Grade 4 – Illinois Assessment Frameworks - Science

STANDARD 11A – SCIENTIFIC INQUIRY	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
11.4.01 Understand how to design and perform simple experiments.			
11.4.02 Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data.			
11.4.03 Compare observations of individual and group results.			
11.4.04 Distinguish among the following: recording the data from an experiment, organizing the data into a more useful form, analyzing it to identify relevant patterns, and reporting and displaying results.			

STANDARD 11B – TECHNOLOGICAL DESIGN	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
11.4.05 Identify a design problem and identify possible solutions. Assess designs or plans to build a prototype.			
11.4.06 Assess given test results on a prototype (i.e., draw conclusions about the effectiveness of the design using given criteria). Analyze data and rebuild and retest prototype as necessary.			

STANDARD 12A – LIVING THINGS	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
Classification			
12.4.01 Distinguish between living and non-living things.			
12.4.02 Identify the basic divisions of animals and their common characteristics (e.g., define mammal, fish, bird, reptile, amphibian, insect, arachnid; give examples of each).			
Reproduction			
12.4.03 Identify the life cycle of familiar animals and compare their various stages: birth, growth and development, reproduction, and death. Understand that metamorphosis occurs in some animals (e.g., butterflies, frogs).			
12.4.04 Identify the basic needs of living things: animals need air, water, food, and shelter; plants need air, water, nutrients, and light.			
12.4.05 Understand the functions of component parts of living things.			
12.4.06 Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction.			

STANDARD 12B – ENVIRONMENT AND INTERACTION OF LIVING THINGS	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
12.4.07 Understand the concept of food chains and food webs and the related classifications of plants or animals (e.g., producers, decomposers, consumers, herbivores, carnivores).			
12.4.08 Know that the world contains many kinds of environments, and that different animals and plants are suited to live in different environments.			
12.4.09 Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things.			
12.4.10 Identify the basic classifications of animals based on how they interact with their environment [e.g., (a) Some animals are active in the daytime (diurnal), others in the night time (nocturnal). (b) Some animals have a body temperature that stays the same regardless of significant temperature changes in their immediate environment (warm blooded), others have a body temperature that rises and falls with the temperature changes of their environment (cold blooded). (c) Some animals are herbivores, others are carnivores].			
12.4.11 Understand that an ecosystem is made of living and nonliving things.			
12.4.12 Understand that some animals survive winter by being fitted for an active life during winter (e.g., penguins), others by hibernation (e.g., certain bears), and			

others by migration (e.g., monarch butterflies).			
12.4.13 Understand that human activities can change the number of species in an area, whether by increasing it or decreasing it.			

STANDARD 12C – MATTER AND ENERGY	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
Properties of Matter			
12.4.14 Understand that matter is usually found in 3 states: liquid, solid, and gas and be able to identify the properties of each. Understand that water can be found in all three forms.			
12.4.15 Understand that an increase in temperature generally causes things to expand, and that a decrease in temperature generally causes things to contract. Understand that particles move more slowly in a solid than they do in a liquid or a gas.			
12.4.16 Understand that some substances will dissolve in water and some will not. Understand the property of density.			
Energy/Electricity			
12.4.17 Understand that a magnet attracts iron, but not plastic, paper, and other nonmetals; nor does it attract all metals (since it does not attract copper or aluminum). Identify conductors and insulators.			
12.4.18 Understand that rubbing together certain objects produces a static electrical charge; in particular, rubbing a balloon on someone's hair or walking in a dry room can build up a charge on the person walking (which is felt as a shock when that person touches someone else). Understand that objects can be positively charged, or negatively charged.			
12.4.19 Understand that objects of like charge repel each other and that objects of opposite charge attract each other.			

12.4.20 Understand that electrical energy can be converted to other types of energy such as heat, light, or mechanical energy.			
12.4.21 Understand that besides static electricity, there is also such a thing as current electricity. For example, given a battery, bulb, and wire, students will understand the proper configuration to make the bulb light.			
Light			
12.4.22 Understand that lighter colors reflect more light, darker absorb more, and that the color one sees depends on what kind of light is reflected (rather than absorbed) by the object seen.			
12.4.23 Understand that white light can be broken into all the colors of the rainbow by means of prisms.			
12.4.24 Understand that light travels in a straight line and can be reflected, refracted, transmitted, and absorbed by matter.			

STANDARD 12D – FORCE AND MOTION	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
12.4.25 Define a force as a push or a pull that tends to move an object. Understand that forces may be balanced or unbalanced. Know that when the forces applied to an object are balanced, the motion or rest of that object does not change.			
12.4.26 Identify the basic forces, such as friction, magnetism, and gravity. Identify which force is operative in a simple scenario.			
12.4.27 Identify simple machines (lever, inclined plane, pulley, screw, and wheel and axle) and understand how they function. Understand know how they apply forces with advantage, and identify which machine is suited for accomplishing a simple task.			
12.4.28 Identify equilibrium conditions (e.g., in a diagram of balanced weights on levers or pulleys).			

STANDARD 12E – EARTH SCIENCE	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
Basic Earth Science			
12.4.29 Understand that Earth's basic materials are land, water, and air.			
12.4.30 Understand that a natural resource is any material found on Earth that is used by people. Understand the difference between renewable and nonrenewable resources. Know that fossil fuels come from animals and plants, and that oil, coal, and natural gas are examples of fossil fuels.			
12.4.31 Identify which everyday materials decompose most slowly (e.g., plastics, glass and ceramics decompose slower than metals, wood, or food substances).			
The Earth's Dynamic Processes			
12.4.32 Understand that the surface of the earth changes. Know that some changes are due to slow processes (e.g., erosion, weathering), whereas others are due to sudden events (e.g., landslides, volcanic eruptions, earthquakes, asteroid impacts).			
12.4.33 Understand that some rocks contain plant and animal fossils. Know how they were formed.			
12.4.34 Identify the three basic kinds of rocks: igneous, sedimentary, and metamorphic and the processes that created them. Use information to identify physical properties of minerals.			
12.4.35 Understand that movement in parts of the earth's crust causes earthquakes.			
12.4.36 Understand that the main cause of erosion is moving water. Understand that			

when water erodes landmasses, it carries the land away by rainfall and rivers and re-deposits it in the form of pebbles, sand, silt, and mud. Understand that the delta of a river is formed by such deposits. Understand that deposition of new soil over a flood plain is what makes a river valley fertile. Identify other causes of erosion besides erosion by water (e.g., wind, chemical erosion).			
12.4.37 Understand that land formations (mountains, valleys, shorelines, and caves) change slowly over time, and identify the major natural causes of such changes: (a) Slow causes: erosion, caused by wind, rain, glaciers, water freezing inside cracks of rocks (which expands and splits the rocks), the growth of tree roots; (b) Sudden causes: rare catastrophes (e.g., earthquakes, volcanic activity, asteroid impacts, floods).			
The Atmosphere			
12.4.38 Name and distinguish the different kinds of clouds based on their appearance and place in the atmosphere: cirrus, cumulus, and stratus.			
12.4.39 Identify types of precipitation and the conditions that cause them to form.			
12.4.40 Understand that weather changes from day to day and over the seasons. Identify the order of the seasons and the different characteristics of each season.			
12.4.41 Understand that weather is described using measurements of temperature, wind direction and speed, amounts of precipitation, humidity, and air pressure.			
12.4.42 Understand that weather systems can be tracked—and their motions roughly predicted.			

Water			
12.4.43 Understand the stages of the water cycle: evaporation, condensation, and precipitation.			
12.4.44 Understand that most of Earth's surface is covered by water, and identify the major kinds of land and water formations: continent, mountain, valley, island, cave, ocean, lake, and river.			

STANDARD 12F – ASTRONOMY	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
12.4.45 Understand that moons and planets do not produce their own light—the light we see when we look at them is the sunlight which they reflect.			
12.4.46 Identify the relative positions of the earth, moon, and sun during a solar eclipse, a lunar eclipse, a full moon, a half moon, and a new moon. Given a diagram of the earth, moon, and sun, identify which of these is depicted.			
12.4.47 Identify the order of planets from the sun, and know that the further planets take longer to go around the sun. Understand that all planets in our solar system revolve around the sun. Because Earth revolves around the sun, objects (e.g., stars, planets, constellations) in the sky appear to change positions throughout the year. Know that it takes Earth 365 ¼ days to revolve around the sun.			
12.4.48 Understand that the earth rotates on its axis and this is responsible for the change from day to night. Understand that the tilt of the earth is responsible for the seasons.			
12.4.49 Define a constellation as a group of stars that form a pattern in the sky. Understand that constellations are useful in the study of space because they help create a map of the sky. Know that locations in the sky are often described using the names of constellations.			

12.4.50 Understand that the Milky Way is our galaxy, so-called because there appears to be a milky-white path or road in the sky.			
12.4.51 Understand that the mass of a body stays the same on different planets but the weight changes depending on the mass of the planet.			

STANDARD 13A – SAFETY AND PRACTICES OF SCIENCE	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
13.4.01 Identify the basic safety equipment used in science, (e.g., gloves, goggles, lab coats, tongs).			
13.4.02 Identify the basic safety procedures (e.g., "Keep your clothes and hair away from open flames," "Don't taste substances without permission.") when conducting science activities.			
13.4.03 Explain why similar results are expected when procedures are done the same way. Understand the importance of recording observations accurately and honestly.			
13.4.04 Know that scientific results must be reproducible. Know that different scientists study different subjects but work in similar ways.			
13.4.05 Know that scientists accept a theory that is supported by tests and experiments until it is disproved or improved upon.			
13.4.06 Recognize that scientists share results so that each scientist may build upon what he or she learns from others.			
13.4.07 Understand that when an experiment is performed a few times and yields conflicting results, one must repeat it many times. Understand that one should also try to find an explanation for the conflicting results.			

STANDARD 13B – SCIENCE, TECHNOLOGY, SOCIETY	Related Textbook pages	Related Additional Resources and Activities	Assessment Items
13.4.08 Identify important contributions men and women have made to science and technology.			
13.4.09 Understand the impact of different scientific discoveries on society.			
13.4.10 Identify occupations in the field of science.			
13.4.11 Identify ways that science and technology affect people's lives (e.g., in transportation, medicine, agriculture, communication) and careers.			
13.4.12 Identify ways that technology has changed local, national, or global environments.			
13.4.13 Identify ways to reduce, reuse, and recycle materials.			
Measurement			
13.4.14 Know that using measuring tools results in greater accuracy than making estimates.			
13.4.15 Identify basic scientific instruments and their functions (e.g., ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope, telescope).			