

Score: 90/100  
Great job.

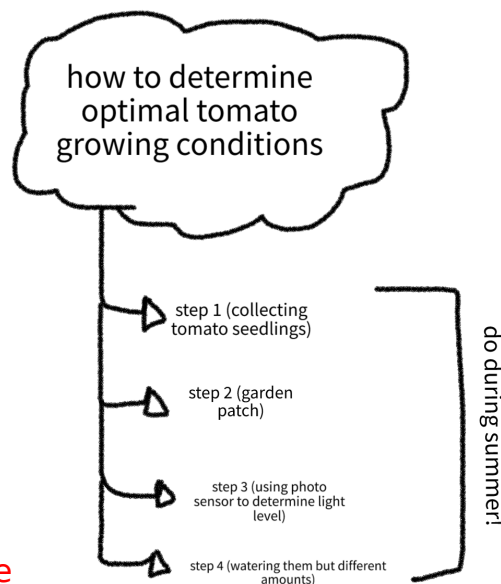
## Unit 1: Concise Writing 1

### 1. Using the *delete* button

The mass of the object indicates it is a black hole

- a. Scientists use the stars' orbits around the galaxy's center to calculate the object's mass at the galaxy's center. The object with a large mass is a black hole.
- b. Epidemiologists use the reproduction parameter  $R_0$ , the number of infections resulting from one new infected person.
- c. According to Newton's Laws of motion, things with different masses and shapes would accelerate downward at the same rate.

### 2. Creating an *outline*



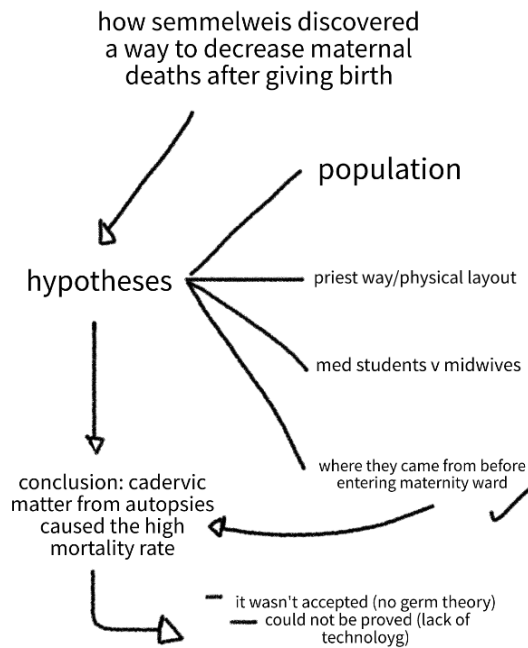
Great job, but I think one more sentence at the end will help give the conclusion.

To determine optimal tomato growing conditions, ten tomato seedlings were obtained. A patch in the garden was reserved with space for them, and a photo sensor was used to determine the light level at each spot in the patch. Each tomato plant was planted and given a different amount of water daily. This process was done during the summer when the amount of sunshine was maximized.

## Unit 2: Concise Writing 2

The story of Dr. Ignaz Semmelweis, the doctor working in the maternity wards of a Vienna hospital, who discovered a way to decrease maternal deaths after giving birth.

Medical professional:  
physician  
Scientist who studies physics:  
physicist



An assistant physicist, Dr. Ignaz Semmelweis, working at the world's largest maternity clinic discovered the importance of washing hands in any medical procedure. The maternity clinic was divided into two wards, and the first ward had an unusually high mortality rate due to childbed fever. To find the root cause of the problem, many hypotheses were offered. The first one was that Ward 1 was overcrowded. However, upon gathering empirical evidence, Semmelweis eliminated population as the cause of the high mortality rate. Willing to change theories in the light of new evidence, Semmelweis moved on to his next hypothesis which accounted for the people who were performing the delivery. However, even upon switching roles, the results did not change. Finally, the place where the medical practitioners came from made the difference. While the medical students came to the maternity ward after conducting autopsies, midwives were not responsible for other medical practices. This hypothesis actually proved to be true later although Semmelweis at the time could not explain why cadervic matter caused the transfer of disease due to the lack of technology.

Well written!

## Unit 2: Technical Description 1

It looks like these were not finished (maybe the point of them was not clear).

1. Removing ambiguous words (See solution manual).
  - a. When born, the baby was heavy and tall.
  - b. The baby grew fast. She was a lot taller by the time she was one year old.
  - c. Radio transmission between the Earth and the Moon took a while.
  - d. A hiker walked the 60 km trail in 4 days, making her average speed moderate.
2. Spatial and temporal detail, perspective

Excellent stuff.

Face the refrigerator in the kitchen. Open the top door, and take the packet of raw chicken. Place them on the wooden cutting board to the right of the refrigerator. Remove the raw chicken and leave it on the board. Below the board, open the left door of the mini-cupboard and take 5 cloves of garlic. Lift the bottle of corn oil from behind the board. Pour oil into the black frying pan on the stove to the board's right for 2 seconds with a medium flow. Replace the bottle, and take a spatula that is hanging at the upper-left of the board. Use the spatula to spread the oil evenly. Ignite the flame under the pan using the switch on the upper right side of the stovetop. Go back to the board, and take a knife from the drawer directly under the board. Cut the raw chicken into 7-10 small pieces vertically. You will find that your chicken pieces are long and narrow in size. Take the garlic cloves and dice them into fine pieces. Right next to the stove's border are containers of salt and pepper. When light smoke begins to rise from the hot pan, put the diced garlic carefully into the pan. Stir it around until light-brown color with the spatula. Add the chicken pieces and stir them around until white-color. Above the salt container, open the door to another cupboard and take the lid off the pan. Place the lid on the pan for 5 minutes. Take the lid off, then stir until the chicken seems crispy and is of light-brown color. Turn off the flame. Directly across the stove, right next to the sink, is the dishwasher. Pull open the dishwasher and take one medium-sized white ceramic plate. Close the dishwasher. Lift the pan up and carefully pour your chicken into the plate with the help of your spatula.

## Unit 4: Technical Description 2

Very good.

1. The acceleration due to Earth's gravity,  $g$ , was measured with a pendulum. First, the length of the pendulum was measured to be 20 cm. Second, the pendulum was hung straight down and displaced the bob 5 cm to the right. The pendulum was then released, and the number of times it returned to the same position as it swung back and forth in a minute was recorded. It was calculated that it returned to its original position every 0.90 seconds. The results were inserted into the formula predicted by Newton's Laws. The result for  $g$  was 9.81 m/s.
2. The average horizontal distance bacteria travel after a person sneeze was measured. The height of each subject was required to be within 6 inches or 5 feet 6 inches tall. The trials were conducted in a room with no air conditioning and, therefore, no airflow. First, a sample of 20 infected people was gathered. 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 without covering their mouth. Fourth, bacterial colonies were allowed to grow in the dishes for one week under ideal conditions. 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 the infection to someone who is 8.0 meters away. These results inform the epidemiology of spreading bacteria.

Correct!

3. Using a diagram of the forces, it was shown that the tangent of the angle is the friction coefficient. An eraser was placed on a meter stick. The angle was measured with a protractor. The angle between the meter stick and the table was increased. The tangent of the angle was measured many times. The angle was increased until the eraser slid off the meter stick. The average friction coefficient was 0.095. The coefficient of friction was measured to be 0.095. The standard deviation of the coefficient was 0.05. A future idea for an experiment is to change the temperature of the eraser and determine if the friction coefficient depends on temperature.

Reverse the order of the third and fourth sentences.  
Replace "many times" with "until an average was obtained"

There are two sentences with 0.095 in them, only one is necessary.