**Lab Safety Rules**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SWBAT: Identify and practice lab safety procedures

1. Report all accidents to the teacher IMMEDIATELY! Never handle broken glass!
2. Follow all written and verbal instructions carefully
3. Bring only your lab worksheet and a pencil to the lab area
4. Do not enter any lab storage area unless instructed to do so by the teacher
5. No food or beverages in the lab area
6. Never touch or taste chemicals without the teacher’s permission
7. Waft fumes to smell odors. Do not sniff or breathe deeply, directly from the chemical
8. Wear goggles when instructed to do so; especially when a flame is present
9. Do no discard ANY solids in the sink
10. No horseplay (running, shoving, playing around) in the lab area
11. Use common sense! Ask if you have a question
12. Perform only the experiment given to you by your teacher
13. Ask the teacher if you do not know how to use a piece of equipment
14. Read the instructions before beginning the experiment. Do them in the order listed
15. Always clean up your lab area when you are finished
16. Wash hands after you finish a lab. Soap and paper towels are available at each station
17. Know the location of the safety equipment. Know the fire drill procedure
18. Keep hair tied back and clothing out of the way (roll up sleeves, remove ties, and bulky coats)

**Intro to Earth Science**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SWBAT: Describe and define the 4 branches of Earth Science

What is Earth and Environmental Science?

* The study of the Earth and the universe around it.
* The Earth and its environment are divided into **spheres** that overlap and interact.

|  |  |  |
| --- | --- | --- |
| There are **five** major branches in Earth Science: Geology, Hydrology, Meteorology, Ecology & Astronomy | | |
| Geology – Lithosphere:  The solid Earth |  | |
| Hydrology – Hydrosphere:  All of the Earth’s water |  | |
| Meteorology – Atmosphere: The air that surrounds Earth |  | |
| Ecology – Biosphere:  All life on Earth |  | |
| Astronomy – Celestial Sphere: The universe beyond Earth |  | |
| **Properties of Earth** | | |
| The Earth is magnetic | | The Earth has gravity |

**Scientific Method**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SWBAT: Identify and describe the steps of the Scientific Method. Be able to use the scientific method to design an experiment

In order to understand the world we need to have a goal in mind, this is where the Scientific Method comes in.

|  |  |  |  |
| --- | --- | --- | --- |
| **What is the Scientific Method?** | | | |
| **Steps** | | **Description** | |
| 1. Ask a Question/Observe a Problem | |  | |
| 1. Background Research | |  | |
| 1. Constructed a Hypothesis   “If, then statement” | | **Hypothesis** is a: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| 1. Test Hypothesis | |  | |
| 1. Analyze Data and Draw Conclusion | |  | |
| 1. Repeat | |  | |
| **Parts of an Experiment** | | | |
| Variables:  things that change | Independent Variable |  | |
| Dependent Variable |  | |
| Constants : things that don’t change | |  | |
| Control | |  | |
| **Laws vs Theories** | | | |
| Law   * You drop a pencil.   + The LAW of gravity states that it will fall, it does not matter why it falls | | | Theory   * You find a fossil of a half reptile/half bird.   + The THEORY of evolution tries to explain why. |

**Metric System and Measurement**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SWBAT: List in order the prefixes of the metric system. Change from one unit to another

|  |  |  |
| --- | --- | --- |
| **The Metric System** | | |
| Measuring | Units | Calculated using |
| Length - |  |  |
| Mass - |  |  |
| Temperature - |  |  |
| Volume – |  |  |
| Density – |  |  |

* Would the objects with the following densities float or sink in pure water?
  + .85 g/mL
  + 1.4 g/mL

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Converting Metric Units** | | | | | | |
| Kilo (K)  1000 | Hecto (H)  100 | Deca (da)  10 | Unit  (gram, liter, meter)  1 | deci (d)  0.1 | centi (c)  0.01 | milli (m)  0.001 |



Step 1: Write the sentence to help remember the order of the prefixes

Step 2: Identify where you are

Step 3: Identify where you want to go

Step 4: How do you get there? (Right/Left, How many space?)

Problem: 2 m = \_\_\_\_\_\_\_\_ km

Practice: 2000 mg = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g 104 kL = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dL 480 cm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_m

|  |
| --- |
| **Converting Standard Units** |
| In the box method, we always make sure our units cancel, so…….. ALWAYS WRITE YOUR UNITS!!!!!!!!!!!!!!! |

Step 1: Draw box

Step 2: Put starting measurements in top left

Step 3: Set up so units cancel

Problem: 10 ft = \_\_\_\_\_\_\_ in

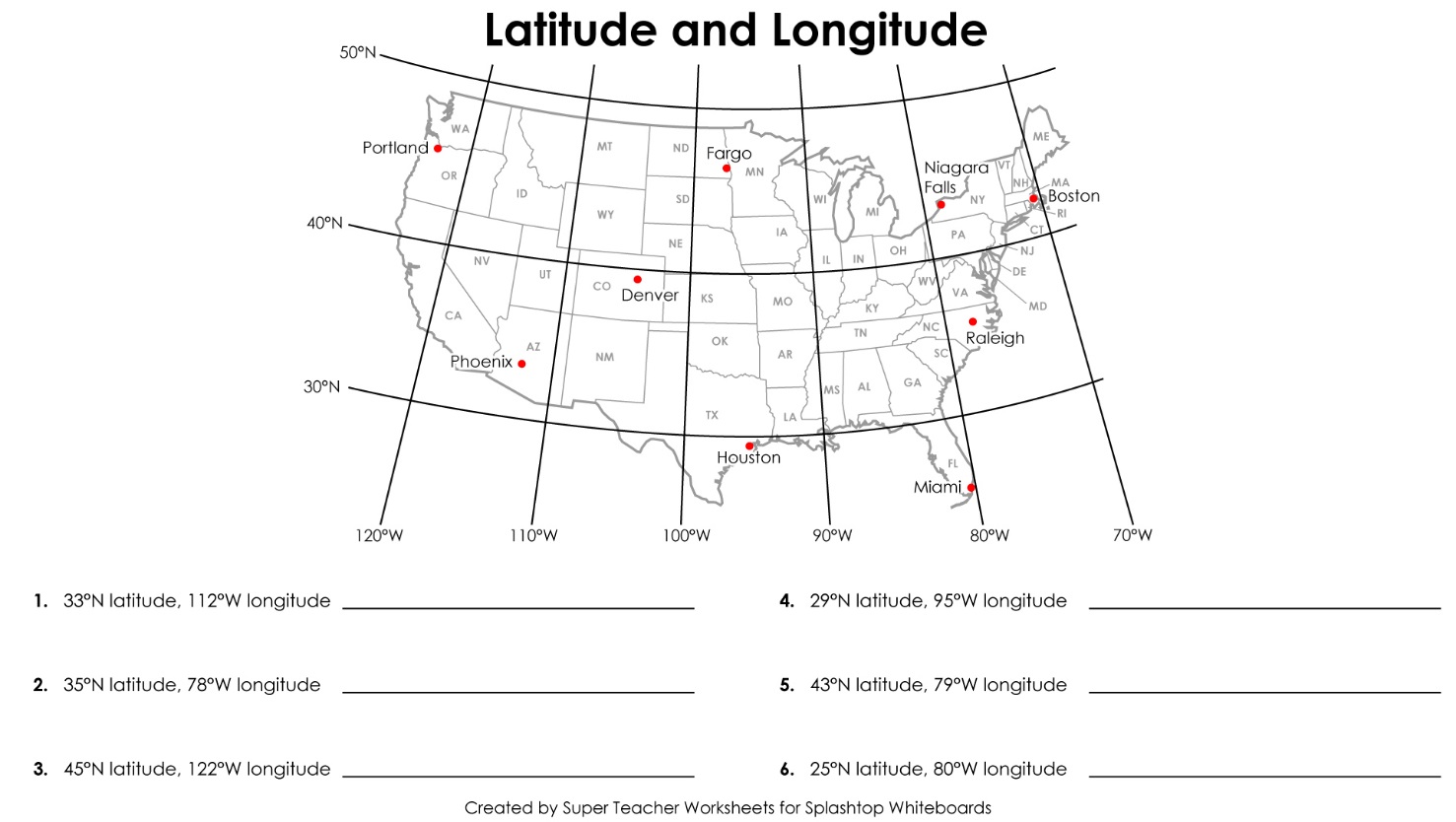
|  |  |
| --- | --- |
|  |  |
|  |  |

**Latitude and Longitude**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SWBAT: Explain how to use and plot latitude and longitude to find locations.

|  |  |
| --- | --- |
| **Coordinate System** | |
| Latitude: North and South of the Equator   * AKA: | Longitude: East and West of the Prime Meridian   * AKA: |
| **Reference - Equator** Latitude:  North Pole Latitude:  South Pole Latitude:  Tropic of Cancer Latitude:  Tropic of Capricorn Latitude:  Arctic Circle Latitude:  Antarctic Circle Latitude: | **Reference - Prime Meridian** Longitude:  International Dateline Longitude: |
| http://mrwhiteswebpage.weebly.com/uploads/1/3/1/8/13180375/4081302.gif?450 | http://mrwhiteswebpage.weebly.com/uploads/1/3/1/8/13180375/4081302.gif?450 |



Coordinates are always

written like an (*x,y*) plot.

(Latitude, Longitude)

**Topographic Maps**

Date:

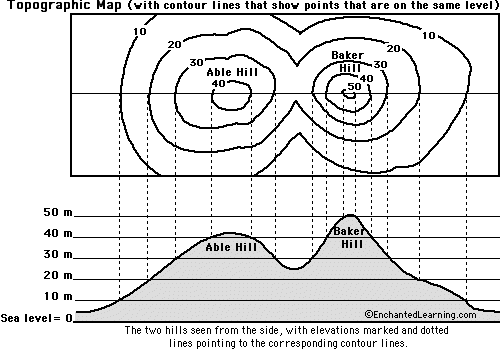
SWBAT: Interpret and construct topographic map. Predict geologic formations based off topographic maps.

Topographic Maps

* Show the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the Earth.

Examples of features: hills, rivers, valleys…

|  |  |
| --- | --- |
| **Topographic Maps** | |
| Contour Lines | * Connect all the points at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * **Lines never cross!** * The closer the lines, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * “V” lines indicate a valley * “V” lines always point upstream (rivers flow from high to low elevation) * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_indicates hills or mountains. |
| Depression Contours | * Show a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * Are dashed |
| Contour Interval | * The difference in elevation between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Contour Index | * Every \_\_\_\_\_\_\_\_\_\_ contour line is in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and labeled with the elevation number * Difference between 2 contour index lines divided by 5 = contour interval |
| Relief | * Difference between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * Example: 150 ft. (highest) - 50 feet (lowest) = 100 feet (relief) |

The top of this drawing is a contour map showing the hills that are illustrated at the bottom.

* On this map, the vertical distance between each contour line is 10 feet.

1. Which is higher, Able Hill or Baker Hill?
2. Which is steeper, Able Hill or Baker Hill?
3. How many feet of elevation are there between contour lines?
4. How high is Able Hill?
5. How high is Baker Hill?
6. Are the contour lines closer together on Able Hill or Baker Hill?