BIOLOGY 12: Chapter 1 and 2 - Review Worksheet Answer Key

A. Experimental Design

1.
Inductive reasoning is used to form the basis of a hypothesis as it is the result of observation of special cases that leads one to suspect that some general principle is true. **Deductive reasoning** is the logical process that is used to test the hypothesis through the conclusion that something must be true because of a special case of a generalization that is known to be true.

2.
A single variable can only be tested in an experiment because the hypothesis must be a controlled experiment with only one differing factor for the experiment to be accurate.

3.
A hypothesis can be proven false but not true because our knowledge is constantly changing and everything that we know can be proven to be false so nothing can be true forever. Ex. Pluto is no longer a planet.

4.
A control is necessary in an experiment so one can note the differences with the addition or subtraction of an extra factor that is being experimented.

5.
A hypothesis becomes a theory after the data from the experiment has been shared and re-tested and accepted by the experts of that community.

6.
For a theory to become a law, it must be observed and supported by scientists for over 100 years.

B. Feedback Cycles

1.
Positive feedback occurs when the presence of products intensifies and increases response, rather than cancelling it.
Eg. Squealing noise of microphones when volume is turned too high.

2.
Negative feedback occurs when products of a process can act to inhibit their own formation, thus stop activity of system and often stabilizes the system.
Eg. Thermostat in home heating system.

C. Structure of Atoms

1.
An atom is the smallest unit of matter that undergoes chemical reactions.