Unit 1 Review: Levels of Organization, MR. ROUGH, Domains/Kingdoms, & Biomolecules

1. What is a theory? A tested, well-supported highly reliable scientific explanation based on observations
2. When would a theory need to be changed? When new scientific data becomes available
3. How are a theory and a hypothesis related? A well-supported hypothesis can develop a theory
4. Science relies on having a _____ hypothesis. testable
5. Incorrect Hypothesis: I believe that plants will grow 10 cm when placed in direct sunlight.
   Correct Hypothesis: _If plants are placed into direct sunlight, then the plants will grow 10 cm. _
6. How would you graph the following information? Label each axis. *See graph on the last page!

Solution	Concentration of acid	Depth agar dissolved
A	0%	2 cm
B	1%	2 cm
C	2%	2 cm
D	3%	3 cm

7. Name the 7 characteristics of life. Metabolism, Reproduction, Response to Environment, Organized of cells, Universal Genetic Code, Growth/Development, Homeostasis
8. Groups of individuals of the same species that live in the same place at the same time is called a _____? population
9. List the order in which your body uses biomolecules. Carbs, Lipids, Proteins
10. What are the 4 biomolecules and their functions? Carbs- Quick Energy, Lipids- Long term energy storage, Proteins – Repair, Build, Transport, Nucleic Acids – Genetic Info
11. If there are 30 Adenine's in a DNA molecule, how many Guanine's Cytosine's and Thymine's are also in this same DNA molecule? 30 A, 30 T, 20 C, 20 G
12. What does pathogenic mean? (or being a pathogen?) An organism that can cause harm or disease
13. The process by which organisms keep their internal conditions constant is called _____. Homeostasis
14. List the elements found in each of the 4 biomolecules. Carbs – CHO, Lipids- CHO, Proteins - CHON, Nucleic Acids - CHONP
15. What are the monomers of each of the 4 biomolecules? Carbs – Monosaccharides, Lipids – Glycerol & Fatty Acids (No true monomers) Proteins – Amino Acids, Nucleic Acids - Nucleotides
16. What can starch be broken down into? Monosaccharide
17. If your body has 25 grams of lipids, how many calories will you burn before you begin to burn proteins? 25 g x 9 cal/g = 225 calories
18. Which part of the DNA molecule is responsible for the coding of traits in ALL organisms? (Hint: Is it the sugar, phosphate or nitrogen bases?) Nitrogen Bases (A-T; C-G)
19. The picture below is an example of gel electrophoresis, which is used to compare bands of DNA. What biomolecule does gel electrophoresis analyze? DNA = Nucleic Acid
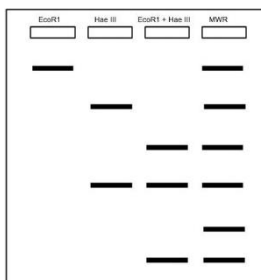
20. Name the 4 kingdoms of Domain Eukaryota. Protista, Plantae, Fungi, Animalia
21. Are all 4 kingdoms in Domain Eukaryota Prokaryotic or Eukaryotic? Eukaryotic
22. What is different in the cell walls of Kingdom Archaebacteria and Kingdom Eubacteria? Kingdom Archaebacteria (NO Peptidoglycan) – Kingdom Eubacteria (Peptidoglycan)

23. Which domain is thought to be the ancestor of eukaryotic organisms? Domain Archaebacteria
24. How are Fungi different from plants? Fungi are heterotrophs, while plants are autotrophs
25. What is the base pairing rule of DNA and RNA? A-T; C-G
26. What is the correct order of the levels of organization? Atom, Molecule, Organelle, Cell, Tissue, Organ, Organ System, Organism, Population, Community, Ecosystem, Biome, Biosphere
27. The smallest unit of living matter in Biology is the _____. Cell
28. Biology is the study of _____. Life

29. Mrs. Sanchez is interested in growing tomatoes. She is unsure if she should use a fertilizer on her plants. She sets up the following experiment with these conditions: each tomato plant is in a separate container, each plant will be watered 100 milliliters every other day, and each plant will receive 6 hours of direct sunlight a day. Plant #1 will be given 2.5 grams of fertilizer mixed into the water while plant #2 will not be given the fertilizer.

   a. Why is Mrs. Sanchez including plant #2 in her experiment? Plant #2 is the control

   b. Name at least 2 control variables. Plant #2, 6 hours of sunlight, 100 mL of water

   c. What is the independent variable? 2.5 g of fertilizer

   d. What is the dependent variable? How many tomatoes have grown

30. For her science fair project, Maya purposes the following: "I see that some recipes for bubble blowing solutions have glycerin and others do not. I want to blow the largest bubbles possible. I will use solutions with 0%, 5%, 10%, and 15% glycerin in my bubble blowing solutions."

   a. Name the control. Solution with 0% glycerin

   b. What is the independent variable? Amount (%) of glycerin added to the blowing solution

   c. What is the dependent variable? How large the bubbles become

31. You want to determine the effects of caffeine on mice by measuring their wheel-running times. The mice are given 0%, 2%, 4% and 6% caffeine in their water.

   a. What is the independent variable? Caffeine

   b. What is the dependent variable? Wheel-Running Times

   c. What is the control? The mice with 0% caffeine given in their water

Depth Agar Dissolved (cm) vs. Concentration of acid (%)