**Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Periodic Table Graphing Lab**

Guiding Question: What are the periodic trends associated with density, radius, ionization energy, and electronegativity?

Materials: graduated cylinder, balance, weighing dished, lead, silicon, tin, reference tables, graph paper, rulers.

Pre-Lab Questions:

**Prediction**: The density of the elements in group 14 will (increase/decrease) as atomic number increases.

**Reasoning**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Procedure: For all graphs, label the axes, use constant intervals, circle your points, and connect with a best fit line. Use pencil and a ruler. Your graphs will be graded on both accuracy and appearance.**

1. Find the density of the tin, lead and silicon. Be sure to record all measurements and show all work.

**Lead**

**Tin**

**Silicon**

1. Graph density versus atomic number for the three substances you measured.

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1. Calculate the percent error of your densities using table S.

**Silicon**

**Tin**

**Lead**

1. Why were some of your percent errors so high? What could have been your sources of error?

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1. Construct a **claim** that supports or contradicts the prediction made in the pre-lab questions.
2. Provide **evidence** that supports your claim. Use your **reasoning** skills to explain why your evidence is relevant.
3. **Justify** the steps you took to obtain the evidence you obtained.
4. Using your reference table S, graph the following:
   1. Atomic Number versus Radius for the Halogens.

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| |  |  | | --- | --- | | **Atomic Number** | **Radius** | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  |  |  |  |  |
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* 1. Atomic Number versus Radius for Period 2.

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| |  |  | | --- | --- | | **Atomic Number** | **Radius** | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  |  |  |  |  |
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1. In a full sentence, state the trend between groups and atomic radius:

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1. In a full sentence, state the trend between periods and atomic radius:

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1. Using your reference table S, graph the following:
   1. Atomic Number versus Ionization Energy for the Alkali Metals.

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| |  |  | | --- | --- | | **Atomic Number** | **Ionization Energy** | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  |  |  |  |  |
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* 1. Atomic Number versus Ionization Energy for Period 3.

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| |  |  | | --- | --- | | **Atomic Number** | **Ionization Energy** | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  |  |  |  |  |
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1. In a full sentence, state the trend between groups and ionization energy:

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1. In a full sentence, state the trend between periods and ionization energy:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Using your reference table S, graph the following:
   1. Atomic Number versus Electronegativity for the Alkaline Earth Metals

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| **Atomic Number** | **Electronegativity** |
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* 1. Atomic Number versus Electronegativity for Period 2.

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| |  |  | | --- | --- | | **Atomic Number** | **Electronegativity** | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  |  |  |  |  |
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1. In a full sentence, state the trend between groups and electronegativity:

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1. In a full sentence, state the trend between periods and electronegativity:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_