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GRADE 4

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SCIENCE

TERM 2 AND TERM 3

SUMMARIES

2018/2019

CHAPTER 6 SUMMARY

LESSON 1

What is matter?

Matter is everything. Matter has mass and takes up space.

MATTER HAS THREE STATES

1. Matter can be a solid-table, chair, humans
2. Matter can be a liquid- rain, snow, water
3. Matter can be a gas-air, helium
4. Water can be all three

PROPERTIES OF MATTER

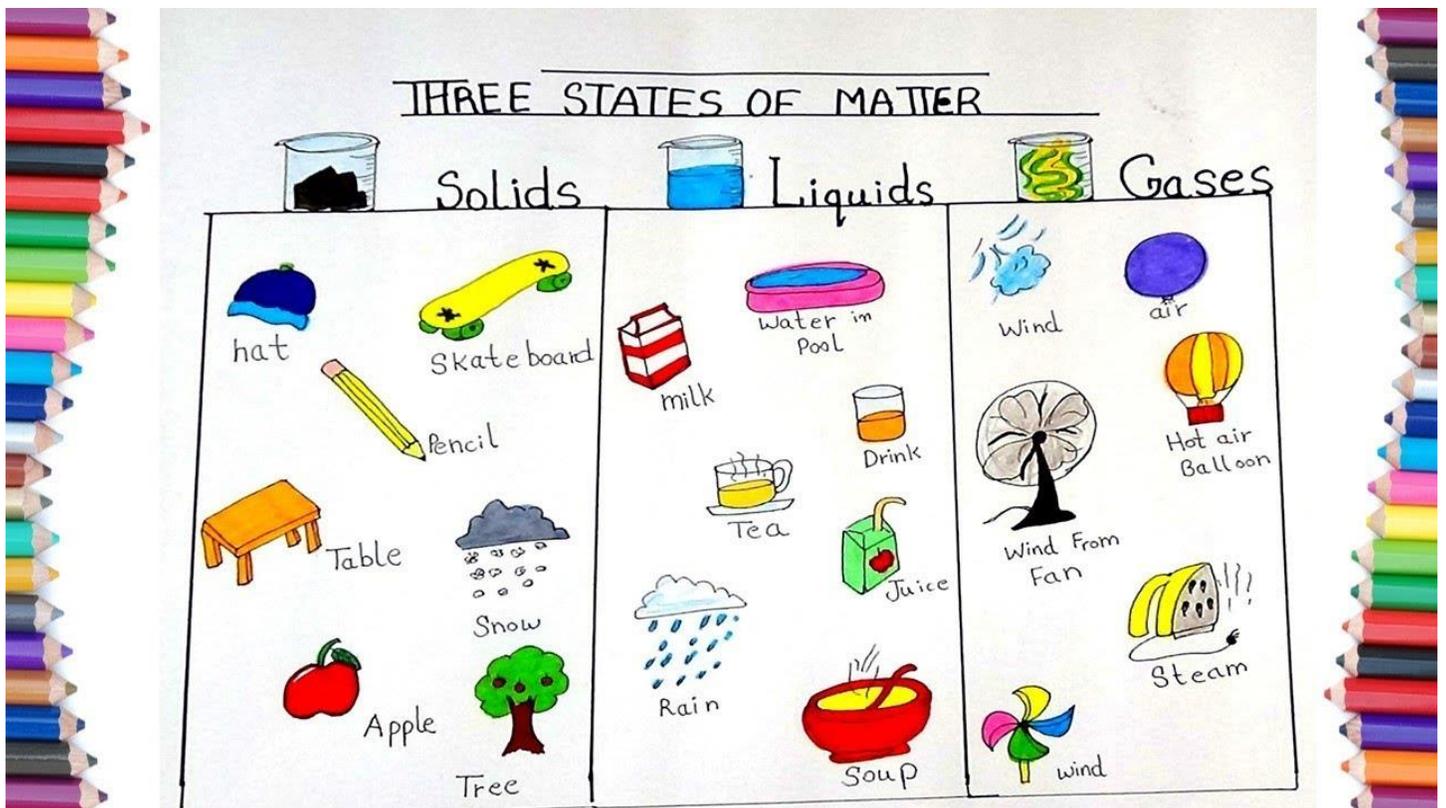
1. Matter has mass. It can be weighed
2. Matter has volume- how much space does it take up
3. Matter can be magnetic
4. Matter can dissolve in liquid- example sugar can dissolve in water
5. Matter is buoyant- can it float or sink

REMEMBER

- Matter can be recycled- turned into something else
- Matter can be reused- example a plastic water bottle can be used again

How can you tell if something is a liquid or a solid?

- A solid has a definite shape
- A liquid will take the shape of its container



CHAPTER 6 SUMMARY

LESSON 2

- **How can you compare matter?**

Matter can be compared by size, by length, area and volume

- **How do we measure area and volume?**

We use a formula to measure area and volume

AREA-Length width

$A=LXW$

VOLUME- LengthXwidthXheight

$V=LXWXH$

Density and Buoyancy

- **What is density? (how heavy or light something is)**

Density is the scientific way of comparing the heaviness or lightness of substances (compactness of molecules).

Formula for density

Mass divided by Volume

$D=M\div V$

- **What is buoyancy? (sink or float?)**

Buoyancy is the upward force on an object that is produced by a surrounding gas or liquid, such as water.

- **What is weight?**

- **What is mass?**

- Mass is measured in kilograms or grams
- Weight is the force of gravity acting on mass
- This is why your weight on the moon will be less than on earth. Why – Moon has less gravity



KIDS' SCIENCE
oil and ice experiment

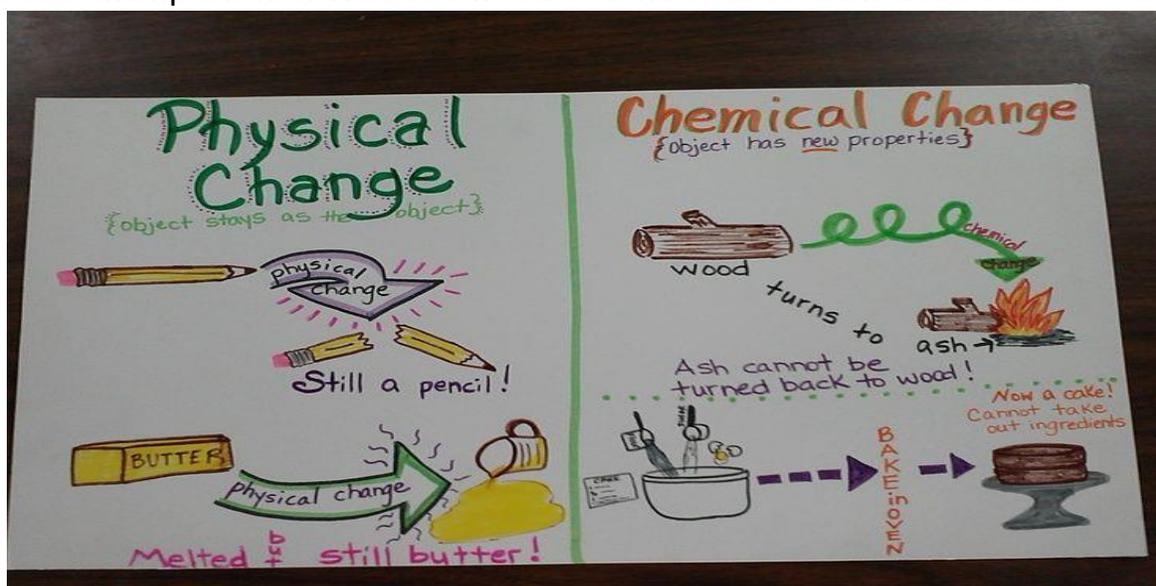


Lesson Summary

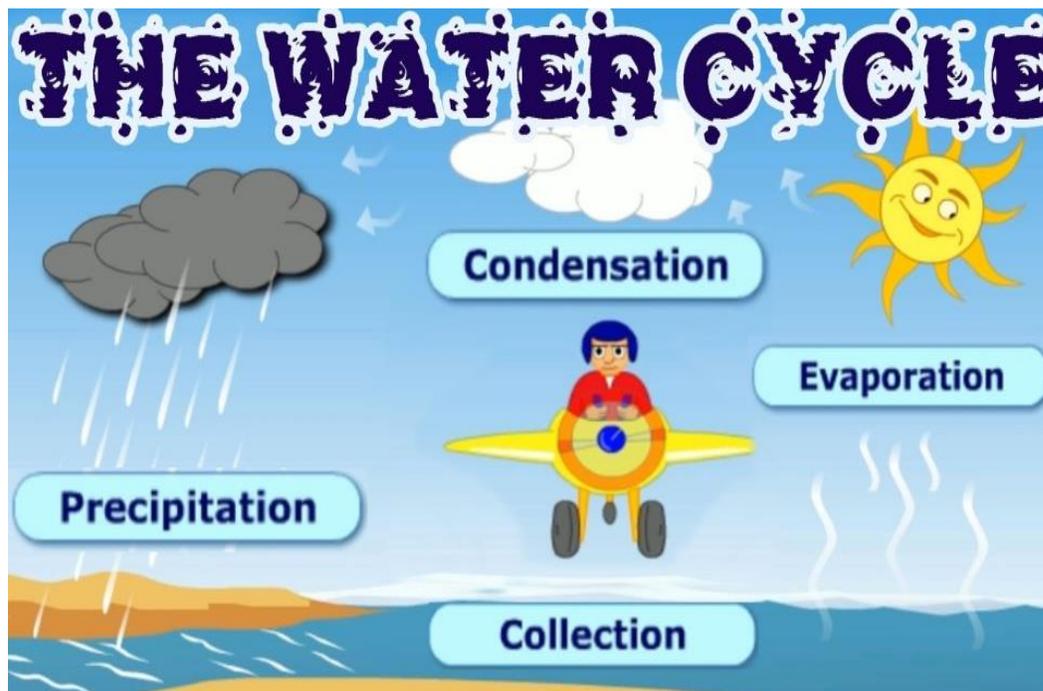
- A **molecule** is a particle of matter that is made up of more than one smaller particles joined together.
- **Properties of water:**
 - a. **Dissolve**- Substances mix together
 - b. **Surface Tension**- This is like a skin on water that allows insects to walk on water.
 - c. **Cohesion**- Water is together. The molecules are together.
 - d. **Capillary Action**- Water moves through our bodies and plants
- Water has 3 states- **Solid, liquid and gas**
- Another word for **gas is water vapor**.

Chapter 7

- **Physical change**- BEGINS and ENDS with the SAME type of matter. Example, clay. We can cut it, shape it, flatten it and it still remains as clay.
- **Real world changes**- A newly bought car. Within time, it gets old, rusty, and dented. The physical appearance (looks) change.
- **Matter changes its state**. Example, solid to liquid (ice to water). Liquid changes to solid (water to ice).
- **Melting**- Solid changes to a liquid (ice to water)
- **Mixture**- two or more types of matter that are mixed together but keep its original properties e.g. a salad.
- **Solution**- A mixture in which one or more types of matter are mixed evenly in another kind e.g. lemonade, juice.
- **Chemical Change**: Begins when one type of matter ends with another type of matter. Example is bread. We mix flour, milk, eggs together, bake it and it turns into bread. Another example is fire. We need wood and matches to make a fire burn.



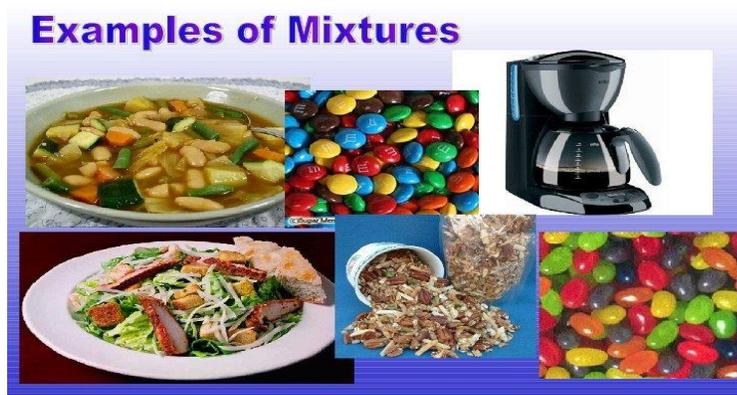
Water Cycle: The movement of water between Earth and the air.



- 1. Evaporation-** The sun heats the water and this changes to a gas (goes up).
- 2. Condensation-** The gas then builds up and forms clouds and the gas becomes a liquid again.
- 3. Precipitation-** The clouds release rain, snow, sleet or hail.
- 4. Collection-** Water falls down on the ocean, lakes, rivers.

LESSON SUMMARY- MIXTURES

- A mixture is a combination of 2 or more types of matter. Examples, salad, mixing candies, fruit salad.
- **We get 4 different kinds of mixtures:**
 - Solid and a solid (Salad)
 - Solid and a gas (Candle releases flame)
 - Liquid and a liquid (oil and lemon juice)
 - Solids and liquids (cornflakes and milk)
- A **solution** is a mixture in which 2 or more substances are mixed completely. Example, salt mixed in water.
 - **Solvent:** A LIQUID substance in which other things can dissolve in it. Example, water.
 - **Solute:** A substance that is dissolved in the liquid. Example, salt, sugar, coloring powder.
- How do we separate mixtures?
 - **Filtering:** used to separate a mixture
 - **Distillation-** See page 271. Use boiling to separate mixtures.
 - **Dissolving:** When a solute dissolves in a solvent. Example, when salt dissolves in water.
 - **Evaporation:** When the sun heats the water and it turns into a gas.
 - **Magnetism:** When opposites attract. Iron is attracted to a magnet. Sand is not magnetic.



ENERGY

LESSON SUMMARY



- **ENERGY** is the ABILITY TO DO SOMETHING. (To do anything). Energy is all around us. It takes energy to cook, talk, walk, drive to school etc.
- We get different kinds of energy- We have learnt in class about, **SOUND, HEAT, LIGHT, MOTION.**
- **HEAT: Transfer thermal energy from one object to another.** Example, the sun making me hot when I stand outside.

- **How is heat transferred?**

- Heat ALWAYS moves from a warmer object to a cooler object. Example, a warm object cools as it transfers heat. Look at the picture of the toaster.



- **Temperature:** Describes the **HOTNESS or COOLNESS** of an object.
- We measure temperature with a **THERMOMETER.**
- As a thermometer **warms, the liquid moves faster and RISES (up).**
- As a thermometer **cools, the liquid moves to the bottom (down).**
- We measure temperature in degrees **CELCIUS (C)**



- **How does heat travel?**

- **CONDUCTION:** heat travel when 2 OBJECTS are TOUCHING (a pot on a stove)
- **CONVECTION:** heat is transferred through LIQUIDS or GASES. (boiling a pot of water, the water at the bottom will heat first.
- **RADIATION:** heat that travels through space/air. (fire burning and the sun shining on earth)

- **INSULATOR:** Does NOT transfer heat very well. Does not have electric heat. Example, jacket, gloves.

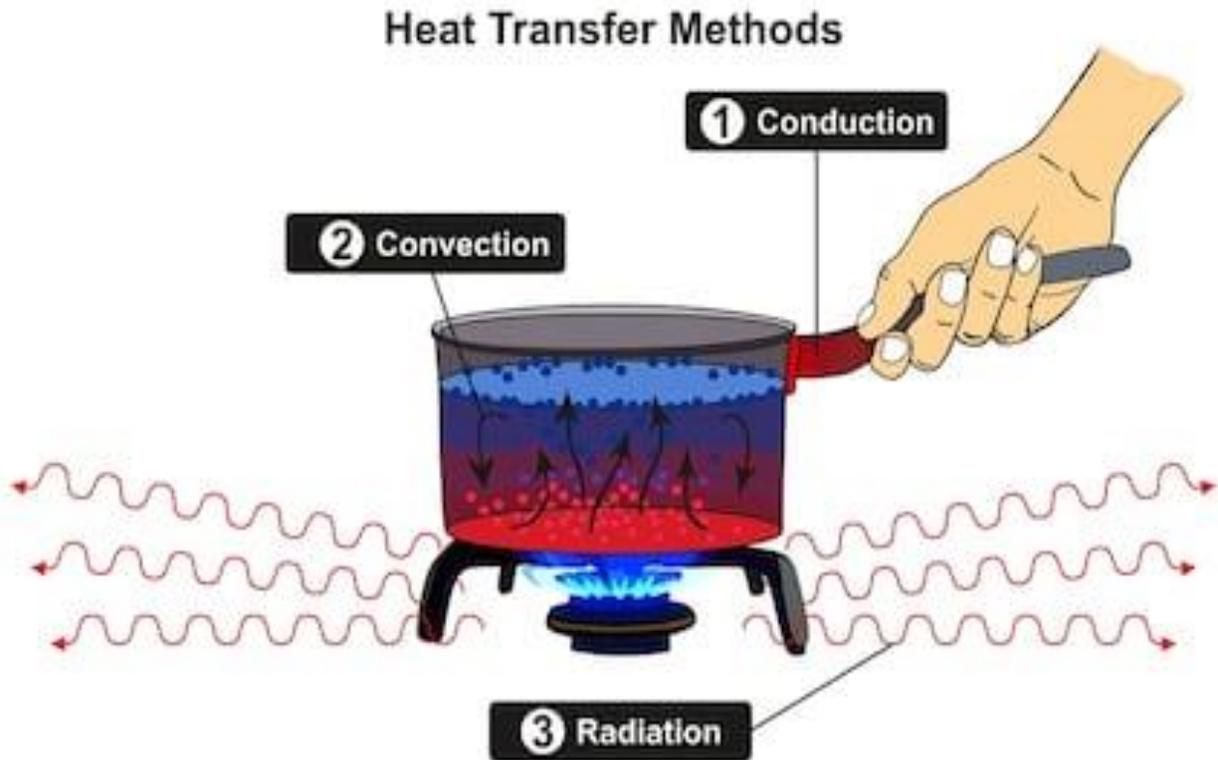


- **CONDUCTOR:** Transfers Heat VERY quickly. Has an electric heat. Example, metal is a good example (pots).



HOW DOES HEAT TRAVEL?

Conduction, Convection, Radiation



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Conductors and Insulators

Materials that transfer heat easily are called **conductors**. One example of a good thermal conductor is **metal**. This is why metal is used to make saucepans for cooking food.



Materials that slow the transfer of heat are called **insulators**. One example of a good thermal insulator is **wool**. This is why wool is used to make winter coats, scarves, hats and gloves.



Lesson Summary

SOUND

- Sound is made up of **VIBRATIONS** that we can hear.
- **Sound Waves** are waves that transfer sound through matter. Example, The alarm clock that starts ringing. You hear the vibrations sound coming from the clock. the
- Sound travels through AIR. Sound can also travel through solids, liquids and gases. thro
- An echo is a specific reflected sound. Example, stand in an empty room and say “hello.” You will hear the echo, “lo lo lo lo.”
- We hear with our EARS.
- **How does Sound differ?**
 - **Wavelength:** The distance of one area of particles to the next.
 - **Frequency:** The number of vibrations a sound makes in a given time.
 - **Pitch:** How high or low a sound is.
 - **Amplitude:** The amount of ENERGY in a sound.
 - **Volume:** how loud or soft a sound is.
- A **SONAR** is: a machine that can see what is happening under water and can allow us to LISTEN to sound waves in the water.



Lesson Summary

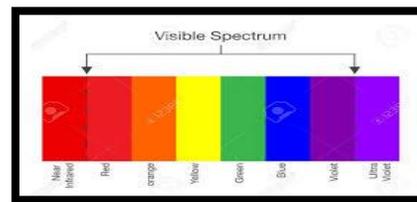
LIGHT



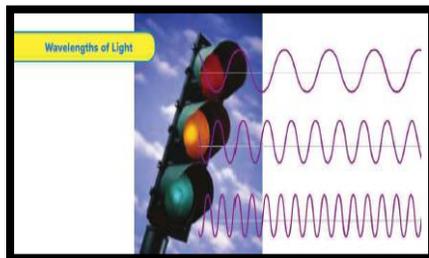
- **Light** is a form of **energy that we can SEE**.
- **Prism:** An object that separates white light into different colors, Example, take a see through prism, shine it in the sun and see the colors it makes.



- **Visible Spectrum:** Colors that we CAN SEE.



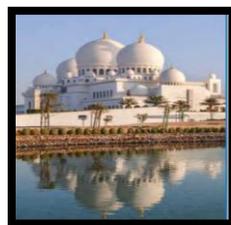
- **Electromagnetic Spectrum:** Range of waves that make up light. Example, a signal.



- Light travels in a straight line and it travels through AIR, SPACE and water.
- **REFRACTION:** Bending of light as it passes from one material to another. Example: Put a straw in a glass of water and see how it looks broken and bigger at the bottom.

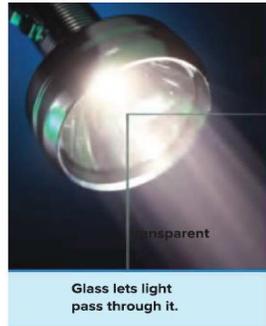


- **REFLECTION:** When light bounces off an object. Example a mirror.

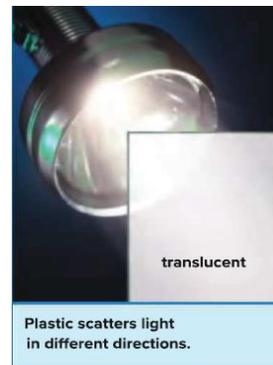


- **LENS:** A tool that refracts light.

- **Concave lens:** Allows us to see FAR objects. E.g. think of the glasses that someone wears to help see FAR objects.
- **Convex lens:** Allow small object to look big. Example: A magnifying glass.
- **We SEE with our EYES.** The color part of our eyes are called IRIS. The dot in our eyes are called Pupil.
- Light passes through:
 - **TRANSPARENT:** Light **CAN pass** through CLEARLY. Example: Light passes through GLASS.



- **TRANSLUCENT:** Light passes through **BUT not so clearly**. Example: Shine light through PLASTIC. It is not so clear.



- **OPAQUE:** Light **CANNOT** pass through. Example, shine light through your book. No light can pass through.



CHAPTER 8

LESSON SUMMARY ELECTRICITY

➤ **Electricity is a form of light energy. It flows through wires.**

➤ **What is an electrical charge?**

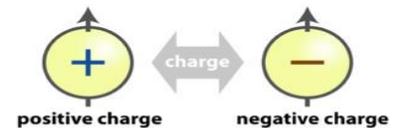
- An electrical charge gives us electricity
- Example: bright lights in a football stadium.
- We cannot see it, smell it or weigh it



➤ **How do charges interact**

- A **positive charge and a negative charge** attract or pull towards each other
- Positive does not attract positive
- negative does not attract negative

ELECTRICAL CHARGES



➤ **Static Electricity**

- Buildup of electrical charges on an object



➤ **Neutral Object**

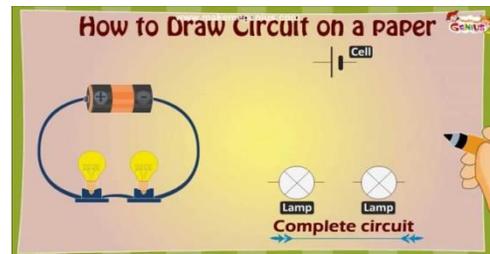
- does not have a buildup of charges

➤ **Electric Current –**

- a flow of electrical charges

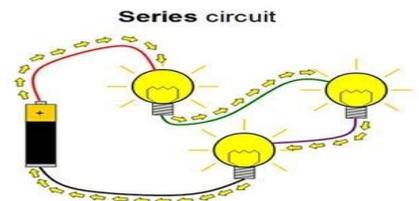
➤ **Circuits**

- The path along which electrical current flows



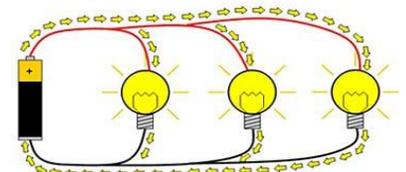
➤ **Series and Parallel Circuits,**

- **Series circuit-** current flows in ONE path. If a lightbulb blows, the circuit will not work.



- **Parallel circuit-**Current flows in many paths. If one lightbulb breaks, the other will still work, because there is more than one wire.

Parallel circuit



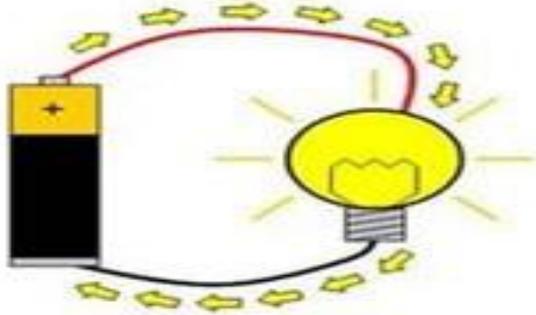
- **How can you use electricity safely?**

- **Short Circuit-** Current flows through a path of little resistance
- **Fuse-** prevents short circuits
- A fuse can only be used once
- **Circuit breaker-** A switch that protects circuits. We find this in our homes.

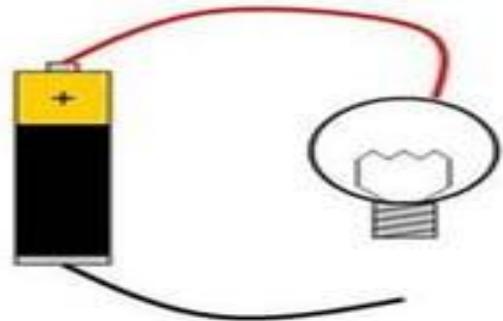
Closed Circuit- a complete path for the flow of electric current.

Open Circuit- an incomplete path for the flow of electric current

Closed circuit



Open circuit



Score

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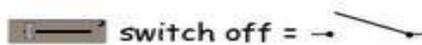
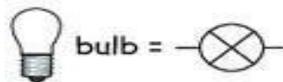
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Name: _____ Subject: Year 4 Science
 Date: _____ Unit: 4f Circuits and conductors

Circuits

When drawing circuits we should use symbols for each part of the circuits, this makes it easier to draw and understand.

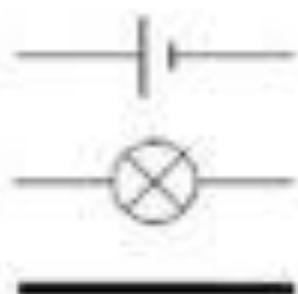
Look at the symbols below:



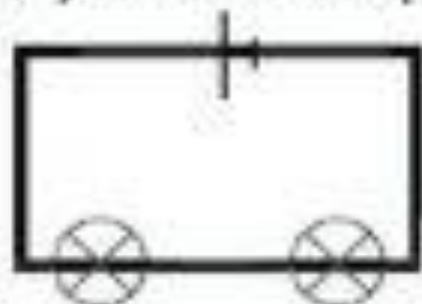
Draw the correct symbols below:

Buzzer	Bulb	Motor
Switch on	Battery	Switch off

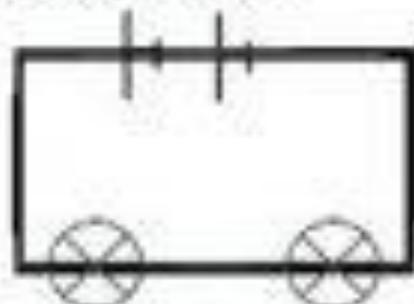
Can you label these symbols?



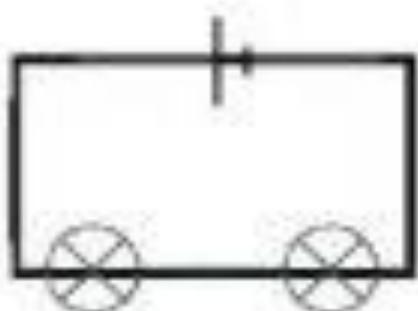
Look at the following circuits. Can you work out how many of each component is in each circuit?



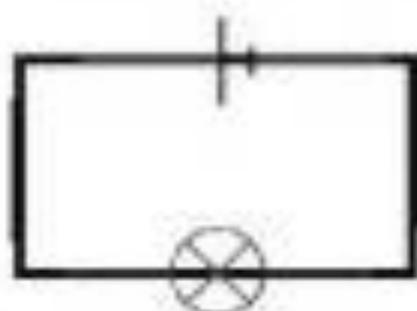
There are



There are



There are



There are

CHAPTER 8 SUMMARY –

HOW IS ELECTRICAL ENERGY USED

- **What do appliances use electrical energy for?**

Appliances use electrical energy to generate heat, light and motion

Example- A toaster uses electrical energy to give us heater

A heater uses electrical energy to give us heat

A lamp will use electrical energy to give us light

A fan will use electrical energy to give us motion- the fan blades move



- **How is electrical energy used?**

Heat, -Toaster, stove (cooking food)

Light, -Lamp switch, street lights, lights on cars

Motion- a train moving, electric toys, washing machines

INCANDESCENT BULBS

- Produces heat and light.
- Has a thin wire inside called a filament.
- Gets very hot.



FLOURESCENT BULBS

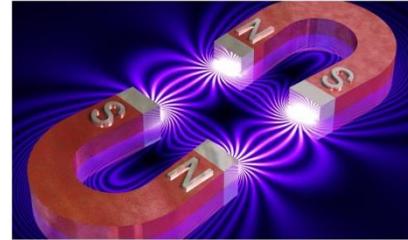
- Uses gas to produce light
- Does not get very hot



CHAPTER 8 LESSON SUMMARY LESSON 6 MAGNETISM AND ELECTRICITY

• What is a magnet?

- Magnets PULL each other.
- Magnets repel (push away) from each other.



Magnetic Poles

All magnets have two poles. A **NORTH** pole and a **SOUTH** pole

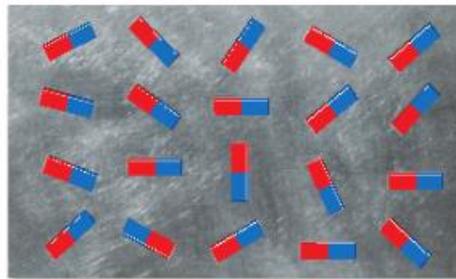
Opposites attract- North will attract south

Like poles **DO NOT ATTRACT**- South and South will **not** attract, north and north will not attract.

Magnetic Particles

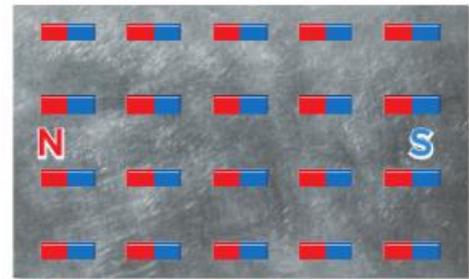
• What are magnetic fields?

An area of magnetic force around a magnet

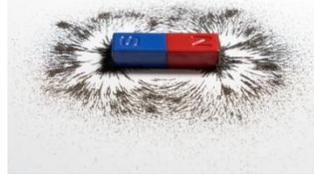


▲ Metals are made of tiny particles. Normally, the particles point in different directions.

south poles are brought together.



▲ When a magnet is brought near iron, nickel, or cobalt, the particles line up. They point in the same direction.



Earth's Magnetic Field

Some of the inside of Earth is made up of melted iron. This iron creates a magnetic field that surrounds earth

• What is an electromagnet?

It is a coil of wire wrapped around a metal core such as iron.

• Electric Motors- What is a generator?

A generator changes mechanical energy into electrical energy

• Alternating Current, -Flows in one direction and flows out in the opposite direction

Voltage- is the strength of power source. It is usually measured in volts

Transformers – Changes the voltage of electrical current

Compass- A tool used to show direction. It has **NORTH, SOUTH, WEST** and **EAST**

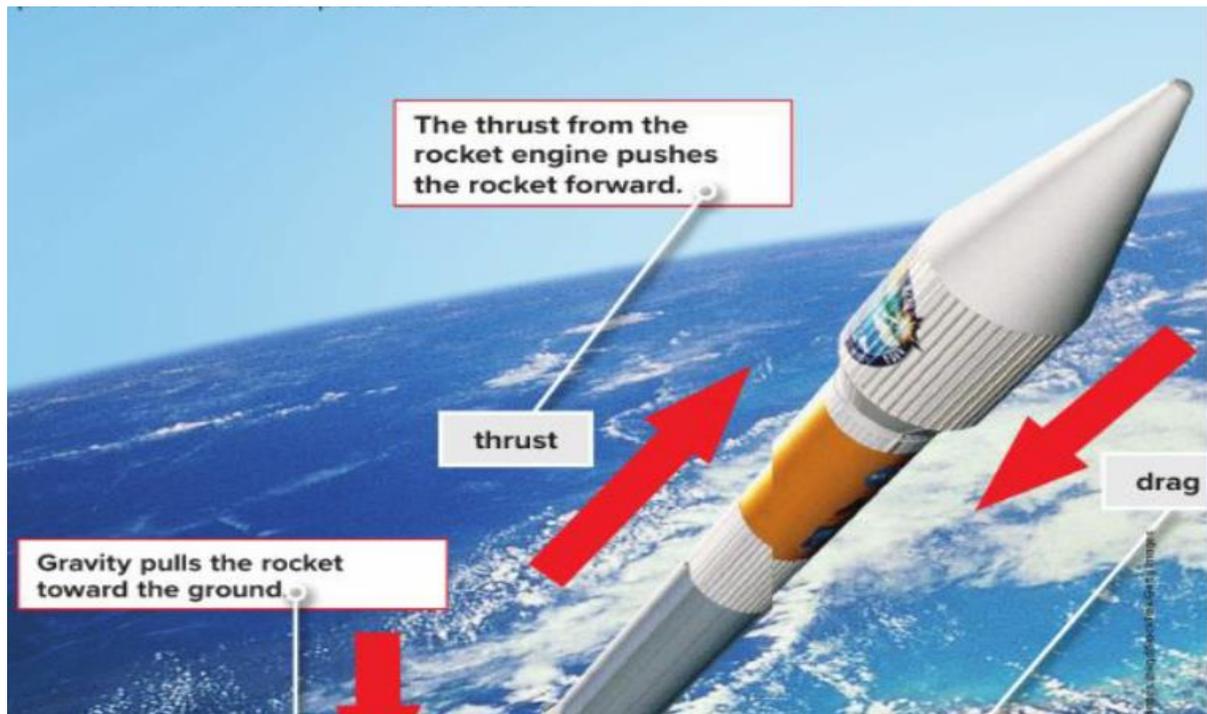
CHAPTER 10 LESSON SUMMARY LESSON 1

- **Motion**- When something is moving all the time
- **Distance**- how far two points are.
- **Speed**- how fast or slow something moves in an amount of time, E.g. 60km/h
- **Velocity**- tells us more about an objects speed, direction and motion, E.g. Amina is driving 120km/h, to the WEST.
- **Force**- when you PUSH or PULL something 
- **Friction**- when one object rubs against another object and it causes it to slow down. A force that helps something to stop and go. Example, when the bicycle wheels ride on the floor and you brake (stop).
- **GRAVITY**- A Pulling force between 2 objects. Whatever goes up MUST come down. Scientists measure gravity in NEWTONS (N)
- **Acceleration**- Any change in speed or direction. Example, 2 people can push a table faster than one person.
- **Buoyancy**- A force that helps a ship to float (on water).



How do rockets fly into Space?

- **Rockets** use a special force called **THRUST**. **Thrust** makes something move forward (straight)
- **Drag**- the force that brings something DOWN.
- **Airplanes**- Need **THRUST** and **LIFT** to fly. Lift is a force that keeps the airplane in the sky.



Lesson Summary

Technology and Design

- **Technology-** Everything that we design, make use and solves a problem. Example, pencil, car, calculator

Why do we create technology?

- To meet a need (demand) or want

Think about your house. If something breaks, you will call someone to fix it. This is all an example of technology



- **Engineer-** A person who designs new technology and fixes old technology.

- **Prototype-** A working model that can be tested.

Think about when the Sheikh wants to build flying taxis in Dubai. They first built a prototype (a working taxi) to see and test how this will work.

- **Design Process-** The steps used to find solutions to problems.



- The 6 steps for the design process are:

1. A problem or challenge is identified or recognized.
2. Develop Solutions
3. Choose a solution
4. Build a Prototype
5. Test the Prototype
6. Make a final design and Communicate the result

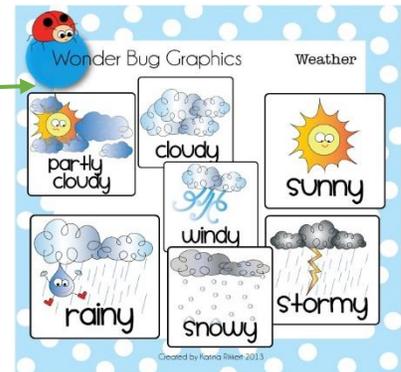
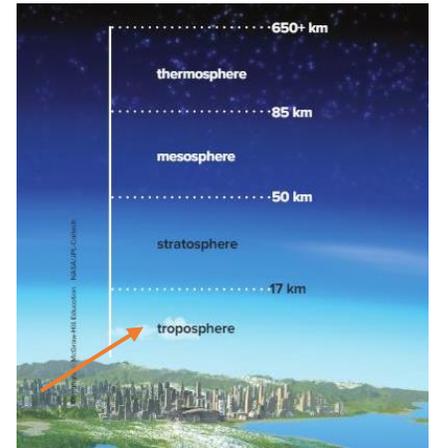
Example

1. I want to design a car that can fly in the sky.
2. The cars will be red in color. It should be big. It should be small. It must have a person driving it.
3. I choose that the car will be small and it must not have any person driving it.
4. Make/ Build the car (Prototype)
5. Test to see if the car can fly and is it good.
6. Make a final decision if I need to make any changes to the car

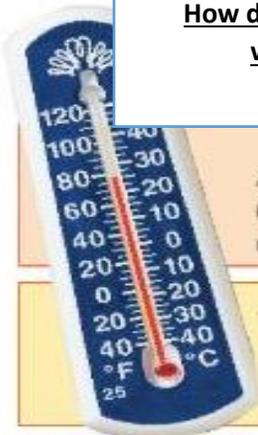
Lesson Summary

Air and Climate

- Air surrounds the Earth like a thin blanket.
- This blanket of air is called an **ATMOSPHERE**.
- Earth has different gases like **OXYGEN** (air we breathe in), **NITROGEN** and **CARBON DIOXIDE** (Air we breathe out).
- Animals and Plants need oxygen to live.
- Plants need carbon dioxide.
- Earth is made up of different layers. The closest layer to the Earth is called **TROPOSPHERE**. This is where all the **WEATHER** takes place.
- In the troposphere, **AIR** is always moving. This is called **WIND** (moving air).
- **Temperature**- how **HOT** or **COLD** something is.
- If the air around us is **HOT** and **STICKY**, we call this **HUMID**.
- We get different kinds of weather. Examples are
- Air around you has weight. Although we cannot see air, it pushes down on us. The force of air is called **Air Pressure**.
- **Precipitation** is when water falls from the clouds.



How do we measure weather?

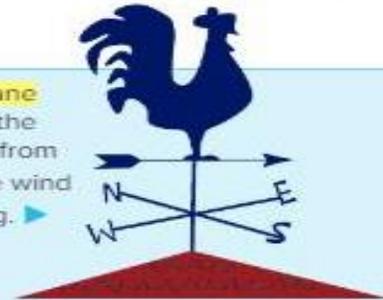


A **hygrometer** (hi-**GRAH**-muh-tur) measures humidity. ▲



◀ A **thermometer** measures air temperature in degrees Celsius (°C) or degrees Fahrenheit (°F).

A **wind vane** points in the direction from which the wind is blowing. ▶



A **barometer** measures air pressure. ▶



◀ A **rain gauge** (**GAYJ**) is a tube that collects water. It shows the amount of rainfall.



An **anemometer** (a-nuh-**MAH**-muh-tur) measures wind speed. The faster the wind blows, the faster the cups spin. ▼



CHAPTER 10 LESSON SUMMARY LESSON 2 WATER

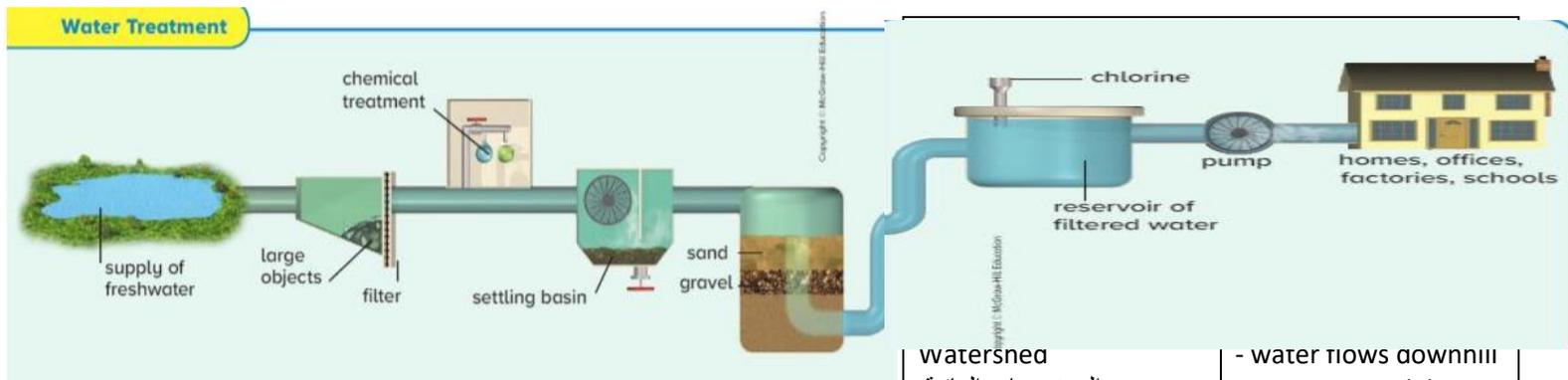
Where is Earth's water found?

- **Salt water**- Oceans have salt water. This water cannot be used for plants or for drinking
- **Freshwater**- this is water without much salt. Rivers. Lakes, ponds.
- **Groundwater**- water that fills cracks in rocks
- **Glaciers and icecaps** (ice) hold most of earths water
- **Soil water**- water that soaks into soil
- **Watershed**- water flows **downhill** into a stream, lake or river
- **A RESEVOIR**- A storage area for keeping fresh water.

How is freshwater supplied?

Please look at the picture on page 472-473

1. Supply of freshwater
2. Water goes into a filter that stops large objects
3. Water is chemically treated- it is cleaned
4. It is stored in a reservoir until it is needed
5. It is pumped into our homes



watershed المستجمعات المائية	- water flows downhill into a stream, lake or river هي تتدفق المياه على سطح الارض الي اسفل منحدر او الي مجرى مائي او بحيرة او نهر
Reservoir الخزان	Storage area for keeping water هي منطقة تخزين للاحتفاظ بالمياه العذبة وادارتها
Wells الابار	Deep holes that are drilled or dug into the ground هي فتحات عميقة راسيه محفوره تحت الارض
Runoff الجريان السطحي	Water that flows over the land without

Lesson Summary

Water Cycle

- **The water cycle** is the movement of water on the Earth and the atmosphere (the way water goes up and comes down).
- **Evaporation:** When the Sun heats the water and a gas goes up into the sky. This gas is called **WATER VAPOR**.
- **Condensation-** When the gas (water vapor) gets cold and turns into clouds.
- **Precipitation-** When water comes out of the sky, example, rain, snow, hail, sleet.
- **Collection-** When water falls from the sky, it collects onto the ground, rivers, lakes, ocean.
- **Runoff-** When water falls from the sky, it goes onto mountains and falls down onto the ground, rivers, lakes.
- **Transpiration-** When water is evaporated back into the air. Think about a puddle of water. Does it stay there forever? No..... the Sun dries the water and the water goes away (evaporates).

2. Types of Clouds:

<u>CUMULUS</u>	<u>STRATUS</u>	<u>CIRRUS</u>
1. Clouds are puffy	1. Clouds are formed in layers.	1. Look thin and feathery
2. They look like cotton balls.	2. They look like blankets	2. Made of tiny bits of ice
3. They have a flat bottom	3. They are the lowest clouds in the sky (fog)	3. Found very high in the sky



Water cycle دورة الماء	The movement of water between Earth's surface and the air حركة الماء المنتظمة بين سطح الأرض والغلاف الجوي
Evaporation تبخر	Change of liquid to a gas تغير السائل تغيرا بطيا ليصبح غازا
Condensation تكثيف	Water vapour changes to a liquid forming a cloud يتغير بخار الماء إلى سائل يشكل سحابة
Transpiration تعرق النبات	Water evaporates from plants Plants lose water يتبخر الماء من النباتات، تفقد النباتات الماء
Precipitation هطول	Rain. Snow, مطر وتلج
Water Vapor بخار الماء	Water Vapor is the gaseous form of water. It is clear and

SLEET, also known as *ice pellets*, are smaller in size than **hailstones**.

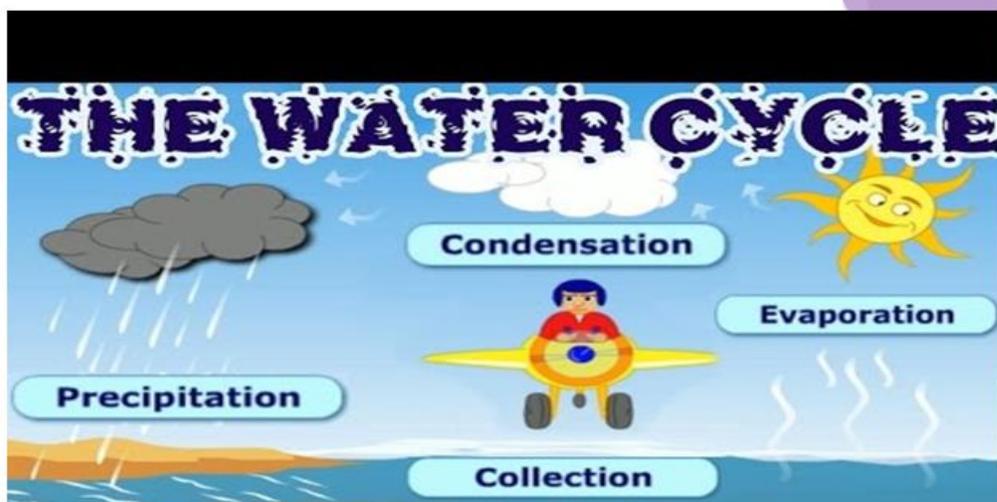


- **SLEET**

Ice that falls onto the ground.

- **HAIL**

Is made in the clouds and are much **BIGGER** than sleet.



RUNOFF-

When water falls from the sky, it goes onto mountains and run down onto the ground, lakes, rivers and more places.



CHAPTER 10 LESSON SUMMARY LESSON 4 TRACKING THE WEATHER

· What are air masses?

A large body of air that have the same properties

What are fronts?

FRONT- boundary between two air masses that have different temperatures

WARM FRONT- when warm air **pushes INTO** cold air

COLD FRONT-when cold air **pushes UNDER** a warm air mass

STATIONARY FRONT- boundary between air masses that are not moving

· What does a weather map show?

- Weather conditions about a certain place
- Temperature
- Winds
- Precipitation

What is forecasting?

To predict weather conditions

· What are the signs of severe

weather?

Tornado- Rotating column of air



Hurricane- a very wide storm

Can be 480km across

Air mass	الكتل الهوائية	A large body of air that have the same properties
Front	الجبهة الهوائية	boundary between two air masses that have different temperatures
Warm Front	الجبهة الدافئة	when warm air pushes INTO cold air
Cold front	الجبهة الهوائية الباردة	when cold air pushes UNDER a warm air mass
Stationary Front	الجبهة الهوائية الثابتة	boundary between air masses that are not moving
Forecast	التنبؤ بالطقس	To predict weather conditions

CHAPTER 10 LESSON SUMMARY LESSON 5 CLIMATE

• What is climate?

- The pattern of weather that happens year after year.
- Climate is not the same everywhere on Earth
- Polar regions have cold climates
- Tropical regions are near the equator- warm, humid and rainy
- Temperate regions- Lie between polar and tropical regions

What are Climate Regions?

- A place that has similar humidity, temperatures and wind

• What determines climate?

- **Latitude**- How far a place is from the equator
- **Global Winds**- Winds that move air between equator and the poles/
- **Ocean currents**- a current is a directed flow of gas or a liquid.
- Some currents move warm water from the equator to the poles
- Others move cold water from the poles to the equator
- **Distance from Water**- Being near or far from water affects climate. Places that are nearer to the water have cooler summers, warmer winters and have more rain

• How do mountains affect climate?

- The base of a mountain is always warmer than its peak. The higher the altitude, the lower the temperature. As the air goes higher it gets cooler.
- **ALTITUDE**- how far above sea level a place is

Climate المناخ	The pattern of weather that happens year after year. هو نمط الجو الموسمي الذي يحدث عاما تلو الاخر
Current تيارات	a current is a directed flow of gas or a liquid التيار هو التدفق الموجه للغاز أو السائل
Altitude ارتفاع عن سطح البحر	How far above sea level a place is مستوى الارتفاع عن سطح البحر
Latitude خط العرض	How far a place is from the equator مدى بعد المكان عن خط الاستواء
Global winds رياح عالمية	Winds that move air between equator and the poles الرياح التي تحرك الهواء بين خط الاستواء والقطبين
<u>ESSENTIAL QUESTION- WHAT IS THE DIFFERENCE BETWEEN WEATHER AND CLIMATE?</u>	
Weather is day to day conditions. الطقس هو حالة الجو في وقت ومكان معينين Climate is the pattern of weather that happens year after year المناخ هو نمط الطقس الذي يحدث سنة بعد سنة	

CHAPTER 11 LESSON SUMMARY LESSON 1 EARTH AND SUN

What causes day and night?

The earth's rotation around its axis causes day and night, A rotation takes 24 hours

What causes seasons?

Earth's tilt causes sunlight to hit earth at different angles. The earth's tilt and its revolution around the sun causes seasons. A revolution takes 365 $\frac{1}{4}$ days or one year

Earth tilts at 23.5 degrees

How does the Sun's apparent path change over the seasons?

In summer the sun rises much higher in the sky. In winter, it is much lower. That's why in summer we have longer days.

VOCABULARY LESSON 1	
Rotation دوران	The act of spinning. Earth takes 24 hours to rotate around the sun فعل الدوران. تستغرق الأرض 24 ساعة لتدور حول الشمس
Revolution ثورة	When one object travels around another. Earth takes one year to make a revolution of the sun عندما يسافر كائن واحد حول آخر. الأرض تستغرق سنة واحدة لإحداث دوران الشمس
Orbit مدار	The path a revolving object takes المسار الذي يستغرقه الكائن الدوار
Shadow ظل	Shadow forms when light is blocked الظل يتشكل عندما يتم حظر الضوء
Apparent motion حركة الظاهرة	The way something appears to move. It is not real motion طريقة يبدو فيها شيء ما بالتحرك ولكن انها ليست حركة حقيقية



Lesson Summary

The Earth and Moon



- The **SUN** gives the Moon light. Without the Sun, the Moon has no light.
- The Moon rotates around the Sun.
- It takes 29 days (30 days) for the Moon to rotate around the whole Earth.
- Earth is much bigger than the Moon.

Features of the Earth and Moon

<u>Earth</u>	<u>Moon</u>
- Have water	- No water
- Have oxygen	- No oxygen
- Have life (people)	- No life (people)
- Have atmosphere	- No atmosphere
	- Extreme temperatures. Very, very cold. And VERY hot.

- **Crater-** Holes (hollow pit) on the Moon.



- **Meteoroids-** Large rocks that travel through space and crash space objects.

- People wear a **SPACE SUIT** to travel to space/Moon because it will **PROTECT** their bodies and it will provide **OXYGEN**.



- **Phases-** Different stages that the moon goes through.

- The Moon has gravity.

- **Eclipse-** when a **SHADOW** is cast by the Earth or the Moon

There are 2 types of Eclipse:

1. **LUNAR ECLIPSE-** When the **EARTH** is directly between the Sun and the Moon.

2. **SOLAR ECLIPSE-** When the **MOON** is between the Sun and the Earth.

Oreo Cookie Moon Phases



NEW MOON



WAXING CRESCENT



**WAXING HALF
(FIRST QUARTER)**



WAXING GIBBOUS

www.sciencebob.com



WANING HALF



WANING CRESCENT

PHASES OF THE MOON

“WAXING”- light shines on the **RIGHT** side

“WANING”- light shines on the **LEFT** side

Lunar Eclipse



Sun



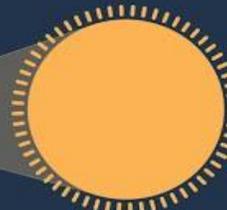
Earth



Moon



SOLAR ECLIPSE



Lesson Summary

The Solar System



- The **SUN** and all objects/ things that move around it make up the SOLAR SYSTEM. (Things like **ICE, ROCKS, STARS, PLANETS**).
- **Satellite**- Any object that moves around another object.
- **PLANETS**- Round objects in Space that travel around the stars.
- **We have 8 Planets.**
- The **SUN** gives light to the Planets.
- **Gravity**- Force of **ATTRACTION** (pull) toward the Sun.
- **Inertia**- Moving objects to keep moving in a straight line.

How do we learn about the Solar System?

- **Telescopes**- Make far away objects look closer



- **Astronaut**- Person that travels to Space.



- **Shuttles**- Help to make satellites. To go to space.
- **Probes**- less expensive and safer. Send pictures to Earth.



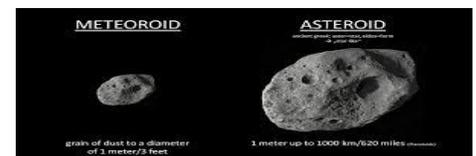
PLANETS

<u>ROCKY PLANETS (CLOSEST TO THE SUN)</u>	<u>GAS GIANTS- HUGE IN SIZE AND MADE UP OF GAS.</u>
- Mercury	- Jupiter
- Venus	- Saturn
- Earth	- Uranus
- Mars	- Neptune

- **Dwarf Planet**- Smaller and smaller Planets are being found. PLUTO is named the 9th Planet.

What else is in the Solar System?

- **Comets**- Ice mixed with rocks and dust
- **Asteroids**- large chunk of rocks or metal in space
- **Meteoroids**- When comets hit each other, pieces of rock break



Lesson Summary

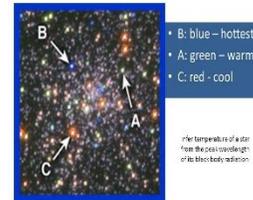
Stars and Constellations

- STARS are made up of hot gases.
- Stars give off LIGHT and HEAT.
- The only star you can SEE in the day is the SUN. The Sun is the CLOSEST star to the Earth, that is why it looks bigger and brighter.
- The Sun is 150 million km from the Earth.
- Stars have different colors. Why? Because of it's Temperature.



- **HOT stars**- White and Blue
- **Cooler Stars**- Red and orange

Stars have different colors



- **A light year** is the distance light travels in one year.
- Stars are found in LARGE groups called **GALAXIES**.



- ANDROMEDA Galaxy is shaped like a spiral.

- A **Milky way** has billions of other stars.

- **CONSTELLATIONS**- A group of stars that make a pattern or shape or design in the sky.
- People named constellation by what picture they saw in the sky.
- Today, there are 88 constellations.
- Constellations can be used to find direction at night.
- **Star charts** and **Telescopes** help you to see each star.



- The Sun is made up of GAS. The Sun is a big star.
- The Sun gives light and heat.
- NEVER look directly into the Sun. It can damage your eyes.
- Always wear **Sunscreen** to protect your skin.

