Epidemic Lab

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ block: \_\_\_\_\_\_\_

**Q1: What is the difference between an epidemic and pandemic?**

**Fill in the blanks**.

Some people are a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a disease. These carriers show either no symptoms associated with that disease or only mild symptoms. At some point they may eventually get sick, but they are dangerous to others because they may not be recognized as having the disease. They carry the virus inside them and spread it to people they may come into \_\_\_\_\_\_\_\_\_\_\_\_\_ with. This is one reason why some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, like HIV, can be spread so quickly. Some people just don’t know they have it.

**Procedure**

1. When you are instructed come to the front of the room and obtain a cup from your teacher. Two of you are now “infected,” but we have no idea who those people are. PLEASE DO NOT DO ANYTHING TO THE CONTENTS IN THE CUP JUST YET!
2. Choose someone at random and empty the contents of your cup into the other person’s cup. Return half of the solution back to your cup. Record the cup letter in which you exchanged solution with on this sheet.
3. Repeat step 2 two more times. Wait for your teacher to tell you when to start the next exchanges. DO NOT CHOOSE THE SAME LETTER TWICE.
4. As a class record your data on the chart provided by your teacher.
5. When instructed the teacher will come around with phenolphthalein. Add a 2 drops into your cup. If it turns pink then you are infected. If it turns white or remains clear you are safe! Good luck!
6. Now it is your job to backtrack and try to figure out who patient zero is. Patient zero is the person that original carrier of the contagion. Work as an epidemiologist and narrow down the results as much as you can.

**Who did you exchange with: MY CUP LETTER:**

1ST EXCAHNGE -

2ND EXCHANGE -

3RD EXCAHNGE

**Analysis questions:**

1. By the end of lab, how many people were infected with the contagion?
2. Using the class data, eliminate the cups of people not infected. From this, try to find the original source of infection by examining all those infected. Explain how you eliminated people that you knew were not the original carrier.
3. Explain how the contagion spread from this simulation? Why is determining how disease spreads important?
4. What is the smallest number of people that could test positive after three rounds of contact?
5. What is the largest number of people that could test positive after three rounds of contact?
6. If we expanded this simulation to a fourth round, make a prediction of how many people will get infected.
7. How many rounds will it take for the entire class to be infected?
8. How would the results differ if the infected person died quickly after catching the contagion? What about if people with the contagion recovered slowly?
9. Who do you believe was patient zero? Why?
10. What if a vaccine becomes available that prevents infection? Research the concept of "herd immunity" and the percentage of people that need to be vaccinated for it to be effective. Try the measles simulation for Charlotte NC. Visit this website for the simulation <http://fred.publichealth.pitt.edu/proj/measles/>
    1. Define herd immunity –
    2. Go to the website and explain which was more effective and how you knew?
    3. What surprised you most-

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| **Patient Name** | **1st Exchange** | **2nd Exchange** | **3rd Exchange** | **Infected?** |
| **A** |  |  |  |  |
| **B** |  |  |  |  |
| **C** |  |  |  |  |
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