Disclaimer: This packet is intended ONLY for the use of students enrolled in Leon County Schools.

Complete the assignments below.

8th Grade

Week 1:
☐ Controls and Variables (SC.8.N.1.1) ☐ Content Area Reading: Everyday Compound or Poison? (SC.8.P.8.4) ☐ Skill Activity: Separating and Controlling Variables (SC.8.N.1.1)

Week 2:
☐ Matter Review (Multiple Standards) ☐ Content Area Reading: The Transfer of Heat ☐ Skill Activity: Interpreting Tables

Week 3:
☐ Content Area Reading: The Amazing World Inside a Human Cell ☐ Content Area Reading: The Hydrologic Cycle ☐ Skill Activity: Interpreting Scientific Illustrations

Week 4:
☐ Models of the Solar System (SC.8.E.5.8) ☐ Content Area Reading: Life Finds a Way and Naturally Selected to Survive ☐ Skill Activity: Interpreting Data

Science Week 2

Name:_____Period:_____Date:_____

1. What is the definition of *mass*?_____

_____

2. How is the volume of a solid calculated? _____

_____

_____

3. How do you calculate the volume of an irregularly shaped object like a rock?

_____

_____

_____

4. How is mass different from weight?_____

_____

5. What is the formula for calculating density?_____

1. What is a chemical property? _____

3. List some physical properties. _____

_____

4. Sort the pictures by property type. Draw a line from the picture to the correct property.

Physical Property **Chemical Property**

1. List 2 examples of a physical change, and 2 examples of a chemical change._____

_____

_____

2. How does temperature effect chemical change?_____

_____

3. Write the law of conservation of mass._____

_____

4. Label each picture as either a chemial or physical change.

1. Write 3 facts for each and draw a picture that represents its particles.

Gas - _____

_____

_____

Liquid - _____

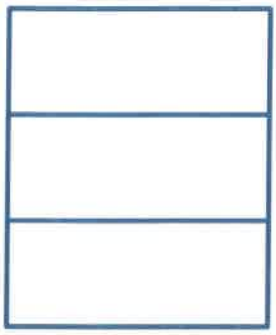
_____

_____

Solid - _____

_____

_____



2. How does a particles energy change as it changes state?_____

_____

1. What is a pure substance?_____

Give and example._____

2. Homogeneous mixture - _____Give an example:_____

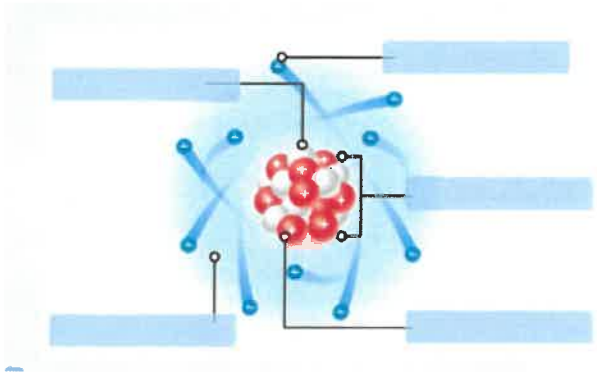
Heterogeneous mixture -_____Give an example:_____

1. What charge does an electron carry?_____What about at proton?_____

2. What is the atomic number? What does it tell us about an atom? _____

_____

3. Label the diagram.



1. What are the rows of the periodic table called? _____What is column on the periodic table called? What do they all have in common?_____

_____

2. Label the information for this element.

3. What are the three main types of elements?_____

The Transfer of Heat Energy

This text is from the U.S. National Oceanic and Atmospheric Administration: National Weather Service.

The heat source for our planet is the sun. Energy from the sun is transferred through space and through the earth's atmosphere to the earth's surface. Since this energy warms the earth's surface and atmosphere, some of it is or becomes heat energy. There are three ways heat is transferred into and through the atmosphere:

- radiation
- conduction
- convection

Radiation

If you have stood in front of a fireplace or near a campfire, you have felt the heat transfer known as radiation. The side of your body nearest the fire warms, while your other side remains unaffected by the heat. Although you are surrounded by air, the air has nothing to do with this transfer of heat. Heat lamps, that keep food warm, work in the same way. Radiation is the transfer of heat energy through space by electromagnetic radiation.

Most of the electromagnetic radiation that comes to the earth from the sun is invisible. Only a small portion comes as visible light. Light is made of waves of different frequencies. The frequency is the number of instances that a repeated event occurs, over a set time. In electromagnetic radiation, its frequency is the number of electromagnetic waves moving past a point each second.

Our brains interpret these different frequencies into colors, including red, orange, yellow, green, blue, indigo, and violet. When the eye views all these different colors at the same time, it is interpreted as white. Waves from the sun which we cannot see are infrared, which have lower frequencies than red, and ultraviolet, which have higher frequencies than violet light. It is infrared radiation that produce the warm feeling on our bodies.

Most of the solar radiation is absorbed by the atmosphere and much of what reaches the earth's surface is radiated back into the atmosphere to become heat energy. Dark colored objects, such as asphalt, absorb radiant energy faster that light colored objects. However, they also radiate their energy faster than lighter colored objects.

Conduction

Conduction is the transfer of heat energy from one substance to another or within a substance. Have you ever left a metal spoon in a pot of soup being heated on a stove? After a short time the handle of the spoon will become hot.

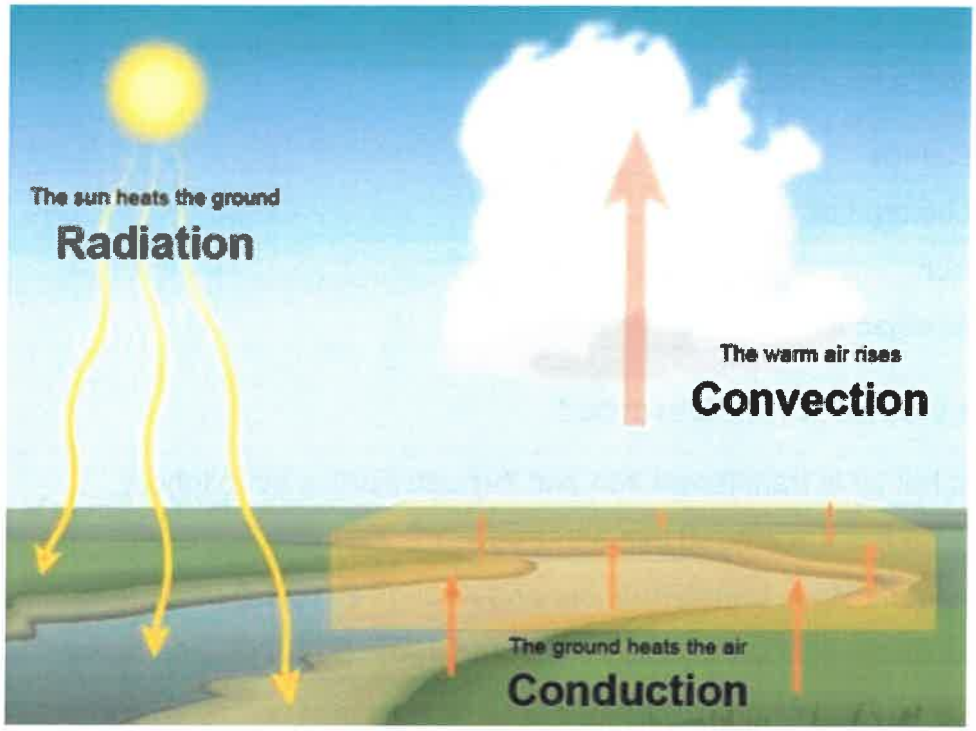
This is due to transfer of heat energy from molecule to molecule or from atom to atom. Also, when objects are welded together, the metal becomes hot (the orange-red glow) by the transfer of heat from an arc.

This is called conduction and is a very effective method of heat transfer in metals. However, air conducts heat poorly.

Convection

Convection is the transfer of heat energy in a fluid. This type of heating is most commonly seen in the kitchen when you see liquid boiling.

Air in the atmosphere acts as a fluid. The sun's radiation strikes the ground, thus warming the rocks. As the rock's temperature rises due to conduction, heat energy is released into the atmosphere, forming a bubble of air which is warmer than the surrounding air. This bubble of air rises into the atmosphere. As it rises, the bubble cools with the heat contained in the bubble moving into the atmosphere.



As the hot air mass rises, the air is replaced by the surrounding cooler, more dense air, what we feel as wind. These movements of air masses can be small in a certain region, such as local cumulus clouds, or large cycles in the troposphere, covering large sections of the earth. Convection currents are responsible for many weather patterns in the troposphere.

Name: _____ **Date:** _____

1. What is Earth's heat source?

A. heat lamps

B. dark colored objects

C. the sun

D. metal objects

2. What does the text list and describe?

A. ways hot air is transferred into and through Earth's atmosphere

B. ways heat is transferred into and through Earth's atmosphere

C. ways radiation is transferred into and through Earth's atmosphere

D. ways visible light is transferred into and through Earth's atmosphere

3. Read this sentence from the text.

"Most of the solar radiation is absorbed by the atmosphere and much of what reaches the earth's surface is radiated back into the atmosphere to become heat energy."

What can you conclude about heat energy?

A. Most of the sun's energy is used to make heat energy.

B. A small amount of the sun's energy is used to make heat energy.

C. All of the sun's energy is used to make heat energy.

D. None of the sun's energy is used to make heat energy.

4. Read these sentences from the text.

> Convection is the transfer of heat energy in a fluid. . . .
>
> Air in the atmosphere acts as a fluid. The sun's radiation strikes the ground, thus warming the rocks. As the rock's temperature rises due to conduction, heat energy is released into the atmosphere, forming a bubble of air which is warmer than the surrounding air. This bubble of air rises into the atmosphere.

What inference can you make about radiation, conduction, and convection?

A. Radiation, conduction, and convection work together to transfer heat energy in Earth's atmosphere.

B. Radiation, conduction, and convection are not important in transferring heat energy in Earth's atmosphere.

C. Radiation, conduction, and convection transfer heat energy from Earth's atmosphere to the sun.

D. Radiation, conduction, and convection work together to transfer heat energy in the sun.

5. What is the main idea of this text?

A. The source of heat for Earth is the sun, and some of the sun's energy is used to make heat energy.

B. White light is when the eye views all the different light frequencies at the same time.

C. The transfer of heat energy from one substance to another or within a substance is called conduction.

D. Heat energy is transferred into and through Earth's atmosphere by radiation, conduction, and convection.

Skill Activity

Interpreting Tables

Background

To organize data in a more understandable form, scientists often use data tables. The ability to use data tables is a useful skill. In this activity, you will practice interpreting information in a table. You also will learn to retrieve data from a table that answer specific questions.

Procedure

1. Study the Mineral Characteristics table below. Each row contains information about a specific mineral and each column compares a single mineral characteristic.
2. What characteristics could you use to distinguish between pyrite and graphite?
3. If you had a mineral with a glassy luster and a colorless streak, which of the minerals in the table could it be? What characteristic could you use to narrow the identification to a single mineral?

Practicing the SKILL

1. The minerals in the table are arranged in order according to one of the four characteristics. Which characteristic is it? Explain your answer.
2. Which mineral in the table has the greatest hardness?

Mineral Characteristics

Mineral	Streak	Hardness	Specific gravity	Luster
graphite	black	1–1.5	2.3	metallic
talc	colorless	1.0	2.7–2.8	pearly
fluorite	colorless	4.0	3.18	glassy
topaz	colorless	8.0	3.4–3.6	glassy
sphalerite	light brown	3.5–4	3.9–4.1	resinous*
pyrite	black	6–6.5	5.0	metallic

*Resinous luster means having the luster of resin, a yellowish-brown substance secreted by plants.