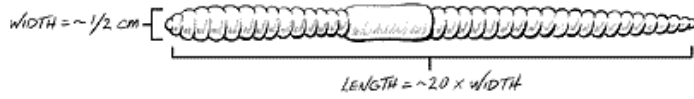Name: _____   Period: _____ Date: _____

Animal Behavior Lab

Part 1: Sketching a Pillbug

a. Good scientific sketches are detailed and accurate. While it's tempting to photograph (and you can), you should also draw a careful sketch. Here's a model sketch of an earthworm. Note the detail.

b. Cut a piece of paper towel so that it fits into the bottom of a petri dish. Place the filter paper in the petri dish, and add enough water to moisten it (without leaving any standing water).

c) Get a pill bug (also known as a roly poly) from your instructor, and place it in your petri dish. In all that follows, BE GENTLE! Using a metric ruler, measure the pill bug. You can temporarily place the pill bug on a piece of paper to get some absolute measurements. All measurements should be in millimeters.

1. body width: _____
2. body length: _____

Proportions:	*Other measurements*
Width: length:	Number of segments:
height: length:	Number of legs:
distance between the eyes to width of the body: _____ to ____	Number of eyes:
length of antennae to length of the body: _____ to _____	

Now, using what you've learned about the proportions of the pill bug's body, draw a big beautiful, detailed sketch of your pill bug. Indicate dimensions. If the space below isn't big enough, feel free to make your drawing(s) on a separate page that you staple to this one.

Part 2: Reading about Pillbugs

Visit the following websites (you should have these in your email), where you can learn about *Armadillium vulgare*

1)http://entnemdept.ufl.edu/creatures/MISC/Armadillidium_vulgare.htm

2) https://www.pbs.org/newshour/science/pill-bugs-emerged-sea-conquer-earth

Write down about 10 things that everyone should know about pill bugs.

Part C: Measuring Pill bug Behavior

Observation 1: Set up a choice chamber so that one side has dry filter paper, while the other side gets just enough drops to make it moist (*but not so much that there's standing water*). Add water drop by drop to saturate the paper (but don't overdo it). Record the location of 10 pill bugs for 10 minutes.

Prediction:

Time (minutes)	# in wet chamber	# in dry chamber	Observations
0			
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			
9.0			
10.0			

Record your 10 minute data on the class spreadsheet

CLASS DATA

After 10 minutes	# in wet chamber	# in dry chamber

Chi Square Analysis

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Probability (p)	Degrees of Freedom		
	1	2	3
0.05	3.84	5.99	7.82
0.01	6.64	9.21	11.3
0.001	10.8	13.8	16.3

What's the null hypothesis?

Calculate Chi square in the space below, and evaluate the null hypothesis.

Observation 2: Set up a choice chamber so that both sides are moist (see observation 1). Add 3 drops of vinegar to one side. Record the location of 10 pill bugs for 10 minutes.

Prediction:

Time (minutes)	# in neutral	# in acid chamber	Observations
0			
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			
9.0			
10.0			

Record your 10 minute data on the class spreadsheet

CLASS DATA

After 10 minutes	# on moist paper	# on moist paper + vinegar

As with the previous observation, do a chi square analysis.

What's the null hypothesis?

Calculate Chi square in the space below, and evaluate the null hypothesis.

Observation 3 (if time); set up a controlled experiment to measure some aspect of pill bug behavior.

Your variable:

Compared to:

Prediction:

Title: _____

Time (minutes)	# in _____	# in _____	Observations
0			
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			
9.0			
10.0			

Reflections:

Class Discussion

Observation 4 (if time): Class Designed Experiment

Your variable:

Compared to:

Prediction:

Title: _____

Time (minutes)	# in _____	# in _____	Observations
0			
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			
9.0			
10.0			

CLASS DATA

After 10 minutes	# in wet chamber	# in dry chamber

Chi Square Analysis

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Probability (p)	Degrees of Freedom		
	1	2	3
0.05	3.84	5.99	7.82
0.01	6.64	9.21	11.3
0.001	10.8	13.8	16.3

What's the null hypothesis?

Calculate Chi square in the space below, and evaluate the null hypothesis.