8th grade Science FCAT 2.0 Review

Created by: R. Hallett-Njuguna, SCPS

For Teachers:

- The purpose of this presentation is to help teachers review the material required for the Science FCAT 2.0.
- All of the assessed benchmarks from 6th-8th grade are covered using videos, online activities, and probing questions.
- Some suggestions for use:

  -Whole class review via white board

  -Small group/center review on computer

  -Individualized formative assessment to determine what review is needed

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Powerpoint Index

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Nature of Science

Scientific Experimentation

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Benchmarks

- SC.8.N.1.1 (SC.8.N.1.3, SC.6.N.1.1, SC.7.N.1.1): Students will evaluate a scientific investigation using evidence of scientific thinking and problem solving. Students will interpret and analyze data to make predictions and/or defend conclusions.
- SC. 7.N.1.3 (SC.6.N.1.3): Students will distinguish between an experiment and other types of scientific investigations where variables cannot be controlled.
- SC. 7.N.1.4: Students will identify test variables (independent variables) and outcome variables (dependent variables) in a given scientific investigation.
- SC. 8.N.1.4: Students will explain how hypotheses are valuable.

Evidence, Data, and Conclusions

Motion of objects traveling down a ramp				
	Mass (g)	Trial 1 Time (s)	Trial 2 Time (s)	Trial 3 Time (s)
Car A	15.5	4.7	4.9	4.7
Car B	20.2	3.3	2.0	3.1
Car C	7.9	5.9	5.6	5.8
Ball A	15.7	4.8	4.6	4.6
Ball B	27.1	4.9	5.3	5.0
Ball C	5.5	6.0	6.2	6.3

Based solely on the data above, what is one conclusion you can make? What evidence do you have to support it? What other evidence would you like to have?

SC.8.N.1.1, SC.8.N.1.3, SC.6.N.1.1, SC.7.N.1.1

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Experiment vs Investigation

- Melanie and Brody want to find out whether wooden bats or metal bats allow baseballs to travel farther.
- Melanie asks five different people to hit ten balls with each type of bat and she measures the distance each ball travels.
- Brody researches the physical properties of the pine wood and the aluminum metal and then estimates the possible distance a ball could travel with a given force.

Which student conducted an experiment and which student conducted an investigation? Explain your answer.

SC.7.N.1.3, SC.6.N.1.3

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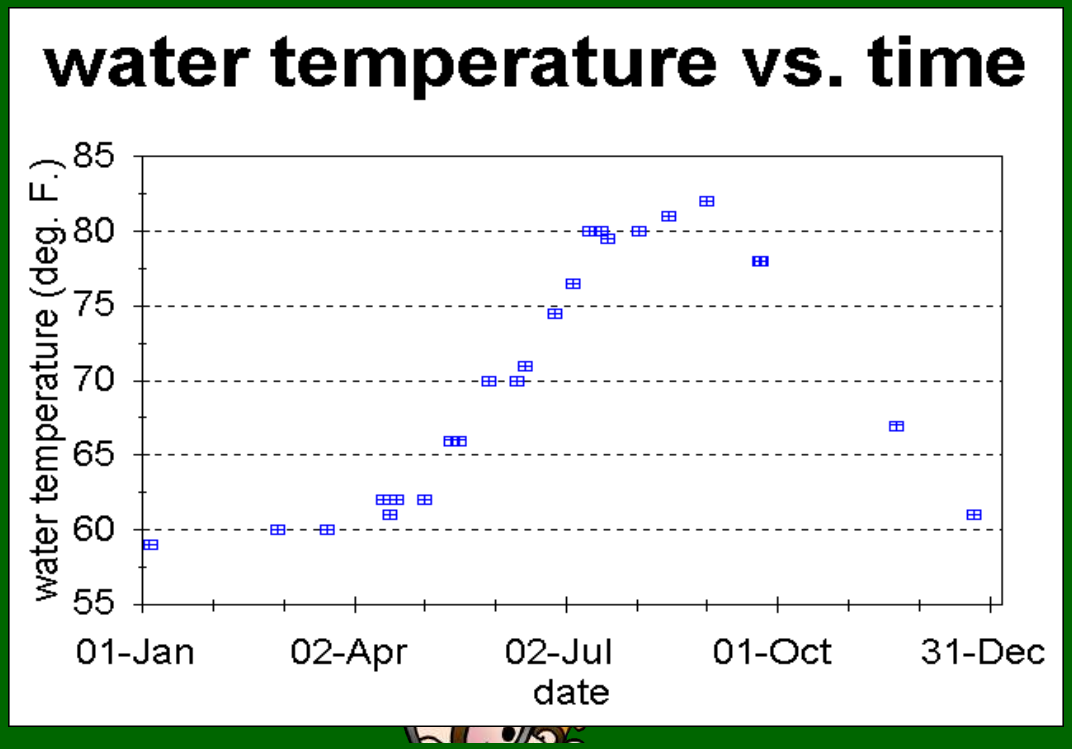
Variables

Lindsey wanted to determine how the temperature of the water in her pool changed throughout the year. She took measurements and made the following graph.



In her investigation, what was the test (dependent) variable and what was the outcome (independent)variable?

SC.7.N.1.4

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Hypotheses

- Kathryn wants to keep squirrels from eating the bird feed she puts out for the birds in her yard. She decides to conduct an experiment to see which types of feed the squirrels seem to prefer. Based on her observations, she hypothesizes that the squirrels prefer when berries are in the feed.

Why was it important for Kathryn to generate a hypothesis prior to starting her experiment?

SC.8.N.1.4

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Replication and Repetition

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Benchmarks

- SC.7.N.1.2 (SC.6.N.1.2 , SC.8.N.1.2) : Students will differentiate between replication and repetition. Students will evaluate the use of repeated trials or replication in a scientific investigation. Students will explain why scientific investigations should be replicable.
- SC.6.N.1.4 : Students will compare methods and results obtained in a scientific investigation.

Replication vs Repetition

Elizabeth conducted an experiment to determine the which toy car would travel the fastest down a ramp. She sent three different toy cars down a ramp five times each and recorded the time it took for the car to reach the bottom of the ramp. Elizabeth reported to her class that the smallest car had the greatest speed. After hearing Elizabeth's results, her classmate Kelley wanted to conduct the same experiment because she felt the results might be inaccurate. Kelley followed Elizabeth's exact procedures to conduct her own experiment.

Which underlined sentence above is an example of replication and which is an example of repetition? Why are both activities important for science experimentation?

SC.7.N.1.2, SC.6.N.1.2, SC.8.N.1.2

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Comparing Investigations

- Two students conducted the same experiment measuring pH. Sarah used a digital pH meter. Olivia used pH paper. They recorded their results in the tables below.

Liquid	pH
Lemon Juice	2
Water	7
Coffee	5
Bleach	13

Liquid	pH
Lemon Juice	1.9
Water	7.3
Coffee	5.5
Bleach	12.8

Which table represents the data from which student? Explain your choices

SC.6.N.1.4

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Nature of Science

Science Methods

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Benchmarks

- SC.7.N.1.5 (SC.8.N.1.5) : Students will describe and analyze common methods and models used in different fields of study.
- SC.7.N.3.2 : Students will identify the benefits and limitations of the use of scientific models.
- SC.8.E.5.10: Students will identify how technology is essential to science

Methods of Science

Observation **Data**

Hypothesis **Conclusion**

Describe what each term above means in the context of scientific experimentation.

SC.7.N.1.5, SC.8.N.1.5

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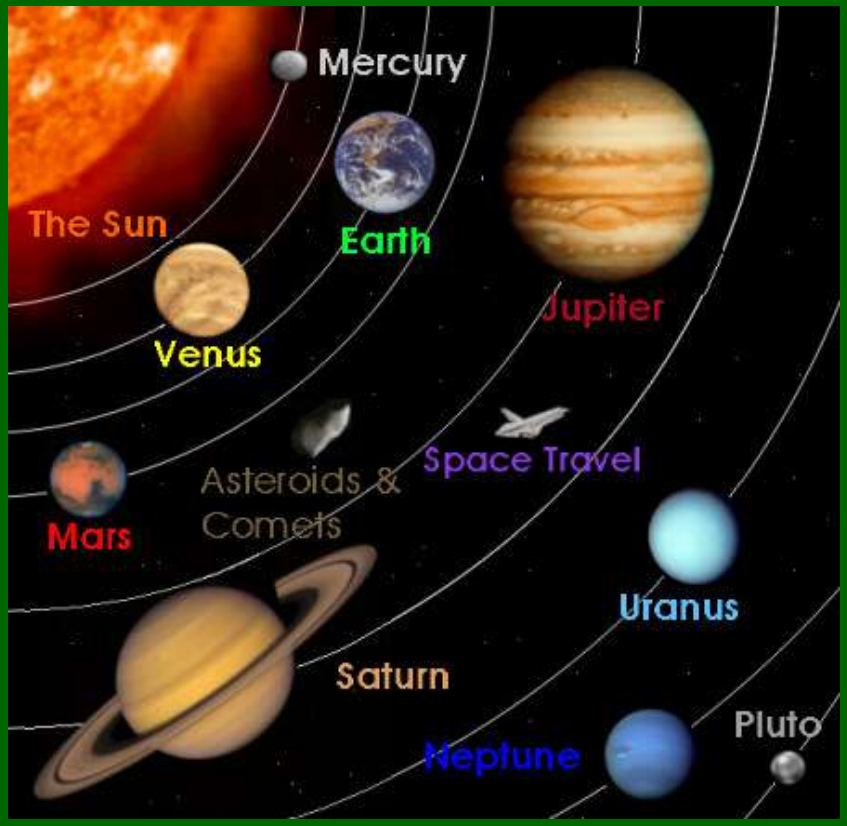
Using Models



Books often have images like the one above for our solar system. How might this type of image be helpful and how might it be misleading?

SC.7.N.3.2

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Using Technology

Explain how the pairs of technologies in the images above are used in science. In this respect, how are two pairs different and how are they similar?

SC.8.E.5.10

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Scientific Knowledge

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Benchmarks

- SC.6.N.2.2(SC.8.N.1.5), SC.7.N.2.1(SC.7.N.1.7): Students will explain that scientific knowledge may change as new evidence is discovered or new scientific interpretations are formed. Students will identify instances in the history of science in which scientific knowledge has changed as a result of new evidence.
- SC.8.N.1.6 (SC.7.N.1.6): Students will explain that scientific explanations are based on empirical evidence, logical reasoning, predictions, and modeling.

Scientific Knowledge

To what change in scientific knowledge does the cartoon above refer?

SC.6.N.2.2(SC.8.N.1.5), SC.7.N.2.1(SC.7.N.1.7)

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Explanations based on Evidence

- The Theory of Plate tectonics describes how the Earth's crust moves and has been moving over time creating the surface as we know it today.

What evidence could be/has been used to support this theory? How could we/do we model this theory?

SC.8.N.1.6 (SC.7.N.1.6)

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Nature of Science

Theory vs Law

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Benchmarks

- SC.7.N.3.1 (SC.6.N.3.1): Students will explain the difference between theories and laws. Students will identify examples of theories and laws.
- SC.8.N.3.2: Students will explain why theories may be modified but are rarely discarded.

Theories vs Laws

Plate Tectonics

Gravity

Conservation of Energy

Evolution

Which topics above relate to a theory and which to a law? How do theories and laws differ?

SC.7.N.3.1 (SC.6.N.3.1)

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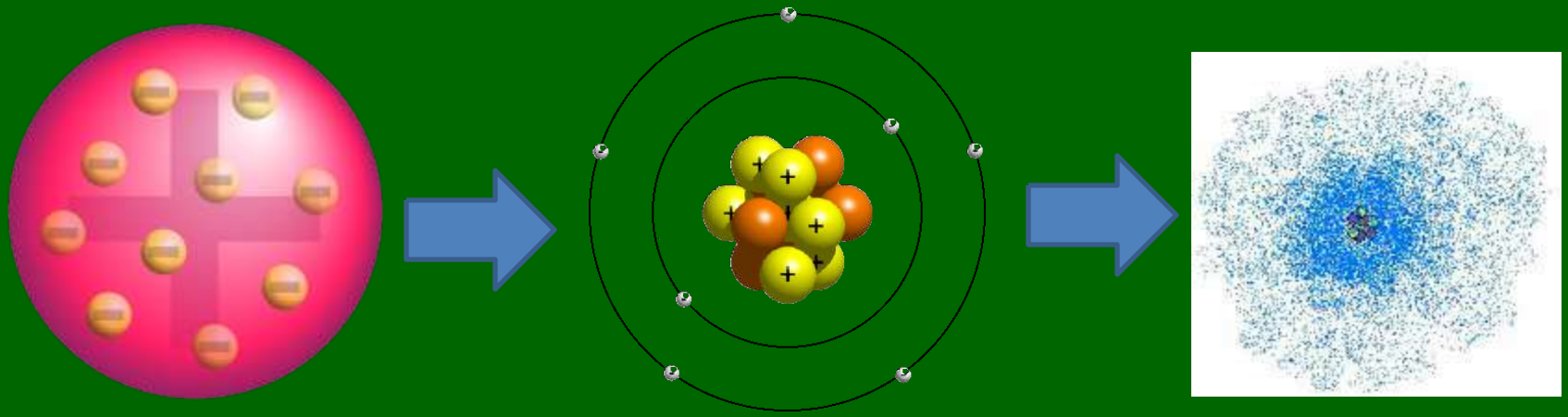
Modifying Theories



Three of the many models of the atom are shown above. Describe some of the ways that the Atomic Theory has changed over time.

SC.8.N.3.2

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Earth Science

The Universe

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Benchmarks

- SC.8.E.5.3: Students will compare and contrast the relative distance, relative size, and general composition of astronomical bodies in the universe.
- SC.8.E.5.1: Students will describe distances between objects in space in the context of light and space travel.
- SC.8.E.5.2: Students will describe that the universe contains billions of galaxies and stars.

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Comparing Objects in Space

Jupiter

Betelgeuse

The Moon

How do the objects above compare to Earth in terms of size, distance from the Sun, and atmospheric composition?

SC.8.E.5.3

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Distances in Space

Time for travel: approximately 1 billion yrs

Distance: Less than 1 light year

Distance: 100,000 light years

Time for travel: approximately 12 yrs

Which distance and time are most reasonable for each image?

SC.8.E.5.1

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Our Universe

Thousands of stars around a black hole

All of the billions of stars and galaxies

A system of planets and moons

All of the known galaxies

Which statement above most accurately describes our universe? Explain your choice

SC.8.E.5.2

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Earth Science

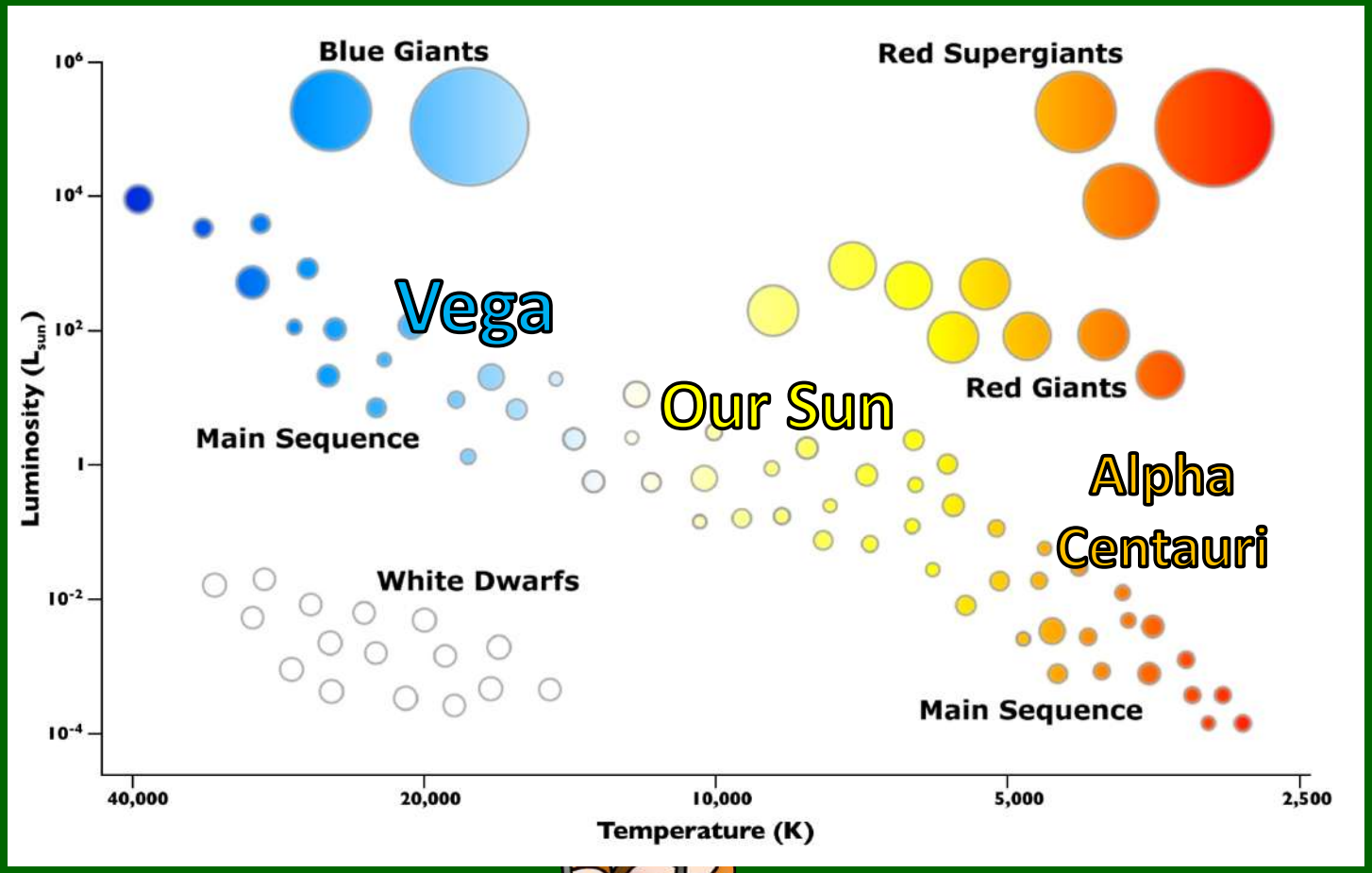
Sun and Stars

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.8.E.5.5 : Students will describe and classify physical properties of stars: apparent magnitude, temperature (color), size, and absolute brightness
- SC.8.E.5.6: Students will evaluate models of solar properties and explain solar characteristics, including rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.

Properties of Stars



Compare the properties of Vega, our Sun, and Alpha Centauri (include brightness, size, and temperature)

SC.8.E.5.5

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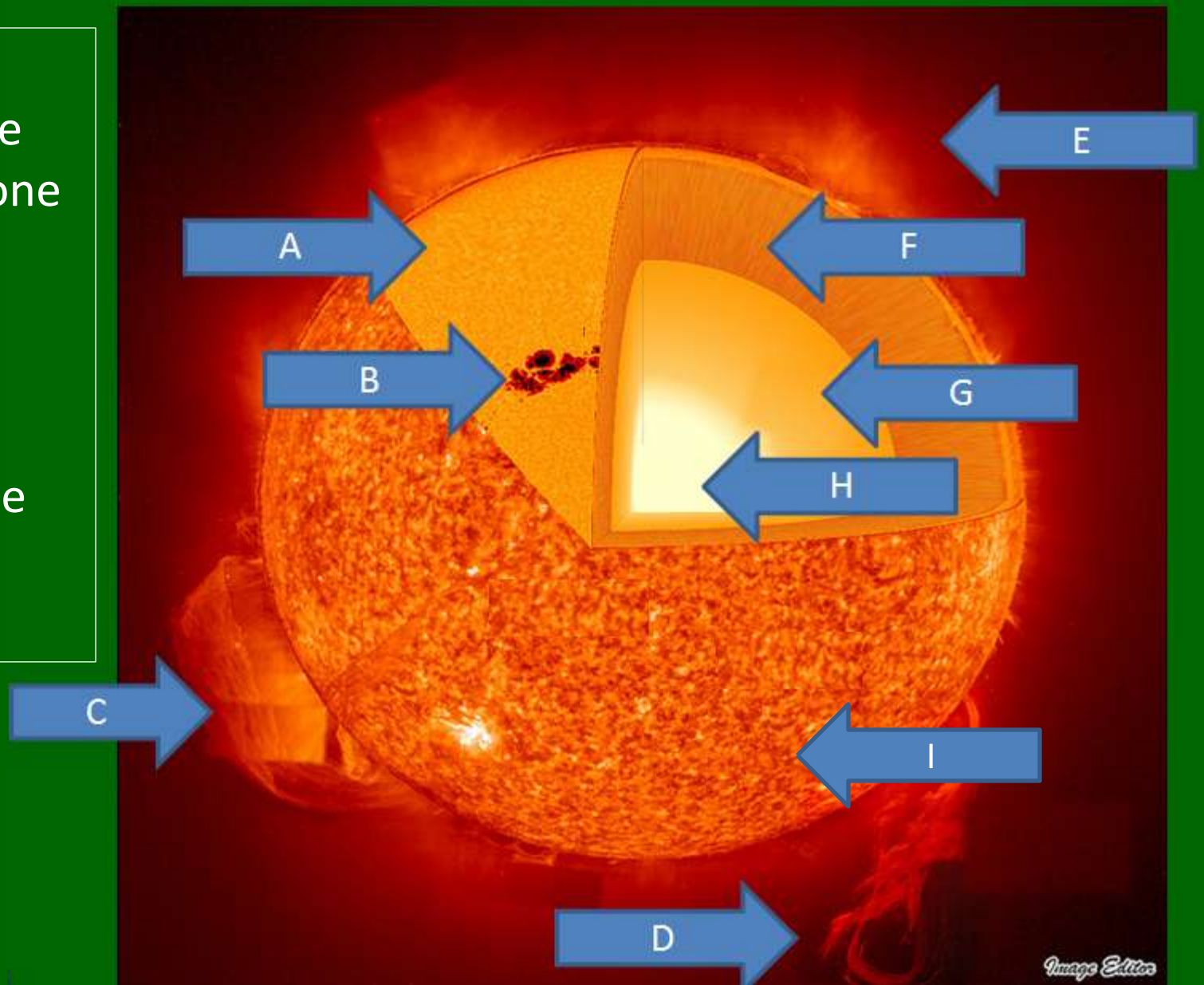
Properties of the Sun

Terms

Chromosphere
Convection Zone
Core
Corona
Photosphere
Prominence
Radiation Zone
Solar Flare
Sunspots



SC.8.E.5.6

Earth Science

Solar System

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Benchmarks

- SC.8.E.5.7 : Students will compare and contrast the characteristics of objects in the Solar System
- SC.8.E.5.4: Students will identify and explain the role that gravity plays in the formation and motion of planets, stars, and solar systems.
- SC.8.E.5.8: Students will compare and contrast various historical models of the Solar System.

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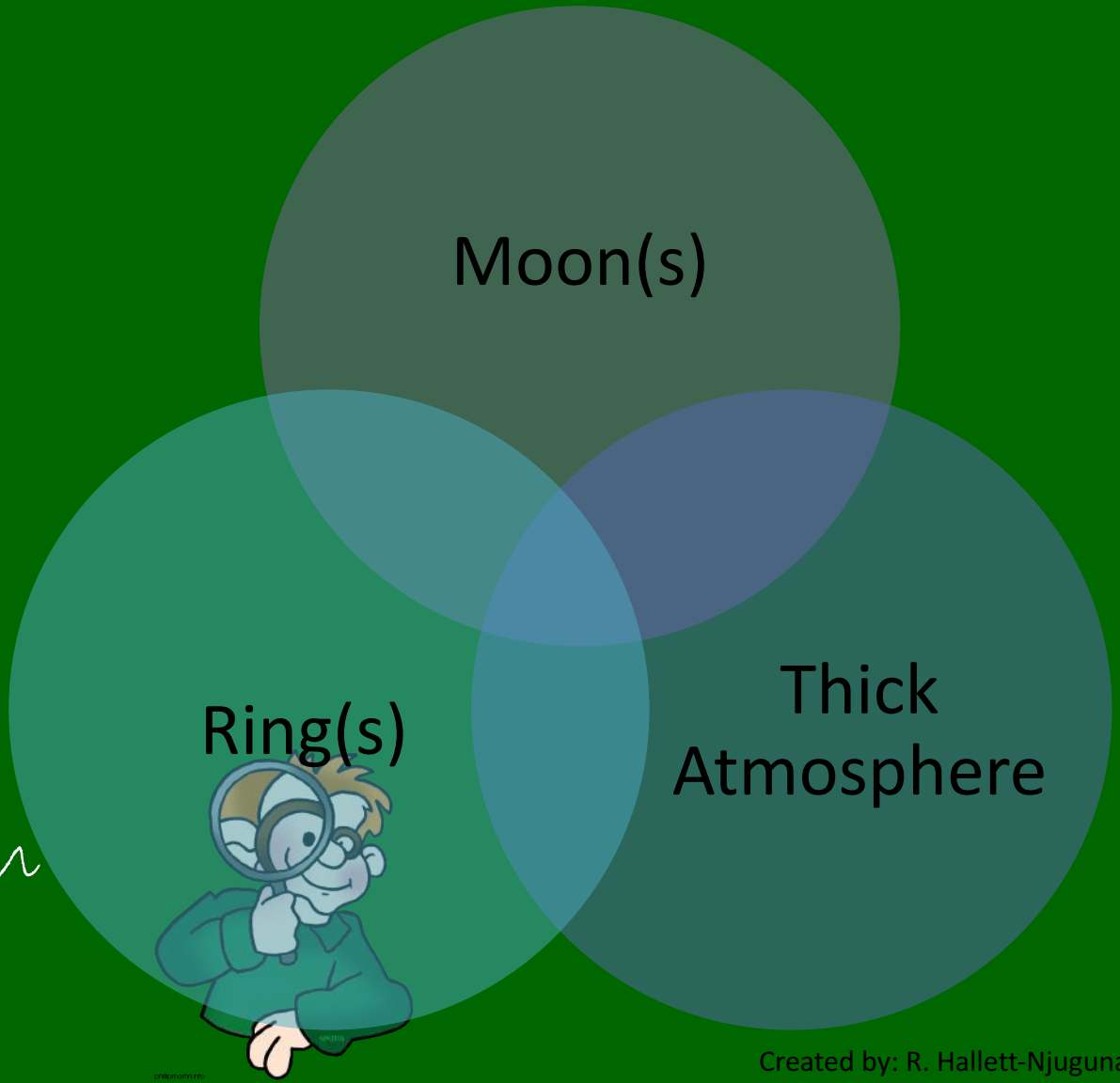
Solar System

Jupiter
Venus
Earth
Neptune
Mercury



Place the planets above in the Venn Diagram

SC.8.E.5.7

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Role of Gravity

Explain the role that gravity had in creating the Sun, planets, stars, etc.

SC.8.E.5.4

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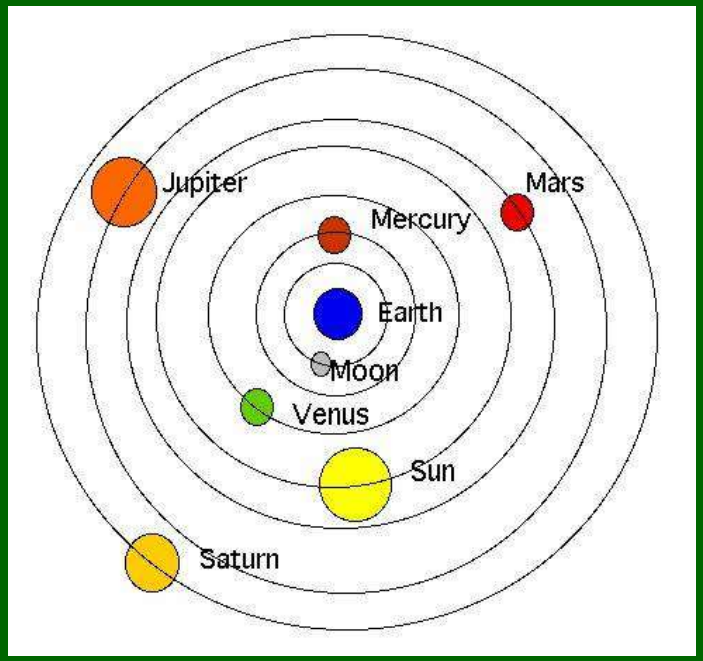
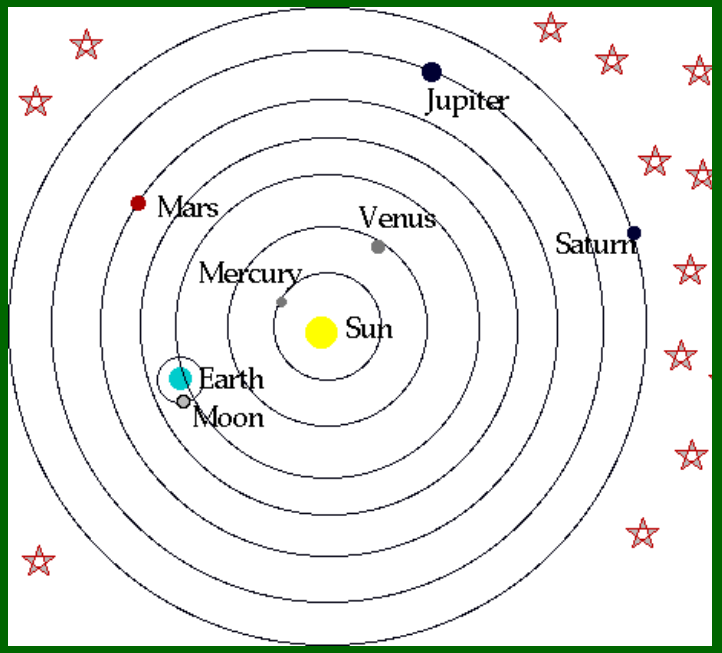
Models of the Solar System

A



B



Label the models above as heliocentric or geocentric. Explain your reasoning

SC.8.E.5.8

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Earth Science

Earth-Moon-Sun

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Benchmarks

- SC.8.E.5.9 : Students will explain the effect of astronomical bodies on each other including the Sun's and the Moon's effects on Earth

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Seasons and Moon Phases

- Seasons and Moon Phases

- Think about:

  -When it is Summer in England (UK), what season is it in Florida?

  -How are the Earth, Moon, and Sun lined up when there is a new moon?

SC.8.E.5.9

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Eclipses

- Eclipses

- Think about:

  Can more people see a Solar or Lunar eclipse?
  Explain your answer

SC.8.E.5.9

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Tides

- Tides

- Think about:

  Why do opposite sides of the Earth have high tide at the same time?

SC.8.E.5.9

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Earth Science

Earth's Surface

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Benchmarks

- SC.7.E.6.2: Students will identify and describe steps of the rock cycle and relate them to surface and sub-surface events.
- SC.6.E.6.1: Students will describe and explain how Earth's surface is built up and torn down through the processes of physical and chemical weathering, erosion, and deposition.
- SC.6.E.6.2: Students will identify different types of landforms commonly found on Earth. Students will describe similarities and differences among landforms found in Florida and those found outside of Florida.
- SC.7.E.6.6: Students will identify and describe the impact that humans have had on Earth.

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Rock Cycle

- Rock Cycle

- Think about:

  What are the processes that change rocks? Which ones happen on the surface and which ones happen below the surface of Earth?

SC.7.E.6.2

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Weathering, Erosion, Deposition

Cracked Rock after Expansion

River Delta

Meandering Stream

Explain how water is changing the landscape in each image above. Be sure to indicate whether the image shows weathering, erosion, or deposition

SC.6.E.6.1

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Landforms

Label the images above as either a dune, delta, or sinkhole. Which of these features can be found in Florida?

SC.6.E.6.2

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Human Impact

Cutting down Forests

Oil Spill

Describe what effect the human activities shown above will have on the Earth

SC.7.E.6.6

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Earth Science

Geologic Time

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Benchmarks

- SC.7.E.6.4: Students will identify examples of and explain physical evidence that supports scientific theories that Earth has evolved over geologic time due to natural processes.
- SC.7.E.6.3: Students will identify and describe current scientific methods for measuring the age of Earth and its parts.

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Geologic Time

Volcanic Eruption

Eroded Mountain Range

Dry Sea Bed

Explain how the images above are examples of evidence of Earth's surface changing over time.

SC.7.E.6.4

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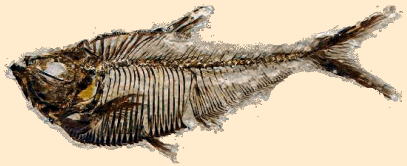
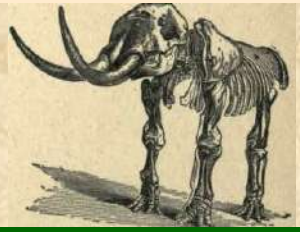
Measuring Age of Earth

A

B



C



Which organism shown above is the oldest? How do you know? Is there a method that could be used to find their ages more precisely?

SC.7.E.6.3

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Earth Science

Plate Tectonics

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Benchmarks

- SC.7.E.6.5 (SC.7.E.6.7): Students will describe the scientific theory of plate tectonics and how the movement of Earth's crustal plates and the flow of heat and material cause various geologic events to occur.
- SC.7.E.6.1: Students will identify and/or describe the layers of Earth

Plate Tectonics

- Dynamic Earth

- Think about:

  How can volcanoes be created by either colliding or separating boundaries?

SC.7.E.6.5, SC.7.E.6.7

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Layers of the Earth

- Earth's Layers

- Think about:

  Which layer is the:

  thickest?

  hottest?

  densest?

SC.7.E.6.1

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Earth Science

Interactions between the Spheres

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Benchmarks

- SC.6.E.7.4: Students will differentiate and explain interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.
- SC.6.E.7.2 (SC.6.E.7.3): Students will describe and explain how the cycling of water and global patterns influence local weather and climate.
- SC.6.E.7.6: Students will differentiate between weather and climate.
- SC.6.E.7.9: Students will describe the composition and structure of the atmosphere and how the atmosphere protects life and insulates the planet.

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Spheres

Geosphere **Hydrosphere** **Atmosphere**

Biosphere **Cryosphere**

Identify what spheres are shown in each of the pictures above?

SC.6.E.7.4

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Weather Patterns

How does the ocean circulation pattern shown above effect Florida's weather?

What will happen to the weather when the cold air reaches the warm Florida air?

SC.6.E.7.2, SC.6.E.7.3

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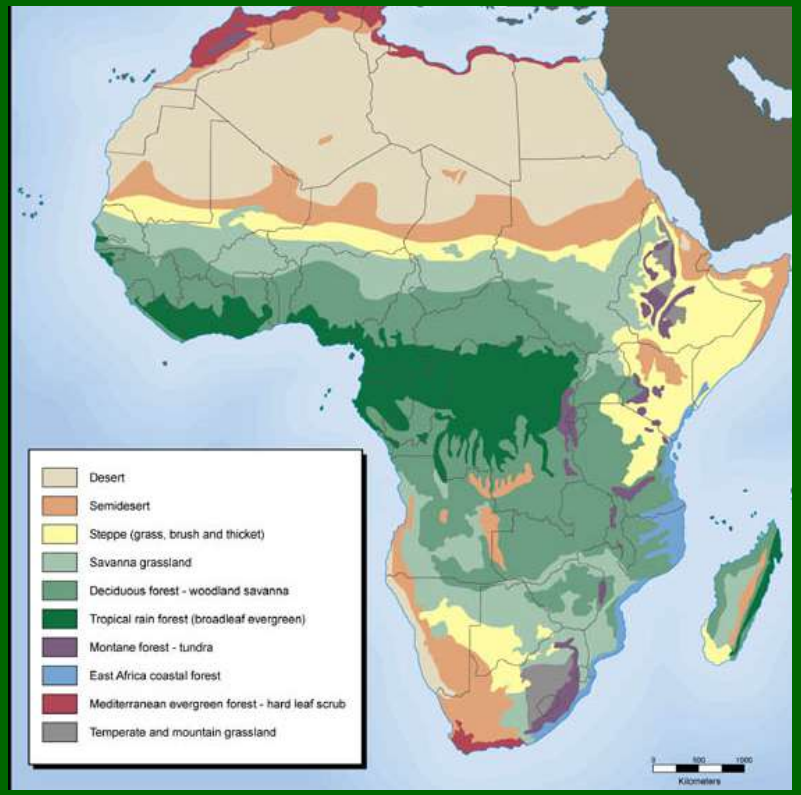
Weather vs Climate



Which map above shows Weather and which shows Climate? Explain your choice.

SC.6.E.7.6

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Atmosphere

- Layers of the Atmosphere

- Think about:

  How do the layers of the atmosphere work together to protect life on Earth?

SC.6.E.7.9

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Earth Science

Sun Influences Weather

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Benchmarks

- SC.6.E.7.5: Students will explain how energy provided by the Sun influences global patterns of atmospheric movement and the temperature differences among air, water, and land.
- SC.6.E.7.1: Students will differentiate among radiation, conduction, and convection in Earth's systems.

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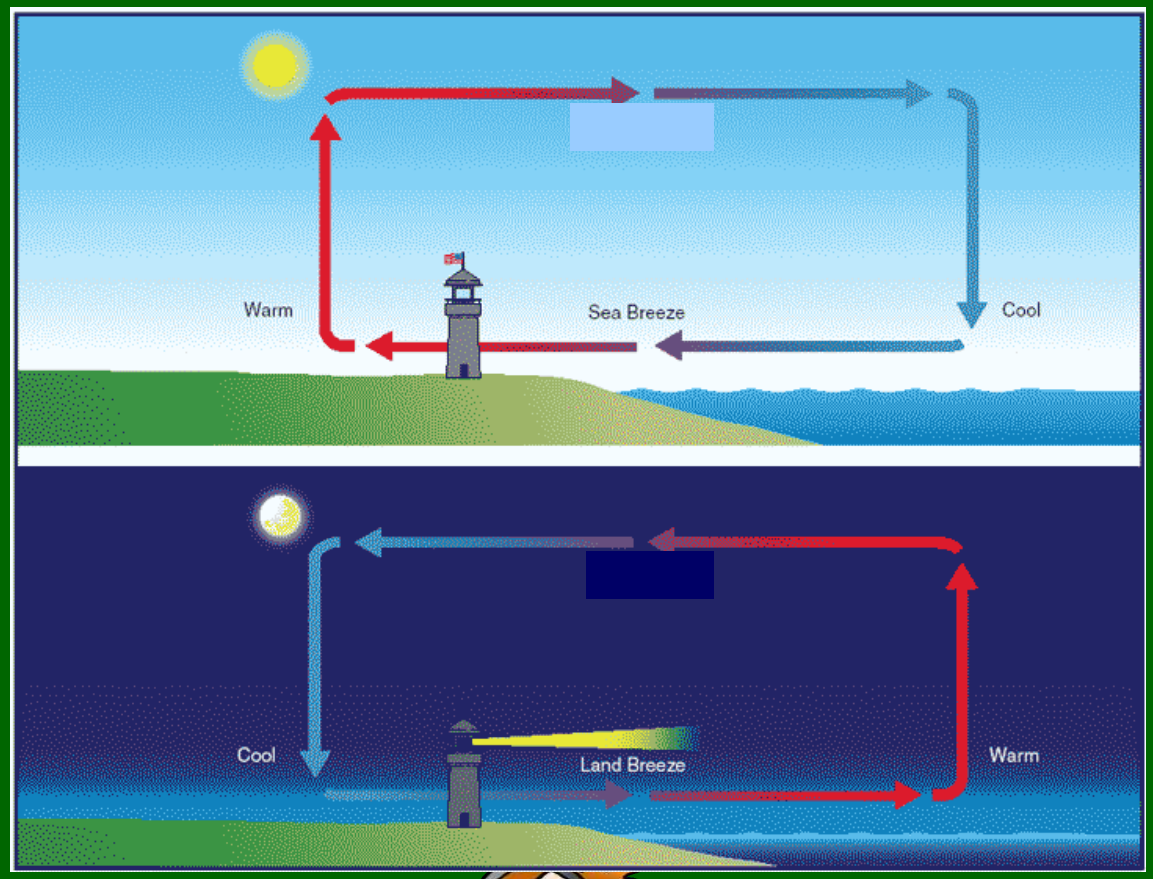
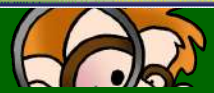
Sun Heating Earth





Explain why the wind patterns shown above occur.

SC.6.E.7.5

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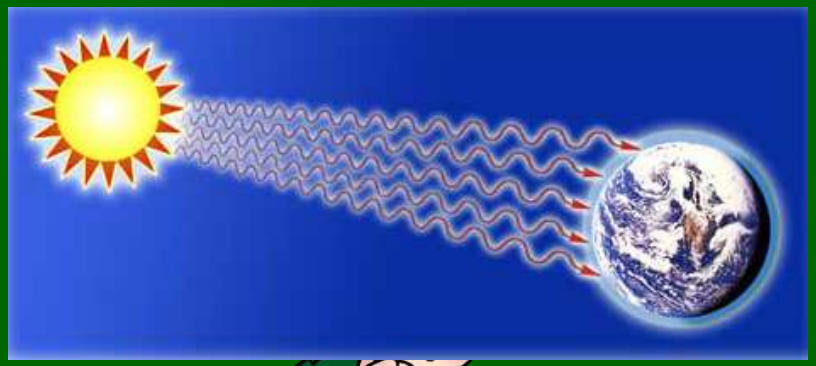
Radiation, Conduction, Convection

Heating of air over the road causing a mirage

Hot air rises, cold air sinks

Sun's heat travels through space



Which type of heat transfer does each image represent?

SC.6.E.7.1

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Physical Science

Physical Properties

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Benchmarks

- SC.8.P.8.4: Students will classify and compare substances on the basis of their physical properties and explain that these properties are independent of the amount of the sample.
- SC.8.P.8.3: Students will describe density and calculate and compare the densities of various materials using the materials' masses and volumes

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Physical Properties

Flammability

Density

Conducts heat/electricity

Boiling Point

Ability to rust

Which properties shown above are physical properties? Why are they considered physical?

SC.8.P.8.4

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Density

- Density

- Think about:

  What happens to the density of a block when you change the volume? What happens to the mass?

SC.8.P.8.3

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Physical Science

Elements, Compounds, and Mixtures

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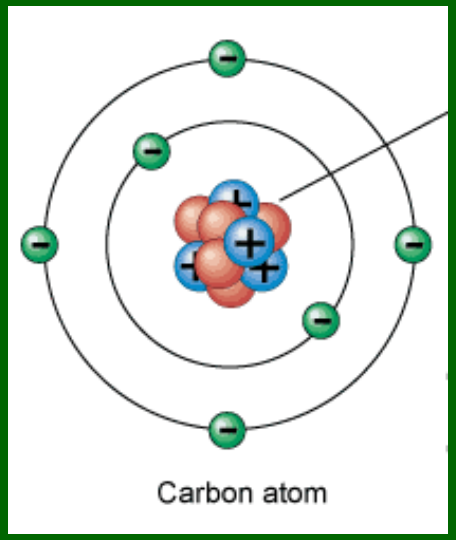
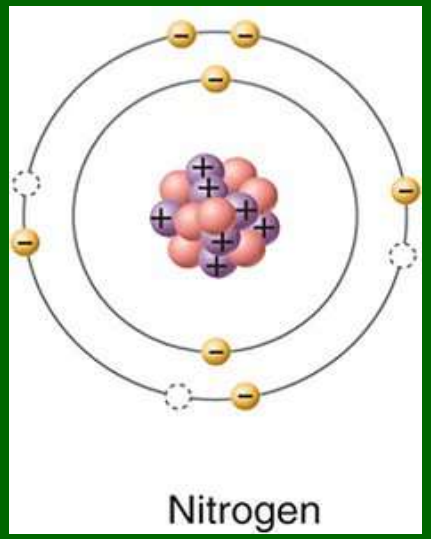
Benchmarks

- SC.8.P.8.7: Students will explain that atoms are the smallest unit of an element and are composed of subatomic particles.
- SC.8.P.8.5: Students will describe how elements combine in a multitude of ways to produce compounds that make up all living and nonliving things.
- SC.8.P.8.9: Students will differentiate among pure substances, mixtures, and solutions.
- SC.8.P.8.1: Students will describe the motion of particles in solids, liquids, and/or gases.
- SC.8.P.8.6: Students will explain that elements are grouped in the periodic table according to similarities of their properties.
- SC.8.P.8.8: Students will identify common exs of acids, bases, salts. Students will compare, contrast, and classify the properties of compounds, including acids and bases.

PS

Atoms and Elements





Label the parts of the atoms above. What is the difference between a Carbon atom and a Nitrogen atom?

SC.8.P.8.7

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Elements and Compounds

Hydrogen + Oxygen

Sodium + Chlorine

Carbon + Hydrogen + Oxygen

Salt

Sugar

Water

Match the elements (in blue) to the compounds (in red) that they create.

SC.8.P.8.5

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Pure Substances vs Mixtures

- Compounds and Mixtures

- Think about:

  What is the main difference between a compound and a mixture?

SC.8.P.8.9

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Solutions

Identify the solute and solvent for each of the solutions above as either a solid, liquid, or gas.

SC.8.P.8.9

Motion of Particles

- Solids, Liquids, and Gases
- States of Matter

- Think about:

  Why do the particles in gases move more freely than those in solids or liquids?

SC.8.P.8.1

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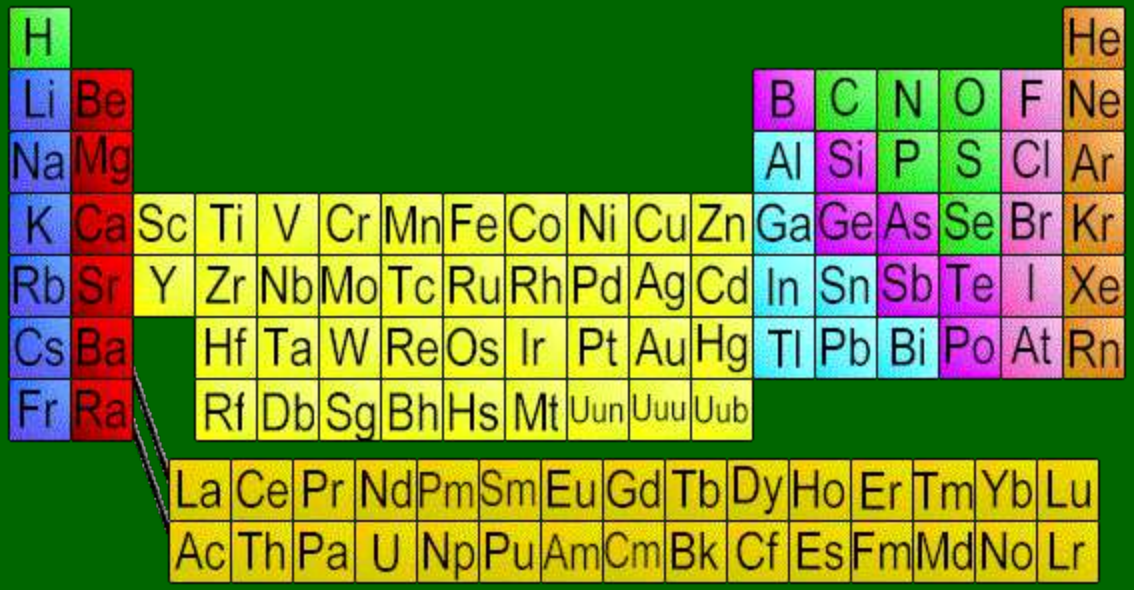
Periodic Table



Which of these elements has properties most similar to **Magnesium**: Sodium, Calcium, or Manganese? How do you know?

SC.8.P.8.6

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Acids, Bases, and Salts

- Kitchen Chemistry
- Think about:

  Which substances reacted with baking soda to create a gas? Why?

- Acids and Bases
- Think about:

  What is created when a base (alkali) is added to an acid?

SC.8.P.8.8

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Physical Science

Physical vs Chemical Changes

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.8.P.9.2: Students will differentiate between physical and chemical changes.
- SC.8.P.9.1: Students will explain that mass is conserved when substances undergo physical and chemical changes, according to the Law of Conservation of Mass.
- SC.8.P.9.3: Students will describe how temperature influences chemical changes

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Physical vs Chemical Changes




Which images above are examples of physical changes and which are chemical changes? How do you know?

SC.8.P.9.2

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Conservation of Mass

Before reaction

After reaction

500 g total mass

500 g total mass

Explain why the total mass is the same before and after the experiment if a gas was formed and inflated the balloon.

SC.8.P.9.1

Temperature and Chemical Changes

- Rate of Reaction

- Think about:

  What effect did increasing the temperature have on how fast the reaction took place?

SC.8.P.9.3

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Physical Science

Electromagnetic Spectrum

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Benchmarks

- SC.7.P.10.1: Students will identify, compare and contrast the variety of types of radiation present in radiation from the Sun.
- SC.8.E.5.11: Students will identify and compare characteristics of the electromagnetic spectrum. Students will identify common uses and applications of electromagnetic waves.

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Sun's Radiation

Heating

Damaging

Coloring

Which word above relates to each of the types of Solar radiation: Infrared, Visible Light, and Ultraviolet?

SC.7.P.10.1

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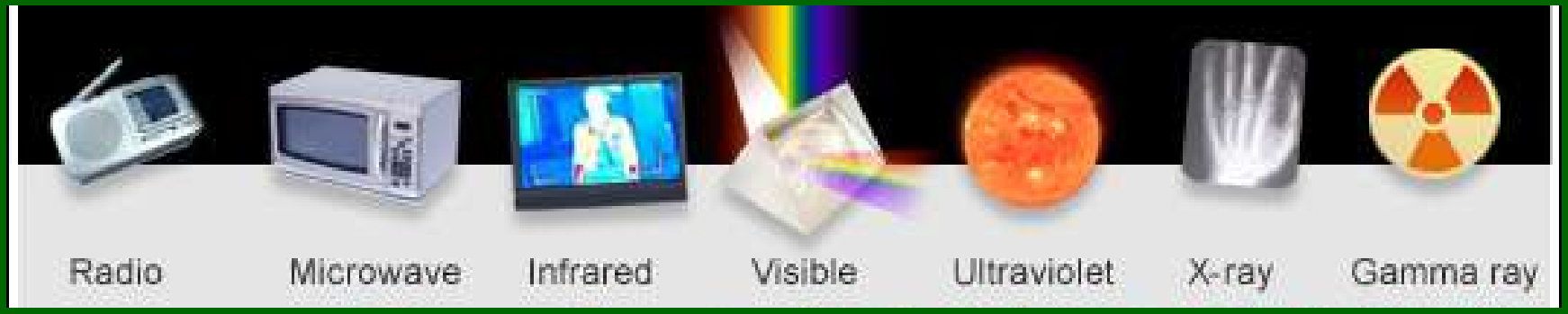
Electromagnetic Spectrum



A

B

Which wave image (A or B) is accurate? Using the terms "wavelength" and "frequency" describe the trends in the waves within the EM Spectrum.

SC.8.E.5.11

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Physical Science

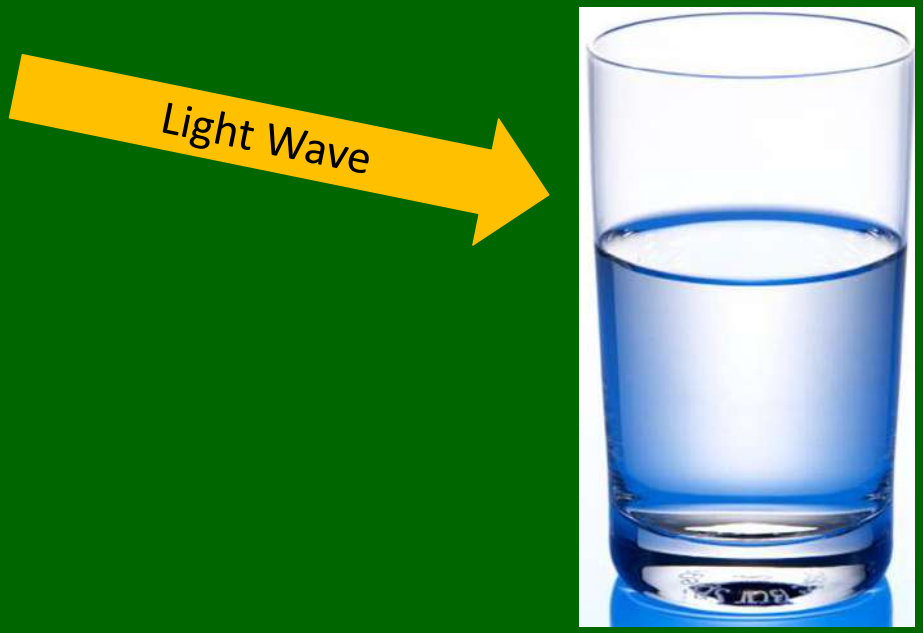
Waves

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.7.P.10.3: Students will describe and explain that waves move at different speeds through different materials.
- SC.7.P.10.2: Students will explain that light waves can be reflected, refracted, and absorbed.

Speed of Waves



What happens to the speed of the light as it travels from the air, through the glass, and then through the water?

SC.7.P.10.3

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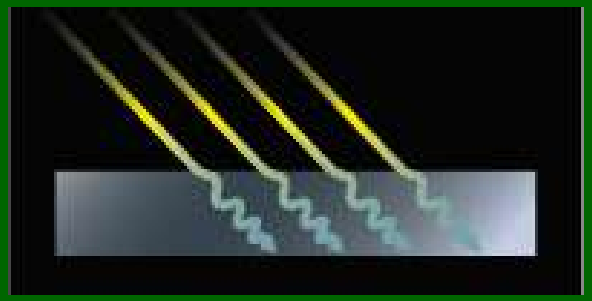
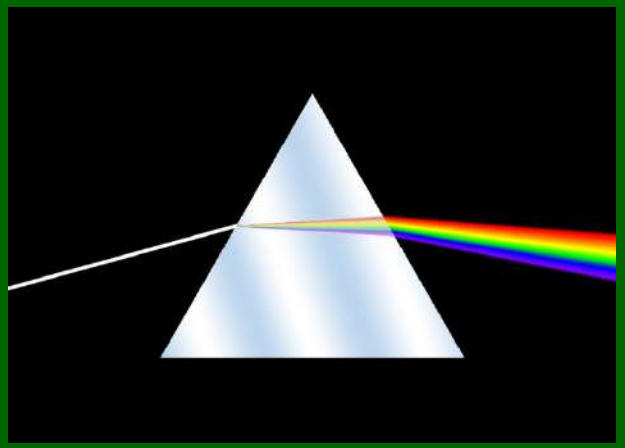
Reflect, Refract, Absorb



A



B

C

Label the images above with the correct term concerning the motion of light waves. Explain your choices

SC.7.P.10.2

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Physical Science

Transformation of Energy

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.7.P.11.2: Students will identify and describe the transformation of energy from one form to another.
- SC.6.P.11.1: Students will differentiate between potential and kinetic energy. Students will identify and explain situations where energy is transformed between kinetic energy and potential energy.
- SC.7.P.11.3: Students will identify and describe examples of the Law of Conservation of Energy.

Transformation of Energy

- Energy Transformation

- Think about:

  What are some examples of each type of energy (chemical, thermal, electrical, mechanical, light, and nuclear)?

SC.7.P.11.2

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Potential vs Kinetic Energy

- Energy in a Skate Park

- Think about:

  When is the skater's potential energy the greatest? Where is the potential energy being transformed into kinetic energy?

SC.6.P.11.1

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Law of Conservation of Energy

- Energy of Springs

- Think about:

  What happens to the Total Energy as the spring bounces? Which types of energy make up the total energy? How to they relate to each other?

SC.7.P.11.3

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Physical Science

Heat Flow

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Benchmarks

- SC.7.P.11.4: Students will describe how heat flows in predictable ways.
- SC.7.P.11.1: Students will explain that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.

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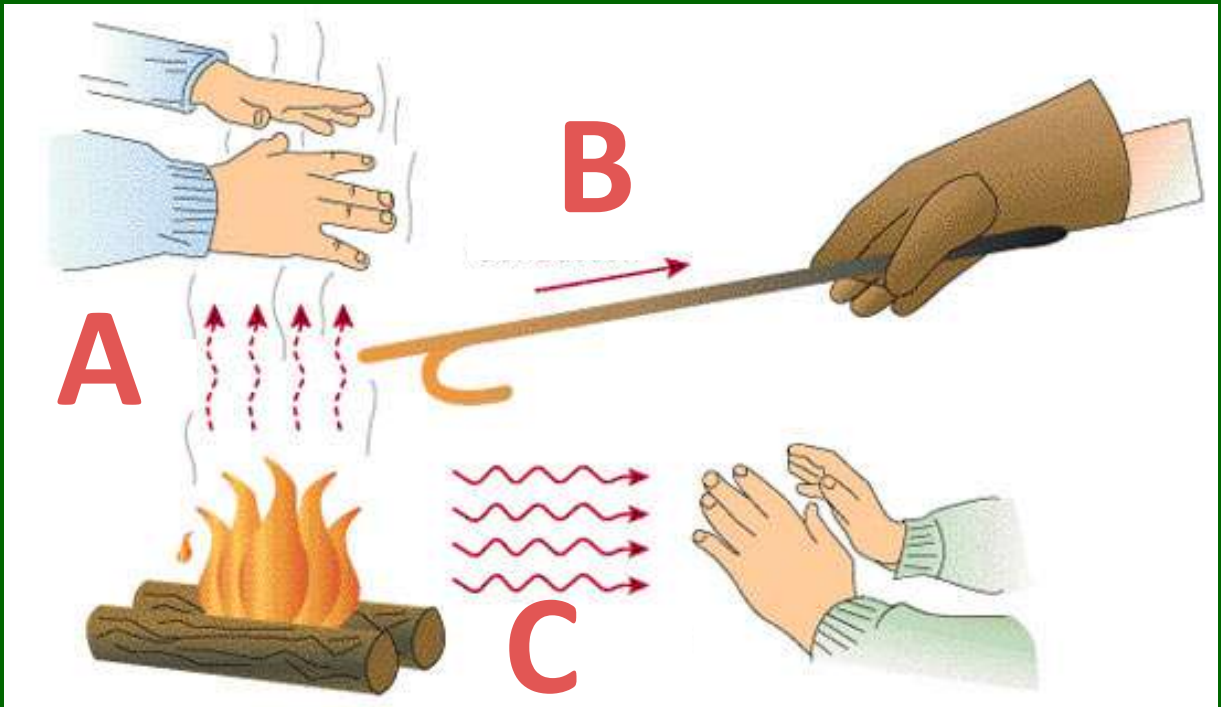
Heat Flow



Label the examples of heat flow above as either radiation, conduction, or convection. Explain your choices

SC.7.P.11.4

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Adding and Removing Heat

- Changing State

- Think about:

  When you "cool" the beaker, are you adding cold or removing heat? Explain

SC.7.P.11.1

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Physical Science

Types of Forces

Mass and Weight

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Benchmarks

- SC.6.P.13.1: Students will identify and describe types of forces.
- SC.6.P.13.2: Students will describe the relationship among distance, mass, and gravitational force between any two objects.
- SC.8.P.8.2: Students will differentiate between mass and weight

Types of Forces

- Forces

- Think about:

  What force works against an object traveling horizontally? What kind of force (balanced or unbalanced) changes an object's motion?

SC.6.P.13.1

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Distance, Mass, and Gravity

- Gravity Model

- Think about:

  What happens to the direction and magnitude of the force of gravity as you change the distance and/or masses?

SC.6.P.13.2

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Weight vs Mass

An object is placed on the digital scale and spring scale below and the following readings are observed

9.5g

93.1 N

Which instrument is measuring the object's mass and which is measuring the object's weight? Why are the numbers different? Explain your thinking

SC.8.P.8.2

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Physical Science

Balanced and Unbalanced Forces

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.6.P.13.3: Students will describe and explain that an unbalanced force acting on an object changes its speed and/or direction.
- SC.6.P.12.1: Students will interpret and analyze graphs of distance and time for an object moving at a constant speed.

Unbalanced Forces

- Unbalanced Forces

- Think about:

  In order for the object to move, which force had to be overcome?

SC.6.P.13.3

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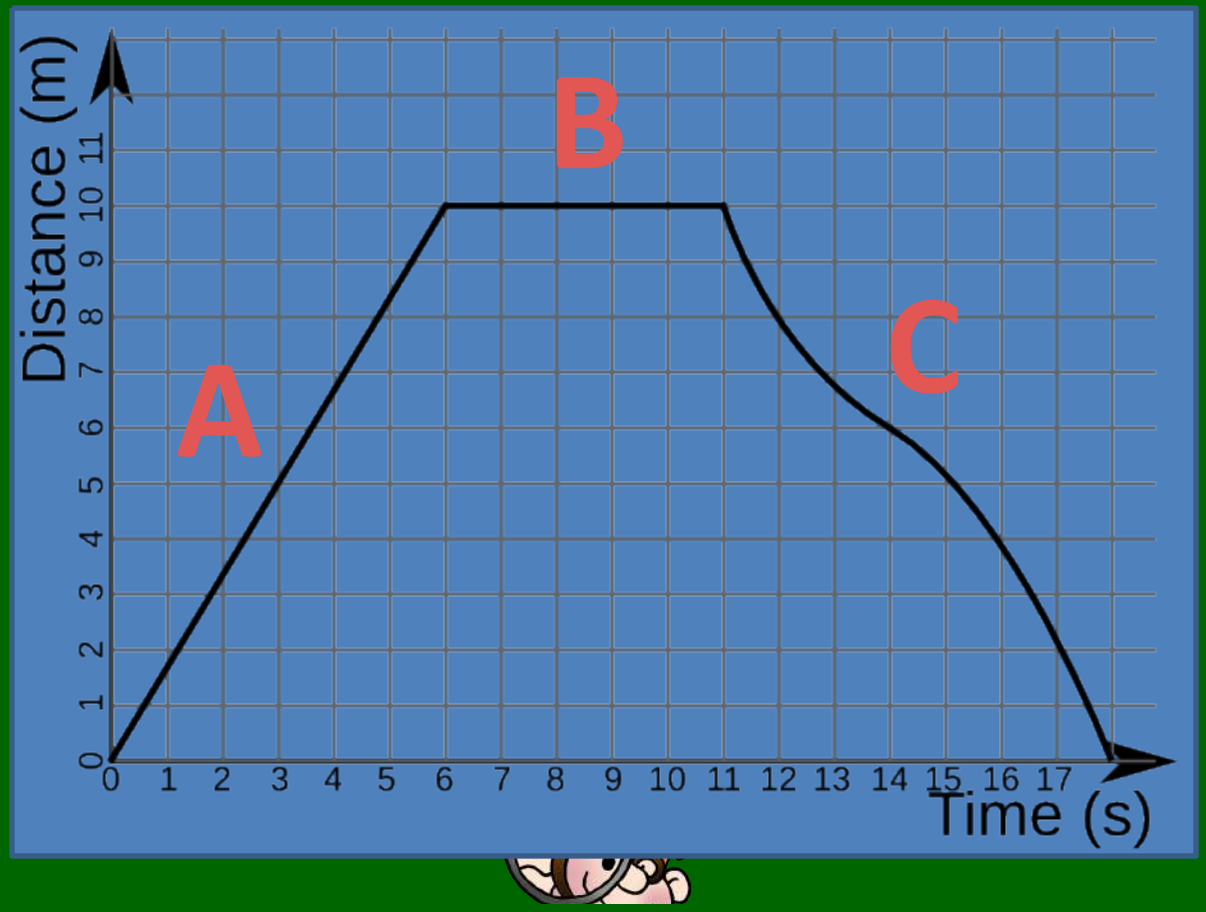
Distance vs Time



Describe the motion of the object during each section.

SC.6.P.12.1

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Life Science

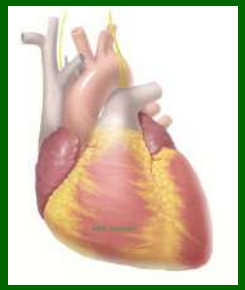
Organization of Organisms

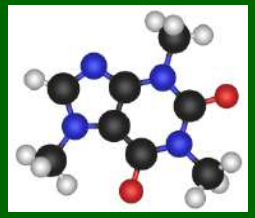
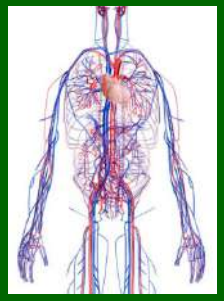
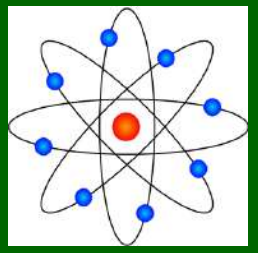
Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.6.L.14.1: Students will identify and/or describe patterns in the hierarchical organization of organisms, from atoms to molecules, to cells, to tissues, to organs, to organ systems, to organisms

Hierarchy




A B C D E F G

Label the pictures above as: atom, molecule, cell, tissue, organ, organ system, or organism. Then put them in order of increasing complexity.

SC.6.L.14.1

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Life Science

Cell Theory

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Benchmarks

- SC.6.L.14.2: Students will identify, describe, and explain the components of cell theory.
- SC.6.L.14.3: Students will describe how cells undergo similar processes to maintain homeostasis.

Cell Theory

All living things are made out of cells

Cells are the smallest unit of life

All cells have a nucleus and cholorplasts

All cells come from other cells

Which of the above statements is NOT part of the Cell Theory? How do you know?

SC.6.L.14.2

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Homeostasis

What processes of cellular homeostasis are represented by the images above? Explain why those processes are important.

SC.6.L.14.3

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Life Science

Cell Structure and Function

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.6.L.14.4: Students will compare and/or contrast the structure and function of major organelles of plant and animal cells.

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Parts of a Cell

- What did Shaggy eat?

- Think about:

  What are some key differences between plant cells, animal cells, and bacteria cells?

SC.6.L.14.4

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Life Science

Human Body

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.6.L.14.5: Students will identify and/or describe the general functions of the major systems of the human body. Students will identify and/or describe how the major systems of the human body interact to maintain homeostasis.
- SC.6.L.14.6: Students will identify, compare, and/or contrast the types of infectious agents that affect the human body

Human Body Systems

- National Geographic Human Body

- Think about:

  How would a problem with your lungs effect your heart?

SC.6.L.14.5

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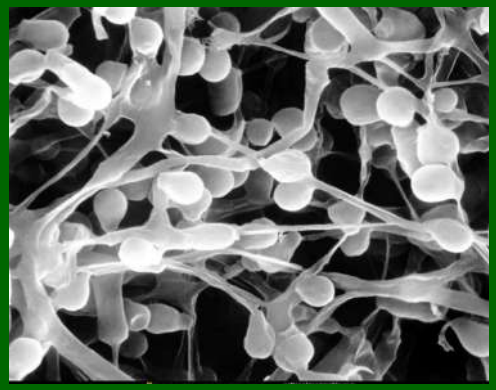
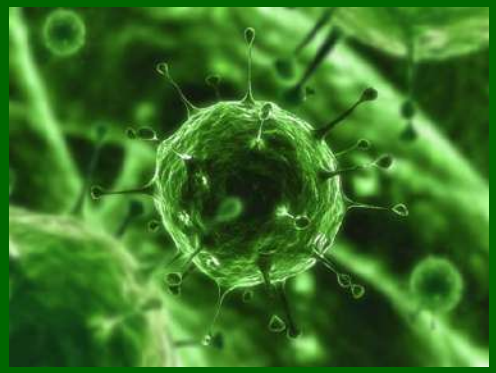
Infectious Agents

Bacteria



Fungus



Virus

Compare and contrast the infectious agents above. Include information about how they are transmitted and treated and if/how they can be prevented

SC.6.L.14.6

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Life Science

Classification

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Benchmarks

- SC.6.L.15.1: Students will analyze and/ describe how and why organisms are classified.

Classification

- Classifying Life

- Think about:

  What are the 3 Domains and how do the 6 Kingdoms fit within them?

SC.6.L.15.1

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Life Science

Theory of Evolution

Created by: R. Hallett-Njuguna, SCPS

Benchmarks

- SC.7.L.15.2: Students will identify and explain ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
- SC.7.L.15.1: Students will identify and explain ways in which fossil evidence is consistent with the scientific theory of evolution.
- SC.7.L.15.3: Students will identify and explain how a species' inability to adapt may contribute to the extinction of that species

Natural Selection

- PhET: Natural Selection

- Think about:

  Under what conditions were the white rabbits best suited?

SC.7.L.15.2

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Fossil Evidence

- Nova: Fossil Evidence

- Think about:

  What is some fossil evidence that has been gathered to explain the evolution from land mammals to aquatic mammals?

SC.7.L.15.1

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Adaptation or Extinction

Explain how polar bears would have to adapt to their changing environment in order to avoid extinction

SC.7.L.15.3

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Life Science

DNA and Genetics

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Benchmarks

- SC.7.L.16.1: Students will describe and explain that every organism requires a set of instructions that specifies its traits. Students will identify and explain that hereditary information (DNA) contains genes located in the chromosomes of each cell and that heredity is the passage of these instructions from one generation to another.
- SC.7.L.16.2: Students will use Punnett squares and pedigrees to determine genotypic and phenotypic probabilities.
- SC.7.L.16.3: Students will compare and contrast general processes of sexual and asexual reproduction that result in the passage of hereditary information from one generation to another.

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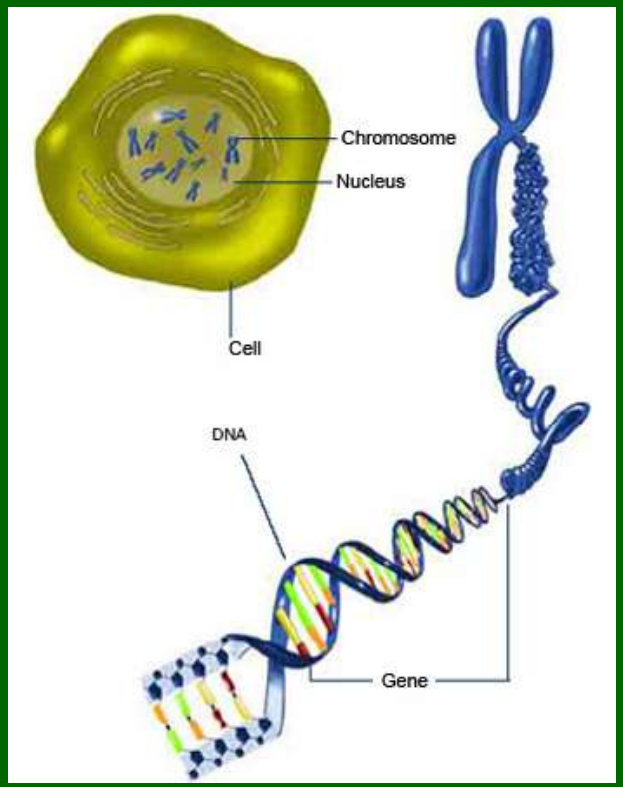
DNA



The diagram to the left shows the structural hierarchy of genetic material inside a cell including: nucleus, chromosome, gene, and DNA

Describe the hierarchy in your own words as it applies to the transmission of genetic material

SC.7.L.16.1

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Punnett Squares

- Interactive Punnett Squares

- Think about:

  What is the difference between organisms that are heterozygous dominant and homozygous dominant?

SC.7.L.16.2

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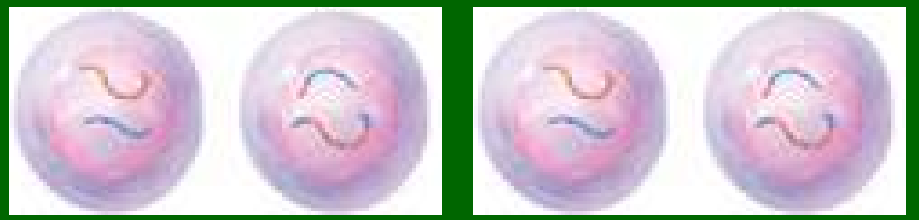
Mitosis and Meiosis

A

B



Which of the cells above went through mitosis and which went through meiosis? How do you know?

SC.7.L.16.3

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Life Science

Relationships in Ecosystems

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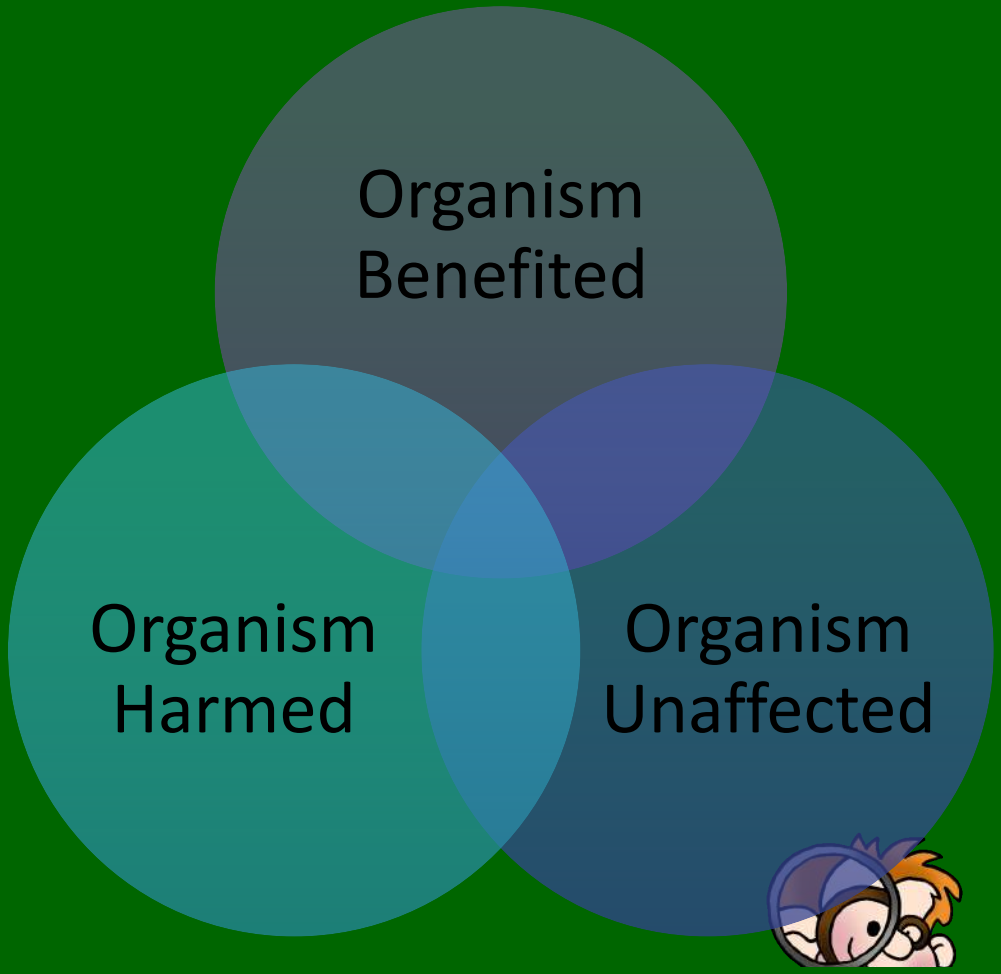
Benchmarks

- SC.7.L.17.2 : Students will compare and contrast relationships between organisms, such as mutualism, predation, parasitism, competition, and commensalism.
- SC.7.L.17.1: Students will describe and explain the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
- SC.7.L.17.3: Students will identify and describe various limiting factors in an ecosystem and their impact on native populations

Relationships between Organisms



Mutualism
Commensalism
Parasitism

Place the terms correctly in the Venn Diagram.
Give an example of each relationship.

SC.7.L.17.2

Producers, Consumers, and Decomposers

- Food Chain Game

- Think about:

  What role does each organism have in the food chain/web?

SC.7.L.17.1

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Limiting Factors

Which limiting factors are represented by the images above? What are examples of additional limiting factors?

SC.7.L.17.3

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Life Science

Conservation of Mass and Energy

(Photosynthesis and Respiration)

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Benchmarks

- SC.8.L.18.4: Students will explain that living systems obey the Law of Conservation of Mass and the Law of Conservation of Energy.
- SC.8.L.18.1 (SC.8.L.18.2): Students will describe and explain the general processes of photosynthesis and cellular respiration. Students will describe the role of light, carbon dioxide, water, and chlorophyll in the process and products of photosynthesis
- SC.8.L.18.3: Students will describe how matter and energy are transferred in the carbon cycle.

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Conservation of Mass and Energy

- **Energy**: states that the total amount of energy in an isolated system remains constant over time. This law means that energy can change its location within the system, and that it can change form within the system but not change in amount of total energy.

- **Mass**: states that the mass of an isolated system will remain constant over time. This law means that mass cannot be created or destroyed, although it may be rearranged in space and changed into different types of particles

Create a statement that combines both laws into one concept. Give an example of how these laws apply to living systems.

SC.8.L.18.4

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Photosynthesis and Respiration

- Photosynthesis and Respiration Animations

- Think about:

  What is created during photosynthesis that is used by the plant for energy? What is created during photosynthesis that is used by humans?

SC.8.L.18.1, SC.8.L.18.2

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Carbon Cycle

- Carbon Cycle Game

- Think about:

  What are some reservoirs (storage) of carbon in the environment?

SC.8.L.18.3

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Reminders

- This presentation was made to highlight some of the concepts that will be covered on FCAT
- This presentation should NOT be used in place of teacher instruction, it is for review purposes only

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