

## Alignment with South Carolina's Science Standards

This document evaluates the state's Education Standards for Science to determine alignment with content found in Cogno board games. Grades 3-8 were analyzed.



### Highlighting Key

Indicates a significant amount of material addresses the standard

Indicates a moderate amount of material is present to develop student understanding of the standard

## GRADE 3

### Scientific Inquiry

#### Standard 3-1:

The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

#### Indicators

3-1.1 Classify objects by two of their properties (attributes).

3-1.3 Generate questions such as "what if?" or "how?" about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.

### Habitats and Adaptations

#### Standard 3-2:

The student will demonstrate an understanding of the structures, characteristics, and adaptations of organisms that allow them to function and survive within their habitats. (Life Science)

#### Indicators

3-2.3 Recall the characteristics of an organism's habitat that allow the organism to survive there.

3-2.4 Explain how changes in the habitats of plants and animals affect their survival.

### Motion and Sound

#### Standard 3-5:

The student will demonstrate an understanding of how motion and sound are affected by a push or pull on an object and the vibration of an object. (Physical Science)

#### Indicators

3-5.1 Identify the position of an object relative to a reference point by using position terms such as "above," "below," "inside of," "underneath," or "on top of" and a distance scale or measurement.

3-5.3 Explain how the motion of an object is affected by the strength of a push or pull and the mass of the object.

3-5.4 Explain the relationship between the motion of an object and the pull of gravity.

3-5.5 Recall that vibrating objects produce sound and that vibrations can be transferred from one material to another.

## GRADE 4

### Astronomy

Standard 4-3: The student will demonstrate an understanding of the properties, movements, and locations of objects in the solar system. (Earth Science)

#### Indicators

- 4-3.1 Recall that Earth is one of many planets in the solar system that orbit the Sun.
- 4-3.2 Compare the properties (including the type of surface and atmosphere) and the location of Earth to the Sun, which is a star, and the Moon.
- 4-3.3 Explain how the Sun affects Earth.
- 4-3.8 Recognize the purpose of telescopes.

### Properties of Light and Electricity

Standard 4-5: The student will demonstrate an understanding of the properties of light and electricity. (Physical Science)

#### Indicators

- 4-5.1 Summarize the basic properties of light (including brightness and colors).
- 4-5.2 Illustrate the fact that light, as a form of energy, is made up of many different colors.
- 4-5.3 Summarize how light travels and explain what happens when it strikes an object (including reflection, refraction, and absorption).
- 4-5.5 Explain how electricity, as a form of energy, can be transformed into other forms of energy (including light, heat, and sound).

## GRADE 5

### Scientific Inquiry

Standard 5-1: The student will demonstrate an understanding of scientific inquiry, including the foundations of technological design and the processes, skills, and mathematical thinking necessary to conduct a controlled scientific investigation.

#### Indicators

- 5-1.1 Identify questions suitable for generating a hypothesis.
- 5-1.3 Evaluate results of an investigation to formulate a valid conclusion based on evidence and communicate the findings of the evaluation in oral or written form.

### Ecosystems: Terrestrial and Aquatic

Standard 5-2: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems. (Life Science)

#### Indicators

- 5-2.5 Explain how limiting factors (including food, water, space, and shelter) affect populations in ecosystems.

### Landforms and Oceans

Standard 5-3: The student will demonstrate an understanding of features, processes, and changes in Earth's land and oceans. (Earth Science)

#### Indicators

- 5-3.1 Explain how natural processes (including weathering, erosion, deposition, landslides, volcanic eruptions, earthquakes, and floods) affect Earth's oceans and land in constructive and destructive ways.
- 5-3.2 Illustrate the geologic landforms of the ocean floor (including the continental shelf and slope, the mid-ocean ridge, rift zone, trench, and the ocean basin).

## Properties of Matter

Standard 5-4: The student will demonstrate an understanding of properties of matter. (Physical Science)

### Indicators

5-4.1 Recall that matter is made up of particles too small to be seen.

## Forces and Motion

Standard 5-5: The student will demonstrate an understanding of the nature of force and motion. (Physical Science)

### Indicators

5-5.1 Illustrate the affects of force (including magnetism, gravity, and friction) on motion.

5-5.2 Summarize the motion of an object in terms of position, direction, and speed.

5-5.3 Explain how unbalanced forces affect the rate and direction of motion in objects.

5-5.6 Explain how a change of force or a change in mass affects the motion of an object.

## GRADE 6

### Scientific Inquiry

Standard 6-1: The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

#### Indicators

6-1.2 Classify organisms, objects, and materials according to their physical characteristics by using a dichotomous key.

### Earth's Atmosphere and Weather

Standard 6-4: The student will demonstrate an understanding of the relationship between Earth's atmospheric properties and processes and its weather and climate. (Earth Science)

#### Indicators

6-4.1 Explain how solar energy affects Earth's atmosphere and surface (land and water).

### Conservation of Energy

Standard 6-5: The student will demonstrate an understanding of the law of conservation of energy and the properties of energy and work. (Physical Science)

#### Indicators

6-5.1 Identify the sources and properties of heat, solar, chemical, mechanical, and electrical energy.

6-5.2 Explain how energy can be transformed from one form to another (including the two types of mechanical energy, potential and kinetic, as well as chemical and electrical energy) in accordance with the law of conservation of energy.

## GRADE 7

### Scientific Inquiry

Standard 7-1: The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

#### Indicators

7-1.1 Generate questions that can be answered through scientific investigation.

7-1.2 Explain the importance that repeated trials and a well-chosen sample size have with regard to the validity of a controlled scientific investigation.

7-1.3 Critique a conclusion drawn from a scientific investigation.

### Human Body Systems and Disease

Standard 7-3: The student will demonstrate an understanding of the functions and interconnections of the major human body systems, including the breakdown in structure or function that disease causes. (Life Science)

#### Indicators

7-3.2 Recall the major organs of the human body and their function within their particular body system.

### The Chemical Nature of Matter

Standard 7-5: The student will demonstrate an understanding of the classifications and properties of matter and the changes that matter undergoes. (Physical Science)

#### Indicators

7-5.1 Recognize that matter is composed of extremely small particles called atoms.

## GRADE 8

### Scientific Inquiry

Standard 8-1: The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

#### Indicators

8-1.1 Recognize the importance of a systematic process for safely and accurately conducting investigations.

8-1.2 Generate questions for further study on the basis of prior investigations.

8-1.3 Explain the importance of and requirements for replication of scientific investigations.

### Earth's Biological History

Standard 8-2: The student will demonstrate an understanding of Earth's biological diversity over time. (Life Science, Earth Science)

#### Indicators

8-2.1 Explain how biological adaptations of populations enhance their survival in a particular environment.

8-2.2 Explain how Earth's history has been influenced by catastrophes (including the impact of an asteroid or comet, climatic changes, and volcanic activity) that have affected the conditions on Earth and the diversity of its life-forms.

## Astronomy: Earth and Space Systems

Standard 8-4: The student will demonstrate an understanding of the characteristics, structure, and predictable motions of celestial bodies. (Earth Science)

### Indicators

- 8-4.1 Summarize the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).
- 8-4.3 Explain how the surface features of the Sun may affect Earth.
- 8-4.6 Explain how gravitational forces are influenced by mass and distance.
- 8-4.7 Explain the effects of gravity on tides and planetary orbits.
- 8-4.8 Explain the difference between mass and weight by using the concept of gravitational force.
- 8-4.9 Recall the Sun's position in the universe, the shapes and composition of galaxies, and the distance measurement unit (light year) needed to identify star and galaxy locations.
- 8-4.10 Compare the purposes of the tools and the technology that scientists use to study space (including various types of telescopes, satellites, space probes, and spectroscopes).

## Forces and Motion

Standard 8-5: The student will demonstrate an understanding of the effects of forces on the motion of an object. (Physical Science)

### Indicators

- 8-5.3 Analyze the effects of forces (including gravity and friction) on the speed and direction of an object.
- 8-5.4 Predict how varying the amount of force or mass will affect the motion of an object.
- 8-5.5 Analyze the resulting effect of balanced and unbalanced forces on an object's motion in terms of magnitude and direction.
- 8-5.6 Summarize and illustrate the concept of inertia.

## Waves

Standard 8-6: The student will demonstrate an understanding of the properties and behaviors of waves. (Physical Science)

### Indicators

- 8-6.5 Explain hearing in terms of the relationship between sound waves and the ear.
- 8-6.6 Explain sight in terms of the relationship between the eye and the light waves emitted or reflected by an object.
- 8-6.7 Explain how the absorption and reflection of light waves by various materials result in the human perception of color.
- 8-6.8 Compare the wavelength and energy of waves in various parts of the electromagnetic spectrum (including visible light, infrared, and ultraviolet radiation).

Please note that use of these standards does not imply this state's endorsement of Cogno.