Name: _____ Date: _____ Pd: _____

DREAD RED

Materials:

1. Two paper cups per student
2. Phenolphthalein indicator
3. Droppers or plastic transfer pipette
4. Water
5. NaOH (Sodium Hydroxide)
6. Safety Goggles

Background:

A communicable disease is one that can be passed on from one individual to another. During the school year, communicable diseases such as colds and flu spread from person to person. These illnesses can be transmitted through the air from saliva released when people cough or sneeze. Other illnesses come from casual contact with an infected person. The sharing of body fluids can transmit more serious diseases, such as AIDS. Still some illnesses are contracted through contact with vectors or contaminated water or food.

Procedure:

PART ONE (pre-experiment):

1. Your teacher will call you up to the front of the room and give you two cups, one with a liquid inside it. Take the cup with the liquid in it and pour half of it into the empty cup. **DO NOT DRINK, TOUCH, WAFT OR SMELL THE LIQUID!**

2. Rip off the last page of the lab and put one cup in the "Control" circle. Put the other cup in the "Experimental" circle.

3. One student in the class is "infected" with the flu. You will be interacting with 3 students during this simulation. Estimate how many people in the class of _____ you think will be infected: _____

PART TWO:

4. When the teacher says to, randomly choose another student in the classroom and mix the liquid in your experimental cup.

    a. This is how you mix them:
        i. Student one will pour his entire liquid in his friend's cup.
        ii. Student two will pour all the liquid back in student one's cup.
        iii. Student one will then pour half of the liquid back in student two's cup

5. On your data sheet, write the student's name that you mixed your liquid with.

6. Repeat steps 5 and 6 two more times, *but only when the teacher instructs you to.* You may **not** mix with the same person twice.

7. Go back to your seat and put your experimental cup back in its place on the template and wait for further directions.

PART THREE:

8. After you have mixed your liquids three different times, add 2-3 drops of phenolphthalein indicator to your **experimental group**.

9. Collect class data and record it in your data chart.

- **QUESTION:** How many students ended up with colored liquid at the end of the experiment? _____

PART FOUR: WHO WAS IT??

10. Add 2-3 drops of phenolphthalein indicator to your control group.

- **QUESTION:** Who was the source of transmission? _____

Name: _____ **Date:** _____ **Pd:** _____

DATA:

LIQUID MIXING:

Student One:

_____

Student Two:

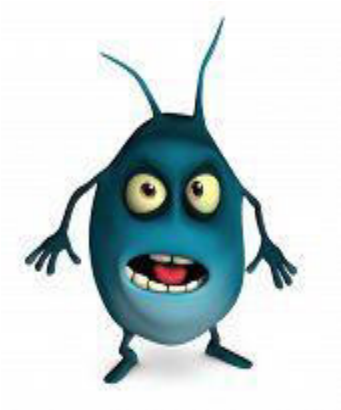
_____

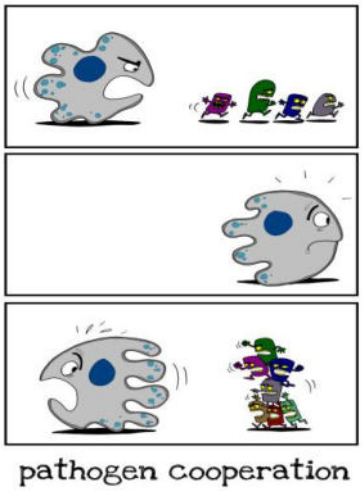
Student Three:

_____

Post experiment chart:

Total students in class	**# of clear liquid after mixing**	**# of colored liquid after mixing**	**# of infected**	**# of initial infection**
				1



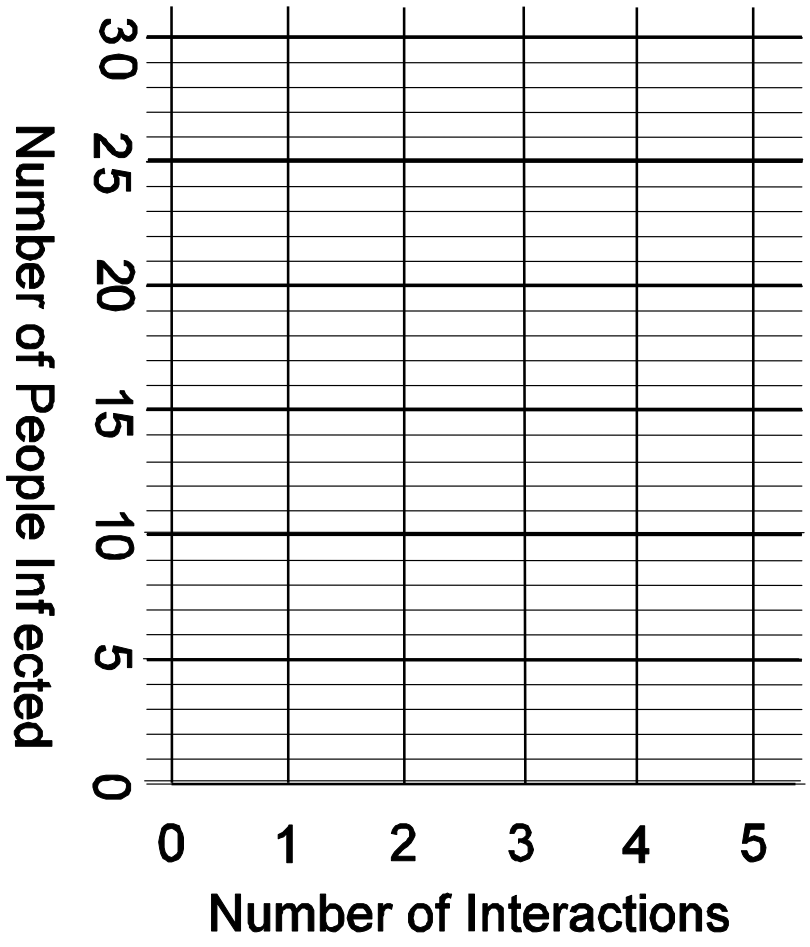


PART FOUR: Further predictions:

	After Trial One	After Trial Two	After Trial Three	After Trial Four	After Trial Five
# of students infected if no student was infected more than once					

GRAPHING A *LINE* GRAPH: (do NOT draw a bar graph)

Now you will graph how an infection spreads with increasing numbers of interactions.



PART FIVE: Data analysis and discussion questions:

1. During the simulation, did the number of people infected increase by the same amount each interaction?
    a. (For example: Were three people infected each interaction?)

2. Which interaction resulted in the smallest increase in the number of infected people?

3. Which interaction resulted in the largest increase in the number of infected people?

4. What was the purpose of the lab?

5. What was the purpose of the control group?

6. What did the red in the liquid indicate?

7. How did some people end up with the infection when they had no direct contact with the initial infected sample?

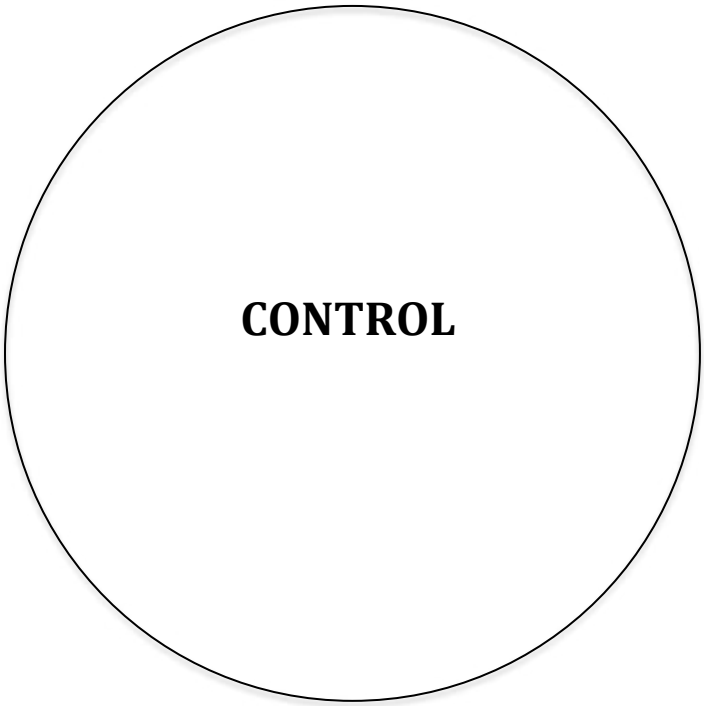
8. According to the graph, how many people do you predict may be infected if we did this experiment for one more trial?

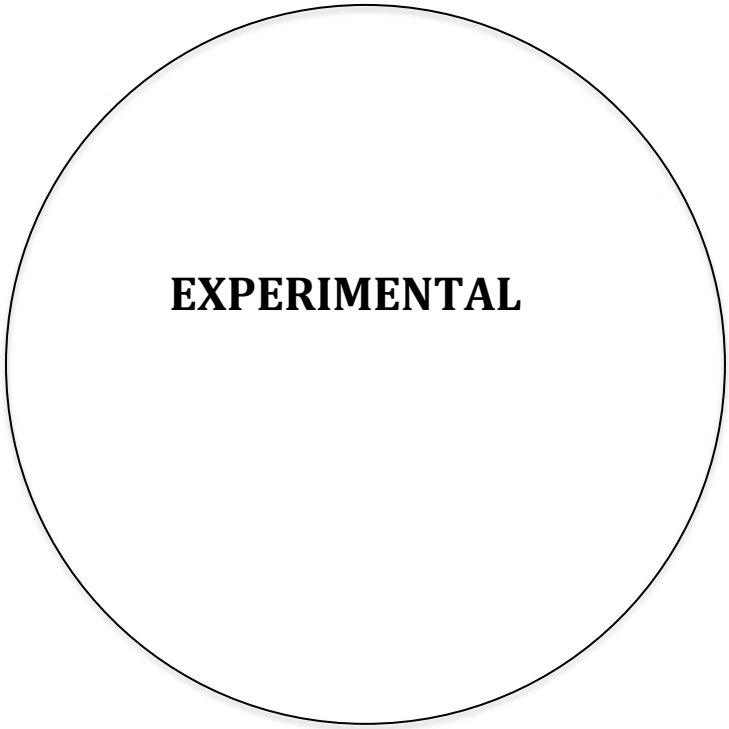
9. What are pathogens?

10. What are 2 examples of pathogens?
    a. _____
    b. _____

11. How does this experiment apply to real life situations?
    a. Example 1:

    b. Example 2:


CONTROL


EXPERIMENTAL