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Weather/Meteorology

1. Climate – pattern of weather in a large area over a long period of time
   http://www.blueplanetbiomes.org/climate.htm
2. Weather – condition of the atmosphere in a smaller area over a shorter period of time
3. Types of heat:
   a. Radiation = how sun's heat travels to us through space
   b. Conduction = heat is transferred by contact (soil in beaker warms from outside in)
   c. Convection = heat rises in one area and sinks in another; the air masses replace each other. (hot air rises cold air sinks
4. Equatorial zones that receive most direct sunlight = hottest.
5. Cloud formation – Water evaporates into the air (water vapor) then rises, cools, and condenses onto dust particles in the upper atmosphere. Clouds are millions of tiny water droplets combined together.
6. Rain Shadow - More precipitation on top of mountains b/c it is colder, so more condensation.
   http://animals.about.com/od/alpinemontaine/f/rainshadow.htm
   http://www.usatoday.com/weather/tg/wrnshdw/wrnshdw.htm
7. Convection current – air moving in a circular pattern caused by uneven heating of Earth.
8. Weather front – boundary between two air masses (where changes in weather occur)
   types: stationary, cold, warm, etc.
   http://www.classzone.com/books/earth_science/terc/content/visualizations/
9. Water cycle – Evaptoration Transpiration Condensation Precipitation Run Off, Fiiltration Accumlation Sublimation
10. http://earthguide.ucsd.edu/earthguide/diagrams/watercycle/index.html
    http://www.enchantedlearning.com/subjects/astronomy/planets/earth/Watercycle.shtml
    a. Evaporation = water moves from liquid to gas state; heat gained
    b. Condensation = water moves from gas to liquid state; heat lost
    c. Sublimation = water moves from solid to gas state; heat gained

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Astronomy/Space Science – Earth-Moon-Sun System

1. Seasons – summer = axis tilts towards sun, winter = axis tilted away from sun.
2. Moon Phases – new/can't see, full/see whole side, waxing = getting bigger, waning =getting smaller, gibbous, crescent http://www.moonconnection.com/moon_phases.phtml
3. Eclipses
   a. Solar = Sun blocked out (caused by shadow of moon on Earth only seen from certain places on Earth http://www.mreclipse.com/Special/SEprimer.html
   b. Lunar = moon blocked out (caused by shadow of Earth on moon Seen from everywhere on Earth http://www.mreclipse.com/Special/LEprimer.html
4. Rotation – Planet spins on its axis = 1 day (24 hrs), same length all over the world,
   Revolution – one complete orbits of planet = 1 year, same length all over the world, 365 days

Universe, Galaxy, Solar System

1. Planet – orbits a star Moon – orbits a planet (also called a satellite)
2. Star – gaseous ball of fire. How many in our solar system? 1
3. Dwarf planets = Ceres, Pluto, Haumea, Makemake, Eris
4. Inner planets – Mercury Venus, Earth Mars
   Outer planets - Jupiter, Saturn Uranus, Neptune

	Relative size	State of Matter	Spacing pattern
Inner Planets	smaller	solid	Closer together
Outer Planets	larger	gaseous	Further apart

5. Asteroid Belt – big space rocks between Mars and Jupiter
6. Kuiper Belt – region beyond Neptune that is full of comets, asteroids and other debris.
7. Comets – have a tail, made of ice , orbit the sun http://www.kidsastronomy.com/comets.htm
8. *draw a line to the correct definition*
   i. meteor when space rock enters atmosphere
   ii. meteorite space rock
   iii. meteoroid when it hits E's surface
9. Biggest item Universe, Galaxy, Solar System, Planet Satellite smallest item
   (Milky Way)

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Earth Science – Plate Tectonics (look at map across from library)

1. Earthquakes – seismic waves (P and S) are the energy released from the earthquake's focus.
2. P-waves travel faster than S-waves.
   a. Seismographs are the instruments that record the seismic waves.
   b. Richter Scale – measures the energy release of a moderate earthquake (magnitude 3-7)
   c. Moment magnitude – measures the energy release of large scale earthquakes
   d. Mercalli Intensity scale – measures the damage the earthquake causes.
3. Inner Earth– crust, mantle (plastic,) outer core (liquid,) inner core (solid)
4. Volcanoes – shield, composite/stratovolcano, cinder cone,
5. Mountain formation
   a. Coast range – plates collide not volcanic folded mountains
   b. Cascade Range – Pacific plate subducts under the North American. plate, volcanic
   c. Himalayan Range – Indian plate colliding with the Eurasian plate, not volcanic
      http://www.pbs.org/wgbh/nova/everest/earth/shock.html
6. Alfred Wegener = Theory of Continental Drift
   http://earthguide.ucsd.edu/earthguide/diagrams/plate_reconstruction/platereconstruction.html
7. Evidence of Pangaea – Fossils, Mountains, glacial structures & continental shapes all match
   http://sio.ucsd.edu/voyager/earth_puzzle/
8. Theory of Plate Tectonics – http://pubs.usgs.gov/gip/dynamic/Vigil.html
   http://education.sdsc.edu/optiputer/teachers/platemovement.html
   a. Convergent – found along coastlines, plates move towards one another
   b. Divergent – mid- ocean ridges, plates move away from each other
   c. Transform boundaries – San Andreas Fault, plates move side by side
   d. Subduction zones - Area where oceanic crust plunges under continental crust
9. Why the plates move: basal drag (convection in mantle,) slab pull (gravity), ridge push (magma forces to surface)
   http://earthguide.ucsd.edu/eoc/teachers/t_tectonics/p_convection2.html
   http://www.see.leeds.ac.uk/structure/dynamicearth/convection/driving_forces/index.htm
10. Continental Shelf – "edge" of continent, under ocean
    http://www.hampton.va.us/eoc/weather/cshelf.html

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Geology

1. Rock Cycle – melting/cooling, heat/pressure, compaction/cementation

   http://www.learner.org/interactives/rockcycle/index.html *click through the whole thing!*

   a. Weathering – breaks down the rock, erosion – movement of rock particles

      Go to Barb's website and click "geology links"

   b. Igneous = Volcanic
      - intrusive or plutonic: from magma ex. granite, large crystals
      - extrusive or volcanic: from lava ex. obsidian, basalt

   c. Sedimentary –
      - clastic layered, deposition ex. sandstone
      - chemical crystals from evaporation of water, stalactite, stalagmite ex. thunderegg
      - organic: fossils buried in layers of sediment

   d. Metamorphic – (gumdrops) ex. gneiss, slate
      - Foliated flattened crystals
      - Non-foliated mangled/folded

2. Geologic Time Scale - http://www.enchantedlearning.com/subjects/Geologictime.html
3. Finding relative ages of rocks = comparing which one is older

   a. Law of Superposition - helps determine relative ages of rocks

http://www.classzone.com/books/earth_science/terc/content/investigations/es2903/es2903page03.cfm

b. Index fossils – organisms that lived for a relatively short time and are common in the fossil record. http://pubs.usgs.gov/gip/geotime/fossils.html

c. Carbon dating (C-14) – helps determine age of organic remains

http://www.pbs.org/wgbh/nova/tech/radiocarbon-dating.html *click on "launch interactive"*

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