Name:_____   Section:_____
Scientific Processes – Important Terms

Observations – data that are descriptions of qualities such as shape, color, etc.;
these are acquired through use of one's senses

    a. Objective observation – an observation based on fact

        Ex. I feel my heart beating faster after running in place.

    b. Subjective observation – an observation based on opinion

        Ex. Jim looks more tired than Tina after running in place.

Inference – an explanation that tries to make sense of your observations;
these explanations may not be true and can be impacted by ones
prior experience/knowledge

        Ex. Perhaps Jim looks more tired than Tina because his heart is beating faster than hers.

Hypothesis – a working explanation or trial answer to a problem; an
educated guess; can be written in the form of
"if…then…because…" statement

        Ex. If an individual increase his/her activity level, then their heart rate will increase because the body's muscles (cells) will require more oxygen to function at a higher level. A faster beating heart will increase blood flow; thus, allowing an increased concentration of oxygen to reach the cells in need.

Control group – a group of subjects in an experiment who are not given any
special treatment; something that is not manipulated

        Ex. The resting heart rate represented the baseline heart rate to which any increase in activity level was compared to.

Constants – factors in an experiment that are kept the same and not allowed to change

> *Ex. One minute was consistently the amount of time allotted to perform the necessary activity (walking, running, etc.).*

Variables – things or factors that can be assigned or take on different values in an experiment

    a. Independent variables - variables that are purposely changed or manipulated

> *Ex. The activity level (resting, walking, running) was purposely changed*

    b. Dependent variables – variable that may change as a result of the independent variables

> *Ex. The person's heart rate changed as the activity level changed*

Quantitative data – data consisting of numbers

> *Ex. The person's heart rate (80 beats/minute)*

Qualitative data – data consisting of verbal descriptions or information gathered using scales without numbers

> *Ex. Describing a person's heart rate with words (fast or slow)*