



6th Grade Science Final Review Packet

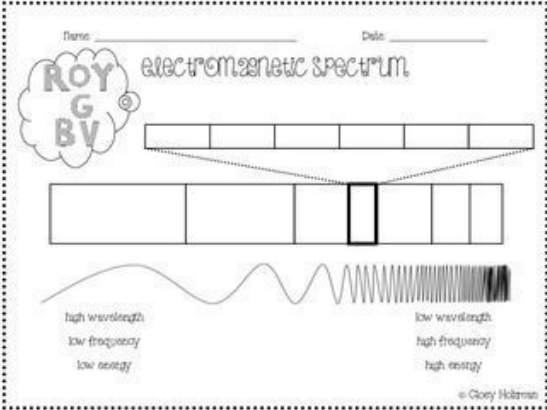
Name: _____

6.P.1 Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound.

6.P.1.1 Compare the properties of waves to the wavelike property of energy in earthquakes, light and sound.

6.P.1.2 Explain the relationship among visible light, the electromagnetic spectrum, and sight.

6.P.1.3 Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and hearing.

<p>Electromagnetic Spectrum: Label and color the EM Spectrum.</p> 	<p>Visible Light:</p> <p>What colors are included in visible light (use the acronym to help)?</p> <p>Draw a diagram to show what colors have the largest and smallest wavelength.</p>
<p>Absorption: What is absorption?</p>	<p>Scattering: What is scattering?</p>
<p>What medium does light travel through fastest?</p> <p>Light travels the fastest in a _____.</p> <p>Light travels slower in _____.</p> <p>Light travels _____ than sound.</p>	<p>Refraction: What is light refraction?</p> <p>What happens when white light is refracted?</p>
<p>Transparent, Translucent and Opaque:</p> <p>What is transparent?</p> <p>What is translucent?</p> <p>What is opaque?</p>	<p>Why does an object appear black, white, or green?</p> <p>Black:</p> <p>White:</p> <p>Green:</p>

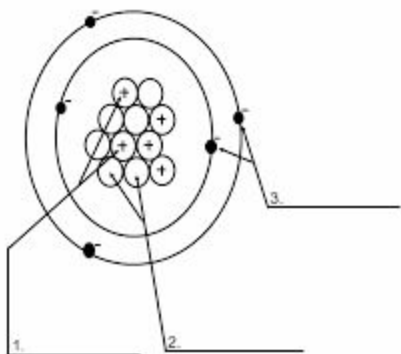
<p>Sound: Basics What is sound?</p> <p>What is the speed of sound?</p> <p>Sound waves are _____ waves.</p> <p>Which is faster (sound / light)?</p>	<p>Sound and States of Matter: Does sound travel faster through a solid, liquid or a gas?</p> <p>Why is there a difference in speed through different mediums?</p> <p>Can you hear sound in space? Explain.</p>
<p>Relationships with Sound: How is frequency and pitch related? High frequency = _____ frequency-low pitch</p> <p>How is loudness and amplitude related? Increase in amplitude = _____ Decrease in amplitude = _____</p>	<p>Acoustics: How can you modify an area to reduce echoes?</p> <p>Increase loudness?</p>
<p>Doppler Effect: Definition: The change in _____ due to a moving wave source.</p> <p>Object moving towards you cause _____ pitched sound.</p> <p>Object moving away from you cause _____ pitched sound.</p>	<p>Echolocation and Sonic Boom: What is echolocation?</p> <p>What is sonar?</p> <p>What is a sonic boom?</p>
<p>Comparisons: How are sound, light and earthquake waves alike?</p>	<p>Resonance: What is resonance?</p>

6.P.2 Understand the structure, classifications and physical properties of matter.

6.P.2.1 Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.

6.P.2.2 Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.

6.P.2.3 Compare the physical properties of pure substances that are independent of the amount of matter present including density, boiling point, melting point and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.



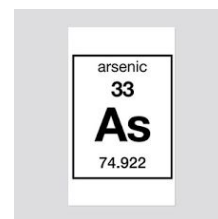
Label the diagram: electron, neutron, proton

The _____ is the center of the atom.
 _____ and _____ are both found in the nucleus of an atom and _____ are found orbiting the nucleus.

The _____ tells us how many protons (and electrons) an element has. You can subtract the atomic number from the atomic mass (rounded) to find the

number of _____.

Subatomic Particle	Charge
Neutrons	
Protons	
Electrons	



Element / Atom / Molecule / Compound

Basic substance made of a single type of atom?

Two or more atoms chemically joined together?

A molecule that contains more than one element?

Smallest amount of an element?

Key Terms

- **Atom** = smallest unique particle of matter
- **Element** = all the atoms of an element are the same
- **Molecule** = two or more atoms chemically joined (can be the same type or different)
- **Compound** = two or more atoms of *different elements* chemically joined
- **Mixture** = two or more elements or compounds not chemically joined

Periodic Table

An organizational system for elements. Elements are arranged in ROWS going from right to left called _____ and COLUMNS going up and down called _____.

1 H 1.00794																	2 He 4.002602
3 Li 6.941	4 Be 9.012182											5 B 10.811	6 C 12.0107	7 N 14.00674	8 O 15.9994	9 F 18.9984032	10 Ne 20.1797
11 Na 22.989770	12 Mg 24.3050											13 Al 26.581538	14 Si 28.0855	15 P 30.973761	16 S 32.066	17 Cl 35.4527	18 Ar 39.948
19 K 39.0983	20 Ca 40.078	21 Sc 44.955910	22 Ti 47.867	23 V 50.9415	24 Cr 51.9961	25 Mn 54.938049	26 Fe 55.845	27 Co 58.933200	28 Ni 58.6534	29 Cu 63.545	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.92160	34 Se 78.96	35 Br 79.504	36 Kr 83.80
37 Rb 85.4678	38 Sr 87.62	39 Y 88.90585	40 Zr 91.224	41 Nb 92.90638	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.90550	46 Pd 106.42	47 Ag 196.56655	48 Cd 112.411	49 In 114.818	50 Sn 118.710	51 Sb 121.760	52 Te 127.60	53 I 126.90447	54 Xe 131.29
55 Cs 132.90545	56 Ba 137.327	57 La 138.9055	72 Hf 178.49	73 Ta 180.9479	74 W 183.84	75 Re 186.207	76 Os 190.23	77 Ir 192.217	78 Pt 195.078	79 Au 196.56655	80 Hg 200.59	81 Tl 204.3833	82 Pb 207.2	83 Bi 208.58038	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 (269)	111 (272)	112 (277)		114 (289) (287)		116 (289)		118 (293)

58 Ce 140.116	59 Pr 140.50765	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.964	64 Gd 157.25	65 Tb 158.92534	66 Dy 162.50	67 Ho 164.93032	68 Er 167.26	69 Tm 168.93421	70 Yb 173.04	71 Lu 174.967
90 Th 232.0381	91 Pa 231.035888	92 U 238.0289	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

_____ masses generally increase as you move from left to right, top to bottom.

The atomic _____ determines the number of _____ and _____ in the atom.

The atomic mass minus the atomic number determines the number of _____ in the atom.

The smallest particle of an element is called an _____.

An _____ is a pure substance.

Regardless of the amount of a certain element, it will still have identical PROPERTIES (ex. Melting point, Boiling point, Freezing point, Density...)

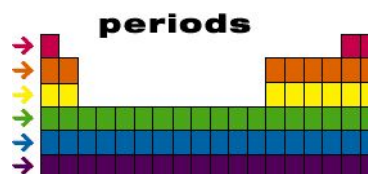
11 Na Sodium 22.99	12 Mg Magnesium 24.31
19 K Potassium 39.10	20 Ca Calcium 40.08

Elements are considered the building blocks to everything because they can be combined to make different _____.

Periods (_____)

Elements in the _____ PERIOD have the same number of energy levels.

The period number is the same as the number of _____ levels.



Groups (_____)

Elements in the _____ GROUP have similar properties because they have a similar electron arrangement.

_____ are on the left hand side of the table.

_____ are on the right hand side of the table.

_____ are between the metals and non-metals.

Groups/Valence Electrons

Group I or _____ metals - Elements whose atoms have 1 outer-shell electron; they are very reactive.

Group II or _____ Earth metals - Elements whose atoms have 2 outer-shell electrons

Group III or _____ - Elements whose atoms have 3 outer-shell electrons

Group IV or _____ - Elements whose atoms have 4 outer-shell electrons

Group V or _____ - Elements whose atoms have 5 outer-shell electrons

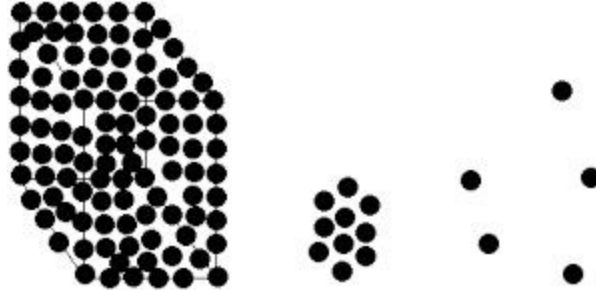
Group VI or _____ - Elements whose atoms have 6 outer-shell electrons

Group VII or _____ - Elements whose atoms have 7 outer-shell electrons

Group VIII or _____ - Elements whose atoms have full outer shells so they are very unreactive.

Phase Changes

Phases of Matter: Define and label the picture that matches the phases of matter.



Phase Change Descriptions

Boiling	Condensation	Deposition	Evaporation	Melting
Freezing	Sublimation	Vaporization		

The change from liquid to gas _____

The change from liquid to solid _____

Vaporization from the surface of a liquid _____

The change from gas to liquid _____

The change from gas to solid _____

The change from solid to liquid _____

The change from solid to gas _____

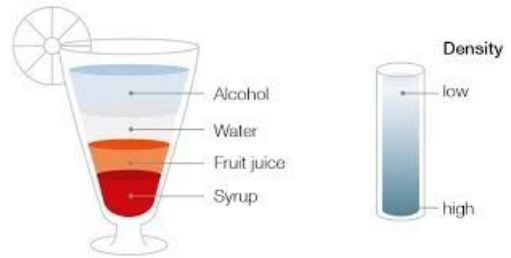
Vaporization from within as well as from the surface of a liquid _____

Make flashcards for the following vocabulary terms:

Heterogenous mixture, homogeneous mixture, solution, solute, solvent, universal solvent, solubility, soluble, insoluble, dilute solution, concentrated solution, saturated solution, supersaturated solution, unsaturated solution

Density

What is density?



$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

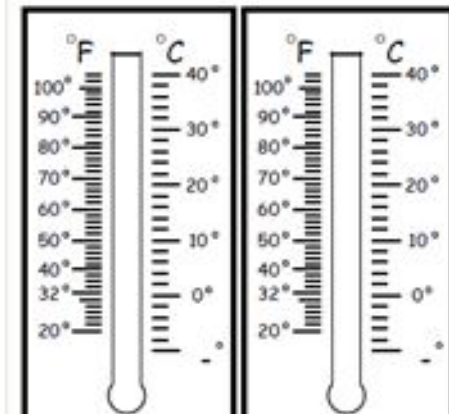
$$\text{Mass} = \text{density} \times \text{volume}$$

$$\text{Volume} = \frac{\text{mass}}{\text{density}}$$

1. Mass = 40g
Volume = 20ml
What is the density? _____

2. Mass = 16g
Volume = 8ml
What is the density? _____

Melting Point, Freezing Point and Boiling Point of Water



6.P.3 Understand characteristics of energy transfer and interactions of matter and energy.

6.P.3.1 Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.

6.P.3.2 Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.

6.P.3.3 Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).

Name the type of heat transfer and then draw an illustration showing the type of heat transfer.

_____ - heat moving between 2 objects where molecules are touching.

_____ - heat energy that travels in waves through the air.

_____ - method of moving heat where warm things rise and cool things sink.



Answer with (T)rue or (F)alse

___ plate tectonics can be explained by convection currents

___ ocean currents are caused by conduction

___ cool air rises

___ higher temperature means faster moving molecules

___ warm air sinks

___ lower temperature means slower moving molecules

___ when air cools down, the air molecules move faster

___ when air warms up, the air molecules move slower

___ heat equilibrium is when a colder object gains heat as a warm object transfer its heat to the colder object. The two objects will meet at a temperature somewhere in between the two temperatures.

Explain the different types of energy. Draw an illustration to help you remember each.

Mechanical	
Radiant (light)	
Sound	
Chemical	
Heat (thermal)	
Electrical	
Nuclear	

Decide if the following heat transfers are: conduction (Co), convection (Cv) or radiation (R).



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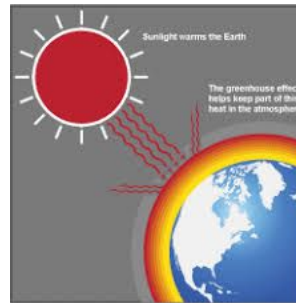






_____ Spoon in hot pot







_____ Grabbing a cold can of soda

6.E.1 Understand the earth/moon/sun system, and the properties, structures, and predictable motions of celestial bodies in the Universe.

6.E.1.1 Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.

6.E.1.2 Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.

6.E.1.3 Summarize space exploration and the understandings gained from them.

Define the following vocabulary terms:

Rotation:

Revolution:

Axis:

Waxing:

Waning:

Crescent:

Gibbous:

Solar Eclipse:

Lunar Eclipse:

Elliptical:

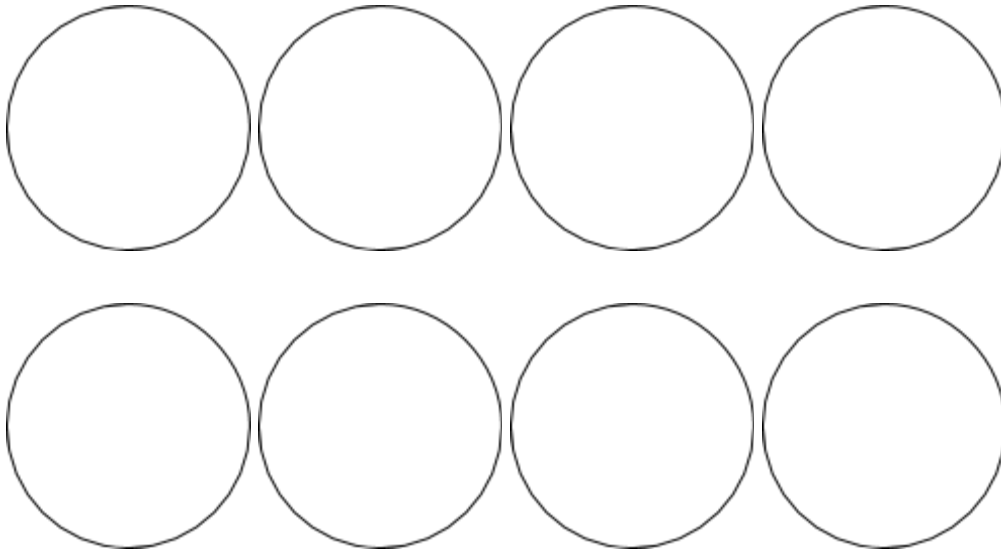
How many days does it take for the Earth to complete:

1 rotation _____ days

1 revolution _____ days

Why do we have a leap year?

Know the phases of the Moon: shade and label the phases.



What causes the phases of the Moon? _____

What is the difference between a Solar Eclipse and a Lunar Eclipse?

Draw and label both a Solar Eclipse and a Lunar Eclipse.

Which phase of the Moon occurs at the same time a Solar Eclipse occurs? _____

Which phase of the Moon occurs at the same time a Lunar Eclipse occurs? _____

Explain why we only see one side of the Moon? _____

Explain what causes day and night.

Why does the Earth have seasons?

Describe the difference between a Spring Tide and a Neap Tide. Draw an illustration of each.

6.E.2 Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.

6.E.2.1 Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition and density.

6.E.2.2 Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.

6.E.2.3 Explain how the formation of soil is related to the parent rock type and the environment in which it develops.

6.E.2.4 Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship

Name the 4 main Earth's Layers

For each the 4 main Earth's Layers, write information (facts) on each.

Name of Earth Layer	Information (facts)

Although _____ rock is the basic component of _____, the composition and texture of soil and its _____ and resistance to erosion are greatly influenced by plant roots and debris, _____, fungi, _____, insects, rodents, and other organisms. The upper-most layer of the _____ crust is covered by soil. The ingredients in soils can vary from place to place and around the Earth. _____ soils have many _____ such as _____, particle size, _____, fertility and ability to hold moisture. Depending upon the combination of properties, soils have great variability in their ability to support structures and plant growth. Forces deep inside Earth and at the surface produce a slow cycle that builds, destroys, and changes the rocks in the crust. _____ movements start the _____ cycle by helping to form _____, the source of igneous rocks. Plate movements also cause faulting, folding and other motions of the crust that help to form _____ and _____ rock. _____ form as hot magma cools inside the crust, or as _____ hardens on the surface. When these liquids cool to a solid state, they form _____. When elements and compounds that are dissolved in water leave a _____, crystallization of minerals occurs. _____ is a mixture of: rock particles, minerals, decayed organic matter, water and air. Soil forms as rock is broken down by weathering and mixes with other materials on the surface.

Weathering/ Erosion/ Deposition

_____ breaks down rock. _____ moves rock that has been broken down. _____ is the resting place for rock that has been weathered and moved.

_____ is the process where wind and rain wash _____ away, making it difficult for plants to grow and survive.

_____ is the movement of weathered rock and soil. Moving _____ is the cause of most weathering.

Chemical or Mechanical - weathering of rock caused by freezing and thawing, animal actions, growth of plant roots and erosion.

Chemical or Mechanical - weathering caused by water, oxygen (oxidation), carbon dioxide (carbonic acid), living organisms (make weak acids) and acid rain.

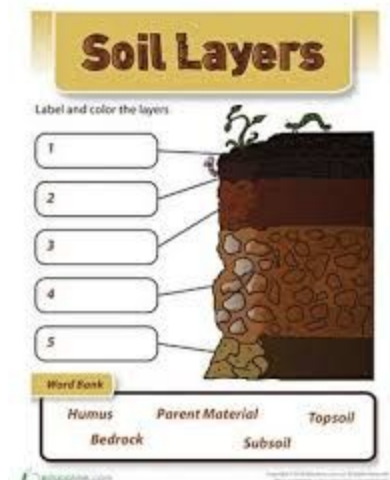
Soil Horizons = Soil Layers = Soil Profile

Soil is the loose material in which plants can grow in the _____ of the Earth. Soil is a mixture of four different materials: tiny pieces of _____, _____, _____, and _____.

Soil is considered a(n) _____ resource and very important to humans because it takes close to 500-1,000 years to make _____ inch of soil.

(diagram from education.com)

_____ is the part of soil made up of decayed living things. Plants absorb minerals from the soil. We the _____ the plants, which gives us the minerals that are found in soil.



_____ is an important part of soil. The plants take it in through the soil.

Rocks and Minerals

_____ rocks - formed when sand, dirt, and other materials are squeezed together until they harden. Fossils are sometimes present.

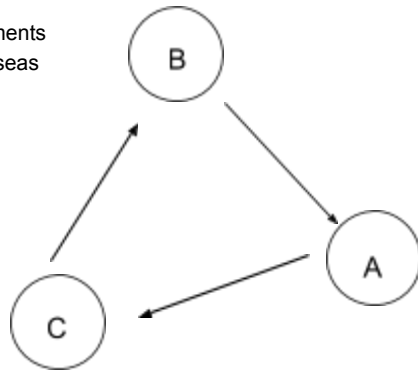
_____ rocks - were once melted and then cooled. They are formed from magma (lava).

_____ rocks - formed by heat and pressure.

The Rock Cycle

The type of rock is formed when sediments sink to the floor of seas and oceans.

This type of rock is formed when magma cools on or below the Earth's surface.



This type of rock is formed when rocks themselves are changed by heat and pressure.

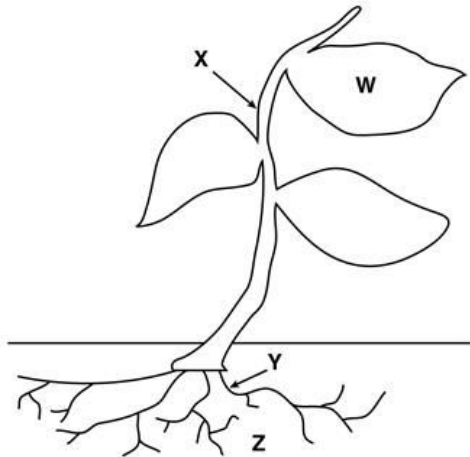
A = _____
B = _____
C = _____

Rocks and _____ can be classified using physical attributes such as color, shape, texture, and hardness. Minerals are non-living solid, non-living objects formed in nature. Rocks are naturally formed solid made of one or more minerals.

6.L.1 Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.

6.L.1.1 Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense.

6.L.1.2 Explain the significance of the processes of photosynthesis, respiration and transpiration to the survival of green plants and other organisms



Key	
W	= leaves
X	= stems
Y	= roots
Z	= soil

What are the functions of each of the parts of the flower?

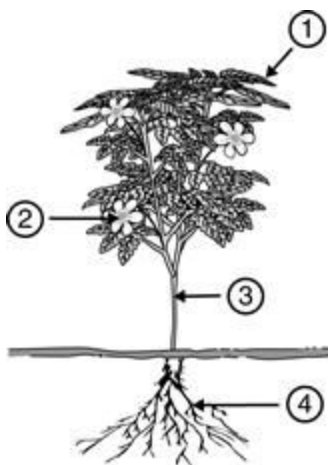
Leaves -

Stems -

Roots -

Soil -

What demonstrates the best path of water through a plant? _____, _____, _____, _____



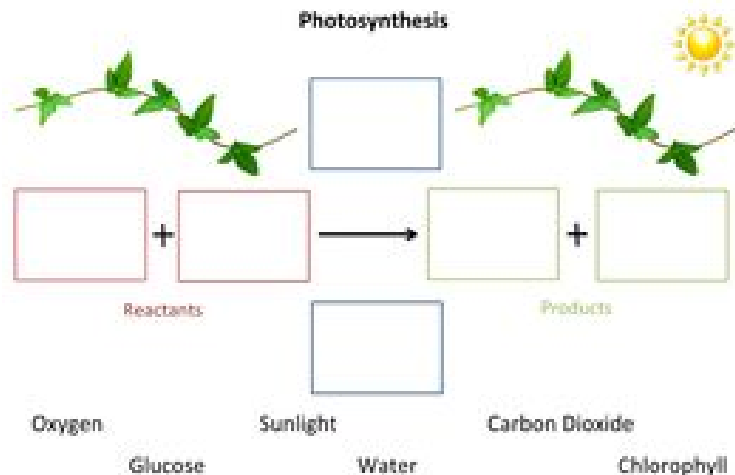
What does the plant absorb at point 1? _____

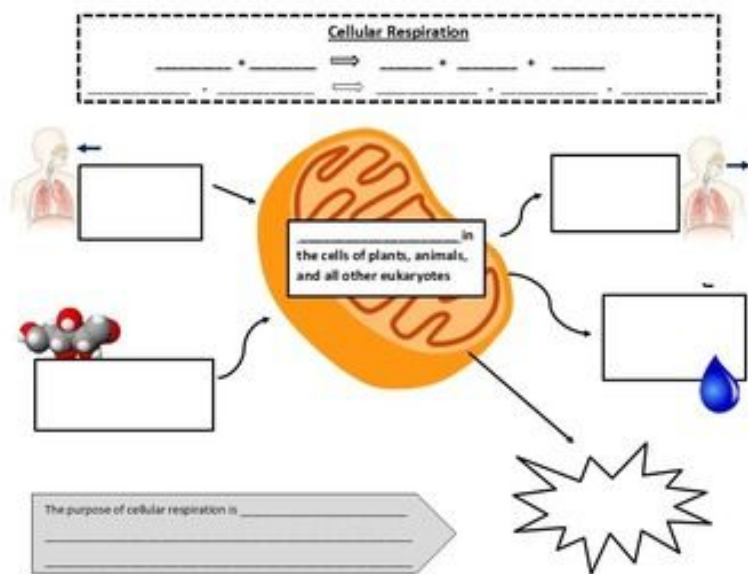
What does the plant absorb at point 4? _____

What part of the plant collects MOST of the sunlight that is needed to make food? _____

What organelle is in the leaves that collects/absorbs the sunlight? _____

Fill in the boxes for photosynthesis using the chemical formulas.





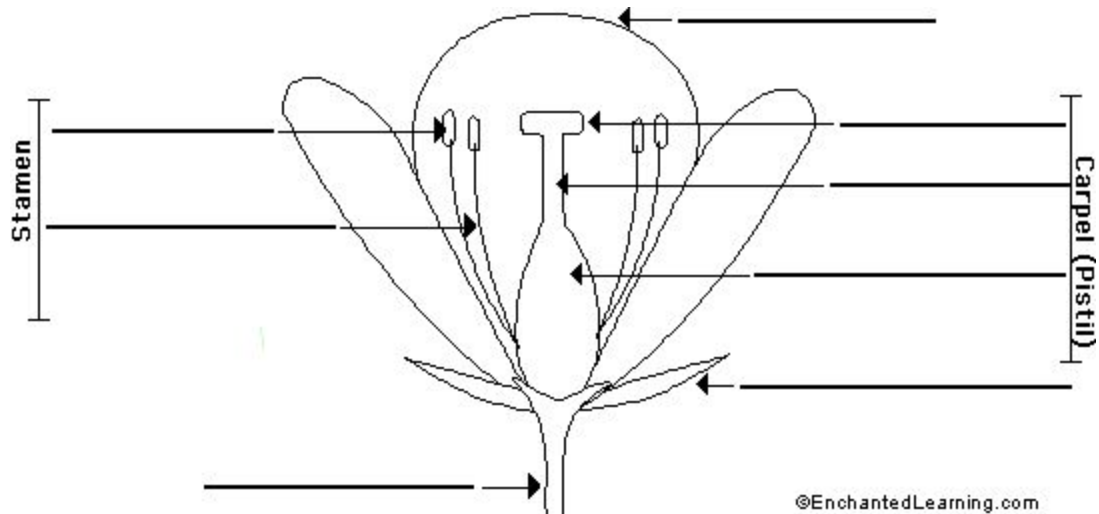
Fill in the boxes for Cellular Respiration using the chemical formulas.

Which compounds are reactants?

Which compounds are products?

___ ___ ___ living things perform cellular respiration.

What is the name of the organelle where cellular respiration occurs?



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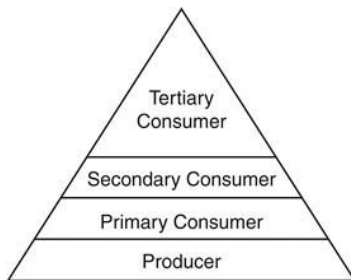
Label the parts of the flowering plants reproduction parts.

6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.

6.L.2.1 Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain or food web (terrestrial and aquatic) from producers to consumers to decomposers.

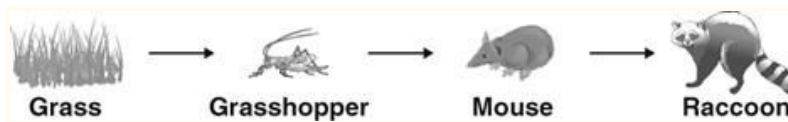
6.L.2.2 Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.

6.L.2.3 Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.



Explain why producers are found at the bottom of an energy pyramid.

Define what a decomposer is. List examples of decomposers.



Label each level of the above food chain.

What does abiotic mean? List some abiotic factors found in the environment.

Define the following:

Producer:

Herbivore:

Carnivore:

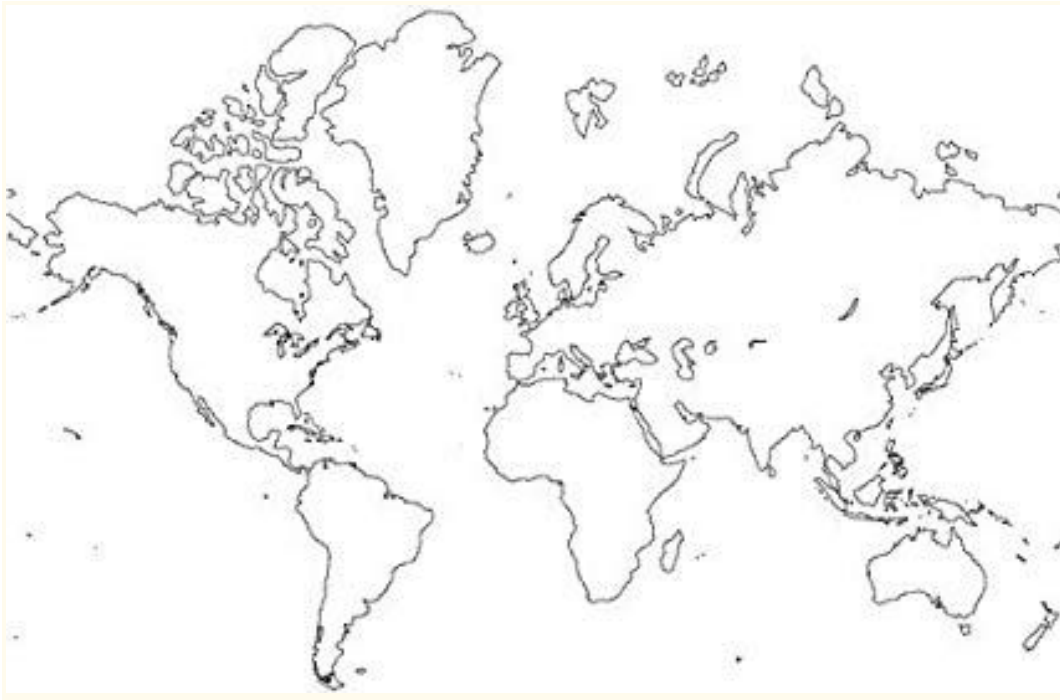
Omnivore:

What is the original source of energy? _ _ _

Explain dormancy.

ECOSYSTEMS

	desert	wetland	rainforest	grassland	tundra	Deciduous forest	ocean
Where is this ecosystem found? label the map							
Type of climate							
Types of landforms							
Kinds of plants							
Kinds of animals							



Desert



Grassland



Ocean



Wetland



Tundra



Rainforest



deciduous forest