

## Alignment with Rhode Island'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

### The Physical Setting

#### The Universe Grades 3-5

- The patterns of stars in the sky stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons.
- Telescopes magnify the appearance of some distant objects in the sky, including the moon and the planets. The number of stars that can be seen through telescopes is dramatically greater than can be seen by the unaided eye.
- Planets change their positions against the background of stars.
- The earth is one of several planets that orbit the sun, and the moon orbits around the earth.
- Stars are like the sun, some being smaller and some larger, but so far away that they look like points of light. The sun is a star.

#### Grades 6-8

- The sun is a medium-sized star located near the edge of a disk-shaped galaxy (Milky Way) of stars, part of which can be seen as a glowing band of light that spans the sky on a very clear night. The universe contains many billions of galaxies, and each galaxy contains many billions of stars. The naked eye, even the closest of these galaxies is no more than a dim, fuzzy spot.
- The sun is many thousands of times closer to the earth than any other star. Light from the sun takes a few minutes to reach the earth, but light from the next nearest star takes a few years to arrive. The trip to that star would take the fastest rocket thousands of years. Some distant galaxies are so far away that their light takes several billion years to reach the earth. People on earth, therefore, see them as they were long ago in the past.
- Large numbers of chunks of rock orbit the sun. Some of those that the earth meets in its yearly orbit around the sun glow and disintegrate from friction as they plunge through the atmosphere—and

sometimes impact the ground. Other chunks of rocks mixed with ice have long off-center orbits that carry them close to the sun, where the sun's radiation (of light and particles) boils off frozen material from their surfaces and pushed it into a long, illuminated tail.

#### The Earth Grades 3-5

- Things on or near the earth are pulled toward it by the earth's gravity.
- Like all planets and stars, the earth is approximately spherical in shape.
- Air is a substance that surrounds us, takes up space, and whose movement we feel as wind.
- We live on a relatively small planet, the third from the sun in the only system of planets definitely known to exist (although other, similar systems may be discovered in the universe).
- The earth is mostly rock. Three-fourths of its surface is covered by a relatively thin layer of water (some of it frozen) and the entire planet is surrounded by a relatively thin blanket of air. IT is the only body in the solar system that appears able to support life. The other planets have compositions and conditions very different from earth.
- Everything on or anywhere near the earth is pulled toward the earth's center by gravitational force.
- Because the earth turns daily on an axis that is tilted relative to the plane of the earth's yearly around the sun, sunlight falls more intensely on different parts of the earth during the year. The difference in heating of the earth's surface produces the planet's seasons and weather patterns.

#### Structure of Matter Grades 3-5

- No matter how parts of an object are assembled, the weight of the whole object made is always the same as the sum of the parts; and when a thing is broken into parts, the parts have the same total weight as the original thing.
- Materials may be composed of parts that are too small to be seen without magnification.

#### Grades 6-8

- All matter is made up of atoms, which are far too small to see directly through a microscope. The atoms of any element are alike but different from atoms other elements.
- Equal volumes of different substances usually have different masses.
- No matter how substances within a closed system interact with one another, or how they combine or break apart, the total weight of the system remains the same. The idea of atoms explains the conservation

of matter. If the number of atoms stays the same no matter how they are rearranged, then their total mass stays the same.

#### Energy Transformations

Grades 6-8

- Energy cannot be created or destroyed, but only changed from one form into another. Most of what goes in the universe—from exploding stars and biological growth to the operation of machines and the motion of people—involves some form of energy being transformed into another.

#### Motion

Grades 6-8

- Light from the sun is made up a mixture of many different colors of light, even though to the eye the light looks almost white. Other things that give off or reflect light have a different mix of colors.
- Something can be "seen" when light waves emitted or reflected by it enter the eye—just as something can be "heard" when sound waves from it enter the ear.
- An unbalanced force acting on an object changes its speed or path of motion, or both. If the force acts toward a single center, the object's path may curve into an orbit around the center.
- Vibrations in materials set up wavelike disturbances that spread away from the source. Sounds and earthquake waves are examples. These and other waves move at different speeds in different materials.
- Human only respond only to a narrow range of wavelengths of electromagnetic radiation—visible light. Differences of wavelengths within that range are perceived as differences in color.

#### Forces of Nature

Grades 6-8

- The sun's gravitational pull holds the earth and other planets in their orbits, just as the planet's gravitational pull keeps their moons in orbit around them.
- Electric currents and magnets can exert a force on each other.

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