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2A

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SCIENCE



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Lesson 7

Classifying Matter

By the end of this lesson, you will be able to:

- identify the properties of matter
- classify objects based on the properties of matter
- describe matter by its observable properties

Lesson Review

If you need to review matter, please go to the lesson titled "What Is Matter?"

Academic Vocabulary

Review the following vocabulary words and their meanings.

- **color:** the different qualities of light reflected off an object
- **hardness:** how hard or soft something is
- **mass:** the amount of matter that makes up an object
- **matter:** anything that has mass and takes up space
- **properties:** unique characteristics of matter
- **shape:** the form or outline of an object
- **size:** how big or small something is
- **texture:** how rough or smooth an object is
- **volume:** how much space an object takes up

TAKE A CLOSER LOOK

Look at the image below. What characteristics do sea stars and seashells have? What makes them different from each other? If you could touch them, how do you think they would feel?



Materials Needed

three different types of cookies, three different types of crackers

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EXPLORE

Noah and his family are going to the Colorado mountains during winter break. They will stay at a hotel on the top of a mountain. Noah is really excited to go skiing for the first time!

His family finally reaches the base of the mountain. As they drive up, it begins to snow. Noah looks out of the car window. He sees lots of snow piling up on the road. Then, he feels the car slide on the road. The snow has started to freeze. The road is becoming dangerous and icy.

Noah's family decides it is too dangerous to keep driving. They turn the car around and head down the mountain. They reach a hotel at the bottom of the mountain. They will stay there overnight to wait for the snow to stop and the road to be less dangerous. They hope to be able to ski the next day!



Why do you think the car started to slide on the road? What does the surface of the road look like? If you could touch the road, how do you think it would feel? Discuss your answers with your instructor.

IN THE REAL WORLD

Take an ice cube from your freezer. Let it sit outside the freezer for about a minute. Once the time has passed, touch it. How does the surface of the ice feel? Do you think the road would feel the same way or different?



READ

The Properties of Matter

Matter is anything that takes up space. Matter also has mass and volume. **Mass** is the amount of matter that makes up an object. **Volume** is how much space an object takes up.

Matter also exists in three different states: solid, liquid, or gas. Each state is different and can be used to tell matter apart from each other.

Mass, volume, and states are the most basic characteristics, or **properties**, of matter.

Matter has other properties too! Properties are used to describe matter. Shape is a property of matter. You can tell objects apart by looking at their shape. **Shape** is the form or outline of an object. Some matter does not have a shape. Liquid and gases, for example, do not have a shape. They take the shape of the container they are in. Look at the shape of the objects in the image. Some objects are shaped like squares or rectangles. Can you find other shapes?

Size and color are other properties of matter. **Size** is how big or small something is. **Color** is the different qualities of light reflected off an object. Look back at the image. Some objects are larger than others. Some objects are white, brown, gray, or tan.

Review some of the properties of matter:

- mass
- volume
- state
- shape
- size
- color
- hardness
- ability to float
- texture



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READ

The Properties of Matter (cont.)

Another property of matter is hardness. **Hardness** is how hard or soft something is. Some things are harder than others. Look at the following images. The rock is harder than the sponge. Sponges can be squeezed, but rocks cannot!





Some objects can float while others sink. The ability to float is a property of matter. For example, cork floats while metal objects sink.





Texture is another property of matter. **Texture** is how rough or smooth an object is. Rough surfaces are bumpy. Smooth surfaces are even and flat. In the image above, the pink side has a rough texture and the blue side has a smooth texture.

WRITE

What is one example of a property of matter?

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PRACTICE

Match the definitions to the correct property of matter.

_____ mass

_____ volume

_____ state

_____ shape

_____ size

_____ color

_____ hardness

_____ texture

A. how big or small something is

B. how hard or soft something is

C. whether the substance is a solid, liquid, or gas

D. the amount of matter that makes up an object

E. how rough or smooth something is

F. the form or outline of an object

G. how much space an object takes up

H. the different qualities of light that are reflected off an object

REVIEW

In this lesson, you learned:

- Matter has unique properties.
- Properties make different objects and substances different from each other.
- You can use the properties of matter to identify different things.

Think About It

What are the properties of matter?

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TAKE A CLOSER LOOK

Classifying Cookies and Crackers

In this activity, you will use three cookies and three crackers. Classify their different cookies and crackers using their properties.

1. Observe and look at each cookie in detail. Notice the color, shape, size, texture, and hardness.
2. Use these properties to complete the following table.

Draw your cookie or cracker.	Is it a cookie or a cracker?	What is the texture like?	What color is it?	What size is it?	What shape is it?

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TAKE A CLOSER LOOK

3. Use the properties from the table to classify the treats.

A. Separate the treats by type. Cookies should go on one pile and crackers should go on a second pile.

B. Separate them by size. Make four piles. One pile is for small cookies. The second pile is for large cookies. The third pile is for small crackers. The fourth pile is for large crackers.

C. Separate them by texture. Make a pile for rough cookies. Make a pile for smooth cookies. Make a pile for rough crackers. Make a pile for smooth crackers.

4. How many piles did you end up with?

.....

5. Which cookies and crackers are small and rough?

.....

6. Which cookies and crackers are large and smooth?

.....

7. Which cookies and crackers are the same color?

.....

8. Which cookies and crackers are the same shape?

.....

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SHOW WHAT YOU KNOW

Circle the correct answer.

1. True or False Matter has mass and volume.

2. True or False Properties are characteristics of matter that can be used to tell matter apart.

3. _____ is the property of matter that defines the form or outline of an object.

A. Color

B. Size

C. Shape

D. Hardness

4. Look at the following image. Is the object hard or soft?

Hard **Soft**



5. Look at the following image. Is the texture of the elephant's skin rough or smooth?

Rough **Smooth**



ONLINE CONNECTION

Have you ever wondered how hot-air balloons fly? Use a computer to research what happens to air when it gets hot.



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