

# SCIENTIFIC SKILLS

We learn about the world around us through **OBSERVATION** which involves using the senses to obtain information about objects or events. There are two types of observation:

- **QUANTITATIVE:** observations involving measurements (example: there are 20 students)
- **QUALITATIVE:** observations of properties or characteristics (example: the students are girls)

## Other skills that you need to know and understand

- **CLASSIFYING:** grouping objects or events according to a common property
- **COLLECTING DATA:** gathering information in a systematic way
- **COMMUNICATING:** using words, pictures, and diagrams to share information
- **CONTROL GROUP:** an unaffected sample that is compared to the experimental samples
- **CONTROLLING VARIABLES:** changing one factor that may affect the outcome of an event while keeping other factors the same
- **DEFINING OPERATIONALLY:** defining something based on how it is used
- **DEMONSTRATING:** showing or explaining by example
- **DESCRIBE:** give an account in words
- **ESTIMATING:** using good judgement to guess how much, how long, how many
- **EXPERIMENT:** A design to solve a problem or answer a question
- **HYPOTHESIZING:** making an educated guess as to a solution for a problem
- **IDENTIFY:** to associate with a group; specifically state what the investigator is attempting to find out
- **INFERRING:** making a reasonable guess to explain observed events
- **INTERPRETING DATA:** explaining information found in graphs, tables, or diagrams
- **MAKING A GRAPH:** using diagrams such as line, bar, or pie graphs to show quantities
- **MAKING MODELS:** using observations, inferences and hypotheses to construct real or mental representations to explain ideas, objects, or events
- **MANIPULATE:** to control or operate; "hands-on"
- **MEASURING:** using units to quantitatively describe objects or observations
- **PREDICTING:** forming an idea after studying the evidence
- **QUESTIONING:** expressing curiosity, inferences, and hypotheses in the form of testable questions
- **SPACE/TIME RELATIONS:** identifying and describing the relative position and motion of objects and changes in these objects through time
- **USING NUMBERS:** applying the concept of number and number operations while engaging in science