

One of the most difficult things for students and non-scientists to get 'straight' are the terms: Theory, Hypothesis, Law, Fact and Belief. This exercise 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).

Fact: A basic statement established by experiment or observation. All facts are true under specific conditions. Some facts may be false when re-tested with better instruments.

Law: A logical relationship between two or more things that is based on a variety of facts and proven hypothesis. It is often a mathematical statement of how two or more quantities relate to each other.

Hypothesis: A tentative statement such as 'if A happens then B must happen' that can be tested by direct experiment or observation. A proven hypothesis can be expressed as a law or a theory. A disproven hypothesis can sometimes be re-tested and found correct as measurements improve.

Theory: An explanation for why certain laws and facts exist that can be tested to determine its accuracy.

Belief: A statement that is not scientifically provable in the same way as facts, laws, hypotheses or theories. Scientifically disproven beliefs can still be held to be true.

- 1 – For every action, there is an equal and opposite reaction.
- 2 - $F = ma$
- 3 – Water freezes at 32 F
- 4 – The Earth is a sphere.
- 5 – The universe is expanding.
- 6 – Humans were created separately from all other life on Earth.
- 7 – Humans and gorillas evolved from a common ancestor species.
- 8 – Light is an electromagnetic phenomenon described by Maxwell's Laws
- 9 – Matter is comprised of atoms.
- 10 – The sun will die in 7.5 billion years.
- 11 – Earth's magnetic field is generated by a conducting fluid in its core.
- 12 – Sunspots are colder than the surface of the Sun.
- 13 – There are such things as ghosts.
- 14 - The solar system formed from a primordial disk of gas and asteroidal material.
- 15 - Matter can be converted into energy.
- 16 – Energy can be converted into matter.
- 17 – The positions of the planets can cause humans to act in specific ways.
- 18 - Momentum is the product of a body's mass and its velocity.
- 19 – The core of the Sun has a temperature of 14.5 million Centigrade.
- 20 – We will never know how life started on Earth.
- 21 – The Milky Way is a spiral-type galaxy.
- 22 – Black holes exist.
- 23 – The sun will rise tomorrow morning.
- 24 – The Earth is older than 10,000 years.
- 25 – Genetic mutations cause organisms to change over time.
- 26 – Primitive human-like creatures existed 2 million years ago.
- 27 – If I jump out a window I will die.
- 28 – The universe was created at the Big Bang.
- 29 – The first generations of stars appeared about 100 million years after the Big Bang.
- 30 – Space exists in 10-dimensions not just 3.
- 31 – Some numbers are more lucky than others
- 32 – More babies are born, and crimes take place, during the full moon.
- 33 – The Coriolis Force makes water go down a drain counterclockwise.
- 34 - The first multi-cellular organisms appeared on Earth about 560 million years ago.
- 35 – The inverse-square law for gravity and Newton's laws of motion explain why orbits are ellipses