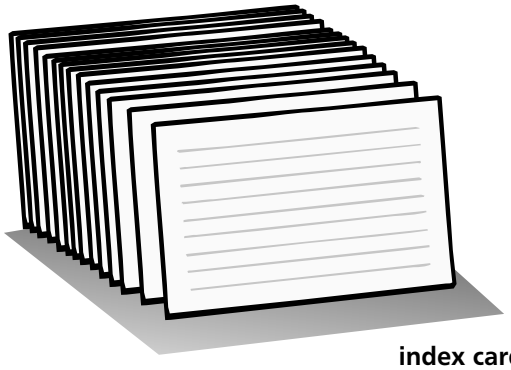
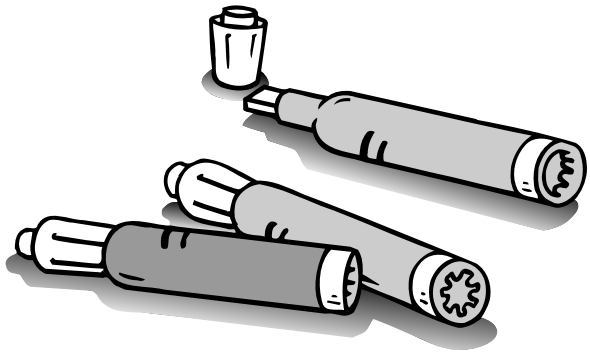
Chapter Science Investigation Name _____

Investigating Elements

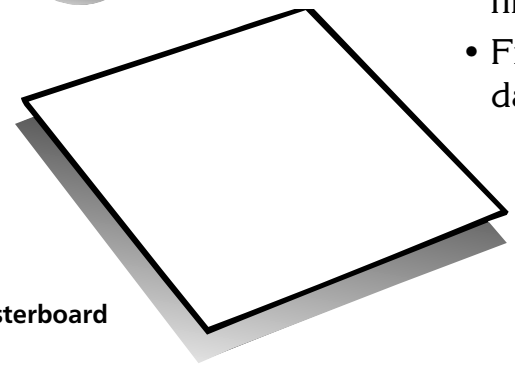
What You Need



index cards



markers



posterboard

Find Out

Do this activity to see how an element in the periodic table compares to other elements.

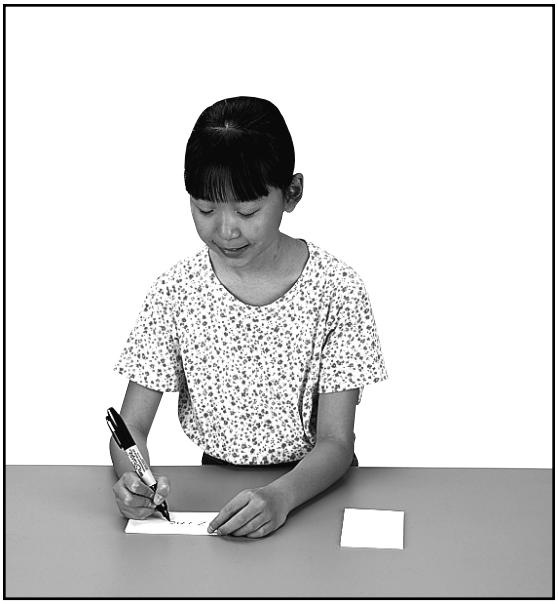
Process Skills

- Constructing Models
- Predicting
- Communicating
- Using Numbers
- Classifying
- Interpreting Data

Time

- One hour on the first day
- Five minutes each day for two weeks

What to Do



1. On the index cards, write the names of the elements with the atomic numbers 1 through 35. Have your teacher shuffle the cards and pass one card out to everyone in the class.

2. When you receive your card, look up the element on the periodic table. This will be your element for the next two weeks.

3. **Predict** which elements might have similar chemical properties to your element and which will have similar numbers of protons, neutrons, and electrons. **Record** your predictions.

4. **Draw** the atom that makes up your element on posterboard.

5. Use the atomic number that is listed on the periodic table to help you include the correct number of protons, neutrons, and electrons.

6. **Classify** your element as a metal, nonmetal, or metalloid. On the posterboard, describe what properties your element might have, based on its being a metal, nonmetal, or metalloid.

7. Hang up your posterboard in the classroom.

8. For the next two weeks, look around for your element. Check the labels on the foods you eat and the liquids you drink. Look in books at the library and ask other people. Find out in what places or in what products your element can be found. **Write** or **draw** on your posterboard all of the information you find during the next two weeks.

Predictions: _____

Conclusions

1. What element did you have? How many protons, neutrons, and electrons did it have?

2. In what family and period is your element? Were there other elements in the same family on other posterboards?

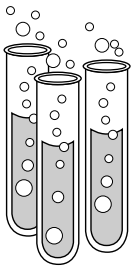
3. How did your element compare to other elements in the same family? In the same period?

New Questions

1. How are elements different from compounds? Did you find a compound that had your element in it?

2. How does your model compare to a real atom?

3. How could you change the model to make it more realistic?



Name _____

ACTIVITY

Investigating Matter

What is the shape of your container? **Describe** it or **draw** a picture.

What are the **measurements** of your container?

What do you **observe** when you:

Tilt the box?

Shake the box?

Pass the magnet over the box?

Predict what is inside the box on the basis of the data you collected.

Draw a picture of what you think is inside the box.

Name _____

Conclusions

1. What information did you use to **infer** what was in the box?

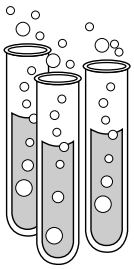
2. Did any articles in the box roll or slide about? Did anything inside the box respond to the magnet?

3. How did your prediction compare to those of the other members in your group? How can you explain any differences?

Asking New Questions

1. How do you think that this activity might resemble the way scientists developed the idea that all matter is made up of atoms?

2. Do you think the theory that all matter is made up of atoms will ever be changed? Why or why not?



Name _____

ACTIVITY

Making a Model of a Molecule

How do the water molecule and salt molecule look different from one another?

Draw your compound model.

Name _____

Conclusions

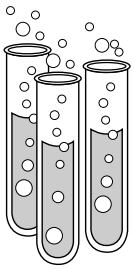
1. **Infer** how your models of water and salt molecules are different from the real water and salt molecules.

2. **Infer** how your models are like the actual molecules.

Asking New Questions

1. What structures of hydrogen, oxygen, sodium, and chlorine atoms were not shown in your model?

2. Do you think that any two elements could combine to form a compound? Why?



Name _____

ACTIVITY

Investigating Metals and Nonmetals

Use the chart to **record** your observations.

Elements	Observations	Conducts Electricity?
Aluminum (Al)		
Carbon (C)		
Lead (Pb)		
Sulfur (S)		
Iron (Fe)		
Tin (Sn)		
Copper (Cu)		
Zinc (Zn)		

Name _____

Conclusions

1. Which samples conducted electricity?

2. By looking at the periodic table, which elements that you tested are metals and which are nonmetals?

3. On the basis of the data you collected, what characteristics do most metals have and most nonmetals have?

Asking New Questions

1. Which elements that you tested are in the same families? Periods?

2. What are some other properties of metals and nonmetals?