Introduction to Biology **ESSENTIAL QUESTIONS**

1. What is Biology?

- Bio- = "_____"
- -ology = "the _____of"
- Biology is the _____of _____

2. What is the biosphere? How much of the biosphere do oceans make up?

- The biosphere is the _____space on earth
  - Everywhere there is _____
- 99% of the biosphere is _____
- The biosphere includes _____, _____and even the inside of your _____!

3. What is biodiversity? Where is biodiversity greatest?

- Biodiversity is the _____of life in the biosphere
- The greatest biodiversity is found near the warm _____.

4. What are species? How many species have been discovered?

- Species are defined as a group of organisms that can _____with one another
- 2 _____species have been discovered
- Scientists hypothesize that there are 10 _____more to be discovered.

5. What are the 10 characteristics of life?

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

6. What environmental factors are needed for life?

- _____– metabolic processes, transport, regulating body temp
- _____– energy and building blocks
- _____– cellular respiration
- _____– chemical reactions
- _____– breathing and circulation

7. How is structure related to function?

- A body part's _____allows it to perform a specific _____ (ex. blood cells vs. brain cells)

8. Why is homeostasis important for survival?

- Homeostasis keep body levels _____ (ex. H2O, O2, nutrients, heat & pressure)
- Homeostasis (*homeo*= _____;*stasis*=_____) keeps body parts _____

9. What are 2 examples of homeostatic mechanisms?

- _____regulation
- _____regulation

10. What are the 7 steps in a scientific investigation?

1. _____**–** a question about the world that can be investigated
2. _____**–** a proposed answer for a scientific question that can be tested
3. _____**and** _____**–** steps for the experiment along with the items needed
4. _____**–** the experiment or investigation to be performed
5. _____ **(**_____**) –** information collected by the senses about the experiment or investigation.
6. _____**–** evidence about what happened in the experiment or investigation
7. _____**–** inferences made about how the results prove or do not prove the hypothesis to be correct.

11. What is the difference between an independent variable and a dependent variable? What are controlled variables?

- Independent variable is the condition that is _____by the experimenter.
- Dependent variable is the condition that is _____in an experiment.
- Controlled variables are kept _____throughout the experiment (also called constants)

12. What is the difference between a hypothesis and a theory?

- A hypothesis is a proposed explanation to a question that can be tested in an _____
- A **theory** is a proposed explanation for a _____of observations and experimental results that is supported by a _____of evidence.

13. What is the difference between *qualitative* data and *quantitative* data?

- Qualitative data are _____in words of observations
- Quantitative data are _____in numbers of observations.

14. What are the 2 major types of microscopes used by scientists?

- _____Microscopes
  - –Used to magnify up to _____x
- _____Microscopes
  - –Used to magnify _____x (or more)
  - –Scanning electron microscopes (SEM)
  - –Transmission electron microscope (TEM)

15. What are some reasons why biologists use computer models?

- Biologists use computer models to…
  - –Study things that cannot be studied _____
    - Like the insides of _____
  - –Study things that cannot be studied _____or _____
    - Like the spread of a major _____

16. Why is Biology important to your life??!!

- _____technologies are changing the way we live
  - –ex. Genetically modified foods, gene therapy
- The more you know about biology, the _____you will be.
  - –Microorganisms, vitamins, nutrition, allergies
- _____issues
  - –Climate change
- _____
  - –DNA fingerprinting, medicine, etc.
- Many questions about life are left unanswered…you could be the one to answer them!!