

Louisiana Grade Level Expectations	ESS Presentations
Kindergarten	
Science as Inquiry	
1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms)	Growing Plants Rocks Weather Soil Living Things Animals and Plants
2. Pose questions that can be answered by using students' own observations and scientific knowledge	Mysterious Magnets Hot and Cold Living Things Senses Marvellous Materials Light and Dark Growing Plants
3. Predict and anticipate possible outcomes	Mysterious Magnets Hot and Cold Living Things Growing Plants Shadows
4. Use the five senses to describe observations	Senses
5. Measure and record length and temperature in both metric system and U.S. system units	Growing Plants Springs Weather
6. Select and use developmentally appropriate equipment and tools and units of measurement to observe and collect data	Growing Plants Springs Weather
7. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate	Changing Materials Senses Living Things Light and Dark
8. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)	

K-2 Product

3-5 Product

9. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)	
10. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope)	Microorganisms
Physical Science	
11. Identify objects by using the senses	Senses
12. Construct patterns by using color, size, and shape of objects	Marvellous Materials
13. Sort objects based on their properties (e.g., size, weight, texture)	Marvellous Materials Materials Matter
14. Determine whether objects are magnetic or nonmagnetic	Mysterious Magnets
15. Create and separate mixtures (e.g., oil/water, rice/beans)	Separating Mixtures
16. Follow directions using vocabulary such as front/back, above/below, right/left, and next to	
17. Trace the motion of an object, such as a ball or toy car, as it rolls	
18. Sequence the relative order of the speed of various objects (e.g., snails, turtles, tricycles, bicycles, cars, airplanes)	
19. Demonstrate and identify sounds as soft or loud	Senses
20. Identify objects that give off heat, such as people, animals, and the Sun	
Life Science	
21. Record observations on the growth of plant seeds	Growing Plants Growing Up
22. Classify objects in a variety of settings as living (biotic) or nonliving (abiotic)	Living Things
23. Compare the human body at various stages of development	
24. Compare the human body with plants and animals	Animals and Plants
25. Identify easily observable variations within types of plants and animals (e.g., features of classmates, varieties of trees, breeds of dogs)	Animals and Plants
26. Classify various foods into the major groups (e.g., bread, meat, vegetable, fruit)	
27. Determine which foods are superior for developing a healthy body	
28. Observe life cycles and describe changes (e.g., humans, dogs, insects)	Growing Up
29. Match models of baby animals with their parents	Growing Up
Earth and Space Science	
30. Distinguish between areas of Earth covered by land and water	
31. Identify the patterns in information recorded on a weather calendar	Weather
32. Discuss and differentiate objects seen in the day and/or night sky (e.g., clouds, Sun, stars, Moon)	Weather
Grade 1	

Science as Inquiry	
1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms)	Growing Plants Rocks Weather Soil Living Things Animals and Plants
2. Pose questions that can be answered by using students' own observations and scientific knowledge	Mysterious Magnets Hot and Cold Living Things Senses Marvellous Materials Light and Dark Growing Plants
3. Predict and anticipate possible outcomes	Mysterious Magnets Hot and Cold Living Things Growing Plants Shadows
4. Use a variety of methods and materials and multiple trials to investigate ideas (observe, measure, accurately record data)	Hot and Cold Springs Growing Plants Shadows
5. Use the five senses to describe observations	Senses
6. Measure and record length and temperature in both metric system and U.S. system units	Growing Plants Weather Springs
7. Select and use developmentally appropriate equipment and tools and units of measurement to observe and collect data	Growing Plants Weather Springs
8. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate	Changing Materials Senses Living Things Light and Dark

9. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)	
10. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)	
11. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope)	Microorganisms
12. Explain and give examples of how scientific discoveries have affected society	
Physical Science	
13. Sort a group of objects by using multiple characteristics	Marvellous Materials Materials Matter
14. Order objects by weight/mass	
15. Measure length and width of a variety of objects and materials by using nonstandard tools, such as a paper clip, cube, shoe, and hands	
16. Observe and describe common properties of solids, liquids, and gases	Changing State
17. Sort and classify objects by their state of matter	Changing State
18. Demonstrate how sound is made in a variety of ways (e.g., singing, whispering, striking an object)	Sounds
19. Describe and demonstrate the volume of sound (e.g., soft, loud)	Senses Sounds
20. Use a flashlight and various objects and materials to determine if light is transmitted or reflected	Light and Dark Shadows Reflection and Refraction
21. Demonstrate that light can be reflected onto another object by using a mirror	Reflection and Refraction
22. Identify some examples where heat is released (e.g., burning candles, rubbing hands, running)	
23. Identify materials attracted by magnets	Mysterious Magnets
24. Determine, through experimentation, which poles of magnets are attracted to each other and which poles repel each other	Magnets
25. Discuss what type of energy makes objects work (e.g., car/gasoline, waterwheel/water, lamp/electricity)	Energy Forms
Life Science	
26. Describe the differences between plants and animals	Living Things Animals and Plants
27. Identify what animals and plants need to grow and develop	Living Things
28. Describe the characteristics of living (biotic) and nonliving (abiotic) things	Living Things

29. Describe basic functions of parts of the body (e.g., lungs, heart, bones, muscles)	Body Systems
30. Record and share observations of changes in developing plants	Growing Plants
31. Describe how animals and their offspring are similar and how they are different	Growing Up
32. Describe features of some animals that benefit them in their environments	
33. Explain how pets' needs are met in their habitats	
34. Record evidence of plants and animals in the schoolyard or other environments	Living Things
Earth and Space Science	
35. Examine soils to determine that they are often found in layers	
36. Locate and compare the relative proportions of land and water found on Earth	
37. Illustrate how water changes from one form to another (e.g., freezing, melting, evaporating)	Changing State Hot and Cold
38. Compare weather patterns as they relate to seasonal changes in students' immediate environment	Weather
39. Identify the characteristics of soil, according to color, texture, and components, including living (biotic) and nonliving (abiotic) substances	Soil
Grade 2	
Science as Inquiry	
1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms)	Growing Plants Rocks Weather Soil Living Things Animals and Plants
2. Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations	Living Things Growing Plants Shadows Senses Springs Hot and Cold Light and Dark

3. Use observations to design and conduct simple investigations or experiments to answer testable questions	Growing Plants Soil Springs Shadows Senses Living Things Hot and Cold Materials Matter
4. Predict and anticipate possible outcomes	Living Things Growing Plants Shadows Hot and Cold Mysterious Magnets
5. Use a variety of methods and materials and multiple trials to investigate ideas (observe, measure, accurately record data)	Springs Growing Plants Shadows
6. Use the five senses to describe observations	Senses
7. Measure and record length and temperature in both metric system and U.S. system units	Growing Plants Weather Springs
8. Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, graduated cylinders) and units of measurement to observe and collect data	Microorganisms Soil Springs Growing Plants
9. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate	Senses Living Things Springs Growing Plants Soil Rocks
10. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)	
11. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)	

12. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope)	Microorganisms
13. Explain and give examples of how scientific discoveries have affected society	
Physical Science	
14. Classify objects as bendable or rigid	Materials Matter
15. Record the temperature of objects (Celsius and Fahrenheit)	Weather
16. Measure weight/mass and volume of a variety of objects and materials by using a pan balance and various containers	
17. Use standard tools to measure objects or materials (e.g., ruler, meter stick, measuring tape, pan balance, thermometer, graduated cylinder)	Growing Plants Soil Springs Weather
18. Observe, describe, and record the characteristics of materials that make up different objects (e.g., metal, nonmetal, plastic, rock, wood, paper)	Marvellous Materials Materials Matter Rocks Changing Materials
19. Describe and illustrate what remains after water evaporates from a salt or sugar solution	Separating Mixtures
20. Observe and describe differences in motion between objects (e.g., toward/away, cardinal directions)	
21. Use students' own voices to demonstrate pitch (e.g., low, high)	Sounds
22. Give examples of objects that vibrate to produce sound (e.g., drum, stringed instrument, end of a ruler, cymbal)	Sounds
23. Change the direction of light by using a mirror and/or lens	Reflection and Refraction
24. Describe how light behaves when it strikes objects and materials (e.g., transparent, translucent, opaque)	Shadows Light and Dark
25. Investigate ways of producing static electricity and describe its effects	
26. Identify and describe sources of energy used at school, home, and play	Energy Forms
Life Science	
27. Match the appropriate food source and habitat for a variety of animals (e.g., cows/grass/field, fish/tadpoles/water)	Living Things Habitats
28. Describe structures of plants (e.g., roots, leaves, stems, flowers, seeds)	Animals and Plants Growing Plants
29. Compare differences and similarities among a variety of seed plants	Plant Reproduction
30. Identify physical characteristics of organisms (e.g., worms, amphibians, plants)	Animals and Plants Growing Plants

31. Identify and discuss the arrangement of the food pyramid	
32. Analyze selected menus to determine whether they include representatives of all the required food groups	
33. Compare the life cycles of selected organisms (e.g., mealworm, caterpillar, tadpole)	Growing Up
34. Describe inherited characteristics of living things	
35. Identify the components of a variety of habitats and describe how organisms in those habitats depend on each other	Living Things Habitats
Earth and Space Science	
36. Observe and record the properties of rocks, minerals, and soils gathered from their surroundings (e.g., color, texture, odor)	Rocks Soil
37. Compare bodies of water found on Earth (e.g., oceans, seas, lakes, rivers, glaciers)	
38. Explain why most of the water on Earth cannot be used as drinking (potable) water	Water Cycle
39. Design an experiment involving evaporation	Changing State
40. Gather, record, and graph weather data (e.g., precipitation, wind speed, wind direction, temperature) using appropriate instruments	Weather Predicting the Weather
41. Analyze recorded daily temperatures and weather conditions from newspapers, television, the Internet, and home/outdoor thermometers	Weather Predicting the Weather
42. Identify and use appropriate tools to gather and study rocks, minerals, and fossils	Rocks Fossils
43. Describe characteristics of the Sun, stars, and Earth's moon (e.g., relative size, shape, color, production of light/heat)	Our Solar System
44. Give examples of how the Sun affects Earth's processes (e.g., weather, water cycle)	Weather Water Cycle
45. Locate and identify plants and animals within an ecosystem	Living Things Habitats
46. Illustrate and describe a simple food chain located within an ecosystem	Food Chains Interdependence
47. Identify the Sun as the primary energy source in a food chain	Food Chains
48. Describe a variety of activities related to preserving the environment	Pollution
49. Describe how consumption of resources can be reduced by recycling, reusing, and conserving	Pollution
50. Describe ways in which habitat loss or change can occur as a result of natural events or human impact	Habitats
51. Describe and give examples of threatened or endangered species	
Grade 3	
Science as Inquiry	

1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms)	Plant Reproduction Predicting the Weather Water Cycle Habitats Food Chains
2. Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations	Separating Mixtures Friction Plant Reproduction
3. Use observations to design and conduct simple investigations or experiments to answer testable questions	Insulators and Conductors Separating Mixtures Friction Plant Reproduction Forces
4. Predict and anticipate possible outcomes	Separating Mixtures Friction Plant Reproduction Circuits Insulators and Conductors
5. Use a variety of methods and materials and multiple trials to investigate ideas (observe, measure, accurately record data)	Insulators and Conductors Separating Mixtures Friction Plant Reproduction
6. Use the five senses to describe observations	Insulators and Conductors Separating Mixtures Friction Plant Reproduction
7. Measure and record length, temperature, mass, volume, and area in both metric system and U.S. system units	Changing State
8. Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, microscopes, graduated cylinders) and units of measurement to observe and collect data	Microorganisms
9. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate	Friction Insulators and Conductors Plant Reproduction Pollution

10. Combine information, data, and knowledge from one or more of the science content areas to reach a conclusion or make a prediction	Separating Mixtures Friction Plant Reproduction Circuits Insulators and Conductors
11. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)	Circuits
12. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)	
13. Identify questions that need to be explained through further inquiry	
14. Distinguish between what is known and what is unknown in scientific investigations	
15. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope)	Microorganisms
16. Describe procedures and communicate data in a manner that allows others to understand and repeat an investigation or experiment	Plant Reproduction Forces
17. Explain and give examples of how scientific discoveries have affected society	
Physical Science	
18. Compare and classify objects on properties determined through experimentation (e.g., ability to conduct electricity, tendency to float or sink in water)	Insulators and Conductors Reflection and Refraction Rocks
19. Select the appropriate metric system and U.S. system tools for measuring length, width, temperature, volume, and mass	Changing State
20. Measure temperature by using Fahrenheit and Celsius thermometers and compare results	Changing State
21. Compare common objects and identify the original material from which they are made (e.g., paper, pencil, comb)	Materials Matter Marvellous Materials
22. Investigate and explain conditions under which matter changes physical states: heating, freezing, evaporating, condensing, boiling	Changing State
23. Demonstrate how force is a push or a pull by using students' bodies, toy cars, or balls	Feel the Force Forces
24. Explain how the amount and direction of force exerted on an object (e.g., push, pull, friction, gravity) determine how much the object will move	Forces Gravity
25. Observe and analyze motion and position of objects over time (e.g., shadows, apparent path of the Sun across the sky)	Shadows Days and Seasons

26. Explain the effect of varying amounts of force on the motion of an object	Feel the Force Forces
27. Use the words high/low to compare the pitch of sound and the words loud/soft to compare the volume (amplitude) of sound	Sounds
28. Describe the reflection/absorption properties of various colored objects	Reflection and Refraction
29. Determine which materials insulate best by using experimental data	Insulators and Conductors
30. Demonstrate and explain the movement of electricity in closed and open circuits	Circuits
31. Compare and describe the common forms of energy and explain how they are used in everyday life (e.g., light, electricity, heat, mechanical)	Energy Forms
32. Give examples of how energy can be used to move or lift objects	
33. Identify simple machines and the tasks they make possible	
Life Science	
34. Describe what the human body needs to grow and be healthy	Body Systems
35. Compare structures (parts of the body) in a variety of animals (e.g., fish, mammals, reptiles, amphibians, birds, insects)	Animals and Plants
36. Compare structures (e.g., roots, leaves, stems, flowers, seeds) and their functions in a variety of plants	Animals and Plants Plant Reproduction
37. Describe how plant structures enable the plant to meet its basic needs	Growing Plants
38. Classify groups of organisms based on common characteristics	Habitats
39. Compare organisms from different groups (e.g., birds with mammals, terrestrial plants with aquatic plants)	
40. Explain how the organs of the digestive system function	Body Systems
41. Describe how the components of the skeletal system function	Body Systems
42. Describe the relationship between eating habits and maintaining a healthy body	
43. Identify a meal that includes representatives from each group of the food pyramid	
44. Graph, analyze, and interpret personal and class data	Friction Forces
Earth and Space Science	
45. Recognize and describe that rock is composed of different combinations of minerals	
46. Describe earth processes that have affected selected physical features in students' neighborhoods (e.g., rusting, weathering, erosion)	Erosion, Transportation and Deposition
47. Describe the difference between weather and climate	Predicting the Weather
48. Identify examples of the processes of a water cycle (e.g., evaporation, condensation, precipitation, collection of runoff)	Water Cycle
49. Describe climate patterns from recorded weather conditions over a period of time	Predicting the Weather

50. Compare and group common rocks according to their characteristics (i.e., igneous, metamorphic, sedimentary)	
51. Identify and compare the components found in soil	Soil
52. Identify characteristics of selected fossils and explain how fossil records are used to learn about the past	Fossils
53. Identify, in order, the planets of the solar system	Our Solar System
54. Describe the patterns of apparent change in the position of the Sun	Days and Seasons
55. Explain the results of the rotation and revolution of Earth (e.g., day and night, year)	Days and Seasons
56. Compare shadow direction and length at different times of day and year	Days and Seasons
57. Describe the interrelationships of living (biotic) and nonliving (abiotic) components within various ecosystems (e.g., terrarium, swamp, backyard)	Habitats
58. Describe how humans have had negative and positive effects on organisms and their environments	Habitats Adaptations
59. Classify manufactured products according to the natural resources from which they are made (e.g., copper wire from copper ore, plastic from petroleum)	
60. Explain how renewable and nonrenewable resources can be replenished or depleted	
61. Explain how selected animals once classified as endangered have recovered	
62. Identify animals in Louisiana that have recovered and that are no longer considered endangered	
Grade 4	
Science as Inquiry	
1. Ask questions about objects and events in the environment (e.g., plants, rocks, storms)	Water Cycle Predicting the Weather Erosion, Transportation and Deposition Plant Reproduction Adaptations
2. Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces

3. Use observations to design and conduct simple investigations or experiments to answer testable questions	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces
4. Predict and anticipate possible outcomes	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces Insulators and Conductors
5. Identify variables to ensure that only one experimental variable is tested at a time	Forces
6. Use a variety of methods and materials and multiple trials to investigate ideas (observe, measure, accurately record data)	Separating Mixtures Friction Plant Reproduction Gravity
7. Use the five senses to describe observations	Insulators and Conductors Separating Mixtures Friction Plant Reproduction
8. Measure and record length, temperature, mass, volume, and area in both metric system and U.S. system units	Changing State
9. Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, microscopes, graduated cylinders) and units of measurement to observe and collect data	Microorganisms
10. Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate	Friction Forces
11. Combine information, data, and knowledge from one or more of the science content areas to reach a conclusion or make a prediction	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces Insulators and Conductors

12. Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)	
13. Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)	
14. Identify questions that need to be explained through further inquiry	
15. Distinguish between what is known and what is unknown in scientific investigations	
16. Select the best experimental design to answer a given testable question	
17. Recognize that a variety of tools can be used to examine objects at different degrees of magnification (e.g., hand lens, microscope)	Microorganisms
18. Base explanations and logical inferences on scientific knowledge, observations, and scientific evidence	Insulators and Conductors Separating Mixtures Friction Plant Reproduction
19. Describe procedures and communicate data in a manner that allows others to understand and repeat an investigation or experiment	Insulators and Conductors Separating Mixtures Friction Plant Reproduction
20. Determine whether further investigations are needed to draw valid conclusions	
21. Use evidence from previous investigations to ask additional questions and to initiate further explorations	
22. Explain and give examples of how scientific discoveries have affected society	
Physical Science	
23. Determine linear, volume, and weight/mass measurements by using both metric system and U.S. system units to compare the results	
24. Illustrate how heating/cooling affects the motion of small particles in different phases of matter	
25. Describe various methods to separate mixtures (e.g., evaporation, condensation, filtration, magnetism)	Separating Mixtures
26. Measure, record, and graph changes in position over time (e.g., speed of cars, ball rolling down inclined plane)	
27. Describe how the amount of force needed to cause an object to change its motion depends on the mass of the object	Forces
28. Explain the relationship between volume (amplitude) of sound and energy required to produce the sound	Sounds
29. Compare the rates at which sound travels through solids, liquids, and gases	

30. Explain the relationship between frequency (rate of vibration) and pitch	Sounds
31. Diagram what happens to white light as it passes through a prism	
32. Describe how light bends or refracts when traveling through various materials (e.g., pencil in a glass of water)	Reflection and Refraction
33. Describe how heat energy moves through a material by conduction	Insulators and Conductors
34. Give examples of ways heat can be generated through friction (e.g., rubbing hands)	
35. Give examples of ways heat can be produced by conversion from other sources of energy	Energy Forms
36. Test and classify materials as conductors and insulators of electricity	Insulators and Conductors
37. Demonstrate how a complete circuit is needed for conducting electricity	Circuits
38. Explain the effects of Earth's gravity on all objects at or near the surface of Earth	Gravity
39. Describe energy transformations (e.g., electricity to light, friction to heat)	Energy Forms
Life Science	
40. Explain the functions of plant structures in relation to their ability to make food through photosynthesis (e.g., roots, leaves, stems, flowers, seeds)	Growing Plants
41. Describe how parts of animals' bodies are related to their functions and survival (e.g., wings/flying, webbed feet/swimming)	
42. Describe how the organs of the circulatory and respiratory systems function	Body Systems
43. Explain the primary role of carbohydrates, fats, and proteins in the body	
44. Analyze food labels to compare nutritional content of foods (e.g., amounts of carbohydrates, fats, proteins)	
45. Identify reproductive structures in plants and describe the functions of each	Plant Reproduction
46. Describe how some plants can be grown from a plant part instead of a seed	
47. Sequence stages in the life cycles of various organisms, including seed plants	Plant Reproduction
48. Classify examples of plants and animals based on a variety of criteria	Habitats Adaptations
49. Compare similarities and differences between parents and offspring in plants and animals	Plant Reproduction Growing Up
50. Explain how some organisms in a given habitat compete for the same resources	Interdependence
51. Describe how organisms can modify their environment to meet their needs (e.g., beavers making dams)	
52. Describe how some plants and animals have adapted to their habitats	Adaptations
53. Identify the habitat in which selected organisms would most likely live and explain how specific structures help organisms to survive	Habitats Adaptations
54. Describe the effect of sudden increases or decreases of one group of organisms upon other organisms in the environment	Interdependence Adaptations

Earth and Space Science	
55. Recognize that sedimentary rocks are composed of particles that result from weathering and erosion (e.g., sandstones, conglomerates)	
56. Investigate the properties of soil (e.g., color, texture, capacity to retain water, ability to support plant growth)	Soil
57. Explain how unequal heating of Earth's land and water affects climate and weather by using a model	Predicting the Weather
58. Draw, label, and explain the components of a water cycle	Water Cycle
59. Measure, chart, and predict the weather using various instruments (e.g., thermometer, barometer, anemometer)	Predicting the Weather
60. Identify various types of weather-related natural hazards and effects (e.g., lightning, storms)	
61. Identify safety measures applicable to natural hazards	
62. Classify rocks and minerals according to texture, color, luster, hardness, and effervescence	Rocks
63. Demonstrate and explain how Earth's surface is changed as a result of slow and rapid processes (e.g., sand dunes, canyons, volcanoes, earthquakes)	Erosion, Transportation and Deposition
64. Describe and sequence the phases of the Moon and eclipses	The Moon
65. Compare a solar and a lunar eclipse	
66. Diagram the movement of the Moon around Earth and the movement of Earth around the Sun	Days and Seasons The Moon
67. Explain the changing appearance of the Moon and its location in the sky over the course of a month	The Moon
68. Identify the relationship between Earth's tilt and revolution and the seasons	Days and Seasons
69. Explain how technology has improved our knowledge of the universe (e.g., Hubble telescope, space stations, lunar exploration)	
70. Design an ecosystem that includes living (biotic) and nonliving (abiotic) components and illustrates interdependence	Habitats
71. Describe and explain food chains/webs and the directional flow of energy in various ecosystems (e.g., construct a model, drawing, diagram, graphic organizer)	Food Chains Interdependence
72. Predict and describe consequences of the removal of one component in a balanced ecosystem (e.g., consumer, herbivores, nonliving component)	Food Chains Interdependence
Grade 5	
Science as Inquiry	

1. Generate testable questions about objects, organisms, and events that can be answered through scientific investigation	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces
2. Identify problems, factors, and questions that must be considered in a scientific investigation	
3. Use a variety of sources to answer questions	
4. Design, predict outcomes, and conduct experiments to answer guiding questions	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces
5. Identify independent variables, dependent variables, and variables that should be controlled in designing an experiment	Forces
6. Select and use appropriate equipment, technology, tools, and metric system units of measurement to make observations	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces Gravity
7. Record observations using methods that complement investigations (e.g., journals, tables, charts)	Insulators and Conductors Separating Mixtures Friction Plant Reproduction Gravity
8. Use consistency and precision in data collection, analysis, and reporting	Insulators and Conductors Separating Mixtures Friction Plant Reproduction Gravity
9. Use computers and/or calculators to analyze and interpret quantitative data	
10. Identify the difference between description and explanation	

11. Construct, use, and interpret appropriate graphical representations to collect, record, and report data (e.g., tables, charts, circle graphs, bar and line graphs, diagrams, scatter plots, symbols)	Friction Forces Predicting the Weather
12. Use data and information gathered to develop an explanation of experimental results	Insulators and Conductors Separating Mixtures Friction Plant Reproduction Days and Seasons
13. Identify patterns in data to explain natural events	Days and Seasons Plant Reproduction Forces
14. Develop models to illustrate or explain conclusions reached through investigation	Predicting the Weather
15. Identify and explain the limitations of models used to represent the natural world	
16. Use evidence to make inferences and predict trends	Separating Mixtures Friction Circuits Plant Reproduction Sounds Forces
17. Recognize that there may be more than one way to interpret a given set of data, which can result in alternative scientific explanations and predictions	
18. Identify faulty reasoning and statements that misinterpret or are not supported by the evidence	
19. Communicate ideas in a variety of ways (e.g., symbols, illustrations, graphs, charts, spreadsheets, concept maps, oral and written reports, equations)	Insulators and Conductors Friction Forces Separating Mixtures Plant Reproduction Days and Seasons
20. Write clear, step-by-step instructions that others can follow to carry out procedures or conduct investigations	Forces Plant Reproduction
21. Distinguish between observations and inferences	

	<p>Insulators and Conductors Friction Forces Separating Mixtures Plant Reproduction Days and Seasons</p>
22. Use evidence and observations to explain and communicate the results of investigations	
23. Use relevant safety procedures and equipment to conduct scientific investigations	
24. Provide appropriate care and utilize safe practices and ethical treatment when animals are involved in scientific field and laboratory research	
25. Compare and critique scientific investigations	Soil
26. Use and describe alternate methods for investigating different types of testable questions	
27. Recognize that science uses processes that involve a logical and empirical, but flexible, approach to problem solving	
28. Recognize that investigations generally begin with a review of the work of others	
29. Explain how technology can expand the senses and contribute to the increase and/or modification of scientific knowledge	Our Solar System
30. Describe why all questions cannot be answered with present technologies	
31. Recognize that there is an acceptable range of variation in collected data	
32. Explain the use of statistical methods to confirm the significance of data (e.g., mean, median, mode, range)	
33. Evaluate models, identify problems in design, and make recommendations for improvement	
34. Recognize the importance of communication among scientists about investigations in progress and the work of others	
35. Explain how skepticism about accepted scientific explanations (i.e., hypotheses and theories) leads to new understanding	
36. Explain why an experiment must be verified through multiple investigations and yield consistent results before the findings are accepted	
37. Critique and analyze their own inquiries and the inquiries of others	
38. Explain that, through the use of scientific processes and knowledge, people can solve problems, make decisions, and form new ideas	
39. Identify areas in which technology has changed human lives (e.g., transportation, communication, geographic information systems, DNA fingerprinting)	
40. Evaluate the impact of research on scientific thought, society, and the environment	
Physical Science	

1. Measure a variety of objects in metric system units	
2. Compare the physical properties of large and small quantities of the same type of matter	
3. Describe the structure of atoms and the electrical charge of protons, neutrons, and electrons	
4. Identify the physical and chemical properties of various substances and group substances according to their observable and measurable properties (e.g., conduction, magnetism, light transmission)	Insulators and Conductors Reflection and Refraction
5. Describe the properties and behavior of water in its solid, liquid, and gaseous phases (states)	Changing State
6. Describe new substances formed from common chemical reactions (e.g., burning paper produces ash)	Separating Mixtures
7. Compare, calculate, and graph the average speeds of objects in motion using both metric system and U.S. system units	
8. Explain that gravity accelerates all falling objects at the same rate in the absence of air resistance	Gravity
9. Demonstrate a change in speed or direction of an object's motion with the use of unbalanced forces	
10. Compare potential and kinetic energy and give examples of each	
11. Classify energy resources as renewable, non-renewable, or inexhaustible	
12. Identify the Sun as Earth's primary energy source and give examples (e.g., photosynthesis, water cycle) to support that conclusion	Food Chains Water Cycle
13. Investigate how changes in the position of a light source and an object alter the size and shape of the shadow	Shadows
14. Identify other types of energy produced through the use of electricity (e.g., heat, light, mechanical)	Energy Forms
Life Science	
15. Identify the cell as the basic unit of living things	
16. Observe, identify, and describe the basic components of cells and their functions (e.g., cell wall, cell membrane, cytoplasm, nucleus)	
17. Compare plant and animal cells and label cell components	
18. Describe the metamorphosis of an amphibian (e.g., frog)	Growing Up
19. Describe the processes of photosynthesis and respiration in green plants	
20. Describe the levels of structural organization in living things (e.g., cells, tissues, organs, organ systems)	
21. Identify diseases caused by germs and how they can be transmitted from person to person	

22. Develop and use a simple dichotomous key to classify common plants and animals	Habitats
23. Construct food chains that could be found in ponds, marshes, oceans, forests, or meadows	Food Chains
24. Describe the roles of producers, consumers, and decomposers in a food chain	Food Chains
25. Compare food chains and food webs	Food Chains Interdependence
26. Identify and describe ecosystems of local importance	
27. Compare common traits of organisms within major ecosystems	
28. Explain and give examples of predator/prey relationships	Food Chains Interdependence
29. Describe adaptations of plants and animals that enable them to thrive in local and other natural environments	Habitats Adaptations
Earth and Space Science	
30. Identify organic and inorganic matter in soil samples with the aid of a hand lens or microscope	
31. Identify common rocks and minerals and explain their uses and economic significance	Rocks
32. Demonstrate the results of constructive and destructive forces using models or illustrations	Erosion, Transportation and Deposition
33. Identify the processes that prevent or cause erosion	Erosion, Transportation and Deposition
34. Identify the components of the hydrosphere	
35. Identify the atmosphere as a mixture of gases, water vapor, and particulate matter	
36. Identify, describe, and compare climate zones (e.g., polar, temperate, tropical)	
37. Identify typical weather map symbols and the type of weather they represent	Predicting the Weather
38. Estimate the range of time over which natural events occur (e.g., lightning in seconds, mountain formation over millions of years)	Erosion, Transportation and Deposition
39. Identify the physical characteristics of the Sun	Our Solar System
40. Describe the significance of Polaris as the North Star	
41. Explain why the Moon, Sun, and stars appear to move from east to west across the sky	Days and Seasons
42. Differentiate among moons, asteroids, comets, meteoroids, meteors, and meteorites	
43. Describe the characteristics of the inner and outer planets	
44. Explain rotation and revolution by using models or illustrations	Days and Seasons
45. Identify Earth's position in the solar system	Our Solar System
46. Identify and explain the interaction of the processes of the water cycle	Water Cycle
47. Identify and explain advances in technology that have enabled the exploration of space	

48. Determine the ability of an ecosystem to support a population (carrying capacity) by identifying the resources needed by that population	
49. Identify and give examples of pollutants found in water, air, and soil	Pollution
50. Describe the consequences of several types of human activities on local ecosystems (e.g., polluting streams, regulating hunting, introducing nonnative species)	Habitats Pollution Interdependence
51. Describe naturally occurring cycles and identify where they are found (e.g., carbon, nitrogen, water, oxygen)	Water Cycle