Name:_____ Date:_____ Period:_____

Lesson 2 Review

Part 1: Identify the Independent Variable and Dependent variable in the following scenarios:

1. Randell wants to determine if salinity has an effect on his goldfish.

IV:_____salinity_____   DV:_____effect (ex: breathing rate)_____

2. James wants to know the effect of studying an extra ten minutes each day on his Environmental Science grade.

IV:_____Time studying_____   DV:_____grade_____

3. Justin wants to determine the effect of fertilizer on the growth of grass.

IV:_____fertilizer_____   DV:_____grass growth (ex: height)___

4. What is a possible control group for this experiment?: The plant that just receives water.

5. How many independent variables there be in a controlled experiment? One

6. What is the difference between a hypothesis and a scientific theory? A scientific theory is **well-tested** and widely accepted hypothesis (explanation) or group of hypotheses.

7. What is the difference between qualitative data and quantitative data?

- **Quantitative data-** A quantity or number that can be measured directly with a tool. (example-the number of centimeters the grass grew)

- **Qualitative data-** data describes qualities or characteristics.

Part 2 Vocabulary Review: Below are a few practice terms for the assessment however it does not include all the terms you are responsible for. Use the Quizlet to review all the terms you will be responsible for.

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8. What the four macromolecules and their building blocks?

- Lipids- Fatty acids

- Carbohydrates- Sugar or Monosaccharides

- Nucleic Acids- Nucleotides

- Proteins-Amino Acids

9. Molecules that contains at least two carbon atoms are called _____Organic_____. They include things like sugar, vitamins, the four macromolecules and most molecules in your body.

10. Energy that can be replenished in a relatively short period of time is called _____Renewable Energy_____.

11. In an experiment the group that is used as standard for comparison is called the _____Control Group_____.

12. One macromolecule is the _____Nucleic Acid_____ that consists of DNA and RNA. The long, continuous threads of DNA that consists of numerous genes is called _____Chromosomes_____.

13. A type of energy that involves heat or thermal energy is _____Kinetic Energy_____.

14. Label the pH scale below with the following terms: **(acid, base, alkaline, OH-, H₃O+, neutral, Hydroxide ion, Hydronium ion)**

$$7\text{-neutral}$$

Acid, Hydronium ion, H_3O+

Base, alkaline, OH-, Hydroxide ion

1	2	3	4	5	6	7	8	9	10	11	12	13	14
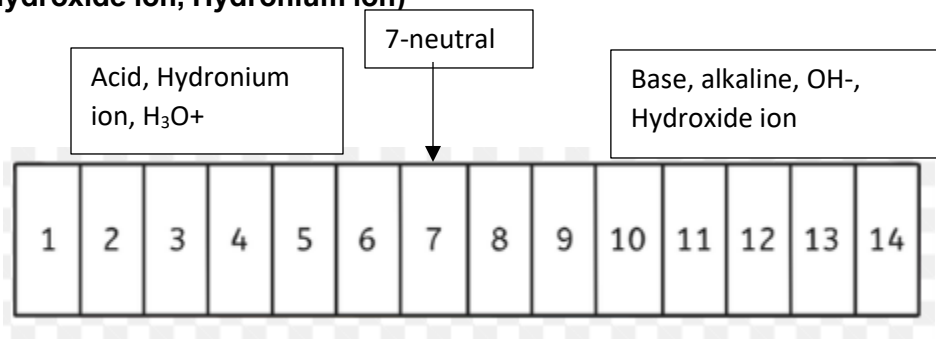
15. Define the following terms and write an example each:

Hypothesis:

- Definition: **hypothesis** is a possible, testable answer to a scientific question or explanation of what scientists observe in nature.

- Example: Grass growth is limited by the amount of available water.

Theory:

- Definition: **well-tested** and widely accepted hypothesis (explanation) or group of hypotheses.
- Examples: Cell Theory, Plate tectonics, climate change theory

Law:

- Definition: A Law is a well-tested and widely accepted <u>description of observations</u> that have been repeated many times in a variety of conditions.
- Example: Newton's Law of Universal Gravitation

16. Characterize the following examples as either an element (E) or compound (C).

- __E____ N
- __C____ NH_3
- __E____ H
- ___C___ H_2O
- ___C___ CO_2
- ___C___ CO
- ____C__ $C_6H_{12}O_6$

17. Read the following scenario and answer the questions:

Scenario: Miracle-Gro and Basil

John really likes the herb basil. He likes it so much he eats it faster than it grows in the 8 pots he has on his windowsill. John decided he needed to find a way to make the basil grow faster because he is limited on space. He decided to design an experiment. John took eight seeds and planted them in eight pots that all received equal amounts of sun and were all spaced 20 centimeters apart. Each day John gave each of the eight plants equal amounts of water using a large graduated cylinder, depending on how dry the soil was. John then divided the eight plants into four groups, A-D. For the two plants in Plant Group A, John only gave them water. For the two plants in Plant Group B, John gave each plant a cup of Miracle-Gro solution mixed at 25% less than the recommended concentration once a week in place of the water. For the two plants in Plant Group C, John gave each plant a Miracle-Gro solution mixed exactly at the recommended concentration once a week in place of water. For the two plants in Plant Group D, John gave each plant a cup of Miracle-Gro solution mixed at 25% more than the recommended concentration once a week in place of the water. After 30 days, John measured the height of each plant. The results were as follows:

	Basil Plant Height After 30 Days (cm)			
Plant Group	A	B	C	D

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Plant Height (cm)	21	23	30	26

Identify the Dependent Variable:_____**Plant Height**_____

Identify the Independent Variable:_____**fertilizer**_____

Control Group:_____**Group with just water**_____

Constants:

   Equal sunlight, type of plant (basil), spaced 4 inches apart, time, soil type, pot size

What can be concluded based on the results presented and how do you know?

Possible answers: The recommended amount (Group C) achieved the greatest height after 30 days. Technically the sample size it too small to draw a conclusion.

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