NATURE OF SCIENCE

One of the most difficult things for students and non-scientists to get straight are the terms “theory,” “hypothesis,” “law,” “fact,” and “belief.” The exercise below consists of a series of statements which you will mark as a statement of a theory (T), hypothesis (H), fact (F), law (L), or belief (B). But first, let’s make sure we know what we are talking about.

Labeling of definition for Scientific Terms

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| **Definition** | **Term (T), (H), (F), (L), (B)** |
| A basic statement established by experiment or observation which everyone accepts to be true. Humans breathe oxygen or frogs develop from tadpoles. Water always boils at 212o F at sea level, but at higher altitudes it boils at lower temperatures. |  |
| A well-substantiated explanation of an aspect of the natural world acquired through the **scientific** method and tested and confirmed many times through observation and experimentation. Accepted as a fact by most people until proven untrue. |  |
| A statement that is not scientifically provable in the same way as facts, laws, hypotheses or theories. |  |
| A statement based on repeated experimental observations that describes some aspects of the universe. It applies under the same conditions, and implies that there is a causal relationship involving its elements. Often represented with an EQUATION. |  |
| A new idea which can studied through experimentation to determine the relationship between two or more variables. |  |

\_\_\_\_\_. If a plant’s growth is related to the amount of sun it gets, then a plant which is transplanted to a sunnier spot will grow taller than a plant in a shady spot.

\_\_\_\_\_. A scientist observes a planet’s motion, writes mathematical formula to explain it and supports it with observation and repeated proving of the formulas over many years.

\_\_\_\_\_ . Force = mass x acceleration

\_\_\_\_ . Water freezes at 32o F.

\_\_\_\_ . The number 13 is unlucky.

\_\_\_\_ . The Big Bang started the universe.

\_\_\_\_ . The color blue is prettier than all the other colors.

\_\_\_\_ . Since weight is determined by gravity, you will weigh less on the moon even though your mass is the same.

\_\_\_\_ . The number 7 is lucky.

\_\_\_\_ . The diversity of life on earth was created by tiny slow changes in populations over time.

\_\_\_\_ . If a plant’s growth is related to the amount of Nitrogen in the soil, then plants with more Nitrogen will grow taller faster than plants with less Nitrogen.

\_\_\_\_ . The circumference of a circle is equal to *C*=2*πr*