# Midterm- INTD 100

Paulina Valdez
October 9, 2020

Week 1: Concise Writing 1

1.
   a. Knowing the orbits of the stars around the center of the galaxy, scientists use them to calculate the mass of the object at the center of the galaxy. If the mass is so large, then it has to be of a black hole
   b. The reproduction parameter, R0, is used by epidemiologists to review the number of new infections resulting from one new infected person.
   c. According to Newton's Laws of motion, objects with different masses and shapes still accelerate at the same rate when dropped.

2. In order to determine optimum growth for tomatoes, the following steps must be taken. Ten tomato seedlings must be obtained, and for these a patch of a garden with space for all 10. A photo-sensor can be used to determine the light level for each spot in this patch. Once planted, the tomato plants must be given a different amount of water per day. All this is done during the summer when the amount of sunshine is maximized, to allow for all factors to be equal and determine what amount of water leads to optimum growth.
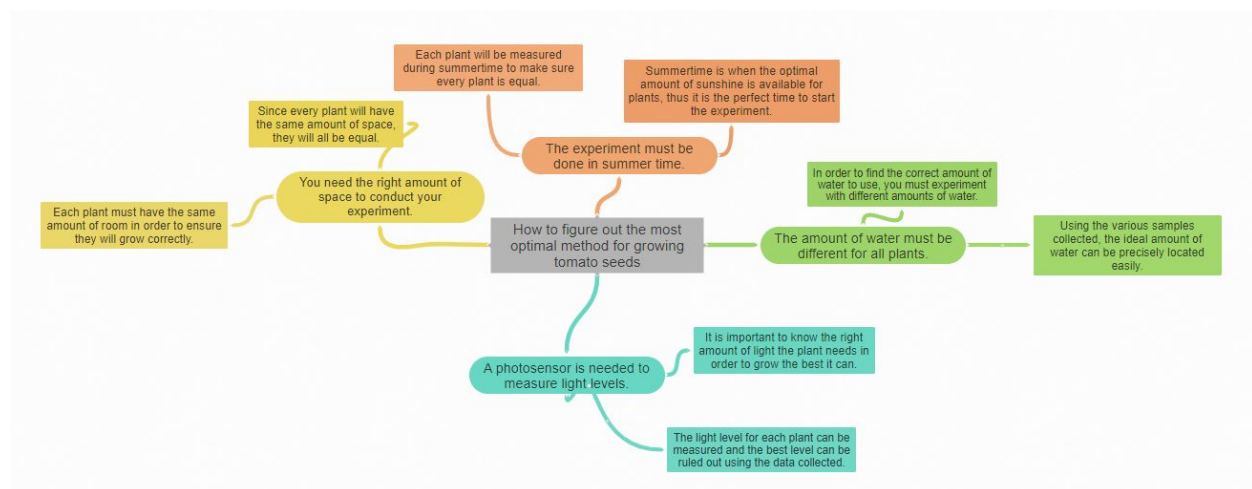
Week 2: Concise Writing 2

1. The coronavirus has proven to be a fatal disease depending on a person's initial health and age. If somebody has any underlying health problems, chances are the virus will be fatal to you. Diseases such as chronic kidney disease, diabetes, and cancer are some of the main diseases that may affect how fatal the coronavirus will be to you (1). These diseases can weaken your immune system, which makes it difficult when you catch the coronavirus. Since your immune system is

already struggling from these previous diseases, the virus will only make things worse. Because of the fatality for people with underlying conditions, it is important to keep track of this disease and calculate the spread of it. A formula has been in development in order to further keep track of this disease and discover which areas are in most danger compared to others. Graphs are constructed to show the rate of spread of the disease (2). Unfortunately, since the virus is still fairly new, these formulas and graphs can still be inaccurate. The rate of spread of disease cannot be fully calculated unless multiple deaths occur (3). Thus, more time is needed in order to study the spread of this new disease and figure out how to keep proper track of it.
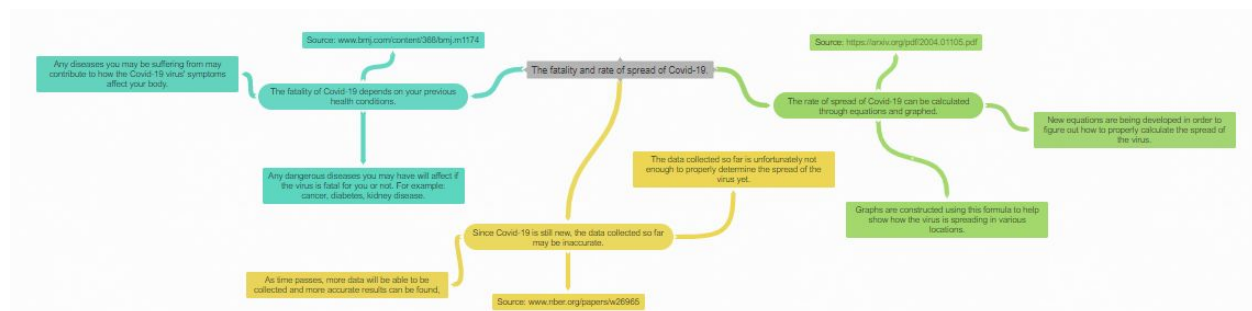
Citations:
1) Extance, Andy. "Covid-19 and Long Term Conditions: What If You Have Cancer, Diabetes, or Chronic Kidney Disease?" The BMJ, British Medical Journal Publishing Group, 25 Mar. 2020, www.bmj.com/content/368/bmj.m1174
2) Dehning, Jonas, et al. "Inferring COVID-19 spreading rates and potential change points for case number forecasts." arXiv preprint arXiv:2004.01105 (2020), https://arxiv.org/pdf/2004.01105.pdf
3) Atkeson, Andrew. "How Deadly Is COVID-19? Understanding The Difficulties With Estimation Of Its Fatality Rate." NBER, 9 Apr. 2020, www.nber.org/papers/w26965

Week 3: Technical Description 1

1.
   a. When born, the baby was heavy and long.
   b. The baby grew fast. By the time she was 1 year old, she grew more inches.
   c. Radio transmission took a while between the Earth and the Moon.
   d. A hiker walked a 60 km trail in 4 days, making her average speed moderate.

2. **How to make a bologna sandwich:** Before you start, take some bread from the pantry and place it on the kitchen counter. Grab a plate from the pantry and place 2 slices of bread on it. Then grab some mayonnaise out of the fridge and a knife from the kitchen drawers. Open the mayonnaise jar and use the knife to spread some on one side of each of the breads. Then, grab

the bologna from the fridge and place 2 slices on each one of the breads. Put the 2 slices of bread together and now you have a delicious bologna sandwich.

Week 4: Technical Description 2

1.

Passive voice: First, the Earth's gravity, g, was measured with a pendulum, and the length was measured as 20 cm. Second, the pendulum was hung straight down and the bob was displaced 5 cm to the right. Third, the pendulum was released, and the number of times it returned to the same position was recorded for one minute. It was calculated that it returned to its original position every 0.90 seconds. Lastly, the results were inserted into the formula predicted by Newton's Laws. The result for g was 9.81 m/s2 .

2.

Hierarchy of detail: The trials were conducted in a room with no air conditioning, and therefore no air flow that would interfere with the experiment. First, a sample of 20 infected people was gathered. The height of each subject in this experiment was required to be within 6 inches of 5 feet 6 inches tall. Second, petri dishes were arranged in 0.5 meter intervals out to 10.0 meters on the floor in front of the subject. Third, once each subject felt the urge to sneeze, the subject was required to aim the sneeze down the line towards the petri dishes without covering their mouth. Fourth, bacterial colonies were allowed to grow in the dishes for one week under ideal conditions. Following the growth, the average horizontal distance bacteria travel after a person sneezes was measured. The category of dishes with the largest colonies were the ones corresponding to 8.0 meters. The results show that when a person sneezes, it is possible to spread infection to someone who happens to be 8.0 meters away. These results inform the epidemiology of spreading bacteria.