Name: _____ **Div:** _____ **Date:** _____.

The Immune System, Why Vaccines Help and How They Work
Percent Word Problems

1. If a new vaccine passes 65/75 trials to prove it is safe and effective, what is its percent effectiveness in this trial? (Round to nearest whole number)

2. If 26.5% of people in a vaccine trial received the vaccine but still got infected with the virus, and there were 3000 people in the study, how many people didn't get infected?

3. How many people altogether were tested in a study if 690, or 0.07%, tested negative? (Round to the nearest whole number)

4. If disease X is 45% more infectious than Disease Y, and 3200 people in a community of 22 000 were infected by Disease Y, how many people would you expect to catch Disease X in that same community?

5. If 54,200 vaccines can be produced in B.C. a week, how many can be made in a year? If this is 0.04% of the world production in a year, how many vaccines are made in a year?
6. If a blood test shows a person has 742 white blood cells and the ratio of red blood cells to white blood is 2:1150, how many red blood cells would you expect to find?

7. If 95% of people in a community are required to be immune in order to reach the herd immunity threshold and there are 54 000 people in this community, how many people must be immune in order to prevent an epidemic of this particular disease?

8. If there are only 8690 people in a community that are not immune to a particular disease and the herd immunity threshold of 90% has been reached, how many people must there be in this community in total?

9. If 12.4% of BC residents identify as immunocompromised and are eligible to get vaccinated early, assuming the population of BC is 5 million, how many people would that be?

10. Suppose there was an outbreak of Disease X in a city and 450 people were infected in the first week, 2000 in the second week, and 8,888 in the third week. How many would you expect to get infected in the fourth week if this same rate of growth continued? (Round to the nearest whole number)

Adapt for grade 6/7/8 by using simpler fractions/smaller numbers and use common percents between 1-100%; whereas for grade 8/9 use larger numbers and percents less than 1% and more than 100%.