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Tips for the Earth Science Lab Practical by Station

Station 1: Rocks and Minerals

A. Conduct all mineral tests carefully:

1. When doing the hardness and streak tests, press your mineral firmly on the glass/porcelain. Make sure the glass/porcelain is lying flat on the table.
2. Cleavage is identified by breaking in a predictable way (along a flat plane), and fracture is breaking unpredictably (random).
3. Having a metallic luster means it "looks like" a metal or pieces of metal – it does not just mean shiny!
4. You will be asked to follow a flowchart to determine the letter that correctly identifies your mineral.

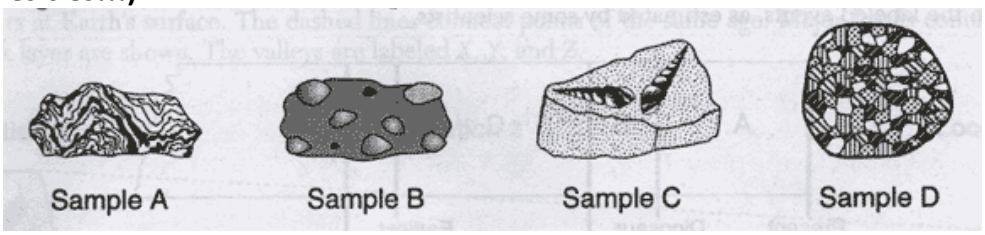
B. Rock Identification – make careful observations!

Rock Type	Possible Reasons
Igneous	Intergrown mineral crystals Glassy Texture Vesicular Texture
Sedimentary	Contains pieces of other rocks Sediments cemented together Shell fragments cemented together Fossil Imprints Layers
Metamorphic	Banding Mineral Alignment (Foliation)

*Your reasons need to be based on what you **observe** about your individual rock!*

Practice Example:

The diagram below shows four rock samples. In the table, identify whether each rock is igneous, sedimentary, or metamorphic and provide <u>one</u> reason for your classification. (**Note: Samples B and D do NOT have vesicles!!!)**



	Rock Type	Observable Characteristic
Sample A		
Sample B		
Sample C		
Sample D		

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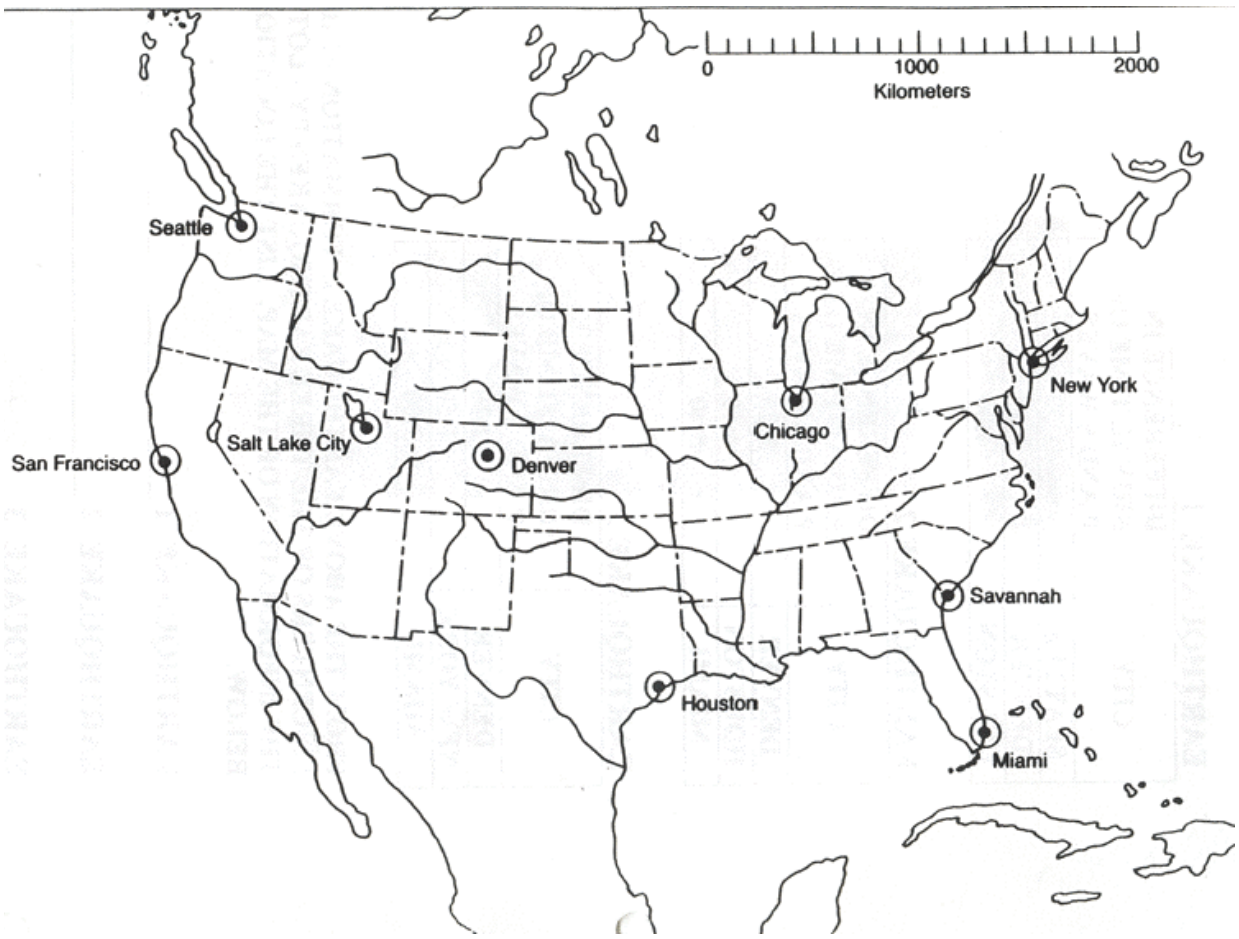
Station 2: Finding Epicenters

- If you are given the distance to the epicenter, use the map scale to set your distance on the compass and draw the circle with the station given as your center.
- If you are given the arrival times of P-waves and S-waves, find the difference in arrival times (S-P) and "surf" the P-wave line on your ESRT chart to find the distance to the epicenter. Then use the map scale and draw your circle.
- Don't forget your time math. If you need to borrow, borrow 60.
- If you do not get an exact point (or very small area) of intersection between your 3 circles, you did something wrong – go back and check your work for precision.

Practice Example: Fill in the information on the chart below based on an earthquake. When you're finished, use the information to draw the circles from each city on the diagram below. Then place an X at the location of the epicenter.

Station	P-Wave Arrival Time	S-Wave Arrival Time	Difference Between Arrivals	Distance to Epicenter
Seattle	2:34:50	2:36:00		
Denver		2:38:20	2:30	
Houston	2:37:40		4:00	



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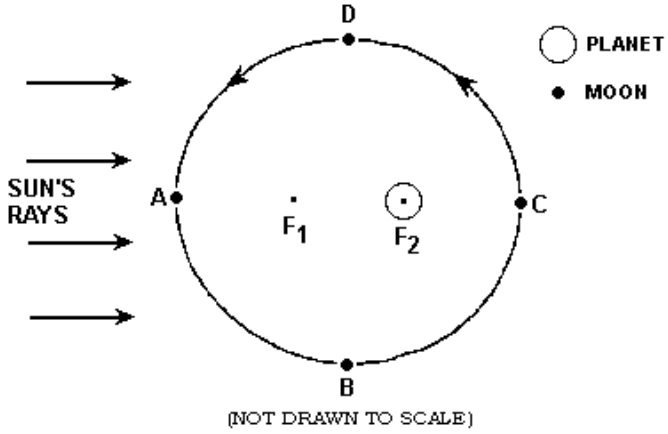
Station 3: Eccentricity

- Place your sheet of paper on top of the box top and put your push-pins into the given focal points.
- Place your string around the push-pins and hold your pencil straight up to draw the ellipse on the paper.
- d= the distance between the 2 push-pins (foci).
- L= the distance from one side of the ellipse to the other *through* the 2 foci (major axis).
- If you get an eccentricity *greater* than 1 you probably divided wrong! Flip the numbers and try again.
- The closer the eccentricity is to 0, the *less* elliptical/eccentric it is (more like a perfect circle).
- The closer the eccentricity is to 1, the *more* elliptical/eccentric it is (more off from being perfect).
- Pay special attention to any rounding instructions. If they tell you to round to the nearest tenth and you write "8" instead of "8.0" you **will** lose a point.
- The fastest velocity and greatest gravitational attraction of a planet in orbit will be at perihelion (on the orbit closest to the star).
- The slowest velocity and least gravitational attraction of a planet in orbit is at aphelion (on the orbit farthest from the star).
- The eccentricities of planets' orbits are provided in the ESRT on page 15.



Practice Example: Use the diagram below for the following questions.

1. Calculate the eccentricity of the ellipse. Round your answer to the nearest thousandth.

2. Which is more eccentric, the orbit of the moon above or the orbit of Mars? Explain your answer.

3. Describe where the moon above is traveling fastest in its orbit.

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4. Place this sheet of paper on a box top. Using push pins and string, construct an ellipse representing the orbit of a planet using the given foci. Then calculate its eccentricity – round to the nearest thousandth!

F_1 F_2

Eccentricity = _____

OVERALL TIPS!!

The lab practical will take place on Wednesday, June 1st. You will have 9 minutes to complete each station as described.

1. When measuring:
    a) Measure from the **CENTER** of one point to the next **CENTER**.
    b) **ROUND** to the place directed! (Add a ".0" at the end if necessary)
    c) Round **CORRECTLY**!! ("5" and higher goes to the next number!)
    d) Be **PRECISE**! It's not enough to eyeball it.

2. **Follow all directions**!

3. If asked for a reason of why something is one way (ex. rock type), it's not the same to give a reason of why it ISN'T something else.

4. Eccentricity has **no** units since it is a ratio.

5. Be careful not to flip numbers when dividing in a calculator. Ex. 5/4 does NOT equal 4/5.

6. Don't write TOO much information - just answer what the question is directly asking!

Doing well on the lab practical sets yourself up for doing a fantastic job on the entire Regents – budget your time, don't leave ANYTHING blank, and have confidence that you know what you're doing!!