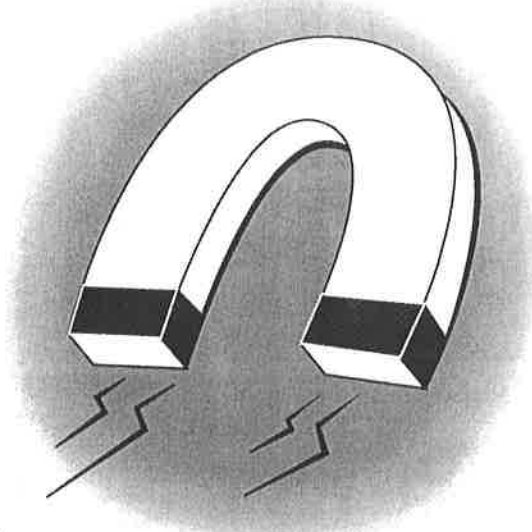


# Is It Matter?

Listed below is a list of things that are considered matter and things that are not considered matter. Put an X next to each of the things that you consider to be matter.

- |                                      |  |   |   |  |
|--------------------------------------|--|---|---|--|
| <input type="checkbox"/> rocks       | <input type="checkbox"/> salt          |  |   |  |
| <input type="checkbox"/> baby powder | <input type="checkbox"/> Mars          |   |   |  |
| <input type="checkbox"/> milk        | <input type="checkbox"/> Jupiter       |   |   |  |
| <input type="checkbox"/> air         | <input type="checkbox"/> steam         |   |   |  |
| <input type="checkbox"/> light       | <input type="checkbox"/> rotten apples |   |   |  |
| <input type="checkbox"/> dust        | <input type="checkbox"/> heat          |   |   |  |
| <input type="checkbox"/> love        | <input type="checkbox"/> sound waves   |   |   |  |
| <input type="checkbox"/> cells       | <input type="checkbox"/> water         |   |   |  |
| <input type="checkbox"/> atoms       | <input type="checkbox"/> bacteria      |   |   |  |
| <input type="checkbox"/> fire        | <input type="checkbox"/> oxygen        |   | <input type="checkbox"/> gravity        | <input type="checkbox"/> dissolved sugar |
| <input type="checkbox"/> smoke       | <input type="checkbox"/> stars         |   | <input type="checkbox"/> magnetic force | <input type="checkbox"/> electricity     |

Explain your thinking. Describe the “rule” or reason you used to decide whether something is or is not matter.

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# WHAT'S AN ATOM?

**What happens when you divide the indivisible?**

Just as letters are the units that make up words, sentences, and paragraphs, atoms are the units that make up elements, compounds, and all other kinds of matter. You can break a paragraph down into the single letters that make it up. But you can't break down a letter into anything smaller, or else it isn't a letter anymore! Likewise, you can break matter down into smaller and smaller pieces right down to a single atom. But atoms cannot be broken down into anything smaller without losing the special properties that give them their identity.

## Activity

### DIVIDING ATOMS

See what happens when you try to divide an atom.

**What You Need:**

- assorted rubber bands (different sizes and colors)
- scissors

**What to Do:**

1. Begin with a handful of assorted rubber bands. This will represent a collection of different atoms.
2. Sort the rubber bands into piles so that all rubber bands in each pile are the same size and color.
3. Choose the largest pile. Divide it into two smaller piles.
4. Separate one of these two small piles into two smaller piles.
5. Continue dividing until your pile can't be divided any more.

**What Do You See?**

▶ *What do you have in your last pile?*

▶ *What would you need to do in order to divide this last pile?*

Go ahead and divide your last pile using the method you just described.

## Propose Explanations

**CHANGING IDENTITIES** Review the results of the activity on page 136.

▶ How was the method you used to divide the last pile different from the method you used to divide the other piles?

▶ What property of rubber bands was lost when you divided your last pile?

**EVALUATING THE MODEL** In the activity, you made a model of the individual atoms that make up elements (pure substances).

▶ What represented a group of different elements in your model?

▶ What represented a single element in your model?

▶ What represented a single atom in your model?

An atom is the smallest part of an element that still has the properties of that element.

▶ How does your model demonstrate this fact?