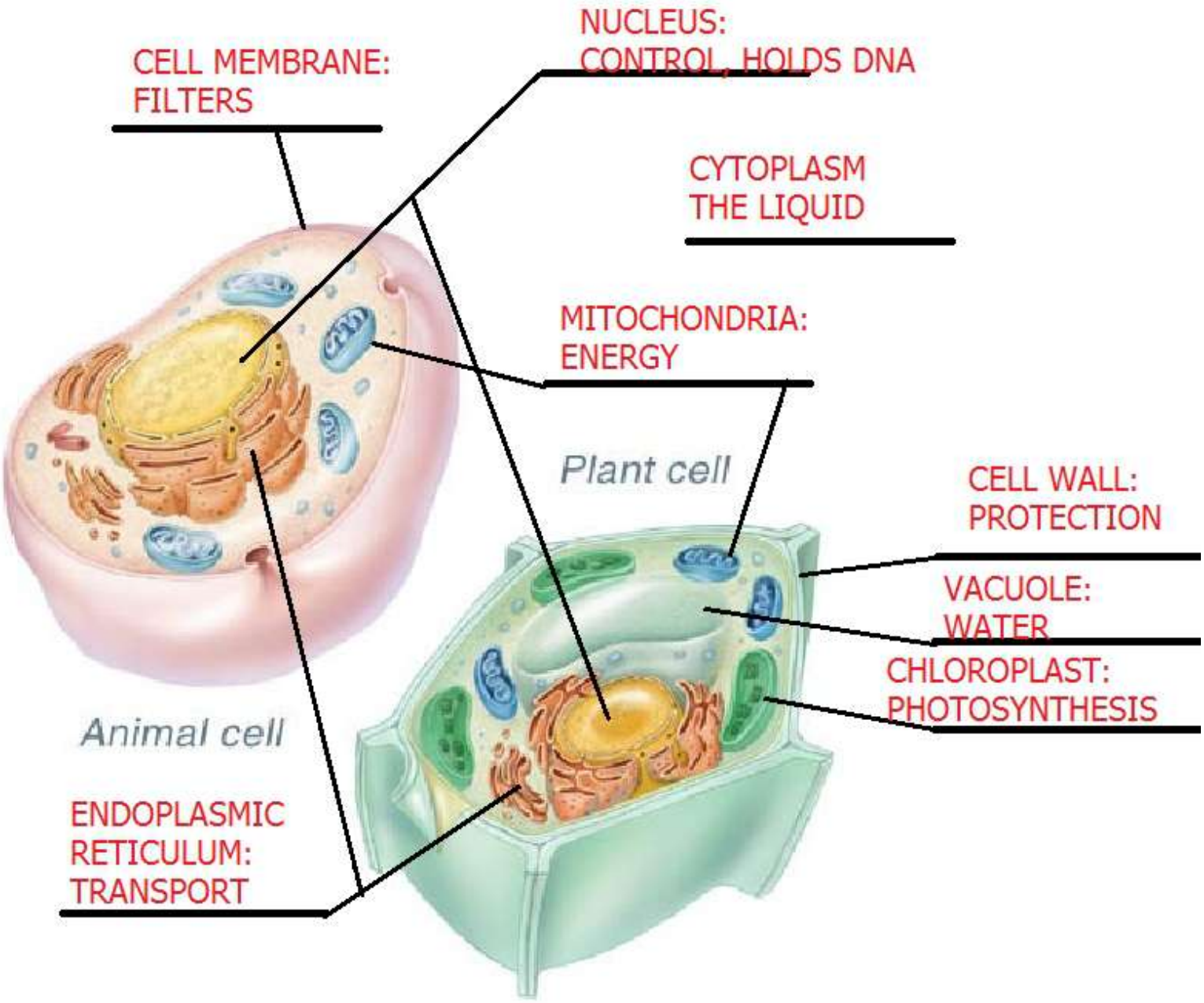
Life Science Review



LS.2

1. The cell theory has three parts. They are…
   CELLS COME FROM CELLS, ALL LIFE IS CELLS, ALL LIFE FUNCIONS ARE DONE BY CELLS.

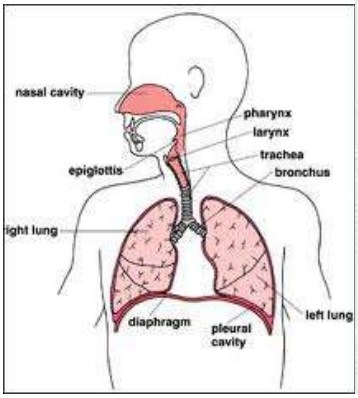
2. The tool that was most important to the development of the cell theory is the MICROSCOPE.

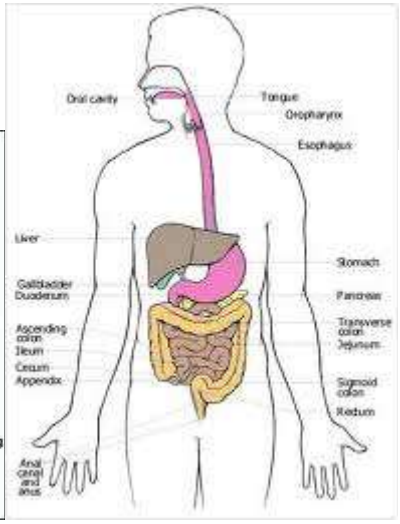
3. Diagram Mitosis: Diagram Meiosis:

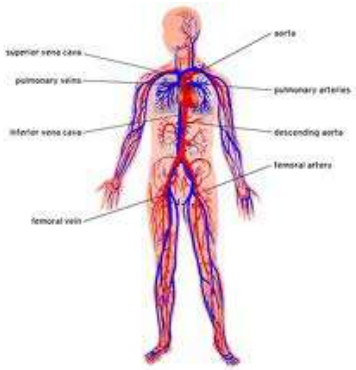
LS.3

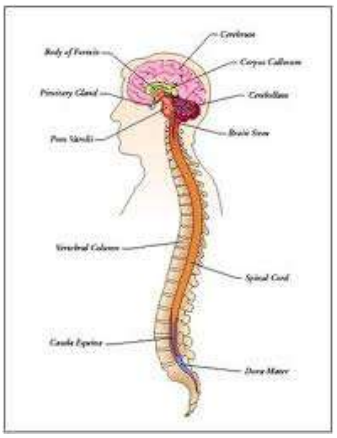
4. ATOMS → MOLECULES →CELLS →**TISSUES ORGANS SYSTEMS** → ORGANISM

5. What system is it and what's it used for?









RESPIRATORY: BREATHING | DIGESTIVE: EATING | CIRCULATORY: BLOOD | NERVOUS: CONTROL

5.1 What is the difference between a unicellular and a multicellular organism?

ONE CELL MANY CELLS:DIFFERENTIATION

LS.4

6. Plants need the proper balance of 4 things to survive, they are…

LIGHT WATER GAS NUTRIENTS

7. Animals need 5 things to survive, they are…

FOOD WATER GAS SPACE SHELTER

LS.5

8. The order of classification from least to most specific is…

KINGDOM

PHYLUM

CLASS

ORDER

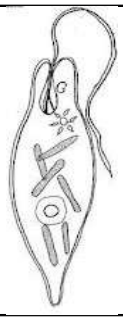
FAMILY

GENUS

SPECIES

Scientific names or scientific nomenclature are based on the GENUS and SPECIES name such as

Humans: HOMO SAPIEN Wolves: CANIS LUPUS Dogs: CANIS DOMESTICUS

Kingdom	ANIMALIA	PLANTAE	FUNGI	PROTISTA	EUBACTERIA	ARCHAEBACTERI
Examples						
Defining Characteristics	CONSUMERS MULTICELLULAR MOBILE EUKARYOTIC	PRODUCERS MULTICELLULAR SESSILE EUKARYOTIC	CONSUMERS MULTICELLULAR SESSILE EUKARYOTIC	UNICELLULAR EUKARYOTIC	UNICELLULAR CONSUMERS PROKARYOTIC	UNICELLULAR PRODUCERS PROKARYOTIC

Phyla	CNIDARIA	MOLLUSCA	ANNELID	ARTHROPOD	ECHINODERM	CHORDATE
Examples						
Defining Characteristics	NO SKELETON RADIAL SYMMETRY	HYDROSKELETON BILATERAL SYMMETRY	NO SKELETON BODY SEGMENTS	EXOSKELETON BODY SEGMENTS BILATERAL SYMMETRY	HARD OUTTER SKIN RADIAL SYMMETRY	SPINE BILATERAL SYMMETRY

Group	MOSS	FERN	CONIFERS	FLORA

Examples				
Defining Characteristics	TINY	SPORES	EVERGREEN	FLOWERS

8.1 A species is defined as…
A GROUP OF SIMILAR ORGANISMS THAT NATURALLY REPRODUCE.

LS.6

9. All energy on Earth originates at the SUN

10. All ecosystems on Earth begin with PRODUCERS which capture sunlight through the process of PHOTOSYNTHESIS.
Plants use the chemical CHLOROPHYLL to absorb and trap sunlight.

11. What is the equation for photosynthesis?
CARBON DIOXIDE + WATER + LIGHT --> OXYGEN + SUGAR

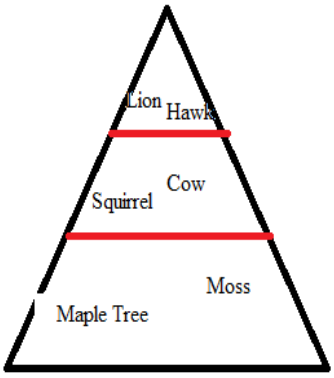
12. Draw a food pyramid and label *producers, first level consumers, and second level consumers.*

Where would the following organisms go on the pyramid?

Maple Tree Lion

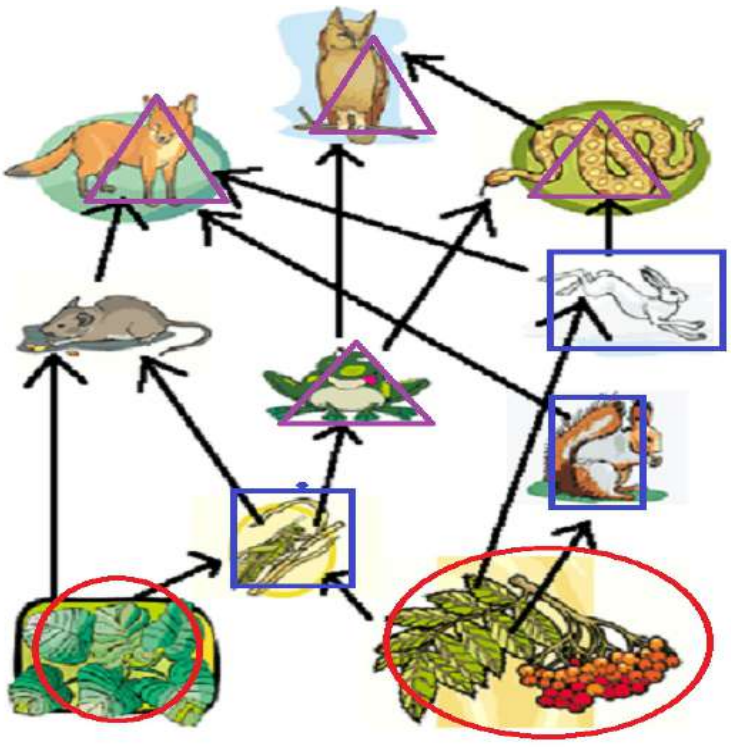
Squirrel Moss

Cow Hawk



LS.7

13. On the food pyramid above, label the flow of energy.: IT GOES UP.



A. Circle the producers.
B. Box the herbivores/first level consumers.
C. Triangle the carnivores/third level consumers.
D. How would the rat be classified?
OMNIVORE

E. How would the Frog be classified?
INSECTIVORE

F. Which organisms would have the highest population? Why?
GRASSHOPPERS: TO SUPPORT HIGHER LEVELS.

G. What would happen if all of the right plant died out?
RABBIT AND SQUIRREL WOULD DIE OUT.

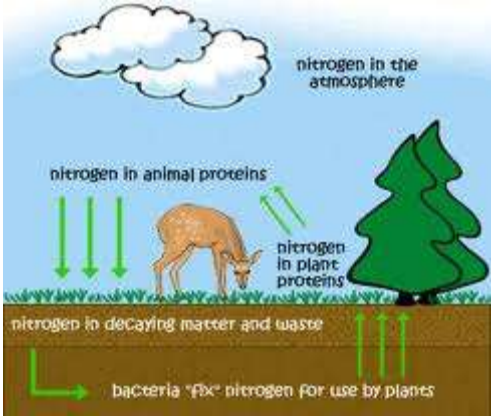
H. What would happen if all of the crickets died out?
FROGS DIE, PLANTS BECOME MORE.

I. The arrows show the direction of…
ENERGY

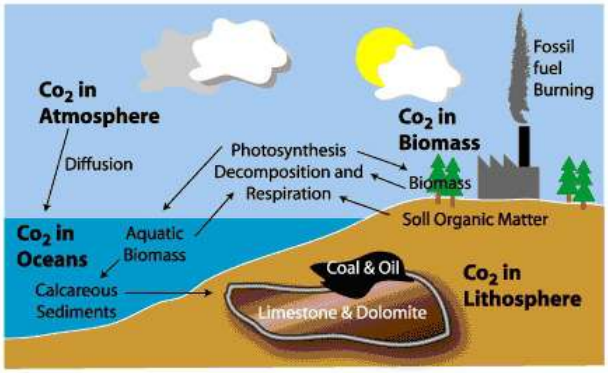
14. How do nutrients in ecosystems get back into the environment after organisms die?
DECOMOPOSERS

15. Why does each level of the food pyramid get smaller?
LESS POPULATION AND ENERGY.

15.1 What is this showing?
NITROGEN CYCLE INCLUDES BACTERIA



What is this showing?
CARBON CYCLE:



LS.8

Cause	Increasing Territory	Decreasing Territory	Increasing Cooperation	Decreasing Cooperation	Increasing Food	Decreasing Food
Effect on population?	INCREASE	DECREASE	INCREASE	DECREASE	INCREASE	DECREASE

LS.9

Niche	Producers	Consumers	Decomposers
What does it mean to be one?	MAKE FOOD	EAT FOOD	EAT DEAD AND POO
What are some examples?	ANIMALS	PLANTS	FUNGI AND EUBACTERIA

Why are there almost always more prey in an ecosystem than predators?

So if the number of predators in a population goes up, the number of prey will most likely DECREASE.

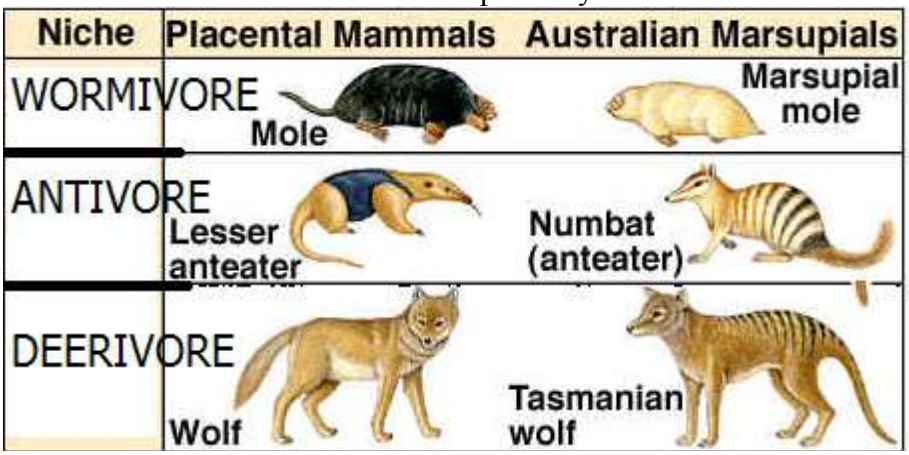
What's the difference between competition and cooperation between organisms?

ONE WINNER, ONE LOSER.....2 WINNERS

There are three types of symbiotic relationships…

Relationship	MutUALISM	ComMENSALISM	ParASITISM
Meaning	BOTH WIN	ONE WIN, ONE DOESN'T CARE	ONE WINNER, ONE LOSER
Examples	OX BIRDS ON OX	BIRD IN TREE	MOSQUITO ON HUMAN

What niche do each of these animals probably fill?



LS.10

An ecosystem is the ORGANISMS living in an area and their ENVIRONMENT.

A biome is…A SPECIFIC GEOGRAPHIC REGION and is made up of many ecosystems.

A biotic factor is…LIVING

An abiotic factor is…NOT LIVING

Biome Name	Geographic Location	Climate	Plant Types/Adaptations	Animal Types/Adaptations
TUNDRA		PERMAFROST	ALMOST NONE	LARGE MAMMALS
DESERT		LITTLE RAIN	CACTI	REPTILES
GRASSLAND		4 SEASONS	GRASS	HERDING MAMMALS
TEMPERATE FORREST		4 SEASONS	EVERYTHING	EVERYTHING
RAINFORES T		4 SEASONS	MOST	MOST
TAIGA		LONG WINTER	CONIFERS	MAMMALS

LS.11

What is phototropism? PLANTS BENDING TO LIGHT

What is hibernation? ANIMAL "SLEEPING" THROUGH WINTER.

What is dormancy? PLANTS "SLEEPING" THROUGH A SEASON.

What are the steps to eutrophication?

FERTILIZER IN WATER	ALGAE GROWS OUT OF CONTROL	PLANTS DIE OUT	FISH SUFFOCATE

LS.12
Humans can negatively impact ecosystems in several ways such as…
OVERHARVESTING, HABITAT DESTRUCTION, POLLUTION

LS.13
Draw a DNA molecule…This is from Watson and Crick!

What are the differences between DNA, a chromosome and a gene?
DNA --> GENE --> CHROMOSOME

Which of the following traits are heritable?

1.	Eye Color H	2.	Hair Length N	3.	Hair Color H	4.	Skin Color H
5.	Typing Speed N	6.	Arm Strength N	7.	Language N	8.	Favorite Color N

What's the difference between a dominant and a recessive trait?
ALWAYS SHOWS....NEED 2 COPIES TO SHOW
What's the difference between a genotype and a phenotype?
YOUR GENES.....THE WAY YOU LOOK
If a black lab homozygous for being black mates with a chocolate lab homozygous for being brown, what will the puppies look like? This is from Mendel!

100% BLACK

If two black labs heterozygous for being chocolate have puppies, what percent of the babies will be chocolate?
75% BLACK, 25% BROWN

What is genetic engineering? Why is it controversial?
PURPOSELY CHANGING AN ORGANISMS GENES TO GET A SPECIFIC PHENOTYPE.

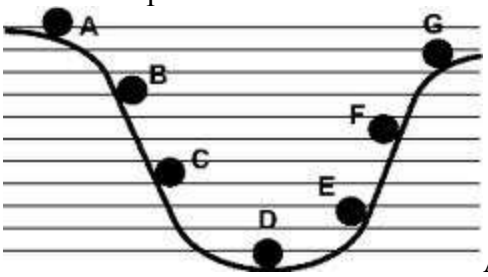
PEOPLE ARE FRAID OF RELEASING UNNATURAL GENES INTO THE ENVIRONMENT.
LS.14
What is a mutation? What are the results of mutation?
A RANDOM CHANGE IN DNA.
1. NOTHING 2. DEATH 3. CANCER 4. CHANGE IN PHENOTYPE.
What is adaptation?
A PHENOTYPE FOR A SPECIFI ENVIRONEMNT

What is natural selection?
WHEN A PHENOTYPE ALLOWS AN ORGANISM TO BETTER REPRODUCE.

What is extinction?
WHENA SPECIES DIES OUT.

How do we know that adaptation, natural selection, and extinction have happened?
FOSSILS

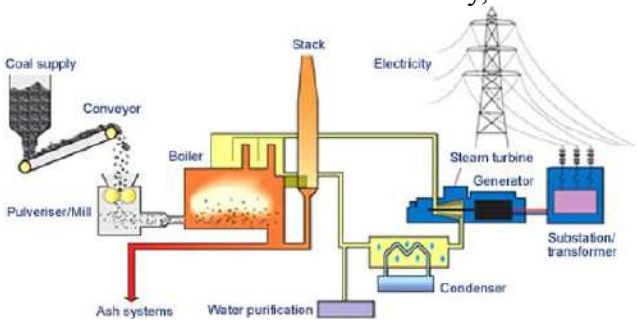
6.2
Which has potential and which has kinetic?



A HAS MOST PE...D HAS MOST KE
What's the difference between a nonrenewable and a renewable resource?
RENEWABLE COME BACK IN A HUMAN LIFETIME.
Are the following renewable or nonrenewable?

Coal: N	Wood R	Wind R	Hydro R	Natural Gas N
Tidal R	Solar R	Gasoline N	Nuclear N	Diesel N

When coal is used to make electricity, describe the energy transformations



CHEMICAL -->THERMAL-->MECHANICAL-->ELECTRICAL

During any energy transformation, some energy is lost as…HEAT

What is a pro and con of each energy source?

Source	Nuclear	Wind	Solar	Hydro	Coal
Pros/Cons	NO AIR POLLUTION	FREE FUEL	FREE FUEL	EFFICIENT	CHEAP/PLENTIFUL
	RADIATION	INEFFICIENT	EXPENSIVE	LOW ACCESS	POLLUTING

6.3

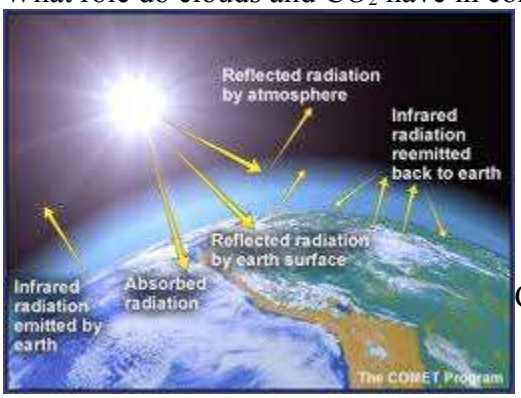
Light Type	Infrared	Visible	Ultraviolet
Wavelength	LONG	MEDIUM	SHORT
What is it?	HEAT	COLORS	SUNBURN

How does the energy of the sun get to Earth? How is it distributed around the Earth?
RADIATION/CONVECTION

Diagram how clouds are formed…

1. RADIATION 2. EVAPORATION 3. CONDENSATION

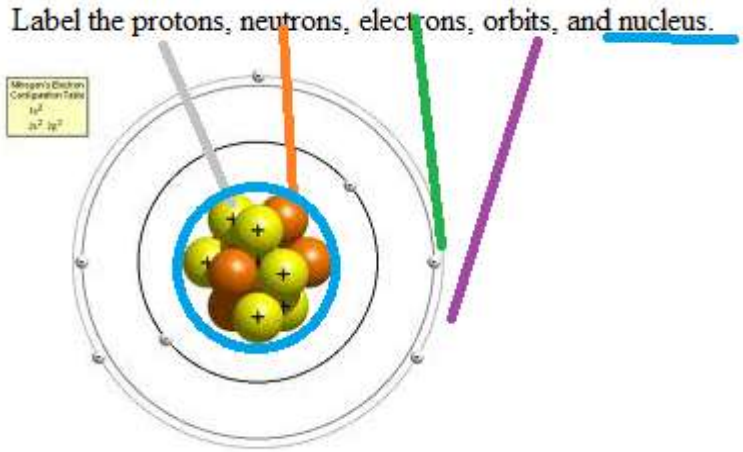
What role do clouds and CO_2 have in controlling Earth's temperature?



CO2=WARMER CLOUDS = COLDER

Why do storms need warm land or water to form?
MORE EVAPORATION=BIGGER CLOUDS.

6.4



Elements always differ based on the number of PROTONS in the nucleus.
What elements and how many of each are in…

O_2,	H_2O,	CO_2, or	$CaCO_3$.
2	3	3	5

What element is the most abundant in our atmosphere? Why is the sky blue?
NITROGEN: IT REFRACTS WHITE LIGHT TO BLUE
What element is most abundant in living things?
CARBON
What element is most abundant in the Earth's crust?
OXYGEN
6.5
What is special about water?

3 States
IT EXISTS IN ALL 3 STATES NATURALLY

U.S.
IT IS THE UNIVERSAL SOLVENT

TE
IT HOLDS HEAT

Freeze
IT EXPANDS WHEN FROZEN

Weathering
IT SHAPES THE SURFACE OF EARTH

Electricity
IT CAN BE USED TO MAKE ELECTRICITY

Surface Tension
IT STICKS TO ITSELF AND OTHERS.

Us
WE'RE MOSTLY WATER

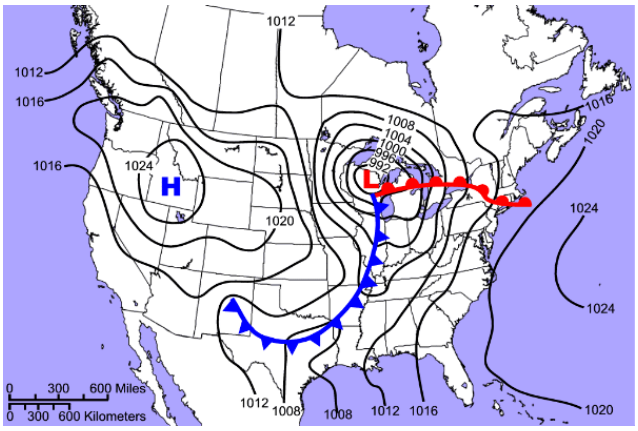
Pure water
IS RARE ON OUR PLANET.

6.6
What is the atmosphere made of?
NITROGEN, OXYGEN, CARBON DIOXIDE, WATER, AND ARGON

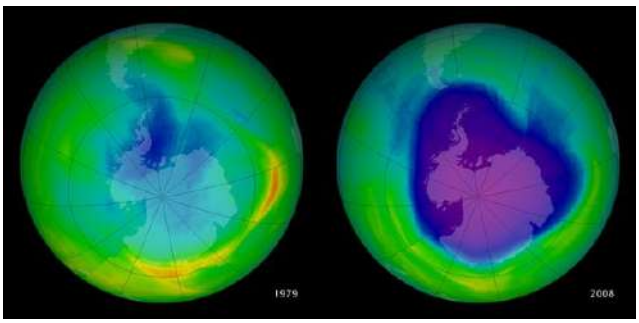
What is air pressure? Why don't we feel it? How do we measure it?
PRESSURE OF ATMOSPHERE, WE HAVE THE SAME PRESSURE, A BAROMETER

What is humidity? How do we measure it?
WATER IN THE AIR, WITH A HYGROMETER
Why does temperature decrease as altitude increases?
LESS AIR TO HOLD THE HEAT

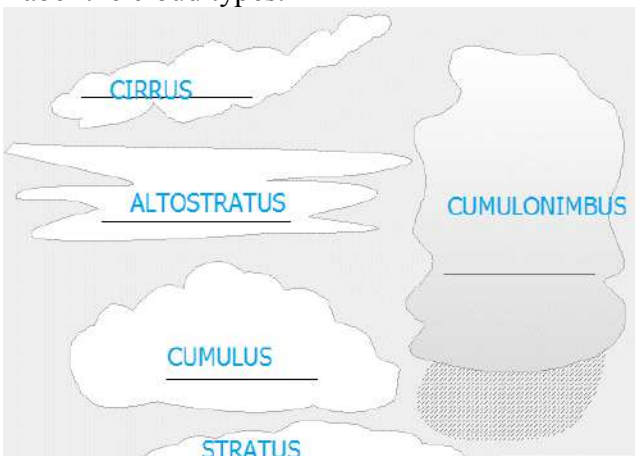
Label the fronts and what they mean. TRIANGLES = COLD
CIRCLES = WARM



What is ozone? Why is it important?
O3: IT BLOCKS UV RAYS



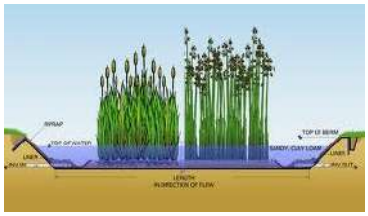
Label the cloud types.



6.7
What is a watershed? What are the three watershed systems in Virginia?

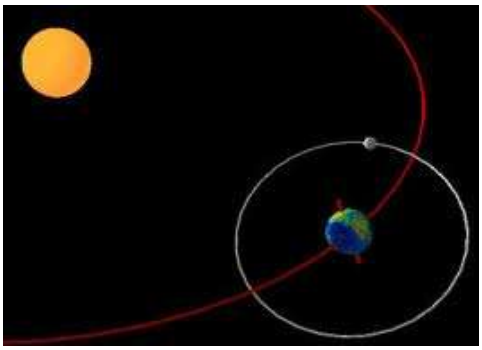
CB NCS GoM
CHESAPEAKE BAY NORTH CAROLINA SOUNDS GULF OF MEXICO

Why are wetlands important?
1.THEY FILTER WATER
2. THEY ARE HABITAT
3. THEY ABSORB FLOOD WATER



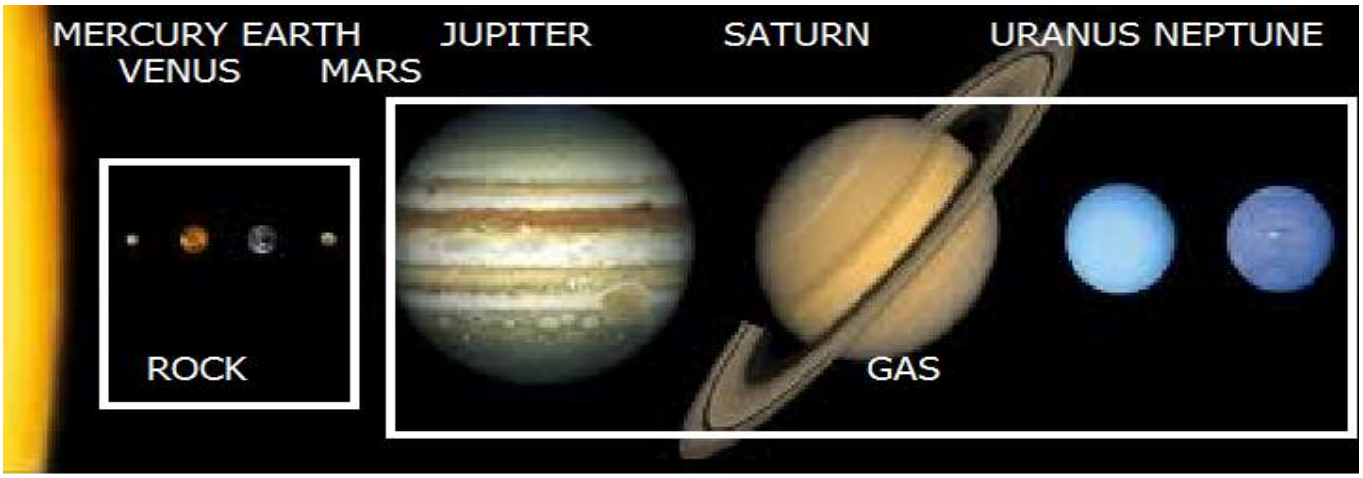
What is an estuary?

6.8
What's the difference between a moon and a planet?



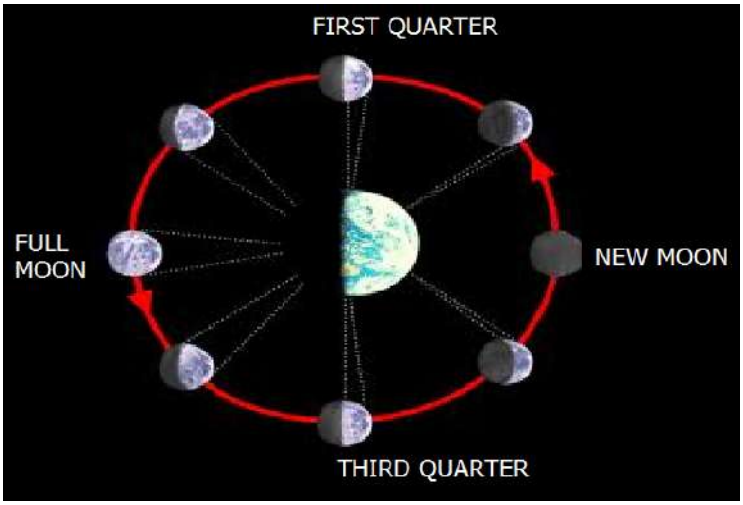
MOON ORBITS PLANET
PLANET ORBITS STAR

What are the planets and what are they made of?

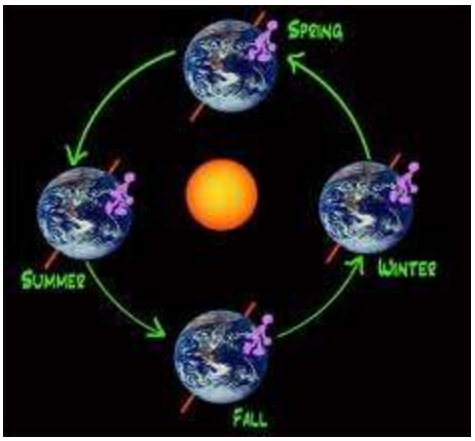


What's the difference between revolving and rotating?
REVOLVE = GO AROUND ROTATE = SPIN

Diagram the Earth, the sun, and the phases of the moon.



What causes the seasons?
THE EARTH'S TILT



What causes the tides?
THE MOON'S GRAVITY

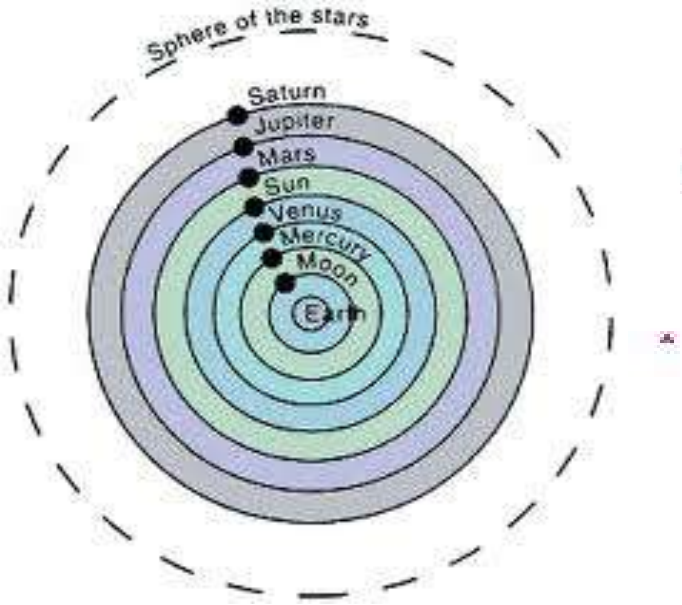
How long ago did we go to the moon? 1969

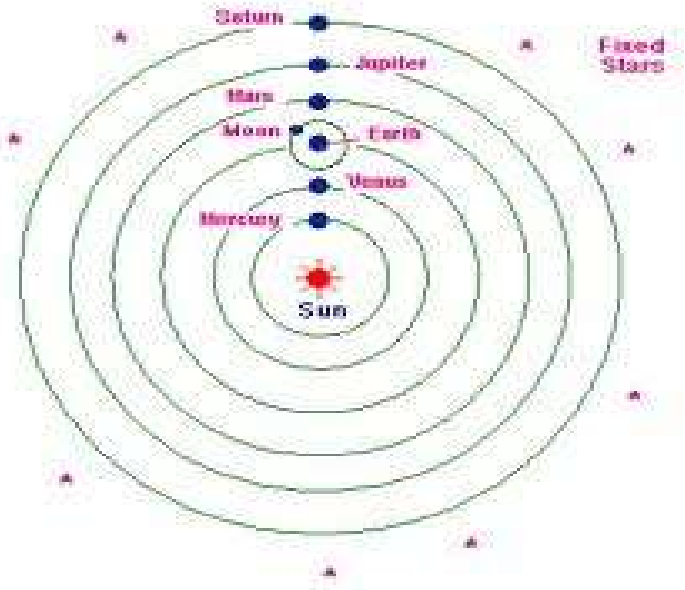
Why were Copernicus and Galileo so much closer to reality with their solar system model?

Ptolemy
And
Aristotle

Copernicus
And
Galileo

THEY USED THE TELESCOPE





PS.1

Match What are the best places to look for current and ACCURATE scientific information each tool with it's use and unit of measure.

1.	Triple beam balance	Mass	g
2.	Thermometer	Temperature	C or K
3.	Ruler	Length	m or cm
4.	Graduated cylinder	Volume	L or mL
5.	Spring scale	Force	N

Label the,,,, and

IV	Trials	Trials	Trials	DV
Control				
Levels of IV				

Fill in the table to make a prefix conversion chart and then do the problems.

Kilo	HECTO	Deca	BASE	DECI	CENTI	Milli
k	h	D	NOTHING	d	c	m

6. 5 km = 500 Dm

7. 32 mL = 3.2 cL

8. 3.2 m = 320 cm

9. .03 hL= 3 L

10. 321 km = 321000000 mm

11. 12 dm = .12 Dm

Match the name, function, and pictures of the graphs.

12. Scatter plot — Finding trends

13. Line graph — Change over time

14. Line plot — Comparing amounts: THE ONE WITH X'S

15. Circle graph — Comparing percents

Define the terms.

16. Independent variable: I CHANGE; THE CAUSE

17. Dependent variable: THE RESULT; THE EFFECT

18. Constant: IS CONSTANT

19. Control: TRIAL 1, STANDARD FOR COMPARISON

Read the following experiments. Identify the independent variable, dependent variable, a constant, and control.

20. A student wants to see how high different types of balls will bounce compared to a basketball by dropping them all from 3 feet and measuring the height that they bounce back up to.

I=SPHERE TYPE D=BOUNCE CT=3' CL=BASKETSPHERE

21. A scientist tried to determine the number of electrons that could be removed from an atom by adding electricity to it. First he checked how many electrons moved without any electricity. Then, he always made sure to use 20 kV at 2 A.

I=ELECTRICITY D=ELECTRONS CT=20kV, 2A CL=NO ELECTRICITY

22. A student wanted to compare whether gender had any effect on favorite TV channel. The student asked 50 males and 50 females and then compared the results.

I=GENDER D=CHANNEL CT=50/50 CL=MALES

What's wrong with this experiment?

23. A scientist wanted to find out whether males or females are faster. He found 4 guys to participate at a local high school and timed them in a 50 yard run. He then found 3 females at a local college and timed them in a 100 yard run. He found that the males ran at 10.2 m.p.h. and the females ran at 10.0 m.p.h. Based on these results he said that males are faster than females.

A. NOT EQUAL SAMPLE SIZE

B. DISTANCE NOT CONSTANT

C. AGES NOT CONSTANT

D. NO REPEATED TRIALS

What are the best places to look for current and accurate scientific information?
SCIENTIFIC JOURNALS AND WEBSITES

PS.2
The particle theory of matter states that…
ALL MATTER IS MADE OF PARTICLES THAT ARE IN CONSTANT MOTION.

Fill in the chart about the 3 states of matter.

State of Matter	Particle Diagram	Volume	Shape
SOLIDS	ALL PARTICLES TOUCHING	FIXED	FIXED
LIQUIDS	PARTICLES ARE MOVING PAST EACH OTHER	FIXED	FLUID
GAS	PARTICLES ARE SPREAD OUT	FLUID	FLUID

Fill in the chart about elements, compounds, and mixtures.

Organization	Definition	Diagram	Examples
Element	ALL ATOMS IDENTICAL, CAN'T BE BROKEN DOWN SMALLER		PERIODIC TABLE
Compound	ALL MOLECULES THE SAME, CHEMICAL FORMULA		WATER, SUGAR
Mixture	DIFFERENT THINGS THAT CAN BE PHYSICALLY SEPARATED		AIR, PEOPLE, DIRT, BRONZE

Identify the following as organic or inorganic compounds.

24. CO_2 inorganic
25. CH_4 organic
26. $CoOH_3$ inorganic
27. $C_2NO_3H_7$ organic

Define.

28. Physical property: LOOKS

29. Chemical Property: ABILITY TO CHANGE

Put P for physical , C for chemical.

30. Color P
31. Shape P
32. ReactiveC
33. Flammable C
34. Acidic C
35. FlexibleP
36. Can Rust C
37. Density P
38. Freezing pointP

What is the formula for density?
D=m/v
Determine the densities.

39. 30 g 3
10 mL
40. 25 g 5
5 mL
41. 20 mL 0.25
5 g

Items with less density are more likely to FLOAT items with more density are more likely to SINK.

Fill in the pH chart by circling the correct category name.

pH 1-6	pH 7	pH 8-14
Acid,	neutral	base

$HCl + NaOH \rightarrow H_20 + NaCl$ This is an example of a reaction between an acid and a base. It shows that when an acid and a base are mixed, SALT and a WATER are formed.

PS.3

List two discoveries for each scientist.

42. John Dalton DIFFERENT ELEMENTS, A MODEL WITH NO DETAILS

43. J.J. Thomson ELECTRONS, A MODEL WITH ELECTRONS SPREAD OUT IN IT.

44. Ernest Rutherford PROTONS, THE JIMMY NEUTRON MODEL

45. Neils Bohr ORBITS, THE MODEL WITH LAYERS LIKE AN ONION

Fill in the chart about the parts of an atom.

Particle	Charge	Relative mass	Location
Electron	-	ALMOST NONE	ORBITS
Proton	+	1 amu	NUCLEUS
Neutron	0	1 amu	NUCLEUS

46. Which model of the atom, the Bohr or the electron cloud is a more accurate model of what an atom really looks like? Why do we still use the other one then?
CLOUD = ACCURATE BOHR = EASIER TO SEE DETAILS

PS.4

The periodic table is organized by the number of PROTONS in an atom.

Use a periodic table to fill in the following table.

TRY THIS!!! http://education.jlab.org/elementmath/index.html

Determine the total number of atoms in each molecule.

47. H_2O=___3__ 48. $2H_2O$=___6__ 49. $Na(CO_2)_2$=____7_

50. $3C_2H_5O$=__24___ 51. CO=__2___ 52. $2Na(CO_2)_2$=__14___

Define:

53. Ionic bonding: ELECTRON TRANSFER; METAL AND NONMETAL

54. Covalent Bonding: ELECTRON SHARING; 2 NONMETALS

PS.5

Define:

55. Physical change: CHANGE IN APPEARANCE OR TEMP.

56. Chemical Change: CHANGE IN MOLECULE

57. Nuclear Change: CHANGE IN NUCLEUS OR ELEMENT

Determine if the following are balanced or not.
TRY THIS! http://education.jlab.org/elementbalancing/index.html

58. $2Na + Cl_2 \rightarrow NaCl$
U

59. $8Ag_2S \rightarrow 16Ag + S_8$
B

60. $H_2O + O_2 \rightarrow H_2O_2$
U

61. $2P + 2O_2 \rightarrow P_2O_5$
U

62. If 20 g of a chemical are mixed with 35 g of another chemical, the reaction bubbles, expands, and gets very hot. The product will have a mass of 55 g because…LAW OF CONSERVATION OF MASS

Define:

63. Endothermic: ABSORBS HEAT

64. Exothermic: RELEASES HEAT

Make a simple diagram of…

65. Fission
SPLITTING

66. Fusion
COMBINING

67. Name two positive and two negative impacts of using nuclear power.
+NO AIR POLLUTION, EFFICIENT
-CONTROVERSIAL, RADIATION

PS.6

68. What is the difference between kinetic and potential energy?

KINETIC = MOTION
POTENTIAL = STORED

For each of the following, list the energy transformations taking place.

69. Batteries in a flashlight making the bulb come on.

CHEMICAL --> ELECTRICAL --> LIGHT AND HEAT

70. Gasoline in an engine makes it run.

CHEMICAL --> THERMAL --> MECHANICAL

PS.7

71. As matter gets hotter, its molecules begin to VIBRATE FASTER.

72. What's the difference between heat and temperature?
HEAT = MOVEMENT, TEMP. = MEASUREMENT

73. What is absolute zero?
THE COLDEST POSSIBLE, NO MORE PARTICLE VIBRATION

Fill in the chart.

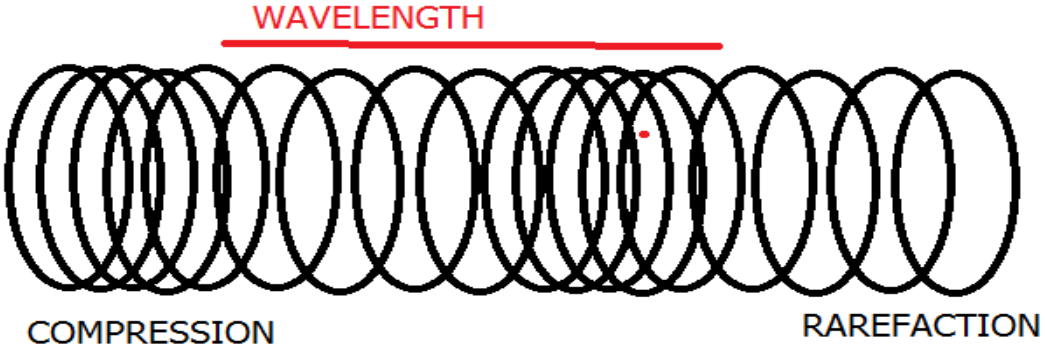
Temperature	Fahrenheit	Celsius	Kelvin
Absolute Zero	-459	-273	0
Water freezes	32	0	273
Water Boils	212	100	373
Today's Temp.			

Fill in the chart.

Heat Transfer	Definition	2 examples
Convection	FLUID MOVEMENT	SMOKE RISING, HOT AIR BALLOON
Conduction	TOUCHING	EGGS ON PAN FEET ON FLOOR
Radiation	LIGHT	HEAT LAMP SUN ON EARTH

PS.8

Draw a compression wave and label the wavelength, compression, and rarefaction.



74. As wavelength increases, frequency DECREASES.

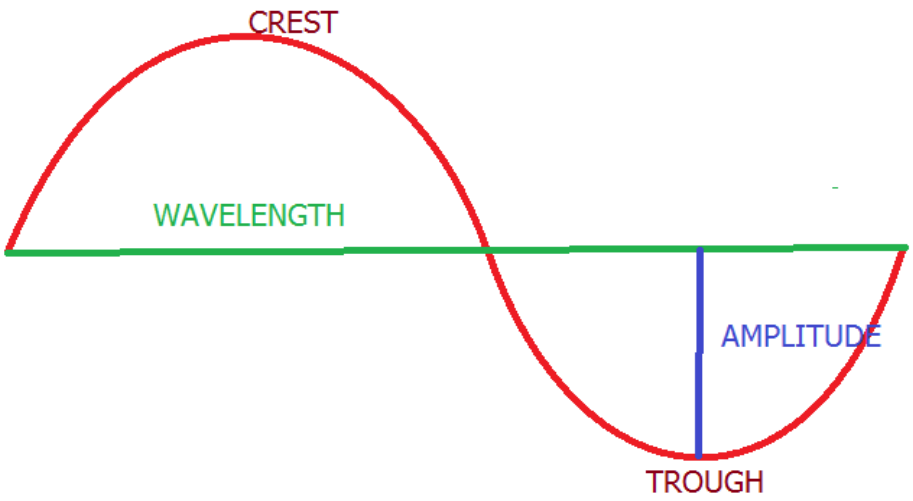
75. Sound moves fastest through SOLIDS because the particles are CLOSER.

76. Sonar uses sound waves to find objects. Sonar sends a sound wave out where it hits an object and bounces back. This bouncing is known as REFLECTION.

PS.9

77. If white light is refracted, it will turn into a RAINBOW.

Draw a transverse wave and label its wavelength, amplitude, peak, and trough.



Fill in the E.M. chart.

Radiation	Example	Energy	Wavelength	Frequency
Radio Waves	RADAR	Lowest=1	LONGEST	LOWEST
Infrared	HEAT	2		
Visible Light	COLOR	3		
Ultraviolet	SUNBURN	4		
X-rays	SEE THROUGH THINGS	5		
Gamma Rays	NUKES	Highest=6	SHORTEST	HIGHEST

PS.10

78. An object moved 25 km in 5 hours. What is its speed?
25 km/h
79. Explain the difference between speed, velocity, and acceleration.
SPEED = DISTANCE AND TIME
VELOCITY = SPEED AND DIRECTION
ACCELERATION = CHANGE IN VELOCITY
80. Which has more force, a 200 kg man running at 5 m/s or a 100 kg man running at 5 m/s? Why?
200 KG, MORE MASS = MORE FORCE
81. Which has more force, a 200 kg man running at 5 m/s or a 200 kg man running at 10 m/s? Why?
10 M/S, MORE SPEED WOULD GIVE MORE ACCELERATION AND FORCE
82. Which can you change more easily, mass or weight? How can it be changed without dieting or exercise?
WEIGHT, IT DEPENDS ON MOVMENT AND GRAVITY

Fill in the Law Chart

Newton's 3 Law	Definition	Example
1st	INERTIA	A BOOK ON A TABLE
2nd	F=MA	A CAR HAS MORE FORCE THAN A BIKE
3rd	ACTION/REACTION	ROCKET PUSHES DOWN, GOES UP

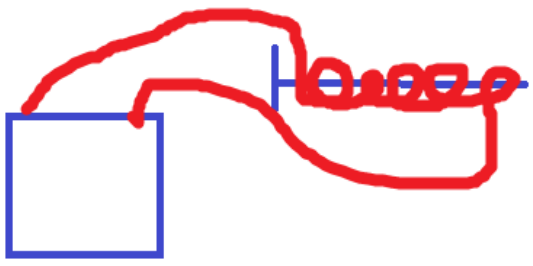
Fill in the machine table.

Machine	FUNCTION	2 examples	WHAT MAKES ONE WORK BETTER?
WEDGE	CUTS	KNIFE AX	LONGER AND THINNER
PULLEY	LIFT	FLAG POLE CRANE	MORE ROPES
INCLINED PLANE	LIFT	RAMP STAIRS	LONGER
LEVER	LIFT OR PUSH	SEE SAW SHOVEL HANDLE	LONGER
WHEEL AND AXLE	TURNING	STEERING WHEEL DOOR KNOB	BIGGER WHEEL
SCREW	HOLDING THINGS TOGETHER	SCREW BOLT	MORE THREADS

Find the formula for work and for power.
W=FORCE X DISTANCE
P=WORK / TIME

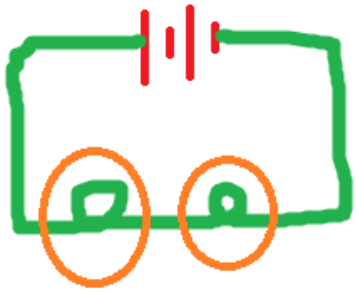
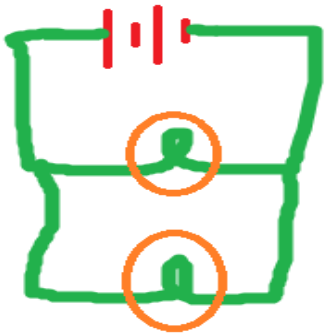
PS.11
83. Diagram an electromagnet and explain how it could be made stronger.

MORE ELECTRICITY OR COILS OF WIRE.



84. VOLTAGE = CURRENT X RESISTANCE

85. Fill in the circuit chart.

Circuit Name	Diagram	It's bulbs would be…
Single Series		BRIGHT
DOUBLE SERIES		DIM, TOO MUCH RESISTANCE
Double Parallel		BRIGHT

86. A motor changes ELECTRICAL into MECHANICAL.

A generator changes MECHANICAL into ELECTRICAL.

87. List 5 items that contain an electric motor (think: anything that uses electricity to make motion *must* have an electric motor).
FAN, TOY CAR, WASHING MACHINE, DRYER, CAN OPENER

88. List 5 items that contain a generator (think: anything that produces electricity or makes electric light without a battery or being plugged in must have a generator).
GENERATOR, CAR, HYDRO PLANT, COAL PLANT, HAND CRANK RADIO

mitochondria / The organelle that powers animal and plant cells.
nucleus / The organelle that holds DNA.
chloroplast / The organelle that does photosynthesis.
cell wall / The organelle on the outside of plant cells.
vacuole / The organelle that protects plant cells.
cells / The cell theory states that all cells come from other __.
microscope / The tool that helped with the development of the cell theory.
mitosis / Cell division in which one cell makes two cells.
meiosis / Cell division in which one cell turns into 4 sex cells.
organs / Cells --> Tissues --> _____ --> Systems
unicellular / Organisms that are made of only one cell.
kingdom / The least specific level of classification.
species / The most specific level of classification.
Animal / The kingdom with multicellular, mobile, consumers.
Plant / The kingdom with multicellular, sessile, producers.
Fungi / The kingdom with multicellular, sessile, consumers.
Protist / The kingdom with unicellular organisms that have a nucleus.
Eubacteria / The kingdom with unicellular organisms with no nucleus.
Chordates / The phylum with bilateral symmetry and backbones.
Ferns / The plant group with spores.
Conifers / The plant group with evergreens.
Producers / The foundation of all ecosystems.
Sugar / Photosynthesis uses water, carbon dioxide, and light to make oxygen and ____.
Herbivore / An animal that only eats plants is an ____.
Omnivore / An animal that eats plants and animals is an ____.
Decomposer / An organism that breaks down the dead and poo is a ___.
Mutualism / A symbiotic relationship in which both organisms benefit is ___.
Tundra / The biome with permafrost.
Desert / The biome with the least rain.
Rainforest / The biome with the greatest biodiversity.
DNA / Also known as the double-helix.
Dominant / A gene that is always shown or expressed.
Heterozygous / When an individual has two different versions of the same gene.
Mutation / A random change in DNA.
Adaptation / A phenotype designed for a specific environment.
Fossils / Evidence of natural selection and extinction can be found in ___.
Renewable / Wood, wind, and solar power are __ energy.
Nonrenewable / Fossil fuels are __ energy.
Wavelength / UV light has a shorter __ than infrared.
Condensation / In cloud formation, ___ occurs after evaporation.
Positive / Protons have a __ charge.
Nucleus / Protons and neutrons are both in the __.
Electrons / The particle with a negative charge.
Nitrogen / The most abundant element in our atmosphere.
Dense / When water freezes, it floats because it is less __.
Barometer / Air pressure is measured with a __.
Wetlands / Swampy areas important for habitat, filtering, and flood absorption.
Estuary / Brackish water where ocean fish reproduce.
Planet / A moon orbits a __.
Venus / Planet closest in size to Earth.
Jupiter / Biggest planet.
Neptune / 8th Planet.
Earth / Only planet man has visited.

New moon / When you can only see the dark side of the moon.
Axis / Seasons are caused by the tilt of the Earth's __. It's summertime!
Earth / Aristotle thought the __ was the center of the universe.
IV / The thing changed in an experiment, the cause.
DV / The result of an experiment.
Control / The first trial and standard for comparison.
Constant / The things that don't change in an experiment.
Line graph / The graph used for change over time.
Fixed / Liquids have a __ volume and a fluid shape.
Element / Carbon cannot be broken down any smaller because it is an __.
Mixture / Air has several elements and compounds so it is a __.
Physical / Color, freezing point, and density are all __ properties.
Chemical / Rusting, reactions, and fire are all __ changes.
Density / Mass divided by volume.
Acids/ Substances with a pH below 7 are __.
Thomson / Discovered the electron.
Rutherford / Discovered the proton.
Neutron / Particle with the same mass as a proton.
Protons / The periodic table is organized by the number of __ in an atom.
Group / The columns on the periodic table that tell chemical relationships.
Period / The rows on the periodic table that tell the number of orbits.
Ionic / Bonding that causes electrons to be transferred.
Covalent / Bonding that causes electrons to be shared.
Endothermic / Reactions that absorb energy.
Fission / A nuclear change that causes an atom to split.
Chemical / Food has __ energy in it.
Absolute zero / The coldest temperature possible.
Zero / Water freezes at __ degrees Celsius.
Convection / Heat by flowing liquids.
Conduction / Heat by contact.
Longitudinal / Sound is a __ wave.
Sonar / Using sound waves to measure distance.
Refraction / Bending a wave traveling through a different medium.
Transverse / Light is a __ wave.
Gamma rays / The type of EM radiation that has the highest energy and frequency.
Speed / Distance divided by time.
Action reaction / Newton's 3rd law is the law of __ __.
Series / A circuit in which one bulb going out would turn off all other bulbs.
Parallel / A circuit with many paths like the lights in this classroom.
Motor / A device that converts electrical energy into mechanical.
Generator / A device that converts mechanical energy into electrical.