

Name: _____

Section: _____

Scientific Method 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 one’s prior experience/knowledge

Ex. Perhaps Jim looks more tired than Tina because he was running in place faster than she was.

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.

Data – factual information

- a. Quantitative data – data consisting of numbers

Ex. The person’s heart rate (80 beats/minute).

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

Ex. Describing a person's heart rate with words (e.g. - fast or slow).

Repeated trials – experimental tests done more than once; necessary to provide more accurate results; data is averaged together; lessens the impact of a chance error on experimental results

Ex. Each person's heart rates (for resting, walking, and running) represent a trial.

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

- 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.

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

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.).