

# ELEMENT BALL PROJECT

**Description:** Create an Element Ball (a combination research project and construction activity)

**Objective:** Students use the icosahedron (a 20-faced Platonic solid composed of equilateral triangles) as the basic form. Students research elements and put information about these elements on the faces of their icosahedron, including information about an element's discovery, physical properties, chemical properties, and uses.

**Materials:** Element information; material chosen for use in constructing element ball (colored paper, construction paper, etc.); stapler and/or glue, markers, pens, crayons, etc.; decorations; patterns.

## **Element Information Suggestions:**

The first six items on this list must be placed on all element balls. The other items are suggestions and may be found for some elements but not for others. These are only suggestions -- feel free to add other interesting information. You need to find 20 properties/facts in total.

1. Element Symbol and Name
2. Atomic Number
3. Atomic Mass
4. Number of Protons, Neutrons and Electrons
5. Picture of your element
6. Group/Family Name and Period Number
  
7. Melting point
8. Boiling point
9. Metal, Non-metal, Metalloid
10. Physical state at room temperature
11. Origin of name or symbol
12. Electron configuration
13. Common Uses
14. Atomic radius
15. Electronegativity
16. Ionization energy
17. Specific heat
18. Sources of the element
19. Common oxidation numbers or charges
20. Common compounds in which the element is found
21. Density
22. Abundance in Earth's crust
23. Cost per lb., g, oz. etc.
24. Date of discovery and discoverer
25. Other facts of interest or unique information

### Sources:

A great periodic table website for you to visit and research elements is Periodic Table Live! By ACS at <http://www.chemeddl.org/collections/ptl/index.html>

### Other Great websites:

[Environmental Chemistry Table](#)

[Chemicool Periodic Table](#)

[Chemistry: WebElements Periodic Table](#)

[A Periodic Table of the Elements at Los Alamos National Laboratory](#)

[Lennotech](#)

[Discoveries](#)

**Attention Facebook Fans:** Students who use Facebook can become fans of their favorite element(s). The Journal of Chemical Education has set up a site at <http://wiki.chemeddl.org/index.php/PTL:Elements> at Facebook where you click on your favorite element and are then directed to the element's Facebook page. Vote for your favorite element. Right now the top 5 with the most fans are carbon, titanium, aluminum, nitrogen, and potassium. I'm a fan of oxygen :o)

### PROCEDURE:

1. Using the circle pattern, cut 20 circles from pieces of construction paper or card stock.
2. Using the triangle pattern, trace the triangle inside the circle.
3. Inside each of the triangles write/type a piece of information or a property on your selection. Decorate the circles or triangles marking them as colorful as you can. Be sure all written/typed information is INSIDE the triangle area.
4. Begin assembly of the element ball by folding up (or down??) the curved sides — extending beyond the triangle on all 20 of the circles.
5. Select 5 of the triangles and place them in a circle with the top points of the triangle toward the center, like pieces of a sliced pie (FIGURE 2).
6. Staple or glue the curved, upright edges at the creases. It should resemble a hat once stapled or glued. This is the top of the ball.
7. Repeat steps 5 and 6 to make the bottom of the ball.
8. To make the center of the ball, take the remaining 10 triangles and place them in a straight row, with alternating points up and points down. Staple or glue these at the creases (FIGURE 3).
9. Bring the ends of the row of triangles together and staple or glue the two end creases together to form a ring of ten triangles.
10. Set the ring up on a table and place the top (From STEP 5/6) on the ring matching up the curved tabs. Staple or glue at the creases.
11. Turn the assembly over and attach the bottom in a similar fashion.
12. Punch one hole in one tab and tie a piece of string or yarn about 12 inches long.

# Element Personal Ad

**Description:** Create a personal ad for an element of your choosing. (a combination research project and construction activity)

**Objective:** Students will research the following criteria on an element of their choice and transfer that information to create an informative/ interesting poster modeled around a personal ad.

**Element Information Suggestions:** The first 7 items on the list must be on all element posters. The other items are suggestions and may be found for some of the elements but not for others. These are only suggestions... feel free to add other interesting information. You need 20 properties/facts in total.

1. Element symbol and name
2. Atomic Number
3. Atomic Mass
4. Number of Protons, neutrons, and electrons
5. A picture of your element
6. Group/ Family name and period number
7. Reactivity
  
8. Melting point
9. Boiling Point
10. Metal/non-metal/metalloid
11. Physical state at room temperature
12. Origin of name or symbol
13. Electron configuration (Bohr model)
12. Common uses
13. Atomic radius
14. Electronegativity
15. Ionization energy
16. Specific heat
17. Sources of the element
18. Common oxidation numbers of charges
19. Common compounds in which the element is found
20. Density
21. Abundance in the earth's crust
22. Cost per pound, gram, oz, etc,...
23. Date of discovery and discoverer
24. Other interesting facts or unique information

**Sources of Information:**

- a. <http://www.chemeddl.org/collections/ptl/index.html>
- b. Environmental chemistry table
- c. Chemicool periodic table
- d. Chemistry: WebElements Periodic table
- e. A periodic table of the elements at Los Alamos National Laboratory
- f. Lenntech



## Element Bohr Model Display

**Description:** Create a Bohr model of an element of your choice and include a facts page detailing information on the element you choose.

**Objective:** Students will research the following criteria on an element of their choice and transfer that information onto a facts sheet. A model of the Bohr diagram of that element will also be made using supplies provided.

**Element information suggestions:** The first 6 items on the list must be on all element posters. The other items are suggestions and may be found for some of the elements but not for others. These are only suggestions... feel free to add other interesting information. You need 20 properties/facts in total.

1. Element symbol and name
2. Atomic Number
3. Atomic Mass
4. Number of Protons, neutrons, and electrons
5. A picture of your element
6. Group/ Family name and period number
  
7. Reactivity
8. Melting point
9. Boiling Point
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**Procedure:**

Part 1: The model

1. Determine the number of neutrons and protons in the nucleus of your element. (Atomic mass – Atomic #)
2. Obtain the appropriate number of pompoms for your neutrons and protons. Make sure they are different colors.
3. Using yarn and a needle, tread your pompoms onto the thread in alternating color patterns until they are all in a line. Then sew them into a ball by treading the yarn back and forth through them. This is your nucleus!
4. Obtain the appropriate number of bead electrons and the appropriate number of orbits you are going to need.
5. Using a hot glue gun, space your electrons in the right amount on the orbits and glue them on.
6. Using fishing line and hot glue, tie your orbits and nucleus together so that they hang appropriately.

Part 2: The information

1. Research the 20 facts you need about your specific element and transfer them onto a work or publisher document in a neat and eye-catching way.
2. Print this in color if possible and present it with your model.

**DO NOT COPY MATERIAL DIRECTLY FROM THE INTERNET! THIS IS ILLEGAL AND  
YOU WILL GET MARK DEDUCTIONS!  
REFERENCE! REFERENCE! REFERENCE!**