



The Case of the Mystery Matter

An Investigation Into Matter - Third Grade Physical Science - Created by Sandra Bradley



**GRAY MATTER
DETECTIVE AGENCY**

You have just been hired as a Private Investigator for the GRAY MATTER DETECTIVE AGENCY. The twin owners, *Identify Matter* and *Classify Matter*, need you to help them crack, "The Case of the Mystery Matter".

It seems that several of the agency's clients have received some packages of mysterious matter. The twins find clues written on the outside of each package, but are afraid to open them because they don't know what they contain.



Your assignment will be to identify the contents of each package and find out if they are safe to open.

As an investigator of the Gray Matter Agency, you may work alone or join with other investigators to solve the case.

After you have solved the case, you will then prepare a report to the twin owners showing your solution.

Begin solving The Case of the Mystery Matter Part 1.

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Team Page



If you are working with a team, here are some ideas to help you work together.

- Divide the questions and research sites equally among all the team members.
- Each team member should record the information on his or her investigator's log.
- Meet with your team to share the information you have found.
- Decide on a way for your team to show what you have learned.

Go to Show Your Stuff for some ideas on how to present your research.

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Research

Use these colored links or these colored links to research the questions.

Write your research on your Investigator's Log.

Use these colored links to go to the glossary and find the definitions of some words you may not know.

What is matter?

What are the three main phases or states of matter?

What are the properties of each phase or state of matter?

Solid

Liquid

Gas

How does matter change at different temperatures?

Phases of water at different temperatures

Phases of copper at different temperatures

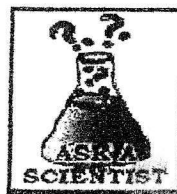
Phases of nitrogen at different temperatures

Atoms are the smallest particles of matter. What do these atoms **look** like? What is the structure of an atom?

Name the three main parts of an atom.

Atoms make elements. Elements have only one kind of atoms. How are these elements organized?

What happens when elements combine with each other?



Do you need some "expert" help?

Good job! Now that you have completed your background research, click on the link below and begin solving:

[The Case of the Mystery Matter Part 2](#)

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Print this page.

Investigator's Log

What is matter?

What are the three main phases or states of matter?

- 1.
- 2.
- 3.

What are the properties or characteristics of each phase or state of matter?

- solid

- liquid

- gas

How does matter change at different temperatures?

- water

- copper

- nitrogen

What is the structure of the atom? Name the three main parts?

- 1.
- 2.
- 3.

Atoms make elements. How are these elements organized?

What happens when elements combine with each other?

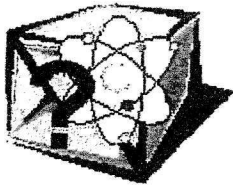
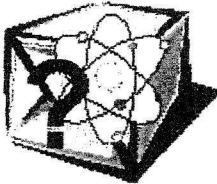
The Case of the Mystery Matter Part 2

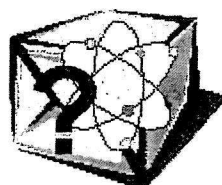
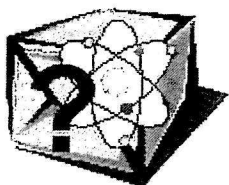


GRAY MATTER DETECTIVE AGENCY

Here are the mystery matter packages that were received by the Agency's clients. Clues were found written on the outside of each package.

Use the clues and the information you recorded on your Investigator's Log to find the contents of each package and prepare your Report To The Twins.

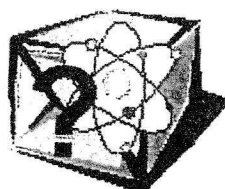
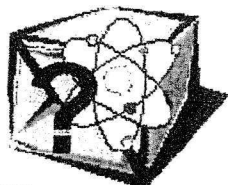
	
Package 1 Clues	Package 2 Clues
<ol style="list-style-type: none"> 1. It's colorless and odorless 2. Its Atomic Number is 2 3. It's in the last column on the periodic table 4. It's used to fill balloons 	<ol style="list-style-type: none"> 1. It's a light metal 2. It's the 13th element 3. It combines with other elements for strength 4. It's used for containers

**Package 3 Clues**

1. It can combine with many other elements
2. It's used in diamonds and pencils
3. It's used by animals and plants
4. Its Atomic Weight is 12

Package 4 Clues

1. It's a trace metal
2. It was discovered in 1808
3. It's used in medicine and in flash bulbs
4. It's in the third period, or row; and the second group, or column



Package 5 Clues

1. It's a compound most people have in their homes
2. One element is a very light metal
3. One element is a special gas
4. Its chemical symbol is NaCl

Package 6 Clues


1. It's a compound in its solid state
2. It changes to its gas state at 100 degrees Celsius
3. Both elements are gases, but the compound can be found in all three states
4. Its chemical symbol is H₂O


Choose one of the activities on the Show Your Stuff page to report your findings to the twin owners, *Identify Matter* and *Classify Matter*.


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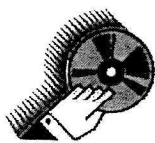
Show Your Stuff

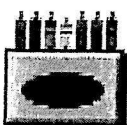
Prepare your report to the twin owners, *Classify and Identify Matter*. Here are some ways you can show them your solution to the THE CASE OF THE MYSTERY MATTER.

 Prepare a written report. In the report describe the packages and their contents. Tell how you solved the case.

 Write a newspaper article describing the case, the packages, their contents, and how you solved it.

 Create a multimedia presentation using HyperStudio or PowerPoint to show the packages, their contents, and the solution to the case.

 Create a slideshow to show your solution. Include a description of the packages and their contents. Use Kid Pix Deluxe Studio or AppleWorks SlideShow.

 Make a poster. On the poster draw each

package with its clues and its contents. Label the contents. Write a paragraph about how you solved the case and attach it to your poster.

When you submit your report to the twin owners, *Identify Matter and Classify Matter*, also include your completed Investigator's Log.

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👁️ How Did You Do ?

The twins want you to check your work and find out how you did in your new job as a Private Investigator for the Gray Matter Detective Agency.

Excellent Investigator

<p>Research Log completed all parts information is correct neat work</p>	<p>Report completed all parts of the task very organized and creative neat work</p>
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The twins are very pleased with your work. You are made a partner in the detective agency and receive a \$10,000 bonus.

Good Investigator

<p>Research Log completed all parts information is mostly correct neat work</p>	<p>Report completed all parts of the task organized neat work</p>
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The twins are pleased with your work. You keep your job with the detective agency and receive a \$100 a week raise.

Investigator-in-Training

<p>Research Log completed most parts information is mostly correct fairly neat work</p>	<p>Report completed most of the task fair organization fairly neat work</p>
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The twins want you to return to Investigator School for some more training on how to research information and present a report.

Looking For A New Job

<p>Research Log incomplete some information is correct messy work</p>	<p>Report task not completed not organized messy work</p>
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The twins think you need more skills to work for their detective agency and suggest you go back to school or find a different job.

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