

Appendix B (continued) What Students Should Understand, Do, and Know

By the end of First Grade students should be able to:

Understand:

- People can often learn about things around them by just observing those things carefully, but sometimes they can learn more by doing something to the things and noting what happens.
- In doing science, it is often helpful to work with a team and to share findings with others. In this sharing, describing things as accurately as possible is important in science because it enables people to compare their observations with those of others.
- When people give different descriptions of the same thing, it is usually a good idea to make some fresh observations instead of just arguing about who is right.
- The natural world is composed of different materials.
- The sun can be seen only in the daytime and the moon can be seen sometimes during the day.
- Seasonal weather changes occur each year.
- Things move in many different ways, such as straight, zig zag, round and round, back and forth, and fast and slow.
- The way to change how something is moving is to give it a push or pull.
- Objects can be described in terms of the materials they are made of (clay, cloth, paper, etc.) and their physical Properties (color, size, shape, weight, texture, flexibility, etc.).
- Offspring are very much alike, but not exactly, like their parents and like one another.
- There is a variation among individuals of one kind within a population.
- Some animals and plants are alike in the way they look and things they do, and others are very different from one another.
- Most living things need water, food, and air.
- All kinds of living things have offspring, usually with two parents involved.
- Plants and animals need to take in water, and animals need to take in food. In addition, plants need light.
- Animals eat plants and other animals for food.

Do:

- Observe, compare, describe, sort, and chart objects by observable characteristics.
- Identify and describe scientific properties, e.g. water source, characteristics of seasons of the year, characteristics of weather, how animals and plants sustain life.
- Record weather information during each season.
- Gather evidence and report their findings.
- Observe, describe, and record scientific phenomena, e.g., changes in the appearance of the sun and moon during daylight, weather information within each season.
- Compare and contrast properties of scientific phenomena, e.g. seasonal weather pattern, the movement of objects
- Use drawing, graphs, and numbers to communicate findings.
- Predict, test, record data, and describe experimental results.
- Analyze similarities and differences between and within groups.
- Use the five senses to make observations in nature.
- Describe and model life cycles.
- Communicate and share findings with others.
- Conduct simple experiments and explain their findings.
- Construct questions, give reasons, and share findings with others.

Know:

- The components of soil have size, texture, and color.
- Water has a variety of natural sources including streams, lakes, and oceans.
- Rocks, soils, and water have many uses.
- The sun changes in location and appearance during the daytime.
- The moon can be seen in the daytime and varies in location and appearance.
- The characteristics of the seasons of the year.
- The characteristics of different types of weather, e.g., types of precipitation, sunny, foggy, and cloudy.
- Objects can move in many different ways, e.g., straight, zigzag, circular, curved, back-and-forth, fast and slow.
- A push or pull can affect how an object moves.
- Objects have observable properties that can be used in their classification.
- Objects have measurable properties such as weight and temperature.
- Objects will sink or float depending on their observable and/or measurable properties.
- Matter may change when heated, cooled, or mixed with water.

- Both plant and animal offspring have similarities with their parents.
- There may be both similarities and differences within and across larger groups.
- They can use their five senses to observe living things and their environments.
- Plants and animals use earth materials to sustain life.
- Living things have life cycles.