Biology 12 **Name:** ANSWER KEY

The Study of Life **Per:** _____ **Date:** _____

Chapter 1 – The Study of Life

Complete using BC Biology 12, pages 4 - 17

1.1 The Characteristics of Life pages 4 - 7

1. The diversity of life seems overwhelming, and yet all living things have certain characteristics in common. Living things are distinguished from non-living things as they generally…

   (1) are organized

   (2) acquire materials and energy

   (3) reproduce

   (4) respond to stimuli

   (5) are homeostatic

   (6) grow and develop

   (7) have the capability to adapt to their environment

2. Use the numbers from the last question to identify the characteristics of life that are described below.

   a. 6 A seed starts to germinate in the soil.

   b. 3 A sperm fertilizes an egg and a zygote results.

   c. 2 A little boy eats a bowl of cereal for breakfast.

   d. 6 A grasshopper molts its exoskeleton as it gets bigger.

   e. 5 Body temperature remains relatively constant at 37°C.

   f. 5, 4 A person starts to shiver as he gets onto a cold ice rink.

   g. 3 Some plants reproduce by producing seeds and spores.

   h. 3 Before a skin cell undergoes mitosis, its DNA is duplicated.

   i. 3 The unicellular protist *Paramecium* divides by binary fission.

   j. 4 A person's cell phone rings and he picks it up to answer the call.

   k. 1 The circulatory system consists of the heart, blood vessels, and blood.

   l. 4 A driver hears a siren and checks to see where the siren is coming from.

   m. 1 A bacterium is a unicellular organism, while a moss is a multicellular organism.

   n. 6 A caterpillar forms a hard shell called a chrysalis and soon emerges as a butterfly.

   o. 1, 5 A pancreatic cell has organelles that work together to produce the hormone insulin.

   p. 7, 5 Organisms that live on land have special features that allow them to conserve water.

   q. 4 A person walks into a dark movie theatre and his pupils dilate to adjust to the darkness.

   r. 5 After finishing a long-distance run, your heart rate starts to slow down as you rest for a while.

3. Identify the key terms described in the scenarios below. Choose from the following list of terms:
   (1) control
   (2) controlled experiment
   (3) data
   (4) dependent variable
   (5) hypothesis
   (6) independent variable
   (7) samples
   (8) sample size

a. 8 Scientists conducted a survey by asking 1500 men about their exercise routines. What does the number of men surveyed refer to?

b. 6 A graph shows the rate of reaction for nuclease on the *y*-axis and for pH on the *x*-axis. What does pH represent?

c. 1 In a drug trial, one group is given a cold medication in the form of a pill, while the other group is given a sugar pill. What is the group that is given the sugar pill called?

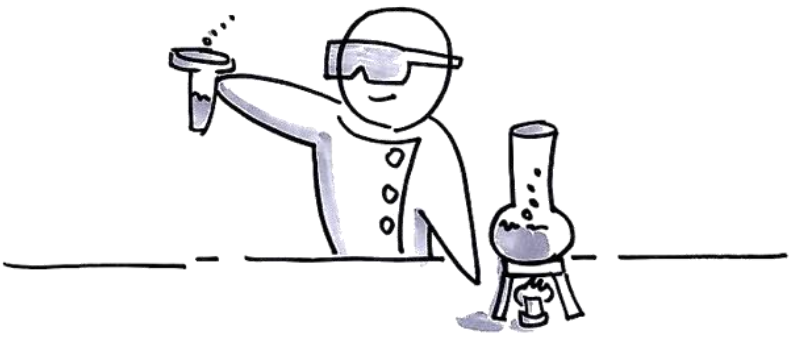
d. 7 Ecologists collected small amounts of soil from different areas on a farm to determine the levels of nitrates. What are these small amounts of soil called?

e. 4 In an experiment investigating the amount of carbon dioxide produced, yeast was given different concentrations of sucrose. What does the amount of carbon dioxide produced represent in the experiment?

f. 3 A marine biologist counted the number of sea stars in the waters off the coast of the Queen Charlotte Islands over a period of a year. She then displayed this information in a table and a bar graph. What is this information called?

g. 2 In an investigation studying the rate of photosynthesis, all the waterweeds were placed in the same size test tubes with the same amount of water and kept at room temperature. Each test tube was exposed to different amounts of light. What is this investigation called?

h. 5 A group of people showed symptoms of neurocysticercosis in a small community. This is a condition where tapeworms infect the brain. After questioning all these people, physicians proposed that they were infected with pork tapeworm by consuming contaminated food at a local restaurant. What is this explanation otherwise known as?



4. Describe two specific examples of the benefits of scientific discoveries. *Do not have to be examples from textbook.*
   - Virology: new drugs to extend the lifespan of people with HIV / AIDS
   - Cell biology: improved cancer treatments
   - Modern agriculture: more food for growing global population
   - Vaccines, antibiotics, gene therapy
5. Describe two specific examples of the drawbacks of scientific discoveries. *Do not have to be examples from textbook.*
   - Misuse or overuse of antibiotics: "superbugs"
   - Modern agriculture: fertilizers causing soil and water pollution
   - Modern agriculture: herbicides and pesticides killing off unintended organisms
   - Bioengineering: ethics of cloning
6. Using at least two specific examples, explain the potential consequences to the human population if we were to STOP using technology. Technology advances the survivability and comfort of humans as well as other selected organisms. Without technology, humans and others would not have clean water, vaccinations, available fuel, pharmaceuticals, or other tools that would help us modify the world.

Chapter 1 Review Questions pages 16 - 17

Mark using the answer key on page 523 – 524. Ensure your written answers are in your own words.

1. c
2. a
3. a
4. b
5. a
6. c
7. c
8. a
9. b
10. c

12. *Write it as a statement that could be tested.* The petri dish with the most effective antibacterial hand sanitizer will have the least amount of bacterial growth.
13. *Variable being investigated.* Type of hand sanitizer
14. *Control group.* Exposed to water instead of hand sanitizer
15. *Two conditions that should be kept the same.* Temperature, length of incubation time, etc
17. *Type of data that could be collected.* Amount of bacteria growth on each petri dish
21. *Read last paragraph of 1.1 and answer in your own words.* Unity of life based on all organisms sharing a common ancestor, which is the first cell or cells that existed almost 4 billion years ago. Diversity which results from the environment changing. Because there is variation among individuals, populations, and species, there is variation in responses to environmental pressures. Some individuals have adaptations or features to make them more suited to the new environment and these individuals tend to live to produce more offspring than less suited individuals.