

Investigate the Possibilities

## Elementary Chemistry

# MATTER

**Its Properties & Its Changes**



# Student Journal

**Tom DeRosa  
Carolyn Reeves**

**Elementary Chemistry**  
**MATTER**  
**Student's Journal**

**Its Properties & Its Changes**



**Tom DeRosa**  
**Carolyn Reeves**

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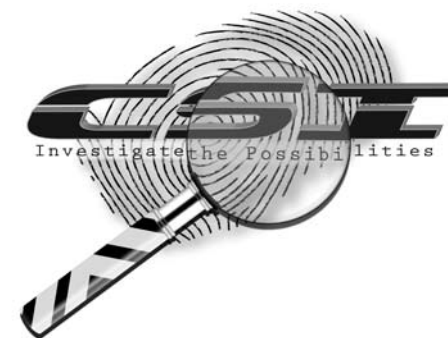
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## Note to the Student

Record the date you completed each investigation in the space to the left. Underline the Dig Deeper and other projects you completed. Record when you completed each on the right side. There is a possibility of 70 points in all. Try to earn at least one point each week. The more stars, the more difficult the project. Your teacher will let you know what is required.

Record your ideas, questions, observations, and answers in the student book. Begin with "Thinking about This." After you read "Think about This," try to recall and note any experiences you have had related to the topic, or make notes of what you would like to learn.

Record all observations and data obtained from each activity.

You should do at least one Dig Deeper project each week. Your teacher will tell you how many projects you are required to do, but feel free to do more if you find an area that is especially interesting to you. The reason for the large number of projects is to give you choices. This

allows you to dig deeper into those areas you are most interested in pursuing. Most of these projects will need to be turned in separately from the Student Answer Book, but uses the Student Answer Book to record the projects you choose to do along with a brief summary of each project and the date each is completed.

Record the answers to "What Did You Learn."

The Stumper's Corner is your time to ask the questions. Write two short answer questions related to each lesson that are hard enough to stump someone. Write your questions along with the correct answer or write two questions that you don't know and would like to know more about.



Date:



The Activity:  
Procedure and Observations



Try to identify one of the items your teacher shows you on the basis of these physical properties: It is round. It is flat. You would not want to eat it. It would be hard to break. It is shiny. What is the item that has all of these properties?

Test each substance and complete the data table.

Substance	Effect of a magnet	Float or sink in water	Soluble or insoluble in water	Color	Shiny or dull
Iron nail					
Paraffin					
Sugar Cube					
Oil					
Copper Penny					



Use your chart to identify each substance.

1. Which substance is attracted to a magnet?

\_\_\_\_\_

2. Which substance is a shiny orange-brown color and sinks in water?

\_\_\_\_\_

3. Which substance is soluble (dissolves) in water?

\_\_\_\_\_

4. Which substance is a solid and floats on water?

\_\_\_\_\_

5. Which substance is not a solid and floats on water?

\_\_\_\_\_



## Dig Deeper

Blank writing area for the 'Dig Deeper' section.



## Stumper's Corner

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_

## What Did You Learn



1. What are physical properties of chemical substances?  
\_\_\_\_\_
2. When scientists want to know what chemical substances are in an item, they seldom consider the size, shape, and amount of the item. Why is that? \_\_\_\_\_
3. Give ten examples of physical properties used by scientists to describe a chemical substance.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. What is a pure chemical substance? \_\_\_\_\_  
\_\_\_\_\_
5. What are some of the things students learn about in analytical chemistry? \_\_\_\_\_  
\_\_\_\_\_
6. What are some of the main things that are done in medical labs?  
\_\_\_\_\_  
\_\_\_\_\_
7. How might an environmental agency use a lab that analyzes chemical substances? \_\_\_\_\_  
\_\_\_\_\_
8. Are the physical properties of a piece of pure iron the same any where pure iron is found? \_\_\_\_\_

# Investigation #2 Strange Substances and Their Properties



Date:



## The Activity: Procedure and Observations



### Part I

Observe your bag of MX. Hold the bag by the different corners. Does it have properties of a liquid? \_\_\_\_\_

Hit the bag of MX (not too hard). Does it feel like a solid? \_\_\_\_\_

Pour the contents of the bag into a plastic bowl. Pick up some MX in a spoon and let it fall back into the bowl. Does the substance act like a liquid or a solid as it falls? Describe how it falls. \_\_\_\_\_

Now slowly push your finger into the MX until your finger is touching the bottom of the pan. Pull your finger out slowly. What happened? \_\_\_\_\_

Slowly push your finger into the MX again. When it is touching the bottom of the pan, try to pull your hand out quickly. What happened? \_\_\_\_\_

Now try to quickly jab the surface of the MX with your fingers. What happened? \_\_\_\_\_

Try pushing the back of a spoon through a container of MX. Move the spoon as fast as you can. Describe what happens. \_\_\_\_\_

Now move the spoon through the MX very slowly. Is there a difference in how hard it is to push the spoon? \_\_\_\_\_

### Part II

Will the diaper hold 50 mL of warm water? \_\_\_\_\_

Predict how much warm water you think the diaper can hold before it begins leaking. \_\_\_\_\_

Continue to add 50 mL of warm water until the diaper can no longer hold any more water and it steadily leaks. Record the total amount of water you added before it began to leak. \_\_\_\_\_

What was the total amount of the water-absorbing layer (while dry) you collected from the diaper? \_\_\_\_\_

Put the water-absorbing material back into the large plastic bag, and add 50 mL of warm water. What do you see? \_\_\_\_\_

What was the total amount of water you added to the bag? \_\_\_\_\_

Place the first diaper in a plastic bowl and pull it apart. Compare the inner contents of this material to the material in the gallon zip bag. \_\_\_\_\_

Estimate how much water was added for every 100 mL of dry diaper material. This doesn't need to be exact — just an estimate. \_\_\_\_\_

List some of the physical properties of the water-absorbing chemical in the baby diaper.

_____	_____
_____	_____
_____	_____



## What Did You Learn



1. Give several physical properties of MX.

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2. There are several ways to describe viscosity. Find two or more ways to describe viscosity.

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3. Viscosity of oils and molasses is often affected by temperature. What affects the viscosity of MX? \_\_\_\_\_

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4. What is one unusual property of the chemical we tested in the baby diaper? \_\_\_\_\_

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5. What are polymers?

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## Dig Deeper

## Stumper's Corner



1. \_\_\_\_\_

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2. \_\_\_\_\_

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