

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

Title: <b>Mendeleev's Periodic Table Lab</b>	Video: 5.1 – Intro to the PT	Textbook: Ch. 5.1-5.2 (pp 131+)
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<b>TEKS: 5A</b> -Explain the use of chemical and physical properties in the historical development of the periodic table; <b>5C</b> -Use the Periodic Table to <i>identify</i> and <i>explain</i> periodic trends, including atomic and ionic radii, electronegativity, and ionization energy.
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## Introduction

Dmitri Mendeleev's original periodic table arranged elements according to observed properties after writing those properties on notecards. You will model the same process as you attempt to arrange paint color chips representing elements in a logical fashion according to their properties. You will be provided with a container of "elements" in a variety of colors and intensities. The basic color of the paint sample represents its "chemical properties". For example, all blue-colored paint chips can be considered to have similar properties, which are different from all the red-colored paint chips. The shade of a paint chip represents its "atomic mass". Thus, a light blue paint chip represents an element of low atomic mass, while a dark blue paint chip represents an element that has similar properties, but more mass. Your job is to be like Mendeleev and arrange all the chips with similar colors in the same column (family), and all colors with similar intensities (shade) in the same row (period). In the real periodic table, properties gradually change from metallic to nonmetallic as you proceed through a series from left to right across the periodic table. You will illustrate this concept by arranging your columns in a logical manner according to the colors of the visible spectrum. Place the reddest colors on the left of your table, and the most violet colors to the right.

After Mendeleev arranged the known elements in the table he noted that there were holes, and he predicted that new elements would be discovered to fill these holes. Examine your periodic table of paint chips. You will predict where the missing chips would be.

## Pre-Lab Questions

1. What are the rows on the periodic table called?
2. What are columns on the periodic table called?
3. Do elements in rows or columns display similar chemical properties?
4. Who developed and organized the first periodic table?
5. What color sequence will you follow to fill out the table?
6. What does the shade of a paint chip represent?

## Materials:

Paint color samples representing elements.

## Procedures:

Arrange your paint chip "elements" by color (properties) and by mass (shade). When correctly arranged, you should see a message.

**Data Table:**

*DO NOT BEGIN WRITING UNTIL YOU HAVE COMPLETELY ARRANGED YOUR "ELEMENTS" BY THEIR PROPERTIES. WRITE IN PENCIL!!!*

<b>Lightest</b>	<b>R</b>	<b>O</b>	<b>Y</b>	<b>G</b>	<b>B</b>	<b>V</b>
<b>Darkest</b>						

**Analysis** – These are not 1 word answers, *use complete sentences to complete your thoughts for full credit.*

1. Explain how you arranged your elements into your periodic table.
2. How were you able to predict where the missing elements on the periodic table would be?
3. Explain how properties of elements change going down a column in the periodic table.
4. What were the missing elements?
5. How was Mendeleev's original periodic table arranged & what was made him such a genius when he arranged his table?
6. How did Moseley "improve" the arrangement of the table into the form we use today?