards from previous round + x = # of leopards for next round

Example: 50 leopards x 0.20 = 10 leopards
50 leopards + 10 leopards = 60 leopards for next round

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DATA TABLE 1:

	Round 1 (Year 0)		Round 2 (Year 1)		Round 3 (Year 2)		Round 4 (Year 3)	
Variation	Round 1 #	Grim/Sponsor Card %	Round 2 #	Grim/Sponsor Card %	Round 3 #	Grim/Sponsor Card %	Round 4 #	Grim/Sponsor Card %
Scavenger								
Flattened Molars								
Smaller Body Size								
Super Fast								
Extra Fat								
Long Claws								
Total Leopards								

	Round 5 (Year 4)		Round 6 (Year 5)		Round 7 (Year 6)		Round 8 (Year 7)	
Variation	Round 5 #	Grim/Sponsor Card %	Round 6 #	Grim/Sponsor Card %	Round 7 #	Grim/Sponsor Card %	Round 8 #	Grim/Sponsor Card %
Scavenger								
Flattened Molars								
Smaller Body Size								
Super Fast								
Extra Fat								
Long Claws								
Total Leopards								

	Round 9 (Year 8)		Round 10 (Year 9)		FINAL COUNT (Year 10)	
Variation	Round 9 #	Grim/Sponsor Card %	Round 10 #	Grim/Sponsor Card %	FINAL #	Grim/Sponsor Card %
Scavenger						
Flattened Molars						
Smaller Body Size						
Super Fast						
Extra Fat						
Long Claws						
Total Leopards						

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DATA TABLE 2: (USE FOR YOUR GRAPH!)

In order to effectively analyze data, we must determine the percentage of each variation among the population over time. In order to do this, you must divide the total # of individuals per trait over the total number of individuals in the population **for each round (year).** Use the information in Data Table 1 to fill out Data Table 2.

Example: Suppose that there are a total of 200 leopards (20 classmates) during Year 0 (Round 1).
40 of them are super fast
40/200= 0.20 (x100%)= 20% of the total number of leopards
The following year, the super fast leopard population received some Grim Cards
There are 32 super fast leopards left out of 186 total
So… 32/186 = 0.17 or 17%

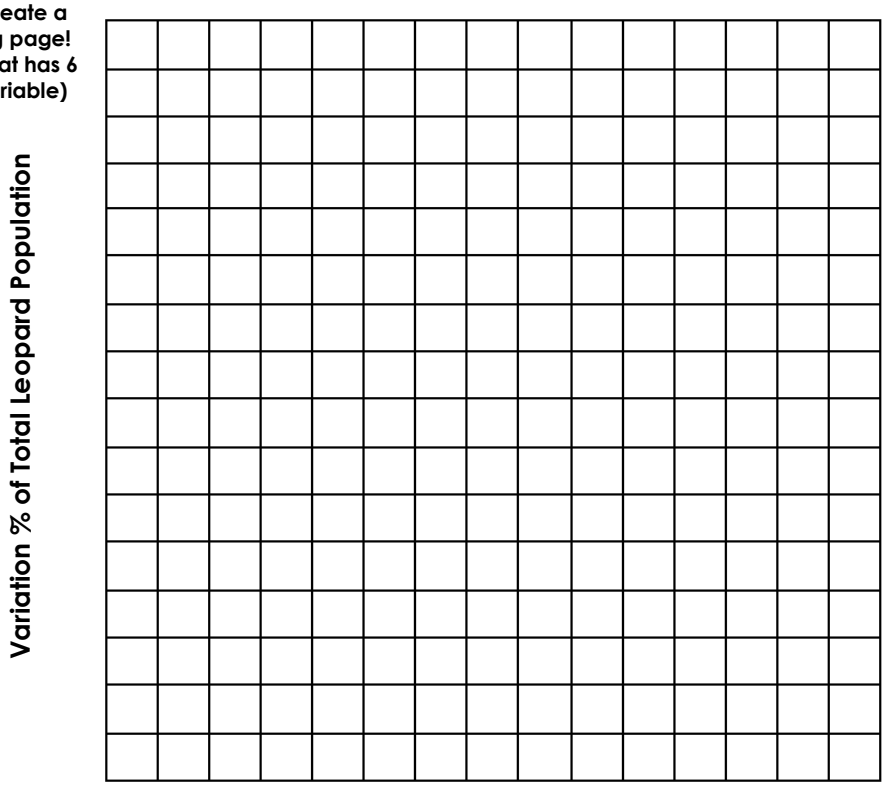
For the following round, there are now 32 total super fast, and a total of 186 leopards. 32/186=0.17, or 17%. For this activity we are going to assume that the population is in equilibrium, and not growing at a steady rate.

And the winner is…_____ because their variation increased by _____

(Final percentage – Year 0 %), which is the highest increase!

Variation	Year 0 %	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %	Year 10 % (Final)
Scavenger											
Flattened Molars											
Smaller Body Size											
Super Fast											
Extra Fat											
Long Claws											

Use Data Table 2 to create a graph on the following page! Create a LINE graph that has 6 lines (one for each variable)



Graph Key:

- ☐ **Scavenger**
- ☐ **Flattened Molars**
- ☐ **Smaller Body Size**
- ☐ **Super Fast**
- ☐ **Extra Fat Reserves**
- ☐ **Longer Claws**

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ANALYSIS: (Answer in complete & thoughtful sentences!)

1. In this exercise, what was responsible for the rise or decline of the variations?

_____

_____

2. Explain how genetic variation played a role in natural selection in this experiment.

_____

_____

3. What do you think determines the success of a population?

_____

_____

4. How does natural selection change a population?

_____

_____

_____

5. Describe how the evolutionary principle of competition works in this lab.

_____

_____

_____

6. Describe how the leopards represented in this lab could be seen as homologous to each other.

_____

_____

_____

7. Describe how the leopards represented in this lab could be seen as homologous to each other.

_____

_____

_____