

# The Periodic Table Turns 150

## Activity Guide for Students: Now Trending, the Periodic Table

**Directions for students:** After listening to “The Periodic Table Song,” answer the questions that follow.

**1. What is the pattern you observe for the order in which the elements are presented during the song? List the first 12 elements mentioned in the song.**

**2. The atomic number defines the type of atom, or element, that exists. How does the number of protons, or the atomic number, differ from one element to the next in the song?**

**3. What is the refrain of the song?**

**4. What does the refrain tell you about the reactivity of noble gases? Where are noble gases located on the periodic table?**

**5. Where are alkalis (metals) and halogens (nonmetals) located on the periodic table? Why do you think elements like the halogens and alkalis would react?**

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6. Given the long list of elements from the song, where do alkalis (metals) and halogens (nonmetals) always fall in relation to the closest noble gas in the list? How does the proximity to a noble gas affect how aggressively elements react?

7. What does the refrain tell you will happen to the physical structure of the atoms as you go down a column, hopping from one period, or row, to the next? In your own words, what visual does the video use to show this trend?

8. What does the refrain tell you will happen to atoms as you go across a row, “moving to the right?” In your own words, what does the video use to show this trend?

**Directions for students continued:** Before watching the videos on reactivity, create a data table to write down the physical properties of each metal element you will see in the video: lithium (Li), sodium (Na), potassium (K), magnesium (Mg), calcium (Ca) and strontium (Sr). Include space to make observations of each metal’s reaction with water. Create a second data table to write down the physical properties of each nonmetal in the videos: chlorine (Cl), bromine (Br), iodine (I) and oxygen (O). Also, include space to make observations of each nonmetal’s reaction with aluminum.

As you watch the videos, fill in your observation table based on what you observe. Then answer the questions that follow.

**1. Based on your observations, list the metals in each of the following sets from least reactive to most reactive:**

K, Na, Li

Sr, Ca, Mg

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Na, Mg

K, Ca

**2. Based on your observations, list the following nonmetals from least reactive to most reactive:**

Cl, Br, I

**3. Based on your observations and analysis, explain the general reactivity trend of metals as you go across a row from left to right on the periodic table. What about the trend as you go down a column on the periodic table?**

**4. Based on your observations and analysis, explain the general reactivity trend of nonmetals as you go down a column on the periodic table?**

**5. In your experience with items made out of aluminum (aluminum cans, foil, etc.), how reactive is oxygen with aluminum? How do you think the reactivity of oxygen with aluminum would compare with the reactivity of fluorine with aluminum?**

**6. What do you predict is the general reactivity trend of nonmetals as you go across a row from left to right on the periodic table?**

**7. What do you notice about the reactivity trends of metals compared with the reactivity trends of nonmetals?**

**8. Atoms react to become more stable either losing or gaining (taking or sharing) electrons. Based on the proximity to a noble gas, do you think metals react by gaining or losing electrons? What about nonmetals?**

**9. What patterns of reactivity would you expect from an element like silicon (Si)? Explain.**