Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Nature of Science Test Review**

1. Define the following terms. Terms with a \*\* next to them should be defined using the definitions in your notebook.

|  |  |
| --- | --- |
| **Vocabulary Word** | **Definition** |
| Observation\*\* |  |
| Inference\*\* |  |
| Repetition\*\* |  |
| Replication\*\* |  |
| Hypothesis |  |
| Prediction |  |
| Scientific Law |  |
| Scientific Theory |  |
| Dependent (outcome) variable |  |
| Independent (test) variable |  |
| Constants |  |

1. What is bias and how can we prevent bias in scientific studies?
2. Label the following as an Inference or an Observation based on the picture:
   1. One student is sleeping. \_\_\_\_\_\_\_\_
   2. There are 4 male students \_\_\_\_\_\_\_\_
   3. It is winter outside. \_\_\_\_\_\_\_\_\_\_\_\_\_
   4. The person in the front row loves this class. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which of the following statements are true regarding lab safety?
   1. A student should wear gloves, goggles and an apron or lab coat to protect themselves in the lab. \_\_\_\_\_\_\_\_\_
   2. When coming to school on a lab day, you should not pay attention to how you dress. \_\_\_\_\_\_\_\_\_\_
   3. Never eat, drink or chew gum in the science laboratory.\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. It’s ok to try your own experiments in lab when the teacher is not looking. \_\_\_\_\_\_\_\_\_\_\_
   5. It’s ok to mess around with your friends as long as you have finished your lab first.\_\_\_\_\_\_\_\_\_\_\_
4. Match the type of scientist to their work. Life Scientist (L), Earth Scientist (E) or Physical Scientist (P).
   1. They study how dolphins communicate. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. They investigate how the ocean currents are affected by climate change.\_\_\_\_\_\_\_\_\_\_\_\_
   3. They investigate how white blood cells fight disease. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. They investigate how much rain falls in the Everglades. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   5. These scientists study how atomic structure effects its electrical charge. \_\_\_\_\_\_\_\_\_\_\_\_\_
   6. They investigate how force and motion are related. \_\_\_\_\_\_\_\_\_\_\_\_
5. Fill in the table below:

|  |  |
| --- | --- |
| **Unit of Measurement** | **Quantity Measured** |
| Meter (m) |  |
| Kelvin (K) |  |
| Kilogram (kg) |  |
| Seconds (s) |  |
| Liter (L) |  |

1. Identify the following variables from the Gobstopper Lab:
   1. Dependent (outcome) variable\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Independent (test) variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Constants \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Also – workbook page 28 (#12) and workbook page 31 (#1-4)

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Key\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Nature of Science Test Review**

1. Define the following terms. Terms with a \*\* next to them should be defined using the definitions in your notebook.

|  |  |
| --- | --- |
| **Vocabulary Word** | **Definition** |
| Observation\*\* | Based on the 5 senses. |
| Inference\*\* | Based on prior knowledge or opinion. |
| Repetition\*\* | A scientific investigation can be performed many times by the same scientist. |
| Replication\*\* | a scientific investigation can be performed by others |
| Hypothesis | a possible explanation about an observation that can be tested by scientific investigations |
| Prediction | a statement about what will happen next in a sequence of events |
| Scientific Law | describes a pattern or an event in nature that is always true |
| Scientific Theory | an explanation of observations or events based on knowledge gained from many observations and investigations |
| Dependent (outcome) variable | the factor measured or observed during an experiment |
| Independent (test) variable | a factor in an experiment that is changed by the investigator |
| Constants | factors in an experiment that remain the same |

1. What is bias and how can we prevent bias in scientific studies?

Bias - Intentional or unintentional prejudice toward a specific outcome.

**Prevent by:**

1. Large, random samples
2. Blind Studies
3. Repetition
4. Label the following as an Inference or an Observation based on the picture:
   1. One student is sleeping. Observation
   2. There are 4 male students Observation
   3. It is winter outside. \_\_\_\_\_ Inference
   4. The person in the front row loves this class. \_\_\_\_\_\_ Inference \_\_\_\_\_\_\_\_
5. Which of the following statements are true regarding lab safety?
   1. A student should wear gloves, goggles and an apron or lab coat to protect themselves in the lab. \_\_\_\_ True\_\_\_\_
   2. When coming to school on a lab day, you should not pay attention to how you dress. \_\_\_\_ False \_\_\_\_\_\_
   3. Never eat, drink or chew gum in the science laboratory.\_\_\_\_\_\_ True\_\_\_\_\_\_\_\_
   4. It’s ok to try your own experiments in lab when the teacher is not looking. \_\_\_\_\_\_False\_\_\_\_\_
   5. It’s ok to mess around with your friends as long as you have finished your lab first.\_\_\_\_ False
6. Match the type of scientist to their work. Life Scientist (L), Earth Scientist (E) or Physical Scientist (P).
   1. They study how dolphins communicate. \_\_\_\_\_\_Life\_\_\_\_\_\_\_\_
   2. They investigate how the ocean currents are affected by climate change.\_\_\_\_ Earth \_\_\_\_\_\_\_\_
   3. They investigate how white blood cells fight disease. \_\_\_\_\_\_ Life \_\_\_\_\_\_\_\_\_\_\_\_
   4. They investigate how much rain falls in the Everglades. \_\_\_\_\_ Earth \_\_\_\_\_\_\_\_\_\_.
   5. These scientists study how atomic structure effects its electrical charge. Physical \_\_\_\_\_\_
   6. They investigate how force and motion are related. \_ Physical
7. Fill in the table below:

|  |  |
| --- | --- |
| **Unit of Measurement** | **Quantity Measured** |
| Meter (m) | Length |
| Kelvin (K) | Temperature |
| Kilogram (kg) | Mass |
| Seconds (s) | Time |
| Liter (L) | Volume |

1. Identify the following variables from the Gobstopper Lab:
   1. Dependent (outcome) variable\_\_\_\_\_\_Rate of Color Change\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Independent (test) variable \_\_\_\_\_Temperature of Water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Constants
      1. Amount of water
      2. # of stirs
      3. Time between stirring
      4. # of Candies in the water
      5. Color of Gobstopper
2. Also – workbook page 28 (#12) and workbook page 31 (#1-4)
3. The experimental group is the one that got the real cough medicine because they got the medicine that was being tested.

The people that got the inert liquid were the control group because they were given a liquid that did not have active ingredients in it.

Constants were that all participants were women ages 20–30 and normally healthy.

Page 31: 1. D 2. F 3. A 4. H