St. Mark Evangelical Lutheran Church and School

Wisconsin Evangelical Lutheran Synod

Science Curriculum Guide

Philosophy of Science

Science is included in the curriculum of St. Mark Lutheran School to better understand the created world of our God, recognizing that the Lord reveals himself in nature and works through it. Although the world may promote its philosophies of humanism and evolution as the truth, we assert that God's Word is Truth.

Science teaches us how to be good stewards of the world the Lord has given us. Basic fundamentals and principles of physical, earth and life science will be taught in light of God's Word.

Assessment

Each grade has specified grade level objectives designed to promote the students academic growth and achievement. Teachers will assess the students as they master these objectives through various formative and summative assessments. Assessments include daily work, quizzes, tests, daily assignments, classroom discussion, group work, science labs and experiments. These assessments assure that each student is learning the objectives outlined in this curriculum guide.

Exit Goals for Graduation

Students graduating from St. Mark Lutheran School will be able to...

1. Understand and appreciate that science is a study of God's creation.
2. See God's omnipotence and omniscience when studying his creation.
3. Work together in group science labs and projects.
4. Use instruments to measure accurately in science labs.
5. Use formulas to solve scientific equations.
6. Use the scientific method to formulate a hypothesis, identify variables, gather data, graph the data, state conclusions, and form inferences.
7. Develop understanding in physical science concepts such as sound and light, electricity and magnetism, chemical building blocks, and motion forces and energy.
8. Develop understanding in earth science concepts such as weather and climate, volcanoes and earthquakes, rocks, astronomy, and earth's waters.

9. Develop understanding in life science concepts in the five kingdoms of living things.
10. Develop understanding in the human body by learning the organ systems, cell structure, heredity, and health.

Preschool Science Curriculum

Knowledge Objectives

1. Students will know what "science" is and that they can do science.
2. Students will be introduced to and be able to explain simple data charts.
3. Students will understand simple cause and effect relationships based on previous experience.
4. Students will develop predictions and explanations based on previous experience.
5. Students will know basic safety procedures in investigations.
6. Students will know that God's creatures experience different emotions and common responses to them.
7. Students will know vocabulary for different types of weather.
8. Students will know that weather conditions change over time.
9. Students will know how the environment changes over the seasons.
10. Students will know that God created the earth.
11. Students will know that there are different materials (e.g., rocks, soil, water) on Earth.
12. Students will know vocabulary used to describe major features of the sky (e.g., clouds, sun, moon.)
13. Students will know that God created the sun and the moon to light our world.
14. Students will know that the sun supplies heat and light to Earth.
15. Students will know that God created each of us and gave us our unique and wonderful body.
16. Students will know the names and locations of main body parts (e.g., head, eyes, nose, mouth, ears, hair, arms, hands, legs, feet etc.)
17. Students will know that living things go through a process of growth and change.
18. Students will know that living things and nonliving things are different.
19. Students will know the basic needs of plants and animals (e.g., air, water, nutrients, light or food, shelter.)
20. Students will know simple ways that living things can be grouped (e.g., appearance, behavior, plant, animal.)
21. Students will know basic vocabulary used to describe observable properties of objects (e.g., color, shape, size.)
22. Students will know that the physical properties of things can change.
23. Students will know the effects of forces in nature (e.g., wind, gravity.)
24. Students will know that objects can be moved in a number of ways (e.g., pushing, pulling, sinking.)
25. Students will know that some foods are more nutritious than others.
26. Students will know how to classify foods according to food groups.

Attitude/Belief Objectives

1. Students will believe that everything is in existence through, and sustained by, God's hand.
2. Students will understand the usefulness of scientific tools for gathering information, comparing and observing objects, and seeking answers to questions through active investigation.
3. Students will understand that through the use of scientific exploration and reasoning their skills and learning will be extending.
4. Students will believe that using their scientific understanding of God's creation they are able to serve God and others with their knowledge and vocations.

Skill/Behavior Objectives

1. Students will identify the five senses and what information you may gain by using them.
2. Students will do simple experiments to understand cause/effect, predictions/ explanations, and demonstrate basic safety procedures.
3. Students will correctly use scientific vocabulary.
4. Students will accurately describe the world around them and it's attributes.
5. Students will identify body parts and physical features of people and animals, their basic needs, and how they grow and change over time.
6. Students will demonstrate their ability to describe, classify, and sort objects in their environment by similarities or uses.
7. Students will consider and practice a variety of methods to move objects from one location to another.
8. Students will identify and share feelings in appropriate ways.

Kindergarten Science Curriculum

Knowledge Objectives

1. Students will know what "science" is and that they can do science.
2. Students will understand simple cause and effect relationships based on previous experience.
3. Students will develop predictions and explanations based on previous experience.
4. Students will know basic safety procedures in investigations.
5. Students will know that God's creatures experience different emotions and common responses to them.
6. Students will know vocabulary for different types of weather.
7. Students will know the effects weather has on the earth.
8. Students will know how the environment changes over the seasons.
9. Students will know that God created the earth.
10. Students will know that there are different materials (e.g., rocks, soil, water) on Earth.
11. Students will know some properties of rocks, soil and water.

A. Students will Know what a volcano is and some basic characteristics.

12. Students will know vocabulary used to describe major features of the sky (e.g., clouds, sun, moon.)
13. Students will know that God created the sun and the moon to light our world.
14. Students will know that the sun supplies heat and light to Earth.
15. Students will know that God created each of us and gave us our unique and wonderful body.
16. Students will know that living things go through a process of growth and change.
17. Students will know that living things and nonliving things are different.
18. Students will know the cycle of life.
19. Students will know the basic needs of plants and animals (e.g., air, water, nutrients, light or food, shelter.)
20. Students will know simple ways that living things can be grouped (e.g., appearance, behavior, plant, animal.)
21. Students will know about machines and how they move.
22. Students will know about tools and how they help.
23. Students will know that the physical properties of things can change.
24. Students will know the effects of forces in nature (e.g., wind, gravity.)
25. Students will know that objects can be moved in a number of ways (e.g., pushing, pulling, sinking.)
26. Students will know basic vocabulary used to describe observable properties of objects (e.g., color, shape, size.)

Attitude/Belief Objectives

1. Students will believe that everything is in existence through, and sustained by, God's hand.
2. Students will understand the usefulness of scientific tools for gathering information, comparing and observing objects, and seeking answers to questions through active investigation.
3. Students will understand that through the use of scientific exploration and reasoning their skills and learning will be extending.
4. Students will believe that using their scientific understanding of God's creation they are able to serve God and others with their knowledge and vocations.

Skill/Behavior Objectives

1. Students will identify the five senses and what information you may gain by using them.
2. Students will do simple experiments to understand cause/effect, predictions/ explanations, and demonstrate basic safety procedures.
3. Students will correctly use scientific vocabulary.
4. Students will accurately describe the world around them and it's attributes.
5. Students will identify physical features of people and animals, their basic needs, and how they grow and change over time and in different situations.
6. Students will demonstrate their ability to describe, classify, and sort objects in their environment by similarities or uses.
7. Students will consider and practice a variety of methods to move objects from one location to another.
8. Students will identify and share feelings in appropriate ways.

Grades 1-2 Objectives (Two Year Cycle)

YEAR 1

Knowledge:

1. Students will know that there are different characteristics of rocks.
2. Students will know how fossils are formed.
3. Students will know that some animals are extinct.
4. Students will know that Earth has many natural resources.
5. Students will know that Earth's surface is surrounded by air.
6. Students will know why it is important to take care of our natural resources.
7. Students will know that weather is the condition of the air outside.
8. Students will know what temperature is.
9. Students will know that wind is moving air.
10. Students will know what makes clouds and rain.
11. Students will know what planets are made of.
12. Students will know the Earth's spinning gives us day and night.
13. Students will know the four seasons and the order that they follow.
14. Students will know that everything around us is matter.
15. Students will know that a liquid is matter that flows.
16. Students will know that some objects sink and that others float in water.
17. Students will know that friction is a force that makes it hard to move things.
18. Students will know that a wheel is a roller that turns on an axle.
19. Students will know that rollers and wheels can make things easier to push or pull.
20. Students will know that a magnet is a piece of iron that attracts objects objects with in them
21. Students will know that a magnet has two different poles.
22. Students will know that a magnetic force gets weaker as distance increases from the magnet.
23. Students will know that a magnet can magnetize things it attracts.
24. Students will know that they have five senses that help them to learn.
25. Students will know how to distinguish between living organisms and nonliving objects.
26. Students will compare living organisms and nonliving objects.
27. Students will know that animals need: food, water, air, and a place to live.
28. Students will know that animals can live in different locations in the world.
29. Students will know that there are various types or groups of animals.
30. Students will know that animals depend on plants for their basic needs.
31. Students will know that plants depend on animals for their basic needs.
32. Students will be able to identify plant and animal characteristics that allow them to meet their needs.
33. Students will know that people, plants, and animals depend on each other for their needs.

34. Students will know what plants and animals need to survive in a forest.
35. Students will know what plants and animals need to survive in a desert.
36. Students will know what plants and animals need to survive in a rain forest.
37. Students will know what plants and animals need to survive in an ocean.

Attitudes:

1. Students will appreciate that God made different types of rocks.
2. Students will appreciate that some animals no longer live on our earth.
3. Students will appreciate the wonderful resources God has given us.
4. Students will realize the need for us to take care of our resources.
5. Students will appreciate that God controls our weather.
6. Students will see the importance weather has on the Earth.
7. Students will appreciate that God made the sky and all of the objects in it.
8. Students will appreciate that God made our Earth and gives us our seasons and days and nights.
9. Students will appreciate how God made the different forms of matter for us to use.
10. Students will appreciate that friction and wheels can help to move things easier.
11. Students will appreciate that magnets have the power to help move iron objects.
12. Students will appreciate how God gave them five senses so they can enjoy all of this wonderful world we live in.
13. Students will appreciate the gift of life that God gave us.
14. Students will appreciate how God made animals able to adapt to their locations.
15. Students will see the importance of each animal's ability to defend itself from predators.
16. Students will appreciate how God made people, plants and animals to meet each others' needs.
17. Students will recognize the unique characteristics of people, plants and animals.
18. Students will appreciate how God made animals with differing characteristics to be able to survive in various climates and locations.
19. Students will see the importance of each animal's unique makeup to survive in its world.

Skills:

1. Students will be able to look at rocks and classify them.
2. Students will be able to explain how fossils are formed.
3. Students compare extinct and living animals
4. Students will be able to explain how our natural resources are used.
5. Students will be able to explain what air is and what it can do.
6. Students will be able to explain why it is important to take care of our natural resources.
7. Students will observe and record weather changes from day to day.
8. Students will be able to identify patterns in temperature changes that relate to weather.
9. Students will observe changes in wind direction and speed
10. Students will recognize that rain forms from water drops in clouds.

11. Students will be able to explain day and night on the Earth with the use of a globe and a flashlight.
12. Students will be able to describe the properties of solids.
13. Students will be able to describe the properties of liquids.
14. Students will know why some objects float in water and others sink.
15. Students will know what the main objects are that we see in the sky.
16. Students will be able to list the four seasons and the weather and changes that come with each.
17. Students will be able to explain that the motion of objects can be changed by the amount of friction acting on them.
18. Students will be able to explain that the use of rollers and wheels can make it easier to push or pill objects.
19. Students will be able to explain how the magnetic force works and how it can be used in machines.
20. Students will be able to explain that a magnet's pulling force is strongest at the poles.
21. Students will be able to explain that the magnetic force gets weaker as the distance from the magnet increases.
22. Students will be able to explain that a magnet can magnetize things it attracts.
23. Students will be able to list the five senses and how they use each of them.
24. Students will be able it identify living and nonliving things.
25. Students will recognize living things grow and change.
26. Students will be able to explain which animals belong in the various groups.
27. Students will be able to explain the changes in the life cycles of the different animal groups.
28. Students will be able to explain the unique features of each animal group.
29. Students will be able to explain which animals live in certain locations.
30. Students will be able to compare and explain the different characteristics of plants and animals and people.
31. Students will be able to sort plant and animal products according to whether they come from plants or animals.
32. Students will be able to describe the unique aspects of living in each of these different locations.
33. Students will be able to describe the features of plants and animals to adapt to their living conditions.

YEAR 2

Knowledge:

1. Students will know the difference between living organisms and nonliving objects.
2. Students will know that plants need: sunlight, air, nutrients, and water to grow.
3. Students will know that there are similarities and differences in plants.
4. Students will know that animals can be alike in some aspects and different in others.
5. Students will know ways to classify animals.
6. Students will know the life cycles of birds and mammals.

7. Students will know that animals grow to resemble their parents.
8. Students will know that people grow and change in many ways throughout their lives.
9. Students will know how the bones and muscles work together to move the body.
10. Students will know the importance of exercise and healthy foods to keep our bodies strong and healthy.
11. Students will know that the heart and lungs work together to carry oxygen throughout the body.
    Students will know the process of digestion.
12. Students will know that habitats are places where plants and animals grow and live.
13. Students will know that there are different kinds of land environments and habitats.
14. Students will know that there are different kinds of water environments and habitats.
15. Students will know that animals adapt in different ways to enable them to survive.
16. Students will know that there are various ways that plants and animals help each other.
17. Students will know that the amount of rainfall can change a habitat.
18. Students will know that a fire can change a habitat.
19. Students will know that there are three main types of pollution.
20. Students will know that pollution can harm plants and animals.
21. Students will know that there are ways to keep our environment clean.
22. Students will know that rocks and soil are natural resources that people use.
23. Students will know that plants and trees are natural resources that people use.
24. Students will know that all living things need water to live and grow.
25. Students will know what fossils are and where to find them.
26. Students will know what scientists can learn from fossils.
27. Students will know there were different kinds of dinosaurs.
28. Students will know the similarities and differences between stars and planets.
29. Students will know the characteristics of the sun.
30. Students will know that the Earth's orbit around the sun causes our seasons.
31. Students will know that the moon orbits the earth and this gives the appearance of different shapes to the moon.
32. Students will know that the weather changes from day to day and season to season.
33. Students will know what the water cycle is.
34. Students will know that there are special tools to measure and predict the weather.
    Students will know that there are many different weather conditions.
35. Students will know that there are three forms of matter: solids, liquids and gases.
36. Students will know how to measure solids, liquids, and gases.
37. Students will know what happens when matter is mixed or cut.
38. Students will know that water can be a solid, liquid or gas.
39. Students will know that changes in matter can be either reversible or irreversible.
40. Students will know that a force is something that pushes or pulls on an object to make it move.
41. Students will know that magnets have two different poles; with one that attracts and one that repels.
42. Students will know that weight, friction and distance affect the force needed to move objects.
43. Students will know what makes sound.

44. Students will know that sounds can vary.
45. Students will know how sound travels.
46. Students will know how to make different sounds.
47. Students will know the basic parts of plants and their functions.
48. Students will know the basic parts of a seed.
49. Students will know that plants need light, air, soil, and water.

Skills:

1. Students will be able to explain the differences between living organisms and nonliving objects.
2. Students will be able to explain how plants can be affected by their environment.
3. Students will be able to explain how plants may be alike and also their differences.
4. Students will be able to identify differing characteristics to help them classify animals.
5. Students will be able to explain the life cycles of birds and mammals.
6. Students will be able to explain similarities between the adult animal and its offspring.
7. Students will be able to explain how our bodies grow and change at different stages in our lives.
8. Students will be able to explain the skeletal and muscular systems.
9. Students will be able to explain how the circulatory and respiratory systems work.
10. Students will be able to explain how the digestive system works.
11. Students will be able to explain the benefits of healthy eating and exercise for our bodies.
12. Students will be able to explain why we need different land habitats to meet the needs of all the plants and animals.
13. Students will be able to explain why there are different water habitats to meet the needs of all the plants and animals.
14. Students will be able to explain how animals adapt to their surroundings.
15. Students will be able to explain what a food chain is and how it benefits many animals.
16. Students will be able to explain the effects of drought and floods to our earth.
17. Students will be able to explain the devastating effects of a fire on our earth.
18. Students will be able to identify the types of pollution and the harm it does to plants and animals.
19. Students will be able to list ways that people can work to make less pollution.
20. Students will be able to describe the ways that people use rocks and soil.
21. Students will be able to describe the ways that people use plants.
22. Students will be able to describe the ways and the amount of water that people use.
23. Students will be able to explain how some kinds of fossils were made.
24. Students will be able to explain how scientists collect and reconstruct fossils.
25. Students will be able to explain what scientists have learned about dinosaurs.
26. Students will be able to identify stars and planets.
27. Students will be able to identify some constellations.
28. Students will be able to explain how we have day and night.
29. Students will be able to explain what causes the different seasons on the Earth.
30. Students will be able to explain how the reflection of the sun’s light enables them to see the moon.
31. Students will be able to describe the changes in weather from season to season.

32. Students will be able to explain how water gets into the air.
33. Students will be able to identify the different kinds of clouds and what weather changes they may bring.
34. Students will be able to describe the ways to prepare for different weather conditions.
35. Students will be able to identify and describe the properties of matter.
36. Students will be able to compare solids and describe their similarities and differences.
37. Students will be able to identify the two properties that all liquids have.
38. Students will be able to recognize the properties of a gas.
39. Students will be able to describe what happens when matter is cut or mixed.
40. Students will be able to describe how water can be made to change from one state to another.
41. Students will be able to describe some changes in matter that are reversible.
42. Students will be able to describe some changes in matter that are irreversible.
43. Students will be able to explain that a force can be used to change the location of an object and the direction it is moving.
44. Students will be able to explain the ways that magnets can be used.
45. Students will be able to explain how to measure motion.
46. Students will be able to explain what makes sound.
47. Students will be able to identify which body parts are used to make and hear sound.
48. Students will be able to identify sounds as being loud or soft and also high and low.
49. Students will be able to explain that sound can travel through gases, liquids and solids.
50. Students will be able to identify that animals use sound to communicate with one another under water.
51. Students will be able to describe ways to change the pitch of sound.
52. Students will be able to explain what causes the loudness of a sound to change.
53. Students will observe and compare various plants.
54. Students will observe the process as a seed grows into a plant.
55. Students will observe what happens to plants when they do not receive the light and water that they need.

Attitudes:

1. Students will appreciate the gift of food and beauty that God gives us with plants.
2. Students will see the importance of plants for our existence.
3. Students will appreciate God's amazing ability to make all of the different types of animals.
4. Students will appreciate the various life cycles of animals and the miracle of their growth and changes.
5. Students will appreciate what a wonderful gift God has given us with healthy and well functioning bodies.
6. Students will see the importance of taking good care of our bodies with healthy diets and exercise.
7. Students will appreciate how God made differing types of land and water so that there can be homes for many different animals.
8. Students will see the wisdom of God in making many types of land and water.

9. Students will appreciate that God sends different types of weather to keep our earth healthy and growing.
10. Students will appreciate that we all need to work to keep our earth clean and healthy.
11. Students will appreciate that God made different types of soil to accommodate the many types of trees and plants that He made to grow on the earth.
12. Students will appreciate what a useful and wonderful gift water is to our world.
13. Students will appreciate that some of God's created animals have died and decayed.
14. Students will appreciate the value and beauty of the sun, moon and stars to the Earth.
15. Students will appreciate the value, beauty and harm that different types of weather can bring to the Earth.
16. Students will appreciate the value and gift that water is to our Earth.
17. Students will appreciate that God made different forms of matter for us to use.
18. Students will appreciate the benefits of being able to mix or change matter.
19. Students will appreciate that God made forces to help us do our work.
20. Students will appreciate the gifts of hearing and sounds that God made for us.
21. Students will appreciate how God made seeds and plants able to grow and produce flowers and food for them to enjoy.
22. Students will see the importance of each plant being able to produce food that they need to live.

Grades 1-2 Scope and Sequence

Year One

Life Science
1. Living and nonliving things
2. All about plants
3. All about animals
4. Plants and animals need one another
5. A place to live

Earth Science
1. Earth's Land
2. Our natural resources
3. Measuring weather
4. The sky and seasons

Physical Science
1. Investigate matter
2. making sound
3. Pushes and pulls
4. Magnets

Year 2

Life Science
1. Plants grow and change

2. Animals grow and change
3. People grow and change
4. Habitats for plants and animals
5. Changes in habitats

Earth Science

1. Earth's resources
2. Earth long ago
3. The solar system
4. Earth's weather

Physical Science

1. Observing and measuring matter
2. Changes in matter
3. Forces and motion
4. Hearing sound

Grade 3 Objectives

Knowledge:

1. Identify air, water, soil, and lights as the four needs of plants
2. Seeds need certain conditions to grow
3. Plants make their own food through photosynthesis
4. All animals have similar needs.
5. Define ecosystem.
6. List different types of ecosystems.
7. Recognize that living things have characteristics for surviving in different environments.
8. All plants and animals are connected to a food chain.
9. Describe what minerals and rocks are.
10. List examples of the uses of minerals and rocks.
11. Identify the forces that change Earth's surface: earthquake, volcanoes, and floods.
12. Describe the ways different landforms look.
13. Explain how soils are different for different types of plants.
14. Describe how soil can be harmed.
15. Define Resource.
16. List common resources
17. Water is found on Earth.
18. List reasons water is important.
19. Define weather.
20. List different types of weather.
21. List the eight plants of the Milky Way.
22. Describe other bodies in the solar system.
23. Determine why Pluto is now considered a dwarf planet.
24. Define Matter.
25. List physical properties of matter.
26. Classify matter as a solid, liquid, or gas.
27. List signs of a physical change.
28. List signs of a chemical change.
29. Define energy.
30. Compare potential energy and kinetic energy.
31. Demonstrate one way energy can be used to move objects
32. Describe a way heat is used for everyday life.
33. List a tool used to measure heat
34. Explain how forces are measured.
35. Explain what work is.
36. List the six types of simple machines.

Skills:

1. Explain how roots, stems and leaves help plants survive
2. Observe a variety of leaves
3. Identify the parts of a plants

4. Describes ways seeds are spread
5. Analyze how adaptive characteristics help members of a species survive.
6. Identify characteristics among amphibians, fish, reptiles, mammals and birds.
7. Explain how migration and hibernation are instinctive behaviors that allow some animals to survive harsh winters.
8. Identify current and past causes of extinction.
9. Connect the needs of plants and animals to the ecosystem which best suits them.
10. Explain how all living things get energy from food.
11. Identify characteristics of living things that help them get food.
12. Identify the three types of rocks and how they are formed.
13. Describe the rock cycle.
14. Explain how fossils are formed.
15. Explain how wind, water and ice shape Earth's surface.
16. State where soil comes from and how it forms.
17. Describe the importance of soil.
18. Give a specific example of a person using a resource.
19. Differentiate between resources that can be used up or never run out.
20. Explain how water is found in different forms and can change from one form to another.
21. Describe how water moves through a water cycle.
22. Create a picture of water cycle.
23. Record the weather for one week.
24. Identify the layers of the atmosphere.
25. Identify the ways temperature, precipitation and wind are measured.
26. Describe how people forecast the weather
27. Use a weather map to predict the weather.
28. Explain why there are seasons.
29. Identify the cause of day and night.
30. Describe the moon's phases.
31. Describe evaporation and give a real life example.
32. Gather information about mass and volume by using the appropriate tools.
33. Describe how a type of matter can change its form.
34. Recognize that when two or more substances combine a new substance may form that has properties different from the original.
35. Conduct an experiment in which a physical change takes place.
36. Conduct an experiment in which a chemical change takes place.
37. Identify sources of energy and the different forms energy can take.
38. Compare various kinds of stored energy.
39. Observe that energy can travel as a wave.
40. Conduct an experiment using a battery as a source of energy
41. Explain how thermal energy affects matter.
42. Describe three ways in which thermal energy moves from place to place.
43. Accurately measure the temperature of three examples using a thermometer.
44. Conduct an experiment in which friction produces a small amount of heat.
45. Describe the relationship between work and force.
46. Classify different types of simple machines.

47. Draw a real life example for each type of simple machine.

Attitudes:

1. God created all plants and seeds.
2. God created plants to make their own food.
3. God created all animals in unique ways and an incredible variety.
4. God created the whole world and each area is unique in its plants and animals
5. Plants and animals work in their environment to survive.
6. Fossils teach us about the past.
7. Their exact date cannot be determined.
8. God created all things in His time.
9. God created a world that continues to change.
10. Importance of conserving soil and our Earth.
11. Recycling is a way to conserve our resources.
12. The same water cycles through Earth and takes on many forms.
13. God controls are weather in our world.
14. There are ways humans can track or predict the weather.
15. God did not just create our planet Earth, but the whole universe.
16. The universe is incredibly vast.
17. All matter takes up space.
18. Matter cannot be created or destroyed.
19. Energy is takes on various forms and is used for everyday life.
20. Simple machines make work easier.

3rd Grade Scope and Sequence

A. Plants and Animals
    1. Types of Plants
    2. Types of Animals

B. Plants and Animals Interact
    1. Where Living Things are Found
    2. Living Things depend on One Another

C. Earth's Land
    1. Minerals, Rocks, and Fossils
    2. Forces that Shape the Land
    3. Soils
    4. Earth's Resources

D. Cycles on Earth and Space
    1. The Water Cycle
    2. Observing Weather
    3. Earth and Its Place in the Solar System

E. Investigating Matter
    1. Properties of Matter
    2. Changes in Matter

F. Exploring Energy and Forces
    1. Energy

2. Heat
3. Forces and Motion

Grade 4 Objectives

Knowledge:

1. Define cell.
2. Explain that all living things are make of one or more cells.
3. Recognize that different kinds of cells have different parts.
4. Identify features of animals.
5. Identify seeds as reproductive cells of plants.
6. List the basic needs of all animals: food, water, oxygen, shelter and climate.
7. Conclude that animals meet their needs in different ways.
8. Identify air, water, soil, and lights as the four needs of plants.
9. List ways seeds are spread.
10. Identify the basic parts that make up the human body.
11. List the six main body systems and their main functions.
12. Identify the basic parts of an ecosystem.
13. Describe a tropical rain forest.
14. Describe a coral reef.
15. List resources of rain forests and coral reefs.
16. Identify three examples of saltwater communities
17. Describe ways ecosystems change.
18. List ways humans affect ecosystems.
19. List the three layers of the earth.
20. Identify the three types of volcanoes.
21. Explain ways to measure an earthquake.
22. Describe the steps involved in fossil formation.
23. List three types of fossil fuels.
24. List the layers of the Earth's atmosphere.
25. Identify the sun as the major source of energy for Earth.
26. Explain the main parts of the water cycle.
27. Describe the composition of ocean water.
28. Describe the ocean floor.
29. Describe the motions of Earth and the moon.
30. List the phases of the moon.
31. List the inner and outer planets in order.
32. List the three forms matter can take: solid, liquid or gas.
33. Recognize that heat can cause a change in the state of a matter.
34. Define buoyancy.
35. Recognize that thermal energy is the motion of particles of matter.
36. Identify conduction as a physical property of matter.
37. Recognize that thermal energy can be transferred from one object to another.
38. Explain that sounds is made of vibrations.
39. Recognize that sound energy can b carried from one place to another by waves.
40. Observe how sounds differ

41. Light can move, bounce, bend and stop.
42. List uses for electricity in everyday life.
43. Define static electricity.
44. Recognize that magnets have two poles, north and south, and that like poles repel each other, while unlike poles attract each other.
45. Identify ways to describe motion.
46. Define force.
47. Recognize the relationship between gravity and weight.
48. List the six types of simple machines.

Skills:

1. Create a model of a cell.
2. Label the main parts of a cell's structure.
3. Explain how an animal cell differs from a plant cell.
4. Describes how body plans and support systems are used to classify animals.
5. List features and examples of plants that reproduce with seeds.
6. Identify three adaptations birds have to help them meet their needs.
7. Describe animal body part adaptations that enable them to meet their needs.
8. Differentiate between learned behavior and instinctual behavior in animals.
9. Explain how plants make food.
10. Give examples of plant adaptations.
11. Explain how plant adaptations enable plants to survive in different environments
12. Identify ways that leaves, stems, and roots help plants live.
13. Describe the ways plants reproduce.
14. Explain the skeletal and muscular systems work together.
15. Describe what breathing does for the body.
16. Identify why blood is important to the body's cells.
17. Describes how the nervous system controls all the body's systems.
18. Detail the process of food through the digestive system.
19. Explain how the living things in ecosystems are organized.
20. Give an example of a habitat and niche in ecosystems.
21. Give an example of a producer, consumer, and decomposer.
22. Draw a food web and describe how it works together.
23. Describe ways people can conserve natural resources.
24. List ways a kid can help their environment.
25. Explain how the government helps to protect ecosystems.
26. Describe how slabs of Earth's crust and upper mantle move.
27. Explain the causes of an earthquake.
28. Describe where earthquakes occur.
29. Describe how volcanoes form.
30. Give examples of how volcano eruptions can be harmful and how they can have good effects on the land around them.
31. Explain how fossils are important to both the present and the past.
32. Describe the formation of coal.
33. List uses for coal, petroleum and natural gas.

34. Explain what causes the greenhouse effect.
35. Describe the results of an air mass passing over an area.
36. Construct a device to measure and observe changes in air pressure.
37. Explain how different weather conditions are measured.
38. Use symbols on a weather map to tell the weather.
39. Demonstrate how fresh water can be extracted from salt water.
40. Compare and contrast waves, tides, and currents.
41. Demonstrate how some ocean currents form.
42. Explain what causes tides to rise and fall
43. Explain how new ocean floor forms.
44. Relate a day and year to the motions of Earth.
45. Describe the causes of the seasons.
46. Differentiate between rotation and revolution.
47. Distinguish between planets, asteroids, and comets.
48. Construct a scale model of the solar system.
49. Use a telescope.
50. Conduct an experiment changing a state of matter.
51. Use numerical data to measure, describe and compare physical properties of matter.
52. Recognize that some materials combine to form solutions.
53. Differentiate between a physical and chemical change.
54. Conduct an experiment in which a physical and chemical change take place.
55. Observe and record changes in the states of matter caused by the addition or reduction of thermal energy.
56. Differentiate between thermal energy and temperature.
57. Explain that adding or removing heat from a substance can change its state of matter.
58. Analyze information about temperature by using thermometers.
59. Identify ways to produce and use thermal energy.
60. Explain that the energy that comes from the sun to Earth can be used by people.
61. Collect and analyze data about how sounds are made.
62. Compare and contrast loudness and pitch.
63. Recognize that sound travels at different speeds through different media.
64. Describe how an echo forms.
65. Explain what causes a sonic boom.
66. Explain how light travels.
67. Describe what can occur when light strikes an object.
68. Describe what causes a rainbow.
69. Explain how light and color are related.
70. Recognize that electrically charged objects attract or repel each other as can be seen from the effects of static electricity.
71. Explain what causes an electric field.
72. Design and build a simple series circuit using components such as wires, batteries, and bulbs.
73. Recognize that electrical energy can be converted to other forms of energy, such as heat, light and motion.
74. Construct a simple compass, and use it to detect magnetic effects.

75. Recognize that all electric currents produce magnetic effects.
76. Construct a simple electromagnet.
77. Identify how electromagnets are useful to people.
78. Define frame of reference and relative motion.
79. Calculate speed using data of distance and time.
80. Demonstrate how forces are added and subtracted.
81. Measure forces using a spring scale.
82. Give examples of different kinds of natural forces.
83. Explain how simple machines make work easier.
84. Identify the six types of simple machines in real life examples.

Attitudes:

1. God created all things in a complex and orderly system of cells in all living things.
2. God created all animals.
3. All animals meet their needs in different ways.
4. God created all plants and seeds.
5. God created plants to make their own food.
6. God created humans in an amazing and complex way.
7. We want to take good care of the body God has given to us.
8. Living things in an ecosystem meet their needs in different ways.
9. God created a wonderful world and we want to care for it.
10. It is our responsibility to protect the earth and to to cause any harm.
11. God created the earth.
12. Changes in nature can be harmful and helpful in different ways.
13. Fossils can show us information about the past.
14. Exact dates of fossils and the earth cannot be determined using human methods.
15. God controls all weather.
16. Man can predict changes in weather using various too.
17. God formed the oceans and they continue to change.
18. God created an orderly universe and all parts of our galaxy.
19. Matter cannot be created or destroyed.
20. Energy comes in many different forms and is used for daily needs.
21. Electricity has power, but as also be dangerous.
22. Different types of simple machines help in different types of situations.

4th Grade Scope and Sequence

A. A World of Living Things
   1. Living Things
   2. Animal Growth and Adaptations
   3. Plant Growth and Adaptions
   4. Human Body Systems

B. Looking at Ecosystems
   1. Ecosystems

2. Protecting Ecosystems

C. Earth's Surface
   1. Earthquakes and Volcanoes
   2. Fossils

D. Patterns on Earth and in Space
   1. Weather Conditions
   2. The Oceans
   3. Planets and Other Objects in Space

E. Matter and Energy
   1. Matter and Its Changes
   2. Heat-Energy on the Move
   3. Sound
   4. Light

F. Forces and Motion
   1. Electricity and Magnetism
   2. Motion-Forces at Work

Grade 5 Objectives

Knowledge:

1. Students will understand the importance of water in our world.
2. Students will recognize the three state of water.
3. Students will be able to describe the Earth's water cycle.
4. Students will know how a river effects the land around it.
5. Students will recognize how animals are classified.
6. Students will know some of the different organisms that live in ponds
7. Students will understand what a wetland is and its importance.
8. Students will be able to describe how glaciers and icebergs form.
9. Students will recall the ways that groundwater moves in the Earth.
10. Students will understand the importance of conserving and the treatment of water in our world.
11. Students will understand that water can be used as an energy source.
12. Students will be able to describe how waves form and changes.
13. Students will recognize that there is a monthly and daily tide cycle.
14. Students will be able to describe the chemistry of ocean water.
15. Students will explain how ocean currents effect the climate of our world.
16. Students will know the different features of the ocean floor.
17. Students will describe the varying habitats along the intertidal zone.
18. Students will explore the different sea life in the neritic zone and open ocean zone.
19. Students will list the resources that are available from the ocean.
20. Students will explain the characteristics that all animals have.
21. Students will know the difference between radial and bilateral symmetry.
22. Students will know the characteristics of sponges and cnidarians.
23. Students will recognized the different varieties of worms.
24. Students will understand the characteristics of mollusks and arthropods.
25. Students will understand the characteristics of insects and echinoderms.
26. Students will be able to explain the three different types of fish.
27. Students will understand the life cycle of amphibians.
28. Students will know the different varieties of reptiles.
29. Students will recognize the characteristics that all birds have in common.
30. Students will know the diversities and characteristics of mammals.
31. Students will be able to list the six characteristics of all living things.
32. Students will understand how scientists classify living things into six kingdoms.
33. Students will describe the basic structure of a virus, and how it multiplies.
34. Students will recall the role that bacteria plays in our lives.
35. Students will list the characteristics of protists and fungi.
36. Students will know the characteristics of plants.
37. Students will be able to explain the process of photosynthesis.
38. Students will describe the characteristics of nonvascular plants.
39. Students will recall the characteristics of seed plants and gymnosperms.
40. Students will be able to describe the characteristics of angiosperms.

Skills:

1. Students will record the differences of animals and plants of our world.
2. Students will observe life cycle of plants and collect data.
3. Students will collect, record, and predict data.
4. Students will list the major characteristics of different animals, insects, fish and birds.
5. Students will compare and contrast how different animals move.
6. Students will draw and label different parts of animals.
7. Students will present the difference between learned and instinctive behavior.
8. Students will plant and care for plants.
9. Students will predict how changing variables will affect the outcome of an experiment.
10. Students will observe, measure, describe and record changes in plant growth.

Attitudes:

1. Students will recognize the role that technological design plays in daily problem solving.
2. Students appreciate how science can be used to solve practical problems.
3. Students recognize the importance of repeating trials to gain valid test results.
4. Students will realize that God has given all animals characteristics and abilities.
5. Students will appreciate the ways that animals survive and adapt in the world.
6. Students will develop an interest in investigating plant growth.
7. Students will appreciate the need for precise and detailed record keeping.
8. Students will value scientific data that has been collected over time.

5th Grade Scope and Sequence

Animals

1. Sponges, Cnidarians, Worms
2. Mollusks, Arthropods, Echinoderms
3. Fish, Amphibians, Reptiles
4. Birds, Mammals
5. Animal Behavior

Earth's Waters

1. The Water Planet
2. Fresh Water
3. Freshwater Resources
4. Ocean Motions
5. Ocean Zones

Plants

1. Plant Variables-light, water soil nutrients
2. Seeds
3. Pollination
4. Fertilizing

From Bacteria to Plants

1. Living Things
2. Viruses and Bacteria

3. Protists and Fungi
4. Introduction to Plants
5. Seed Plants

Grade 6 Objectives

Knowledge:

1. A complete electric circuit is required for electricity to light a bulb
2. A complete circuit can be constructed in more than one way using the same materials.
3. Different types of electric circuits show different characteristics.
4. A switch can be used to complete or interrupt a circuit.
5. Some materials conduct electricity; these are called conductors.
6. Some materials do not conduct electricity; these are called insulators.
7. Electricity can produce light, heat, and magnetism.
8. A diode conducts electricity in one direction only.
9. Photochemical smog is caused by the action of sunlight on chemicals.
10. Earth's atmosphere is heated by the sun.
11. Air pressure and density decrease as altitude increases.
12. Earth's use weather is made up of various gases and is divided into four main layers.
13. Earth's atmosphere makes conditions on Earth suitable for living things.
14. Most air pollution is caused by burning fossil fuels.
15. The layers of the atmosphere are classified by their characteristics temperatures.
16. Nearly all the energy in Earth's atmosphere comes from the sun.
17. The energy transferred from a hotter object to a cooler one is referred to as heat.
18. Winds are caused by unequal heating of Earth and its atmosphere.
19. Water moves between Earth's atmosphere and surface in the water cycle.
20. Heat is transferred by radiation, conduction, and convection.
21. Rain, sleet, hail, and snow are types of precipitation.
22. A storm is a violent disturbance in the atmosphere.
23. As an air mass moves into an area, it changes the weather there.
24. Meteorologists interpret weather data to prepare weather forecasts.
25. Four major types of air masses influence the weather in North America.
26. El Nino affects global weather.
27. Air masses are classified as tropical, polar, maritime, or continental and fronts as cold, warm, stationary, or occluded.
28. Global warming is a gradual increase in the temperature of Earth's atmosphere.
29. Major climate changes could be caused by variations in the position of Earth relative to the sun, changes in the sun's energy output, and the movement of continents.

30. Earth has three main temperature zones and five main climate regions.
31. The seasons are caused by the tilt of Earth's axis.
32. Climate regions are determined on the basis of average temperature and precipitation.
33. Several variables affect the buoyancy of an object.
34. Water pushes up on both floating and submerged objects with a buoyant force; objects push down on the water.
35. The buoyant force on large objects displaces is directly related to the object's volume.
36. The amount of water an object displaces is directly related to the object's volume.
37. Because of buoyant force, objects appear to weigh less when they are submerged.
38. Objects that weigh more than the same volume of water sink; objects that weigh less than the same volume of water float.
39. Salt water weighs more than equal amount of fresh water.
40. The buoyancy of an object varies with the density of the liquid.
41. Magnets attract and repel each other; this attracting and repelling can be used to cause motion.
42. A compass can be constructed by suspending a magnet so that it is free to rotate.
43. A compass will move in response to a magnet that is placed near it.
44. An electric circuit moving through a wire produces magnetism; a coil of copper wire conducting an electric current becomes an electromagnet.
45. A steel bolt placed inside a coil wire conducting an electric current increases the strength of the electromagnet.
46. A simple machine current can be made from an electromagnet and a rotating armature.
47. An electric current can be generate by placing a rotating coil of wire near a magnet.

Skills

1. Wiring simple electric circuits.
2. Predicting, observing, describing, and recording results of experiments with electricity.
3. Drawing conclusions about circuits from the results of experiments.
4. Building and using a simple circuit tester.
5. Using symbols to represent the different parts of an electric circuit.
6. Building a simple switch
7. Applying troubleshooting strategies to complete an incomplete circuit.
8. Applying information about electric circuits to design and build a flashlight.

9. Applying information about electric circuits to design and wire a house.
10. Reading to learn more about electricity.
11. Communicating results and ideas through writing, drawing, and discussion.
12. Students use weather observations to predict the weather.
13. Students look for patterns in weather data and investigation wind patterns around a building.
14. Students create a weather station.
15. Students investigate how the angle of light affects the rate of temperature change.
16. Observing, recording, and organizing test results
17. Applying previous experiences to make predictions
18. Creating and analyzing graphs
19. Calibrating a spring scale and using it to measure the magnitude of a force.
20. Reading science materials for information.
21. Communicating results through writing and discussion
22. Solving a problem that requires the application of previously learned concepts and skills.
23. Observing, describing, and recording the results of experiments.
24. Learning to plan and conduct experiments in which variables are controlled.
25. Predicting and testing how changing a variable affects the outcome of an experiment.
26. Interpreting the results of experiments to draw conclusions.
27. Applying troubleshooting strategies to investigations with compasses, electromagnets, and motors.
28. Reading and researching to learn more about electricity and motors.
29. Communicating results through writing, drawing, and discussion.

Attitudes:

1. Appreciating the need for safety rules when working with electricity.
2. Developing an interest in electricity.
3. Developing confidence in being able to analyze and solve a problem.
4. Developing an interest in investigating floating, sinking, and related phenomena
5. Recognizing the importance of repeating a test or measuring and comparing results.
6. Developing an interest in experimenting with the technology of motors.
7. Appreciating advances made in the use of magnets, electricity, and motors.
8. Recognizing the importance of validating results through repeated testing.

6th Grade Scope and Sequence

Electricity and Magnets

- Magnetism and Electromagnetism
- Electric Circuits
- Electricity and Magnetism at Work
- Electronics

Inside Earth

- Plate Tectonics
- Earthquakes
- Volcanoes
- Minerals
- Rocks

Weather and Climate

- The Atmosphere
- Weather Factors
- Weather Patterns
- Climate and Climate Change

Grade 7 Objectives

Knowledge Objectives

Students will…

1. Identify the effects of Earth's rotation and revolution.
2. Explain what causes the seasons.
3. Explain what causes the phases of the moon.
4. Compare the causes of solar and lunar eclipses.
5. Explain what causes the tides.
6. Describe features of the moon's surface.
7. Explain what scientists learned about the moon from space exploration.
8. Explain how the heliocentric and geocentric models of the solar system differ.
9. Explain the two factors that keep the planets in their orbits.
10. List the uses of satellites, space stations, and the Space Shuttle.
11. List and describe the layers of the sun's atmosphere.
12. Identify features of the sun's surface.
13. Determine scaled distances of the planets using a penny as the scale.
14. Describe the main characteristics of the inner planets.
15. Describe the main characteristics of the gas giant planets.
16. Compare Pluto with the other planets.
17. Describe the characteristics of comets and asteroids.
18. Identify the conditions needed for living things to exist on Earth.
19. Describe how astronomers measure distances to nearby stars.
20. Explain how stars are classified.
21. Identify what determines how long a star will last.
22. Identify and describe three types of galaxies.
23. Explain the big bang theory and contrast that with the truth of how God created the earth.
24. Define waves and identify what causes them.
25. Identify and compare the three main types of waves.
26. List and describe the basic properties of waves.
27. Describe how a wave's speed is related to its wavelength and frequency and calculate a wave's speed.
28. Identify and compare reflection, refraction, and diffraction.
29. Describe what creates seismic waves.
30. Explain how a seismograph works.
31. Define sound and explain how it travels.
32. Identify the factors that affect the speed of sound.
33. Describe what happens when an object moves faster than the speed of sound.
34. Explain the relationship between frequency and pitch.
35. Describe the apparent change in frequency observed in the Doppler Effect.
36. Identify timbre and tone and state the difference between noise and music.

37. Describe what happens when two or more sound waves interact.
38. Explain how the body interprets sound waves.
39. Identify causes of hearing loss and ways that hearing loss can be prevented.
40. Explain how sonar and bats use reflection of sound waves to locate objects.
41. List and compare different types of electromagnetic waves.
42. Name uses for waves of the electromagnetic spectrum.
43. Describe how signals are transmitted from broadcasting stations.
44. Explain the workings of cellular phones.
45. State how satellites relay information and find the position of objects.
46. Describe what happens when light strikes opaque, transparent, and translucent objects.
47. Identify the ways in which images can be reflected.
48. Explain refraction.
49. Describe how a lens forms an image and distinguish between concave and convex lenses.
50. Identify the factors that determine the color of an object.
51. Explain and compare how colors are combined in light and in pigments.
52. Describe how light waves are sensed and interpreted as images by humans.
53. Identify types of vision problems and kinds of lenses that can be used to correct the problems.
54. Explain how telescopes, cameras, and microscopes use light.
55. Describe the differences between laser light and ordinary light and list uses of lasers.
56. Explain when an object is in motion and how motion is relative to a reference point
57. Infer how reaction time, speed and stopping distance influence total distance.
58. Describe what happens to the motion of an object as it accelerates.
59. Explain how balanced and unbalanced forces are related to motion.
60. State Newton's first law of motion and define inertia.
61. State Newton's second law of motion and explain how force and mass are related to acceleration.
62. Describe friction and identify the factors that determine the friction force between two surfaces.
63. Explain how mass differs from weight.
64. State the law of universal gravitation.
65. Describe the effects of gravity and air resistance on an object in free fall.
66. State Newton's third law of motion.
67. Define and calculate momentum and state the law of conservation of momentum.
68. Explain how a rocket lifts off the ground.
69. Define and calculate pressure.
70. State how pressure changes with altitude and depth
71. Identify and explain examples of balanced pressures.
72. State Pascal's principle and recognize applications of the principle.
73. Explain how a hydraulic device can multiply force.
74. Define the buoyant force and its effect
75. State Archimedes' principle

76. Explain how the density of an object determines whether it floats or sinks.
77. State Bernoulli's principle and apply its principle in flight.
78. Identify when work is done on an object.
79. Explain what machines do and how they make work easier.
80. Identify the difference between actual and ideal mechanical advantage.
81. Draw conclusions about how various factors affect a seesaw.
82. Describe the six types of simple machines.
83. Define compound machines.
84. Explain how the body uses levers and wedges.
85. Describe the relationship between work and energy.
86. Define and calculate potential and kinetic energy.
87. List different forms of energy.
88. Identify and describe conversions from one type of energy to another.
89. State the law of conservation of energy.
90. Explain how fossil fuels contain energy that came from the sun.
91. Define and calculate power.
92. Compare energy and power.

Skills Objectives

Students will…

1. Formulate hypotheses concerning the revolution of a planet around the sun related to its distance from the sun.
2. Determine whether their hypotheses should be accepted or rejected based on the results of their tests.
3. Use sunrise and sunset times to compare day and night.
4. Create an accurate scale model of the solar system.
5. Measure distances between points
6. Calculate the distanced to an object using ratios of measured values.
7. Test their hypotheses to determine if they are supported by the available data.
8. Calculate and object's speed and velocity using SI units of distance.
9. Graph motion showing changes in distance as a function of time.
10. Measure speed using time taken to travel a certain distance.
11. Measure the effect of the incline of the ramp on the speed an object attains at the end of the incline.
12. Measure reaction time, maximum speed, and stopping distance.
13. Use reaction time, maximum speed, and stopping distance to calculate the total distance a student could travel after crossing an out-of-bounds line
14. Calculate the acceleration of an object and graph changing speed and distance of an accelerating object.
15. Calculate the work done on an object.
16. Calculate the efficiency of a machine.
17. Control variables to determine the effect of a particular variable.
18. Calculate the ideal mechanical advantage of four types of simple machines.

Attitudes/Beliefs

Students will…

1. Acknowledge God as the creator of the universe.
2. Reject the theory of evolution as fact.
3. Participate in classroom lecture and labs.
4. Praise and thank God for the creating the complexities of the Universe.
5. Praise and thank God for our gift of hearing and vision.

7th Grade Scope and Sequence

Astronomy

- Earth, Moon, and Sun
- The Solar System
- Stars, Galaxies, and the Universe

Sound and Light

- Characteristics of Waves
- Sound
- The Electromagnetic Spectrum
- Light

Motion Forces and Energy

- Motion
- Forces
- Forces in Fluids
- Work and Machines
- Energy and Power
-

7th Grade Resources

Prentice Hall Science Explorer, 2002
Discovering Gods Creation: MLC Guidebook to hands on science, 1997.
Steve Spangler Science supplies
AIMS Education Science Projects
Learn 360 website videos
Carson Dellosa Publishing Science Skills Series
Desktop Investigations in Science

Grade 8 Objectives

Knowledge:

1. The students will identify the four levels of organization in the body: cells, tissue, organs, and organ systems.
2. The students will identify the four types of tissue in the body: muscle, nerve, connective, and epithelial.
3. The students will be able to define homeostasis.
4. The students will be able to explain how to evaluate wellness and list ways to improve personal health.
5. The students will identify the five functions of the skeleton: shape and support, movement, protects the body, produces blood cells, and stores materials.
6. The students will explain the role that moveable joints play in the body.
7. The students will identify the three types of muscles in the human body and describe the function of each: skeletal, smooth, and cardiac.
8. The students will be able to explain how skeletal muscles work in pairs.
9. The students will describe the functions of the skin: protection, maintain temperature, gathers information, and produce vitamin D.
10. The students will list ways that individuals can keep skin healthy.
11. The students will be able to identify and describe the layers of skin: epidermis and dermis.
12. The students will be able to list and describe each of the six nutrients needed by the body: carbohydrates, fats, proteins, vitamins, minerals, and water.
13. The students will describe the function of water in the body.
14. The students will describe the food plate made by the USDA and describe how it can be used to plan a healthy diet.
15. The students will learn to list and describe the information that is included on nutrition labels.
16. The students will describe the general functions carried out by the digestive system and the specific functions of the mouth, esophagus, stomach, small intestine, liver, and large intestine.
17. The students will describe the function of the cardiovascular system.
18. The students will describe the structure of the heart and explain its function.
19. The students will trace the path taken by blood through the circulatory system.
20. The students will describe the functions of the arteries, capillaries, and veins.
21. The students will name and describe the four components of blood: red blood cells, white blood cells, platelets, and plasma.
22. The students will identify the functions of the respiratory system.
23. The students will identify the structures that air passes through as it travels to the lungs.
24. The students will describe how oxygen, carbon dioxide, and water move in the lungs.

25. The students will list how tobacco smoke harms the respiratory and circulatory system.
26. The students will identify the function of the excretory system.
27. The students will name the organs involved in excretion and describe their roles: kidneys, liver, skin, and lungs.
28. The students will explain the cause of infectious disease and identify the kinds of organisms that cause disease.
29. The students will describe methods in which pathogens enter the body.
30. The students will identify the body's barriers against pathogens.
31. The students will describe the role of the inflammatory response in fighting disease.
32. The students will state how the immune system responds to pathogens.
33. The students will define an allergy.
34. The students will explain how diabetes affects the body.
35. The students will explain how cancer affects the body.
36. The students will identify the functions of the nervous system: receiving information, responding to information, and maintaining homeostasis.
37. The students will list the three types of neurons and tell how a nerve impulse travels: sensory, interneuron, and motor.
38. The students will identify the function of the central nervous system, describe its parts, and explain how to keep it safe from injury.
39. The students will identify the functions of the peripheral nervous system and its parts.
40. The students will describe a reflex.
41. The students will name the senses and state the overall function performed by the senses: vision, hearing, smell, taste, and touch.
42. The students will identify the organs of the endocrine system and their functions.
43. The students will list the organs of the male and female reproductive systems and identify their function.
44. The students will list the stages of human development that occur before birth.
45. The students will compare adolescence and puberty.
46. The students will describe the mental and social changes associated with adolescence.
47. The students will state the three points of the cell theory: all living things are composed of cells, cells are the basic unit of structure of living things, and cells are produced from other cells.
48. The students will identify the role of the cell membrane and nucleus in the cell.
49. The students will describe the functions performed by other organelles in the cell: vacuole, golgi body, mitochondria, ribosome, and lysosome.
50.
51. The students will describe the three methods by which materials move into and out of cells: diffusion, osmosis, and active transport.
52. The students will describe the process of photosynthesis.
53. The students will describe the events that occur during respiration.

54. The students will describe the relationship between photosynthesis and respiration.
55. The students will list the events that take place during the three stages of the cell cycle: interphase, mitosis, and cytokinesis.
56. The students will describe the structure of DNA and how DNA replication occurs.
57. The students will describe several methods of cancer treatment and of cancer prevention.
58. The students will explain how geneticists use symbols to represent alleles.
59. The students will describe the principles of probability and how Mendel applied them to inheritance.
60. The students will state how geneticists use Punnett squares.
61. The students will explain the meanings of the terms: phenotype, genotype, homozygous, heterozygous, and codominance.
62. The students will identify and describe the events that occur during meiosis.
63. The students will describe different types of mutations and how they affect an organism.
64. The students will explain why some human traits show a large variety of phenotypes.
65. The students will explain how environmental factors can alter the effects of a gene.
66. The students will explain what determines sex and why some sex-linked traits are more common in males than in females.
67. The students will describe how geneticists use pedigrees.
68. The students will describe the causes and symptoms of four human genetic disorders: cystic fibrosis, sickle-cell disease, hemophilia, and Down syndrome.
69. The students will describe three ways in which people have developed organisms with desired traits: selective breeding, cloning, and genetic engineering.
70. The students will study Darwin's theory of evolution.
71. The students will describe how most fossils form.
72. The students will explain how a scientist determines a fossil's age.
73. The students will distinguish between physical and chemical changes in matter.
74. The students will identify characteristic properties of matter and explain their uses: hardness, density, boiling point, and melting point.
75. The students will compare mixtures and a pure substance and describe elements and compounds.
76. The students will identify atoms as the smallest particles of an element.
77. The students will describe Dalton's theory of atoms.
78. The students will define and differentiate solids, liquids, and gases in terms of shape and volume.
79. The students will compare motion in solids, liquids, and gases.
80. The students will describe the differences between physical and chemical changes.
81. The students will define chemical reactions and explain ways that energy can change in chemical reactions.

82. The students will list the information in the periodic table and describe how it is organized.
83. The students will describe the chemical and physical properties of metals: hardness, shininess, malleability, ductility, and corrosive.
84. The students will identify and describe different groups of metals and describe how the reactivity of metals changes across the periodic table.
85. The students will locate nonmetals and metalloids in the periodic table.
86. The students will compare the physical and chemical properties of nonmetals with those of metals and describe the properties of metalloids.
87. The students will explain how carbon can form bonds in many different arrangements.
88. The students will list the four main classes of organic compounds in living things and name examples: carbohydrates, proteins, lipids, and nucleic acids.

Skills:

1. The students will construct a model to show the relationship among cells, tissue, and organs.
2. The students will learn to work in cooperation with others while performing the labs
3. The students will practice note taking during class lectures.
4. The students will make a three-dimensional model of a human bone.
5. The students will cut and examine cow bone and compare it to human bone.
6. The students will chart their calorie intake.
7. The students will record data based on reading food labels.
8. The students will make a model of the circulatory system.
9. The students will orally communicate the path of blood through the circulatory system.
10. The students will learn to examine specimen through a microscope as they view a goldfish tail through one.
11. The students will measure their lung capacity in the lab "Lung Capacity."
12. The students will use a spreadsheet to make a graph during a lab that compares infectious and noninfectious diseases.
13. The students will learn to interpret data and make conclusions based on that data.
14. While dissecting a frog, the students will identify the differing organs and their purposes.
15. The students will use a microscope to identify a live specimen of Blepharisma and see how it reproduces over time.
16. The students will identify a chemical reaction in the lab "Selective Service".
17. The students will measure mass and circumference of an egg.
18. The students will record data in a lab.
19. The students will visually represent data in a lab.
20. The students will make conclusions based on data and graphing the results.

21. The students will use a microscope to identify the differences between a plant cell, an animal cell, and a cell that shares plantlike and animal like characteristics in the lab "Cells Are Us".
22. The students will construct drawings that compare animal cells to plant cells.
23. The students will perform a lab featuring the fictitious creature the "Mochro" to show the change in the number of chromosomes in mitosis and meiosis.
24. The students will perform a lab experiment that helps them understand the difference between genotype and phenotype.
25. The students will perform a lab experiment that enables them to determine how probability plays a role in genetics.
26. The students will construct Punnett squares to show possible combination of traits.
27. The students will construct a family pedigree.
28. The students will interpret data on genotypes and phenotypes as they examine a family pedigree.
29. The students will draw conclusions from the pedigrees about the type of alleles controlling the traits and the chances of given individuals inheriting specific alleles for the traits.
30. The students will collect and examine data as they fingerprint differing people in school.
31. The students will make conclusions based on the evidence collected.
32. The students will evaluate the theory of evolution in a written essay.
33. The students will need to use scientific inquiry as they discuss how to determine the density of an orange peel.
34. The students will measure the mass and volume of an object.
35. The students will find the volume of an irregularly shaped object through water displacement.
36. The students will determine the density of an object.
37. The students will practice several lab experiments that show a unique property of water called surface tension. This is done in the lab titled "Wonderful Water Skin – A Unique Property of Water – Surface Tension."
38. The students will conduct tests to check for chemical reactions in the lab – "Mixed Reactions."
39. The students will classify the tests based on whether or not a chemical reaction has taken place.
40. The students will identify that the production of gas and change of temperature as evidence of a chemical reaction.
41. The students will construct a graph comparing temperature and volume of a gas.
42. The students will construct a graph comparing volume and pressure of a gas.
43. The students will make conclusions whether these comparisons are positive correlations or negative correlations.
44. The students will make a plan for designing a vehicle to transport an egg in a egg drop creative challenge.

Attitudes:

1. The students will learn to praise God as they realize their bodies are fearfully and wonderfully made.
2. The students will learn to make positive choices that promote wellness for their own physical, mental, and social health.
3. The students will learn that smoking is a harmful action that affects their own bodies circulatory and respiratory system and others who breathe secondhand smoke.
4. The students will learn that improper use of drugs and using illegal drugs can damage their immune system.
5. The students will understand that the abuse of alcohol is a sin and it can harm their body.
6. The students will learn that God uses people's reproductive systems to fill the earth.
7. The students will learn to honor God through their bodies by making God-pleasing decisions with their sexually developed bodies.
8. While the theory of evolution seems logical to the human mind, it clearly goes against Scripture. The students will know to discern what the world teaches about the origin of the world and what the Bible teaches.

Grade 8: Science Scope and Sequence

Book D: Life Science/Human Biology and Health
- Chapter 1: Healthy Body System
- Chapter 2: Bones, Muscles, and Skin
- Chapter 3: Food and Digestion
- Chapter 4: Circulation
- Chapter 5: Respiration and Excretion
- Chapter 6: Fighting Disease
- Chapter 7: The Nervous System
- Chapter 8: The Endocrine System and Reproduction

Book C: Life Science/ Cells and Heredity
- Chapter 1: Cell Structure and Function
- Chapter 2: Cell Processes and Energy
- Chapter 3: Genetics: The Science of Heredity
- Chapter 4: Modern Genetics
- Chapter 5: Changes Over Time

Book K: Physical Science/ Chemical Building Blocks
- Chapter 1: An Introduction to Matter
- Chapter 2: Changes in Matter
- Chapter 3: Elements and the Periodic Table
- Chapter 4: Carbon Chemistry