

Today you will be taking the TENTH grade QUARTER FOUR assessment. This test is designed to test your skills and knowledge in science. It has questions taken from science classes, as well as about experiments. You should make sure to read each question carefully, including the information given at the beginning of each section. Examine the diagrams to help you understand the questions as well. Some questions may refer to diagrams or information from the previous page.

For the multiple choice sections, make sure to place your answers on your Scantron sheet.

Make sure the Scantron has your full name, neatly written, as well as your student ID number on the right hand side of the box.

For the open ended questions, make sure to read all the information, and write your answer clearly in the space provided

1. Some cells, such as human nerve and muscle cells, contain many more mitochondria than do other cells, such as skin cells. Why do some cells have more mitochondria than others?

- A. The cells use more energy.
- B. The cells store more nutrients
- C. The cells degrade more proteins.
- D. The cells divide more frequently.

2. Going from simple to complex, which order correctly represents the organization of a living thing, such as humans?

- A. organ system → organ → cell → tissue
- B. cell → tissue → organ → organ system
- C. tissue → cell → organ → organ system
- D. organ → organ system → cell → tissue

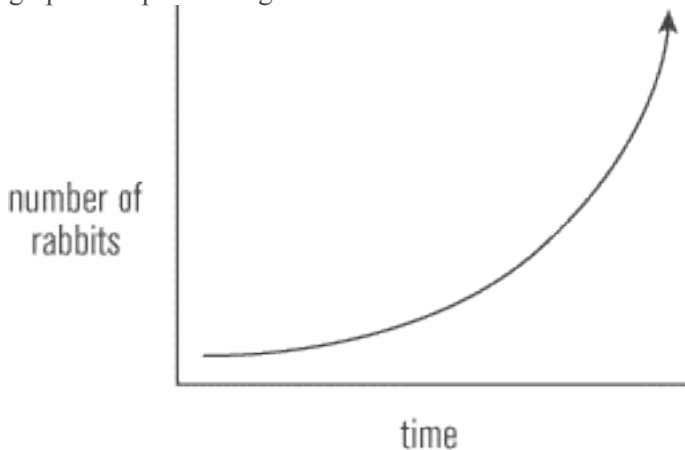
3. In the process of photosynthesis, plants use:

- A. water and sugar to make protein
- B. Carbon dioxide and oxygen to make protein
- C. water and carbon dioxide to make sugar and oxygen
- D. water and oxygen to make sugar and carbon dioxide

4. Which is a characteristic of members of the plant kingdom that distinguishes them from members of the animal kingdom?

- A. Storage of energy in chemical bonds
- B. Exchange of H₂O with the environment
- C. Use of mRNA during protein production
- D. Use of chlorophyll for solar-energy transformation

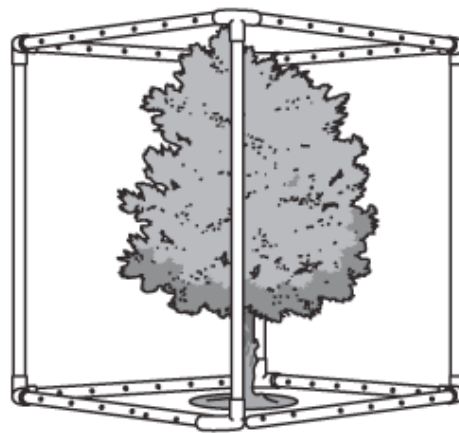
Use this graph to help answer questions **5 and 6**. The rabbit population is following the trend of **exponential population growth** and that population correspondingly grows by exponential factors. A graph of exponential growth looks like this:



5. What factor best explains this initial increase?
- A. Rabbits reproduce quickly
 - B. There is nothing to limit the growth of a population
 - C. There are a lot of lettuce patches
 - D. People like rabbits
6. What do you predict will happen to the rabbit population if left alone for more time?
- A. It would continue to grow until the world was over run with rabbits.
 - B. The population would continue to grow until people no longer liked rabbits.
 - C. The population would dramatically decrease because they would run out of food.
 - D. The population will stabilize when the rabbits become sterile due to overpopulation.
7. Cheetahs have come close to extinction due to hunting, drought, and disease. There is now very little genetic variation in cheetah populations. Which of the following is a result of the limited genetic variation in the current cheetah populations compared to earlier cheetah populations with more variation?
- A. Cheetahs in current populations are more resistant to new diseases.
 - B. The survival rate of young cheetahs is increased in current populations.
 - C. Cheetahs in current populations are less able to interbreed with other species.
 - D. The current cheetah populations are less likely to be able to adapt to environmental changes.
8. In all plant and animal cells, the nucleus contains long molecules of DNA. Which of the following best describes the function of DNA?
- A. DNA provides the shape and structure of the nucleus.
 - B. DNA packages materials for transport through the nucleus.
 - C. DNA carries materials into and out of the nucleus.
 - D. DNA contains the blueprint for producing the whole organism.

Variation in Leaf-Dropping Times

Plot	Gases Added to Surrounding Air	Time (days)
1	CO ₂	26
2	O ₃	3
3	CO ₂ + O ₃ mixture	10
4	None (control)	18



9. The table above shows the time it took trees of the same type and size to drop all of their leaves after being grown in different atmospheres. For the experiment to be valid, which of these must be a constant for all the trees?

- A. The height of all the trees during the entire experiment
- B. The amount of water available to all trees during the experiment
- C. The mass of fallen leaves collected from each tree
- D. The rate of photosynthesis in all trees during the experiment

10. A student concluded from this experiment that ozone (O₃) gas was six times more likely to cause leaves to drop than carbon dioxide. What other piece of information would you most need in order to definitively support their numerical analysis?

- A) The molecular weight of each molecule.
- B) The height of each tree.
- C) The concentration of gas in plot 3.
- D) No more information is needed.



62-64 A student took a sample of water from a pond and examined it under a microscope. She identified several species of protozoans, including two species of *Paramecium* that are known to eat the same food. The student decided to examine the water sample every day for a week. She added food for the *Paramecia* each day and counted the number of each species. Her findings are summarized in the table below.

NUMBER OF *PARAMECIA* IN POND WATER SAMPLE

Day	Species S	Species T
1	50	50
2	60	80
3	100	90
4	150	60
5	160	50
6	160	30
7	160	20

62.(3 pts) Using the axes below, construct a graph showing the number of each species of *Paramecium* the student found each day. Be sure to label the axes



