Bio I ING Tomasino 2012

Unit 1 Review

I. Scientific Methods

 A. Inquiry Process

 1. Hypothesis

 a. definition:

 b. 3 key characteristics

 i.

 ii.

 iii..

 2. Prediction

 a. definition:

 b. format:

 3. Experiment

 a. independent variable (definition + location on graph)

 b. dependent variable (definition + location on graph)

 c. control group

 d. constant (controlled variable)

 4. Bias

1. identify examples
2. identify motives

 B. Measurement & Observation

 1. SI

 a. reasons it is superior system

 i.

 ii.

 b. prefixes (and conversions!)

 c. scientific notation (and conversions!)

 c. m k s L base unit system (what is each?)

 d. derived unit

 2. Accuracy v. Precision

 a. accuracy:

 b. precision:

 i. how tools limit:

 ii. relationship to uncertainty and range

 3. Qualitative v. Quantitative

 a. qualitative

 b. quantitative

 C. 7 Characteristics of Living Things: What are they and what do they mean? (define homeostasis)

 D. Microscopes

 1. When invented:

 2. Important ODWDs:

 3. Explain why it’s called a compound light microscope

 4. Given ocular and objective lens magnification, find total magnification

 5. Identify eyepiece, objective, stage, diaphragm, coarse and fine focus, and describe functions

 E. Animal Behavior

 1. Instinctual behaviors (definition and 3 types)

 2. Learned behaviors (definition and 3 types)

Unit 1 Review Problems and Practice

1. Describe an experiment that could determine the effect of temperature on the rate of photosynthesis in plants.

Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Prediction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Independent Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Constants: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Experiment Plan: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. A graph is used to represent the results of an experiment. The vertical (y) axis is labeled Reaction Rate (mol/s) and the horizontal axis (x) is labeled pH. What are the independent and dependent variables of the experiment?

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3. To test the ability of termites to follow certain colors of ink, students sketch three circles by hand, using black, red, and blue BIC pens. To measure how well termites follow each color, students count how many laps the termites complete around each circle. Identify one or two parts of this experimental design that *could be* biased.

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4. Convert into or out of scientific notation:

1. 3,560,000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B. 0.000,343,0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C. 5.64 x 106 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ D. 3.2 x 10-6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Convert the following metric measurements

 A. 85 μm to m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B. 2.3 km to m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 C. 0.002,3 m to mm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ D. 23 m to km \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Why is the SI system superious to other systems of measurement? List two reasons

7. What are the SI units of length, mass, and time?

8. Give an example of a derived unit in the SI system.

9. For the observations below, circle all that are quantitative

 Brown 2.2 cm small heavy 152 kg 12

10. The true value of the mass of a pepper is 24.754 g. Students determine the mass of the pepper as follows: Circle all of the answers that are accurate. Draw a box around the measurement that is precise to 0.1 g. Beneath each measurement, identify the range of values it represents (for example: [5.15 – 5.24)].

 25 g 24.8 g 24.7 g 23 g 24.77 g 24.75 g

11. Universal Characteristics of Life: List, define, and provide an example of each

|  |  |  |
| --- | --- | --- |
| Characteristic | Definition | Example |
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12. Draw a quick sketch of a microscope, and label the eyepiece, objective, stage, diaphragm, coarse focus, and fine focus.