Name_____ Properties of Matter
Date_____ Grade 5

Topic 1 Properties of Matter

Dear Parent:

After completing this topic, your child will be able to develop a model to describe that matter is made of particles too small to be seen. In addition, he or she will make observations and measurements to identify materials based on their properties.

Learning Objectives

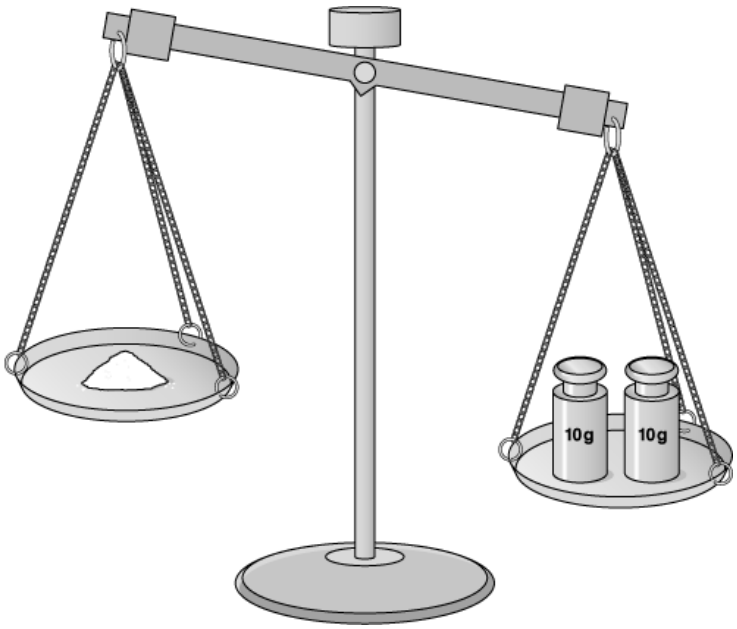
- Identify and define matter as anything that takes up space and has mass.
- Differentiate between the three states of matter: solid, liquid, and gas.
- Recognize that atoms are the tiny building blocks of all matter.
- Classify objects based on their physical properties, such as color, size, shape, and texture.

Language Objectives

- Use new vocabulary words correctly, including matter, mass, volume, solid, liquid, gas, and atom.
- Ask and answer questions about matter and its properties using simple sentence structures.
- Follow instructions for simple science experiments and demonstrations about matter.

Use the information below to answer questions 1, 2, and 3.

Gian investigates a property of matter using a balance.



***Write** the letters of the correct answers on the lines at left.*

_____**1.** Which **best** explains what Askar is doing?

A. He is observing a property because he is comparing the property to a standard unit of measure.
B. He is measuring a property because he is comparing the property to a standard unit of measure.
C. He is observing a property because he is only using his senses to gather information.
D. He is measuring a property because he is only using his senses to gather information.

_____2. Which conclusion is supported by Askar's investigation?

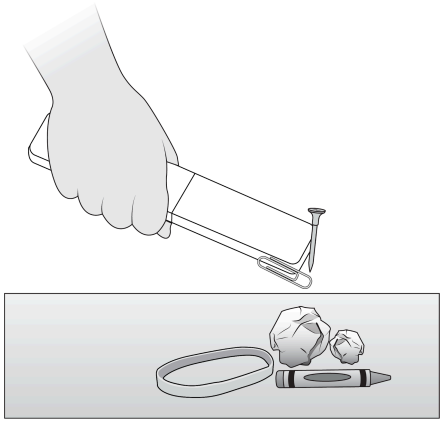
A. The matter weighs more than 20 grams.
B. The matter weighs 20 grams.
C. The matter weighs less than 20 grams.

_____3. Which other **two** properties can Gian identify without using any additional materials?

A. color
B. solubility
C. magnetism
D. texture

Circle the words to complete the sentence.

4. Alicia holds a tool over a pile of objects without touching the objects. Her tool picks up some of the objects in the pile but not all of them.



Alicia is testing the **(magnetism / hardness / texture)** of the objects in the pile and discovers that the paper clip and nail are **(good conductors / harder than the other objects / made from magnetic steel)**.

Write the letter of the correct answer on the line at left.

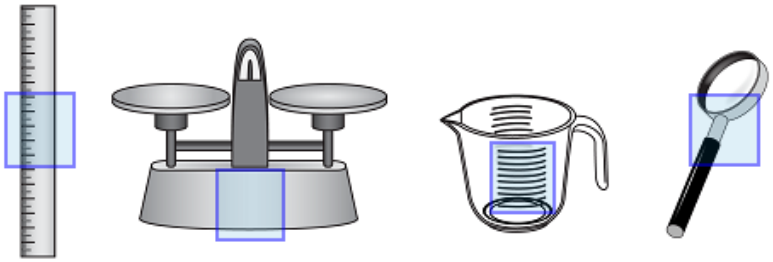
_____5. Mubeen has four different substances. He places the same amount of each substance in a cup of hot water and in a cup of cold water. He stirs each cup of water for one minute and records his data in the table shown.

Solubility Data		
Substance	**Hot water**	**Cold water**
W	did not dissolve	did not dissolve
X	dissolved immediately	partially dissolved
Y	dissolved after 40 seconds	mostly dissolved
Z	dissolved immediately	completely dissolved

Which conclusion is supported by Mubeen's data?

A. Some substances dissolve faster in warmer water.
B. Substance X is more soluble than substance Z.
C. Most substances do not dissolve in cold water.
D. Substance Y is more soluble than the other three substances.

6. The pictures show four tools that can be used to measure properties of matter. Circle the tool used to measure the number of **milliliters** in a sample of matter.



uInvestigate...Lab

How do we describe materials?

Scientists often use knowledge of different materials to identify what something is. How can you describe an object so that others can identify it?

Materials:

Procedure:

1. Choose three of the objects. Do not let others see them. Write the *properties* of each object in the Properties column of the table. Use the other materials to help you describe the properties. *Do not write the name of the object*.

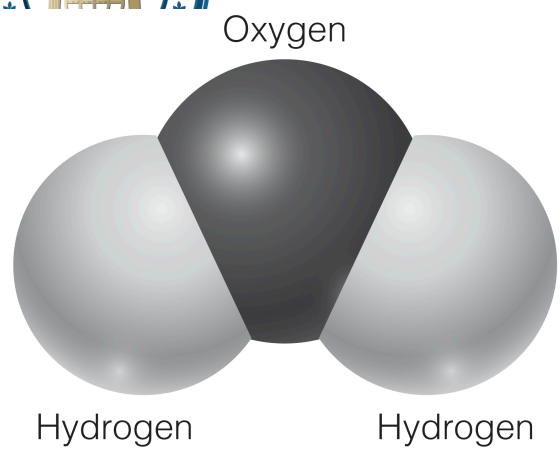
Object	Properties

2. Trade notes with another group. Use that group's descriptions to identify each of the objects.

3. Evaluate What information helped you identify each object? What information would have made identifying the objects easier? _____
_____
_____
_____.

Use the information below to answer questions 7, 8, and 9.

Ghazal makes a model of a water molecule.



Write the letter of the correct answer on the line at left.

_____7. Which **best** describes an advantage of the model?

A. The model shows that water exists as a solid, liquid, and gas.
B. The model shows observable properties of water.
C. The model shows how water interacts with other substances.
D. The model shows parts of the molecule that are too small to see.

Circle the words to complete the sentence.

8. The water molecule is a(n) **(atom / element / compound)** because it is made of **(three atoms / one compound / two elements)**.

Write the letters of the correct answers on the lines at left.

_____ 9.. Ghazal changes her model by adding another circle to represent oxygen as part of the molecule. How does this change what the model shows?

A. The model now shows that water can change into new substances.

B. The model now shows a larger water molecule.
C. The model now shows a different kind of molecule.
D. The model now shows that water molecules can have two oxygen atoms.

_____ 10. Which model would **best** demonstrate evidence of matter that cannot be seen?

A. Blow up a balloon with helium gas.
B. Burn a piece of paper to make ashes.
C. Feel the heat given off by a lightbulb.
D. Add water to a mixture of sand and gravel.

_____ 11. Adam knows that there is water in the air in the form of a gas. It is called water vapor. He also knows that when water vapor cools, it turns from a gas into a liquid. He decides to use a model to show that there is water in the air that people cannot see. He places a glass of cold ice water on a picnic table on a warm day. Adam lets the glass sit on the table for several minutes.

Which observation will show that there is water in the air that people cannot see?

A. The ice in the glass will melt.
B. Water droplets will form on the outside of the glass.
C. Gas from the surrounding air will enter the glass.
D. The water in the glass will get warmer.

_____ 12. A hand lens, or magnifying glass, magnifies

objects. Karen uses a hand lens to observe a rock. Which observation could Karen make using the hand lens?

A. The rock is made of atoms.
B. The rock contains different kinds of molecules.
C. The rock is made of small grains of sand.
D. The rock weighs about 2 kilograms.

uInvestigate...Lab

How can you detect matter without seeing it?

Materials scientists study all kinds of matter. How can you show evidence of matter that you cannot see?

Materials:

Procedure:

1. Pull the plunger to the last mark on the syringe. Observe the syringe. Write a description of what you think is in the syringe.

_____

_____

_____.

2. Choose materials from the list to test whether matter is in the syringe. Write a procedure test if the syringe contains matter. Show your procedure to your teacher before you start.

3. Record your observations.

4. <u>SEP Use Evidence</u> How did your data provide evidence that the syringe contained matter?

_____

_____

_____

_____.

13. Fill in the blank using the word bank below. You will use answers more than once!

matter mass magnetism volume temperature density states of matter physical properties

a. _____ Anything that has mass or takes up space
b. _____ The amount of space something takes up
c. _____ Whether something is attracted to a magnet
d. _____ Measured using a thermometer
e. _____ Measured in grams
f. _____ A property of matter that can be measured or observed using the 5 senses.
g. _____ Measured using a graduated cylinder
h. _____ Whether something is a solid, liquid, or gas
i. _____ How much matter is in something
j. _____ Whether something will sink or float
k. _____ How hot or cold something is
l. _____ Measured using a triple beam balance
m. _____ Measured in degrees Celsius
n. _____ Measured in liters (or milliliters)
o. Name a physical property of matter not listed above:

uInvestigate...Lab

How can you use properties to identify solids?

To identify an unknown substance, materials scientists compare its properties with the properties of known substances. How can you use properties to identify three substances?

Materials:

Procedure:

1. You have three substances labeled A, B, and C. Use the table to plan an experiment to identify the three unknown substances. Show your procedure to your teacher before you begin.

2. Identify each unknown substance by writing its letter beneath the name of each substance in the table

Sugar	Salt	Cornstarch
white solid	white solid	white solid
irregular crystals	cube-shaped crystals	fine powder
dissolves in water	dissolves in water	does not dissolve in water
solution is not very conductive	solution is very conductive	does not form solution

3. **SEP Use Evidence** What evidence did you use to identify each unknown?

_____

When we've completed the packet please solve pages 36–37.