

# Science 6

## Evidence and Investigation

- Recognize evidence of recent human activity, and recognize evidence of animal activity in a natural outdoor setting.
- Observe a set of footprints, and infer the direction and speed of travel.
- Recognize that evidence found at the scene of an activity may have unique characteristics that allow an investigator to make inferences about the participants and the nature of the activity, and give examples of how specific evidence may be used.
- Investigate evidence and link it to a possible source; e.g., by:
  - classifying footprints, tire prints and soil samples from a variety of locations
  - analyzing the ink from different pens, using paper chromatography
  - analyzing handwriting samples to identify the handwriting of a specific person
  - comparing samples of fabric
  - classifying fingerprints collected from a variety of surfaces

## Trees and Forests

- Identify reasons why trees and forests are valued. Students meeting this expectation should be aware that forests serve as habitat for a variety of living things and are important to human needs for recreation, for raw materials and for a life-supporting environment.
- Describe kinds of plants and animals found living on, under and among trees; and identify how trees affect and are affected by those living things.
- Describe the role of trees in nutrient cycles and in the production of oxygen.
- Identify general characteristics that distinguish trees from other plants, and characteristics that distinguish deciduous from coniferous trees.
- Identify characteristics of at least four trees found in the local environment. Students should be familiar with at least two deciduous trees and two coniferous trees. Examples should include native species, such as spruce, birch, poplar, and pine and cultivated species, such as elm and crab apple.
- Describe and classify leaf shapes, leaf arrangements, branching patterns and the overall form of a tree.
- Interpret the growth pattern of a young tree, distinguishing this year's growth from that of the previous year and from the year before that. Students meeting this expectation should recognize differences in colouration and texture of new growth and old growth, and locate scars that separate old and new growth.
- Identify human uses of forests, and compare modern and historical patterns of use.
- Identify human actions that enhance or threaten the existence of forests.
- Identify an issue regarding forest use, identify different perspectives on that issue, and identify actions that might be taken.

## Air and Aerodynamics

- Provide evidence that air takes up space and exerts pressure, and identify examples of these properties in everyday applications.
- Provide evidence that air is a fluid and is capable of being compressed, and identify examples of these properties in everyday applications.
- Describe and demonstrate instances in which air movement across a surface results in lift- Bernoulli's principle.
- Recognize that in order for devices or living things to fly, they must have sufficient lift to overcome the downward force of gravity.
- Identify adaptations that enable birds and insects to fly.
- Describe the means of propulsion for flying animals and for aircraft.
- Recognize that streamlining reduces drag, and predict the effects of specific design changes on the drag of a model aircraft or aircraft components.
- Recognize that air is composed of different gases, and identify evidence for different gases. Example evidence might include: effects on flames, the "using up" of a particular gas by burning or rusting, animal needs for air exchange.

Subtopic

## Flight

- Conduct tests of a model parachute design, and identify design changes to improve the effectiveness of the design.
- Describe the design of a hot-air balloon and the principles by which its rising and falling are controlled.
- Conduct tests of glider designs; and modify a design so that a glider will go further, stay up longer or fly in a desired way; e.g., fly in a loop, turn to the right.
- Recognize the importance of stability and control to aircraft flight; and design, construct and test control surfaces.
- Apply appropriate vocabulary in referring to control surfaces and major components of an aircraft. This vocabulary should include: wing, fuselage, vertical and horizontal stabilizers, elevators, ailerons, rudder.
- Construct and test propellers and other devices for propelling a model aircraft.
- Describe differences in design between aircraft and spacecraft, and identify reasons for the design differences.

## Sky Science

- Recognize that the Sun and stars emit the light by which they are seen and that most other bodies in space, including Earth's Moon, planets and their moons, comets, and asteroids, are seen by reflected light.
- Describe the location and movement of individual stars and groups of stars (constellations) as they move through the night sky.
- Recognize that the apparent movement of objects in the night sky is regular and predictable, and explain how this apparent movement is related to Earth's rotation.
- Understand that the Sun should never be viewed directly, nor by use of simple telescopes or filters, and that safe viewing requires appropriate methods and safety precautions.
- Construct and use a device for plotting the apparent movement of the Sun over the course of a day; e.g., construct and use a sundial or shadow stick.
- Describe seasonal changes in the length of the day and night and in the angle of the Sun above the horizon.
- Recognize that the Moon's phases are regular and predictable, and describe the cycle of its phases.
- Illustrate the phases of the Moon in drawings and by using improvised models. An improvised model might involve such things as a table lamp and a sponge ball.
- Recognize that the other eight known planets, which revolve around the Sun, have characteristics and surface conditions that are different from Earth; and identify examples of those differences.
- Recognize that not only Earth, but other planets, have moons; and identify examples of similarities and differences in the characteristics of those moons.
- Identify technologies and procedures by which knowledge, about planets and other objects in the night sky, has been gathered.
- Understand that Earth, the Sun and the Moon are part of a solar system that occupies only a tiny part of the known universe.