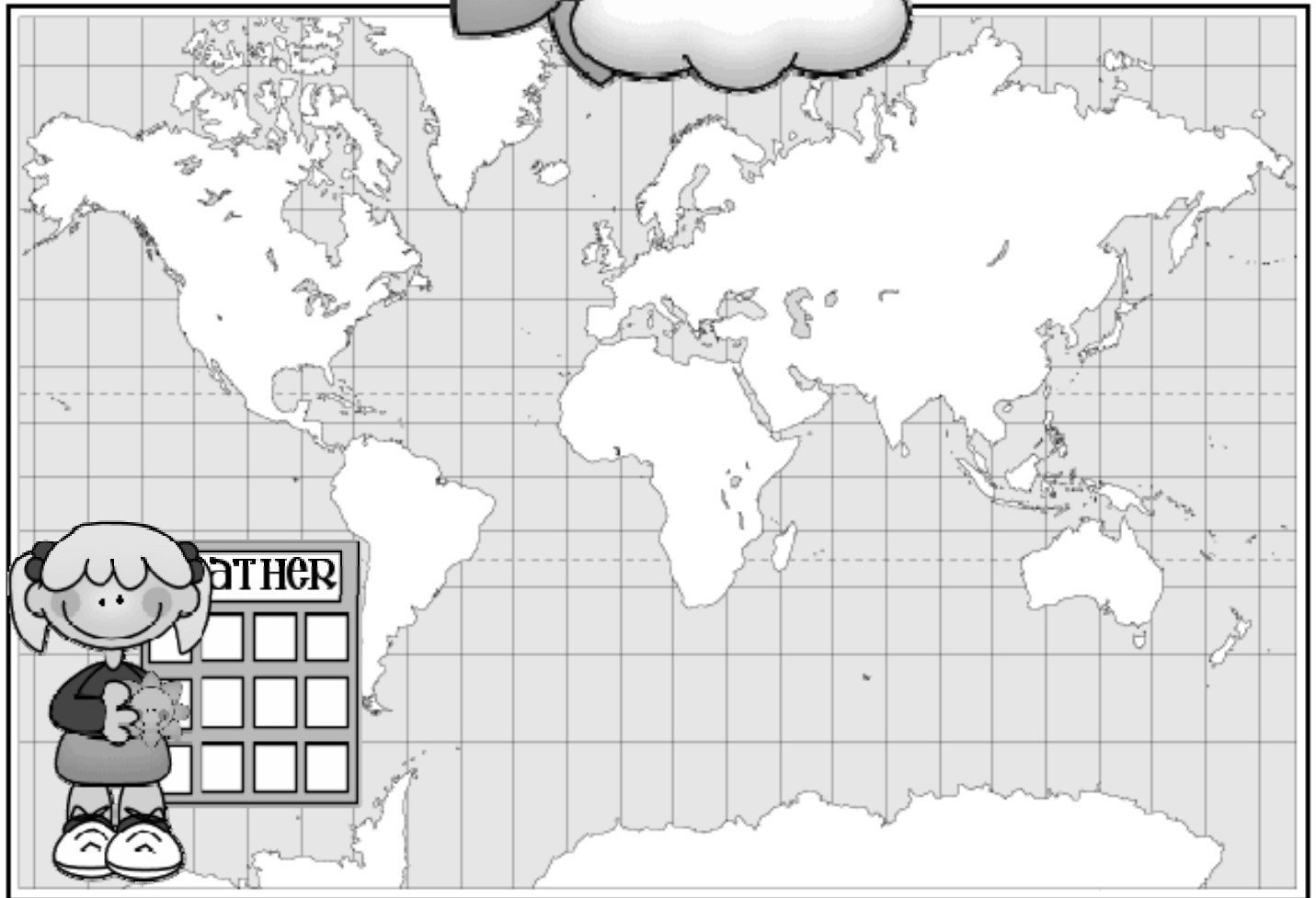



# Planet Earth



Name \_\_\_\_\_ Station# \_\_\_\_\_

Homeroom Teacher \_\_\_\_\_

Discovery Lab  
Science Notebook

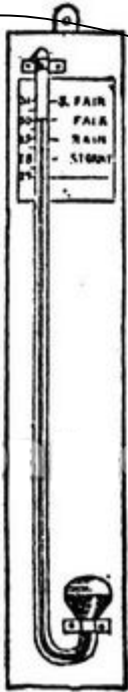


# WEATHER

**Wind** speed and direction are measured using the Beaufort's Wind Scale and a wind vane or an **anemometer**.



**Pressure:** High pressure areas form when cold air sinks. These generally bring light winds, steady temperatures, and a little change in weather. Low pressure areas form when surface air rises. This generally brings strong winds, dropping temperatures, cloudy skies and precipitation. **Barometers** measure air pressure.

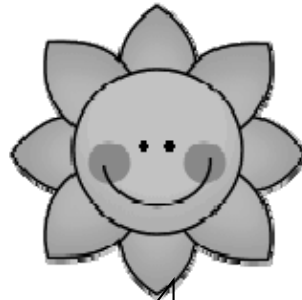


**Thermometers** are used to measure **Temperature**. Thermometers are filled with alcohol dyed red for easy viewing or mercury, which is silver in color. The way a thermometer works is that when it is hot, the liquid inside the thermometer will expand and rise in the tube; the opposite happens when it is cold.



**Dew Point** is the temperature at which water vapor condenses.

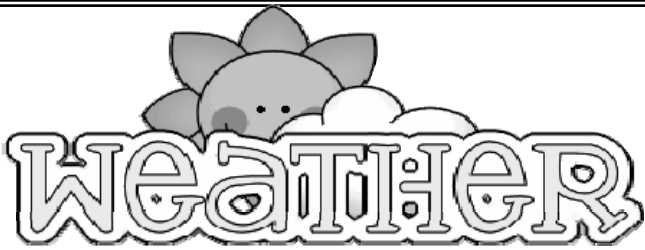
**Humidity** is the amount of water vapor in the air. **Hygrometers** are used to measure relative humidity.



**Visibility** lets us know how clear our skies are of cloud coverage. Some days we can see for miles nothing but blue skies. On other days we cannot because clouds block our view.



**UV Index**-is an international standard measurement of how strong the ultraviolet (UV) radiation from the sun is at a particular place on a particular day.



What's the weather like today?  
 Fill in the chart below for today's forecast.

Local Weather	Date:
Sky Conditions	
Current Temperature	
Wind	
Humidity	
Pressure	
Dew Point	
Visibility	
UV Index	
Sunrise Sunset	

Local Weather	Date:
Sky Conditions	
Current Temperature	
Wind	
Humidity	
Pressure	
Dew Point	
Visibility	
UV Index	
Sunrise Sunset	

Local Weather	Date:
Sky Conditions	
Current Temperature	
Wind	
Humidity	
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Local Weather	Date:
Sky Conditions	
Current Temperature	
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Humidity	
Pressure	
Dew Point	
Visibility	
UV Index	
Sunrise Sunset	

## Website Research Understanding Planet Earth

Planet Earth Page click on the first link titled What Makes Up Earth. Using this file you are to read through and find the answers to the following questions.

1. Name the layers of the Earth in order from the outside to the center of the Earth.
  - A. Crust
  - B.
  - C.
  - D.
  - E.
2. What are the two main metals that make up the outer and inner core?  
\_\_\_\_\_ and \_\_\_\_\_
3. The crust is composed of what two basic rock types? \_\_\_\_\_  
and \_\_\_\_\_

Now, close out of this file by clicking on the red X at the top right-hand corner of the screen.

Planet Earth Page click on the second link titled **Weather Wiz Kids**. On the left-hand side of the page are the titles starting with Home.

### *Click on Hurricanes*

What are the five things a hurricane needs?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_



Scroll down the page and look for When does hurricane season start?

Atlantic hurricane season \_\_\_\_\_

Eastern Pacific hurricane season \_\_\_\_\_

Scroll down and look at Who names Hurricanes? Under this section click on both available links and see if you can find your name under the listing of hurricane names.

*After exploring the Hurricane Page, scroll back up and click on Tornadoes.*

1. What is the wind speed of a FO tornado? \_\_\_\_\_
2. What is the wind speed of a F5 tornado? \_\_\_\_\_
3. What is a gustnado? \_\_\_\_\_
4. When is peak season for tornadoes in the south? \_\_\_\_\_

*After exploring the Tornado page, scroll back up and click on Earthquakes.*

1. There are about \_\_\_\_\_ plates along the surface of the earth that move continuously and slowly past each other.
2. \_\_\_\_\_ is an area of stress in the earth where broken rocks slide past each other, causing a crack in the Earth's surface.
3. What is a seismograph? \_\_\_\_\_  
\_\_\_\_\_

*After exploring the Earthquake page, scroll back up and click on Volcanoes*

1. How many volcanoes are there? \_\_\_\_\_
2. Where are the active volcanoes in the United States? \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
3. What are the four types of volcanoes?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



Now that you have finished your research you may explore more by clicking on some of the other websites listed on the Planet Earth page.

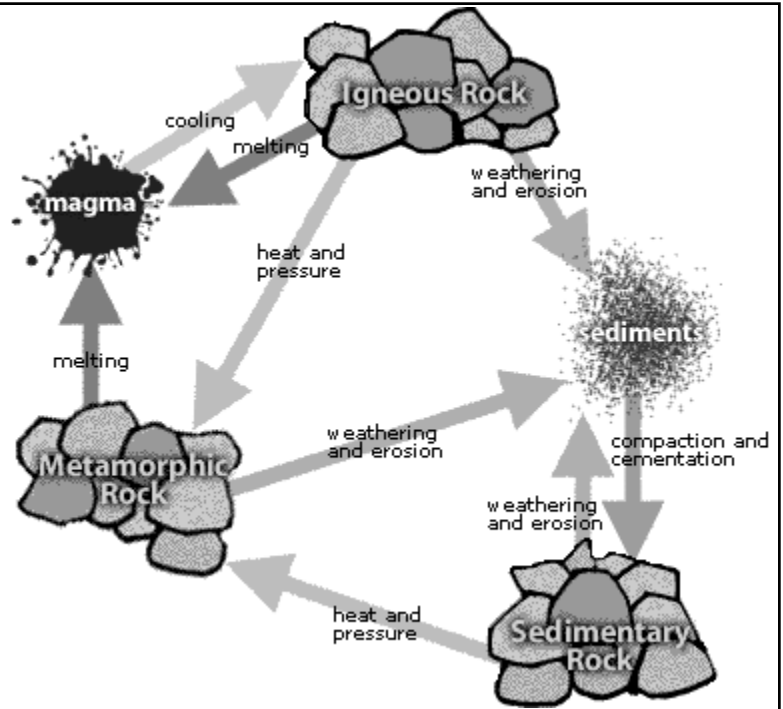
# Rock-n-Roll

Earth is composed of rocks, water, and gases. Earth's crust is composed of rocks and minerals. A mineral is an inorganic (not life-based) solid that is composed of one type of mineral. Talc, gypsum, and calcite are all examples of minerals found in Earth's crust. A rock is an inorganic solid that is composed of two or more minerals.

Rocks are divided into three major groups according to how they were formed. **Igneous** rocks are formed when molten material from Earth's mantle rises to the surface, cools, and hardens. **Sedimentary** rocks form when particles of other rocks (like sand) are laid down and cemented together over time. **Metamorphic** rocks are formed when other rocks are transformed by heat and pressure deep underground.

Oceans cover almost three-quarters of the Earth's surface. Unlike fresh water, salt water contains a number of dissolved solids. The greatest of these is sodium chloride (table salt), but salt water also includes potassium, calcium, magnesium, sulfur, and even gold.

The **atmosphere** is a collection of gases and tiny particles that surround Earth. These gases include the oxygen many organisms need to breathe, water vapor that is moving through the water cycle, and ozone that protects us from the Sun's ultraviolet light.



Name	Characteristics	How Formed	Usually Found
<b>Igneous</b> (granite, basalt, quartz, obsidian, pumice)	glossy, crystalline, coarse-grained	created when molten lava cools	where volcanoes have existed
<b>Metamorphic</b> (slate, schists, marble, magmatite, eclogite)	hard, crystals may appear, layers may develop	created when sedimentary or igneous rocks undergo a change due to pressure or heat within the earth	deep in the earth where pressure and heat can affect the rocks
<b>Sedimentary</b> (chalk, coal, sandstone, shale, limestone, dolomite)	contains fossils, soft, layered	created when layers of sediment (mud, sand, gravel, and minerals) settle to the bottom of the ocean and over thousands of years are pressed together.	where oceans or bodies of water once existed or still exist

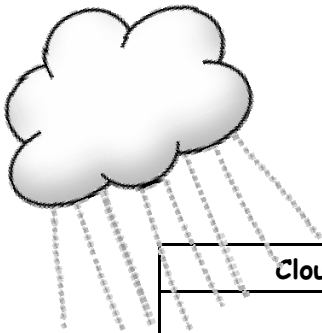


## Words to Remember

1. **Anemometer:** Instrument that measures wind speed at ground level.
2. **Ash:** A class of tephra smaller than two millimeters in size that is formed during explosive volcanic activity.
3. **Caldera:** A depression formed when a massive eruption causes a volcano's external structure to collapse. One well-known example is in Yellowstone National Park
4. **Cinder Cone:** Type of volcano formed by explosive eruptions as runny lava is blasted into fragments, cools, and falls to the ground, accumulating around a volcanic vent in a cone shape.
5. **Cyclone:** Another name for "hurricane."
6. **Doppler Radar:** Records rainfall density and wind speeds inside a storm in order to assign hurricanes their ratings and to forecast the path and intensity of the storms. Also used to look inside tornadoes for signs of rotation.
7. **Dust Devil:** A spiraling column of wind that rises from the ground in hot, dry areas, lifting up dust and debris; it is not a tornado because it does not come from the rotating updrafts of a thunderstorm, and a dust devil doesn't stretch from a thunderstorm cloud to the ground.
8. **Epicenter:** The point on the earth's surface directly above an earthquake.
9. **Fault (Normal):** A fault in which the rock below the fault plane slides up as the rock above the fault plane of separation slides down.
10. **Fault (Reverse):** A fault in which the rock below the fault plane slides down while the rock above the fault plane of separation moves up.
11. **Fault (Strike-slip):** A fault in which the rocks on either side of the plane of separation slide in opposite directions.
12. **Fujita Scale:** The numerical ranking of F0 to F5 used to identify a tornado's strength, based on wind speeds. The scale is named after the tornado researcher Tetsuya Theodore "Ted" Fujita, who developed the original scale in 1971.
13. **Fumarole:** An opening in the ground that emits steam and gases generated as a result of volcanic heating.
14. **Geology:** The study of the earth or other celestial body—past and present—and the processes that shape them.
15. **Geyser:** A type of hot spring that periodically erupts a jet of water and steam into the air.
16. **Hot Spot:** A volcanic area in the middle of a plate or at a plate boundary—like that at Yellowstone or Hawaii—that remains active as plates move over or away from it.
17. **Hot Spring:** A pool of water heated by volcanic activity.
18. **Hurricane:** A rotating storm that forms in the tropics (near the equator) and has winds of at least 74 miles per hour. "Hurricane" comes from Hurakan, the name of the ancient Mayan god of wind and storm. Other names for such storms are "typhoon" or "cyclone."
19. **Hypocenter:** The point under the earth's surface where fault slippage occurs, leading to an earthquake.
20. **Krakatoa:** Volcanic island in Indonesia that exploded and collapsed into the sea on August 26-27, 1883.
21. **Lapilli:** A class of tephra ranging from two to 64 millimeters in size that is formed during explosive volcanic eruptions. Lapilli is Latin for "little stone."
22. **Lava:** Molten rock found at the Earth's surface.
23. **Lava Dome:** Type of volcano formed when thick, viscous, slow-moving lava oozes from a vent, piles up, and cools into a steep mound. Lava domes can form on their own, or they can form around a vent on a large stratovolcano or shield volcano. The lava is low in gas, so it oozes instead of explodes.
24. **Levee:** Wall that holds back water. Levees can be manmade, or they can also form naturally as a ridge of clay, silt and sand on either side of a stream or river, built along its banks during flooding.
25. **Magma:** Molten (melted) rock found below Earth's surface. Once molten rock erupts at the Earth's surface, it is called lava.
26. **Magnitude (of an Earthquake):** The amount of energy released by an earthquake. One common numeric magnitude scale to measure earthquakes is the "Richter scale."

27. **Meteorology:** The study of the atmosphere and its phenomena, including weather and weather forecasting.
28. **Mt. St. Helens:** Volcano in the state of Washington that erupted on May 18, 1980, releasing 520 million tons of ash.
29. **Mud Pot:** A bubbling mixture of mud and clay formed by volcanically heated water.
30. **Obsidian:** Rock formed from lava that has cooled and solidified very quickly. Also known as volcanic glass.
31. **Pahoehoe:** Runny, flowing lava that flows gently. Hawaiian volcanoes erupt Pahoehoe.
32. **Pele's Hair:** Glassy strands of volcanic rock formed when lava erupts like a fountain, or cascades like a waterfall, is blown in the wind, and cools quickly. Named for the Hawaiian volcano goddess Pele.
33. **Primary Waves (P-waves):** Fast-moving waves that compress and expand the earth in the direction that they travel, the way a spring compresses and expands.
34. **Pumice:** An abrasive rock formed from lava that erupts in a frothy mass full of gas bubbles and cools quickly. Often used in cosmetics and cleaners and by dental hygienists in a paste to polish away stains; it's also used to make lightweight concrete.
35. **Pyroclasts:** Air-fall particles of all sizes produced by explosive volcanic eruption. Pyroclasts are sometimes also called tephra.
36. **Richter Scale:** The numeric scale used to measure the magnitude, or "size," of an earthquake. Earthquakes range from small (magnitude 1) to gigantic (magnitude 9). A jump of one number up the scale equals a slightly greater than thirty-fold increase in the amount of energy released.
37. **Ring of Fire:** A 25,000 mile horseshoe-shaped arc encircling the Pacific Ocean where more than ten plates interact in a series of subduction zones. More than 75% of the world's volcanoes can be found and 90% of all earthquakes occur along the Ring of Fire.
38. **Secondary Waves (S-waves):** Slower-moving waves that shake the earth at right angles to the direction that they travel.
39. **Seismic Waves:** Waves that travel through the Earth, normally but not always, as the result of an earthquake along a fault.
40. **Seismogram:** The zigzagging line recorded by a seismograph that shows the strength of seismic waves.
41. **Seismograph:** Machine that records the shaking detected by a seismometer as a zigzagging line.
42. **Seismometer:** Machine that detects the seismic waves that shake the ground.
43. **Shield Volcano:** Type of volcano formed by layers of gently flowing lava that accumulates and hardens into gentle slopes. Shield volcanoes can stretch for hundreds of miles and erupt for years, but they do not erupt explosively.
44. **Stratovolcano:** Explosive volcanoes, stratovolcanoes form over many thousands of years, with layers of pyroclastic material and cooled lava flows building up to form a steep cone, often with multiple vents.
45. **Subduction Zones:** Places where one of Earth's tectonic plates is slipping, or descending, beneath another.
46. **Surface Waves:** Waves that roll the ground either side-to-side or up-and-down when an earthquake's energy reaches the surface.
47. **Tephra:** Air-fall particles of all sizes produced by explosive volcanic eruption. Tephra is sometimes also called pyroclasts.
48. **Tornado:** A swirling, funnel-shaped column of wind stretching from a thunderstorm cloud to the ground. It gets its start when strong winds at high altitudes set a thunderstorm's updrafts rotating.
49. **Tornado Alley:** The area of the central United States spanning nine states where more than 75 % of all tornadoes in the world occur. There, cool dry air from the Arctic collides with warm humid air from the Gulf of Mexico, providing the perfect conditions for thunderstorms.
50. **Tornado Warning:** Used to alert to the danger from tornadoes, "tornado warning" means a storm has started to rotate and a tornado could be on its way.
51. **Tornado Watch:** Used to alert people to the danger from tornadoes, "tornado watch" means thunderstorm conditions exist that could spawn tornadoes.

52. **Tsunami:** Wave in the ocean or sea that is usually caused by underwater earthquakes; tsunamis occur when the movement of seafloor causes water to move across the ocean as waves, which grow taller as they approach land.
53. **Tuff:** Rock composed of volcanic ash particles that are bonded together like concrete.
54. **Typhoon:** Another name for “hurricane.”
55. **Vent:** An opening at Earth’s surface from which volcanic material—lava, steam, or gas—is emitted.
56. **Vesuvius:** Volcano in Italy that erupted on August 24, A.D.79; its ash and gas enveloped and buried the town of Pompeii.
57. **Waterspout:** A vortex extending from a thunderstorm cloud to the surface of a large body of water, drawing water up into the air.



## Cloud Chart

Cloud Group	Cloud Height	Cloud Types
High Clouds = <b>Cirrus</b>	Above 18,000 feet	Cirrus Cirrostratus Cirrocumulus
Middle Clouds = <b>Alto</b>	6,500 feet to 18,000 feet	Altostratus Alto cumulus
Low Clouds = <b>Stratus</b>	Up to 6,500 feet	Stratus Stratocumulus Nimbostratus

<b>Clouds with Vertical Growth</b>	Cumulus Cumulonimbus
<b>Special Clouds</b>	Mammatus Lenticular Fog Contrails