5th Grade Science FCAT 2.0 Review

The 5th grade Science FCAT will take place on ***Monday, April 13, through Friday, May 8, 2015.*** *You can review for this test by revisiting the information on this review sheet, as well as the Science Notebooks you created in class.*

NATURE OF SCIENCE

The Practice of Science: SC.5.N.1.1

1. Scientific inquiry is a process through which questions are answered. Scientists look for things they want to learn about, and conduct observations or experiments to gather data and form conclusions.
2. Hypothesis: this is the prediction scientists make about what they expect will happen. For example, "Giving plants Fiji water will make them grow taller".
3. Procedures: the set of steps used in a science investigation. These must be clearly explained so that the experiment can be repeated by other scientists in the same way.
4. Observations and collecting data: It is important for scientists to take notes of their observations and collect data. Observations must be objective and based on the senses, not based on opinion. For example, "the flower looked pretty" is not a scientific observation, but "the flower had 8 red petals around a yellow center" is a scientific observation because it is objective and based on what is seen.
5. Control group: factor in an experiment that is kept the same. Without a control group, the scientist can not make comparisons and say whether there was an effect.
6. Variable: any factor that can change in an experiment. In every experiment, you have to keep all variables the same except the one you are testing.
7. Graphing data: Once a scientist collects data, the data is communicated in graphs so that it can be easily understood by others. Bar graphs are for discrete data (counting and grouping into categories) and line graphs are for continuous data (when change is observed over time).
8. Drawing conclusions: once you analyze the data you draw a conclusion, or a final statement about your original problem or question. This is where you say whether your hypothesis was supported by the data. Conclusions allow scientists to explain things they observe.

The Characteristics of Scientific Knowledge: SC.5.N.2.1

1. Science is grounded in observations that are testable.
2. Explanations must always be linked to evidence (objective observations and measurements, not opinion).
3. Scientific evidence or objective observations are not subject to personal interpretation, but rather will be the same for all people.

The Characteristics of Scientific Knowledge: SC.5.N.2.2

1. Replicating experiments: scientists repeat or replicate experiments in order to validate the findings of that investigation (in order to prove the results are true and reliable).
2. Scientists should compare the observations made by different groups using the same tools, procedures, and methods, and they should seek reasons to explain differences and similarities across groups.
3. Scientists question, discuss, and check each others' evidence and explanations.
4. Scientists compare methods and results of investigations done by others, and repeat experiments with multiple trials in order to confirm and validate their results.

EARTH AND SPACE SCIENCE

Earth in Space and Time: SC.5.E.5.1

1. Our Solar System is part of the Milky Way galaxy.
2. The Sun is the only star in our Solar System, and it is the main source of all energy on Earth (light and heat).
3. A galaxy consists of gas, dust, and many stars, including objects orbiting the stars (like planets, moons, asteroids, and comets.)
4. Stars can be different: some are smaller, some are larger; some are brighter, some release more gaseous energy; some are closer, and some are farther. The size and brightness of a star as it appears in our sky depends on all of these factors. Mainly, stars appear tiny because they are much farther away than our Sun or any of our planets.
5. The Sun appears larger and brighter than any other star because it is the closest one to Earth.

Earth in Space and Time: SC.5.E.5.3

1. The objects in our Solar System include the Sun (the only star), planets, moons, asteroids, and comets.
2. There are 8 planets: the inner planets—Mercury, Venus, Earth, Mars—and the outer planets—Jupiter, Saturn, Uranus, and Neptune. Remember them with "My Very Educated Mother Just Served Us Nachos".
3. Inner planets are called the terrestrial planets because they are rocky and resemble planet Earth. They have a thin atmosphere and are closer to one another and to the Sun.
4. Outer planets are known as the Gas Giants because they have gaseous surfaces. They also have more moons, icy/rocky rings, and a thicker atmosphere.
5. The farther planets are from the Sun, the colder they are, the longer their year.

Earth in Space and Time: SC.4.E.5.4

1. All planets revolve around a star (the Sun). It takes 365 ¼ days (year) for planet Earth to make one revolution around the Sun. The farther a planet is from the Sun, the longer it takes for that planet to make one full revolution.
2. Our Earth, like other planets, is tilted on its axis and rotates around that axis, causing day and night. One rotation around the axis takes 24 hours.
3. Even though the Sun appears to rise and set every day and stars appear to shift across the night sky, it's actually the Earth that's rotating on its axis.
4. Our moon appears to change over the course of about 29 ½ days, as it revolves around planet Earth. It goes through the following phases, in order: full moon, waning gibbous, third quarter, waning crescent moon, new moon, waxing crescent, first quarter, waxing gibbous, full moon.

Earth Systems and Patterns: SC.5.E.7.1

1. Water cycle: the change of water from one state to another as it moves between the Earth's surface and the atmosphere (water can be gas, a liquid, or a solid and can go back and forth from one state to another).
2. Gas to liquid = condensation. Liquid to gas = evaporation.
3. Processes of the water cycle include runoff, collection, evaporation, condensation, precipitation.
4. The water we drink and swim in today is the same that was on the planet during the time of the dinosaurs.
5. The ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.

Earth Systems and Patterns: SC.5.E.7.3

1. Weather is the variety of events in the atmosphere that we observe on a daily basis. This includes air temperature (thermometer), barometric pressure (barometer), humidity (hygrometer), wind speed (anemometer) and direction (wind vane), and precipitation – rain, sleet, snow, and hail (rain gauge).
2. Climate is the pattern of weather in a certain place over a long period of time.
3. Scientists identify three basic climate zones on Earth: polar (cold, dry), tropical (warm, wet or dry depending on season), and temperate (temperature and precipitation change with season and place to place).
4. Differences in temperature and humidity are found among the Earth's various environments: desert, grassland, rainforest, tundra, and wetland.
5. Hurricanes occur over oceans where warm, humid air is present.
6. Different types of clouds in our atmosphere: cumulonimbus (thunderstorms), stratus (light

rain/drizzle; also produces fog), cirrus (high level clouds made of ice crystals), and cumulous (fair weather clouds).

Earth Structures: SC.4.E.6.2

1. Minerals can be identified by their physical properties, including hardness (by scratch test), color, luster (shiny, glassy, pearly, metallic, non-metallic, dull), cleavage (the way it breaks—smooth, jagged, rough…), and streak color (the color it leaves when you draw with it).
2. Some common minerals are quartz, feldspar, mica, calcite, talc, pyrite, and graphite.
3. Rocks are mixtures of minerals. Scientists classify rocks according to how they formed: igneous (formed from molten rock and lava), sedimentary (pieces of other rocks and fossilized organisms compressed over time), and metamorphic rock (formed from heat and pressure).

Earth Structures: SC.4.E.6.3

1. Natural resources found on Earth can either be renewable or non-renewable.
2. Renewable resources won't run out if we are careful! They include: water (hydropower), wind, sun (solar power), heat from the earth's core (geothermal energy), wood, and soil.
3. Non-renewable resources will be used up faster than they can be replaced. They include oil, natural gas, coal, and nuclear energy.
4. Some resources found in Florida include water, phosphate, oil, limestone, silicon, wind, and solar energy.

Earth Structures: SC.4.E.6.4

1. Physical weathering is the breaking down of rock by wind, water, ice, temperature change, or plants. For example, water that seeps into cracks in rocks and freezes can cause the rock to crack and break.
2. Erosion is the movement of rock by gravity, wind, water, or ice. For example, ocean tides and waves cause the sand on a beach to be washed away and carried out to sea.

LIFE SCIENCE

Heredity and Reproduction: SC.4.L.16.4

1. Grasshoppers, dragonflies, and cockroaches go through incomplete metamorphosis (egg-nymph-adult).
2. Moths, butterflies, and beetles go through complete metamorphosis (egg, larvae, pupa, and adult).
3. The life cycle of both flowering and some nonflowering plants start with a seed. Flowering plants: seed → seedling → adult plant → flowers/fruit → seed dispersal → germination. Nonflowering plants: seed → seedling → adult plant → cones → seed dispersal → germination.
4. Some plants produce spores such as ferns and mosses.

Interdependence: SC.5.L.17.1

1. Adaptations are ways in which living things change in order to adapt to and survive in their specific environment.
2. Behavioral adaptations are things that animals or plants do to adapt, like hibernate, fight, flee, mating habits, etc. Animal behaviors are affected by heredity (inherited) and learning (experience).
3. Physical adaptations are ways that plants or animals change physically, like camouflage, fur, blubber, appearance, etc.
4. Plants and animals respond to their environment, and adaptations allow them to survive, or they change locations or die.

Interdependence: SC.4.L.17.3

1. Flow of energy: starts with the Sun, then goes to producers (plants, who produce their own energy through photosynthesis), to primary consumers (herbivores), to secondary consumers (omnivores and carnivores), to decomposers (fungi, bacteria, worms).
2. Photosynthesis is the process in which plants use carbon dioxide, water, and energy from the Sun in order to produce glucose (energy) and release oxygen.
3. Consumers cannot produce their own energy, so they eat producers or other consumers to get energy.

Organization and Development of Living Organisms: SC.3.L.14.1

1. Plant structures and their purposes:
   a) Stem: provide structure and support and allows for the absorption and transportation of water and nutrients from the soil.
   b) Leaves or needles: where photosynthesis happens (turning sunlight into energy), also where the "breathing" of the plant happens (CO_2 is taken in during photosynthesis and oxygen is released).

c) Flowers: the reproductive organ of the plant (includes the stamen, pistil, ovary, petals, sperm, and egg). Serves to attract birds and bees in order to spread pollen for fertilization and reproduction.
d) Seeds: forms when a male and female reproductive cell is combined.
e) Fruit: grows around the seeds and serves to protect the seeds but also to disperse the seed so that new plants can grow in other places.
f) Root: holds the plant in place and absorbs water and nutrients from the soil.

2. Sexual reproduction in flowering plants: pollination, fertilization (seed production), seed dispersal, and germination.
3. Non-flowering plants, like ferns and mosses, have spores, not flowers and seeds.
4. Plants respond to stimuli in the environment. For example, plants will grow towards sunlight, and roots will grow downwards due to gravity.

Organization and Development of Living Organisms: SC.5.L.14.1

1. Know the following organs' primary functions and how to identify them on a body diagram: skin, brain, heart, lungs, stomach, liver, intestines (small and large), pancreas, muscles, skeleton, reproductive organs, kidney, bladder, and sensory organs.

Organization and Development of Living Organisms: SC.5.L.14.2

1. Comparing animals and plants: skeletons (internal or external—exoskeletons) are like plants' stems. Lungs are like plants leaves. Bark is like skin. Flowers are the reproductive organs.
2. The main classifications in the animal kingdom are mammals, amphibians, fish, reptiles, and birds. Know the general characteristics of each.
3. Flowering plants produce seeds and nonflowering plants produce spores (ferns and mosses) or cones (conifers).

PHYSICAL SCIENCE

Changes in Matter: SC.5.P.9.1

1. Matter can undergo physical or chemical changes.
2. Physical changes do not create a new substance. The substance can change in color, size, shape, temperature, or state, but it is still the same substance. For example, when ice melts or water freezes, or when you cut something into smaller pieces, you have not made a new substance.
3. Liquid to gas = evaporation. Gas to liquid = condensation. Solid to liquid = melting. Liquid to solid = freezing.
4. Chemical changes occur when the change results in the formation of a new substance. For example, rust is a chemical change, because new chemical bonds were created and you cannot get back the

original material. Other common chemical changes include food decaying, something burning, or something being cooked or baked.

5. How to tell if it's a chemical change? Some signs include a change in color, a formation of a gas, a formation of a solid, fizzing or burning, or a change in temperature.

Forces and Changes in Motion: SC.5.P.13.1

1. A force is a push or pull. Common forces include gravity, magnetism, and friction.
2. Motion is the change in an object's position from start to finish.
3. Forces act in pairs. For example, friction may prevent a ball from rolling down a hill if the hill is not too steep, but on a steeper mountain, gravity will win out as the stronger force over friction.
4. Magnetism is a force that acts between the north and south poles of magnets. In magnets, opposite poles attract, and like poles repel.

Forces and Changes in Motion: SC.5.P.13.2

1. The greater the force applied to an object, the greater the change in motion of that object.
2. The greater the mass of an object (the heavier), the more force will be required to make it move.
3. An object in motion will stay in motion unless acted on by another force. An object at rest (inertia) will stay at rest unless acted upon by another force. (Newton's laws of motion).
4. For an object to be set in motion there must be unbalanced forces.
5. Speed is determined by the distance an object travels and the time it takes the object to travel that distance. The greater the mass of an object, the slower its speed will be given the same force.

Forms of Energy: SC.5.P.10.1

1. Basic forms of energy include light, heat (caused by rubbing two objects together), sound (through vibrations), electrical, chemical (batteries, gas), and mechanical (anything that moves).
2. Light can be reflected, refracted (bent), or absorbed. Light travels in a straight line until it strikes an object or travels from one material to another.
3. Sound is caused by vibration, and the slower the vibration the lower the pitch.

Forms of Energy: SC.5.P.10.2

1. Energy has the ability to cause motion and create change. Wind, for example, can cause a windmill to move, which can power energy.
2. Possible transfers of energy include chemical (battery), to mechanical (fan) and sound (buzzing vibrations). Or mechanical (pedaling on a bike) to mechanical (the moving of the bike) and heat (the

friction of the tires on the road).

3. Potential energy is the stored energy an object has as a result of their position and mass. The higher an object the more potential energy it has.
4. Kinetic energy is the energy of motion. The amount of kinetic energy of an object depends on its mass and speed.

Forms of Energy: SC.5.P.10.4

1. Electrical energy can be transformed into heat, light, sound, and mechanical energy.
2. The Sun produces heat and light energy, and heat from the Sun can be transferred from one object to another.
3. Heat and electricity are conducted best through metal. You can use rubber, plastic, or wood to insulate objects from heat (not transfer the heat) or electricity.
4. Electricity can flow only through a closed circuit (or a complete loop).

Properties of Matter: SC.5.P.8.1

1. Matter is anything that has mass and takes up space.
2. There are three states of matter: gas, liquid, and solid. Solids have a definite shape and tightly packed particles. Liquids and gasses take the shape of whatever container they are in.
3. Particles are most tightly packed in a solid, are more loosely bonded and moving around in a liquid, and are bouncing all over the place in a gas.
4. Physical properties of matter include mass, shape, volume, color, texture, temperature, odor, taste, hardness, and attraction to magnets.

Properties of Matter: SC.5.P.8.3

1. A mixture is made from two or more substances that are physically blended together. Mixtures are not chemically combined, which means that the mixing of two or more substances does not create a new substance that is different from the ones mixed.
2. Mixtures can be separated based on observable properties of their parts, such as particle size (i.e., sand gets separated from water with a coffee filter), shape and color (visible properties), magnetic attraction (like with the iron filings), and evaporation (to separate salt from water).
3. Some materials will dissolve in water, like salt and sugar, but others will not, like pepper or sand.
4. You can speed up the rate of dissolving by stirring the mixture, or increasing the temperature of the liquid.