

**Three-Dimensional Thinking**

1. How does matter change from one state to another?
Circle all that apply.
☒ A. adding energy
☒ B. removing energy
C. adding mass
D. removing volume
2. Liquid has _____. Circle all that apply.
☒ A. definite volume
B. definite shape
C. no definite volume
☒ D. no definite shape
3. Use evidence to support the argument that particles in water change when heat energy is added.

The particles begin to move faster and faster when heat is added. They also start to move farther apart, forming water vapor, which is a gas.



Q2

LESSON 1 LAUNCH

Is it Matter?



Four friends were talking about matter. They each had different ideas about the kinds of things that are matter. This is what they said:

Abe: I think something needs to be solid to be matter.

Kayla: I think matter can be a solid or a liquid.

Curtis: I think matter can be a solid, liquid, or gas.

Lori: I think matter can be a solid, liquid, or gas, but it doesn't include living things.

Who do you agree with most? Curtis

Explain why you agree.

Sample answer: Matter is made of particles and is what makes up all objects. Matter can be in the form of a solid, a liquid, or a gas.

You will revisit the Page Keeley Science Probe later in the lesson.

Q3

VOCABULARY

Look for these words as you read:

chemical
property
conductivity
magnetism
mass
matter
physical
property
reflectivity
solubility
volume

Matter

Matter is anything that has mass and takes up space. The water you drink, the air you breathe, and you are all made up of matter.

All matter is made of tiny particles.

Mass is a measure of the amount of matter in an object. The more mass an object has, the more particles an object has. Think about holding a golf ball and a table tennis ball. The golf ball is made up of more particles. It has more mass. As you hold the golf ball and table tennis ball, you are also feeling their weight. Weight is how strongly gravity pulls on an object.

The amount of space an object takes up is its **volume**. Volume describes how large or small an object is. A golf ball and table tennis ball have roughly the same volume.



These rocks all have a different mass and volume.

1. Think about an inflated balloon with a small bag of marbles that is half its size. Which one has more volume? Explain your answer.

Sample answer: The balloon has more volume, because it takes up more space.

2. Which one has more mass? Explain your answer.

Sample answer: The bag of marbles has more mass, because it contains more matter.

Q4

Define the following terms: **matter**, **mass**, **volume**. Unit 1 pg 10

VOCABULARY

Look for these words as you read:

gas

liquid

solid

States of Matter

State is another physical property of matter. Solids, liquids, and gases are common forms that matter can take. Each state has specific characteristics.

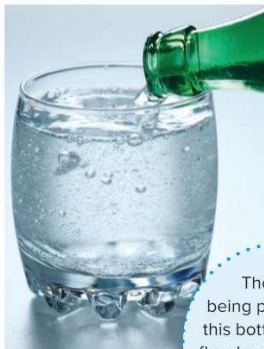
GO ONLINE Watch the video *States of Matter* to learn more about matter.

A **solid** has a definite shape and takes up a definite amount of space. A solid stays in its definite shape with a definite volume unless it is changed by an outside force. The particles in a solid are tightly packed together and vibrate in place. They are often packed in a regular pattern.

A **liquid** has a definite volume, but it does not have a definite shape. It can be poured from one container to another. The liquid fills the shape it is poured into from the bottom up. The particles in a liquid are usually less tightly packed than those in a solid and can move and slide past one another. One example in which this is not true is water. Water is actually more dense than ice!



Books have a definite shape. No matter what type of container you put them in they will still keep that shape.



The liquid being poured from this bottle is able to flow because it does not have a definite shape.



Because the basketball is a sphere, the air inside of it will be sphere-shaped too.

Gases have no definite shape or volume. The particles in a gas are much farther apart than particles in solids or liquids. They can move around each other very easily. Gases spread out and completely fill a closed container. If you make the container bigger, the same amount of gas will expand to fill it.

Gases have no definite shape or volume. The particles in a gas are much farther apart than particles in solids or liquids. They can move around each other very easily. Gases spread out and completely fill a closed container. If you make the container bigger, the same amount of gas will expand to fill it.

Read the passage above then use it to answer the following questions:

1. Which comparison between gases and solids is correct?

- A. Gas particles are farther apart than solid particles.
- B. Gas particles are closer together than solid particles.
- C. Gas particles cannot move while solids can.
- D. Gas particles have a fixed shape while solids do not.

☒ **A. Gas particles are farther apart than solid particles.**

2. Which best explains why gases can be compressed more easily than solids or liquids?

- A. Gas particles are very far apart with lots of empty space
- B. Gas particles are tightly packed together
- C. Gas particles cannot move at all
- D. Gas particles are heavier than solids

☒ **A. Gas particles are very far apart with lots of empty space.**

VOCABULARY

Look for these words as you read:

chemical change

conservation of mass

physical change

Changes in Matter

Think about the ways the banana was changing. Matter can be changed in many ways. A

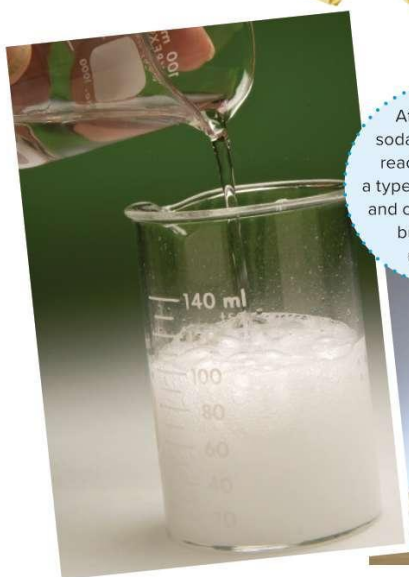
physical change begins and ends with the same kind of matter. A

chemical change—also called a chemical reaction—is a change that produces new matter with different properties from the original matter. The law of **conservation of mass** states that matter is neither created nor destroyed during a physical change or chemical reaction. For example, when you mix baking soda with vinegar, particles in the baking soda and vinegar link up in new ways. During the chemical change, bubbles form and a solid is left behind. The new substances formed have different properties than the starting materials.

GO ONLINE Watch the video *Identifying Chemical Changes* to learn more about how to recognize a chemical change.



The properties of a piece of paper do not change if it is flat or folded into a different shape.



After baking soda and vinegar react, water and a type of salt remain, and carbon dioxide bubbles are released.



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A **physical change** begins and ends with the same kind of matter.

A **Chemical change** is a change that produces new matter with different properties from the original

7

Visualize:

Identify as physical or chemical change

I	 Combustion	Chemical Change
II	 Rusting	Chemical Change
III	 Digestion	Chemical Change
IV	 Boiling	Physical change

8

You combine 500 g of one material and 200 g of another in a **closed container**. A **chemical change** occurred. What can you say about the masses of the materials after the chemical change?

What law are you using?

If a **chemical change** happens in a **closed container**, the **total mass stays the same** (total mass equal before after)

Before the reaction: $500\text{ g} + 200\text{ g} = 700\text{ g total}$

After the reaction: The total mass of all products will still be **700 g**

The Law of Conservation of Mass

states that matter is neither created nor destroyed during physical change or chemical reaction

Salt and Water



A spoonful of salt has a mass of 10 grams. A cup of water has a mass of 300 grams. What do you predict will be the total mass of the saltwater when the salt is dissolved in the water? Circle the answer that best matches your thinking.

A. more than 300 grams

B. less than 300 grams

C. 300 grams

Explain your thinking. What reasoning did you use to make your prediction?

Explain your thinking. What reasoning did you use to make your prediction?

Sample answer: Since the mass of the water is 300 grams, adding more mass to the water would increase its mass, even if the salt seems to disappear.

You will revisit the Page Keeley Science Probe later in the lesson.

10a	 Three-Dimensional Thinking . Which mixture is most likely a solution? A. muddy water B. cranberry juice C. potting soil D. milk	Unit 1 pg 31
10b	. How are mixtures formed and separated?	Unit 1 pg 31

Mixtures are formed from the physical combination of materials such as stirring. They can **be separated using different techniques** depending on their physical properties. Some examples may include sorting materials by hand, using tools such as a **sieve** or **magnet**, or by the process of **evaporation**.

Describe at least three physical properties that can help identify copper.



Three-Dimensional Thinking

1. Which property measures the space taken up by an object?
 - A. hardness
 - B. mass
 - ☒ C. volume
 - D. weight
2. Use information you have obtained to explain how properties of matter can be measured.

Sample answer: Magnetism can be measured by placing a magnet close to an object, mass can be measured with a balance, and the volume of a liquid can be measured with a beaker or a measuring cup.

3. Describe at least three physical properties that can help identify copper.

Sample answer: Copper has a reddish-brown color and can take on many different shapes because it is able to be formed. Copper can conduct electricity and reflect light.

Signs of Chemical Change

Chemical changes produce new substances. Often you can see, hear, or smell the formation of new substances as a chemical change occurs. Below are some possible signs of chemical change.

Change in Color The change from shiny metal to rust and tarnish shows that certain metals have chemically changed.

Describe 4 additional possible signs of chemical change.

1- Change in Color

2- Temperature Change

3- Formation of Gas

4- Formation of Solid

5- Change in odor

INQUIRY ACTIVITY

Hands On

Solubility Solutions

Think about the phenomenon of the solid being mixed into the liquid. You will investigate whether a solid will dissolve faster in warm water or cold water.

Make a Prediction Will sugar dissolve faster in warm or cold water?

Explain why.

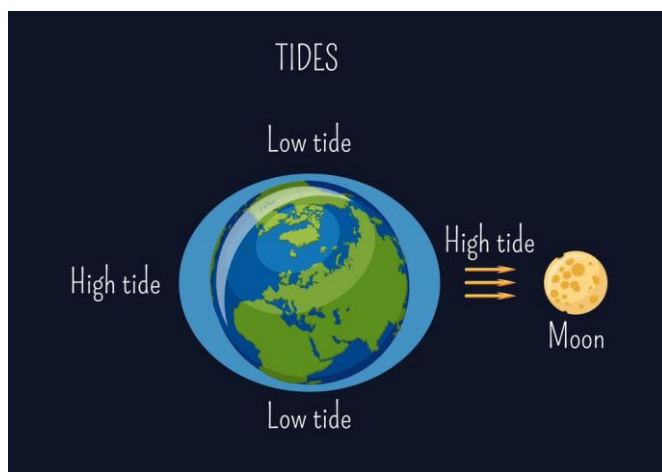
The sugar will dissolve faster in warm water because solubility increase and when I add drink mix to cold water, I must stir it a lot.

Describe how the moon's gravity causes Earth's tides.

Earth's gravity affects the Moon. The Moon's gravity also affects Earth. The Moon's gravitational force causes Earth's **tides**, or the regular rise and fall of water along the shore. Earth's water bulges on the Moon-facing side of Earth. A bulge also forms on the side facing away from the Moon. The water level rises where the bulge is and the level lowers where it is not. This bulge of water causes changing tides as the Moon travels around the Earth.

Tides : are the rise and fall of water along the shore

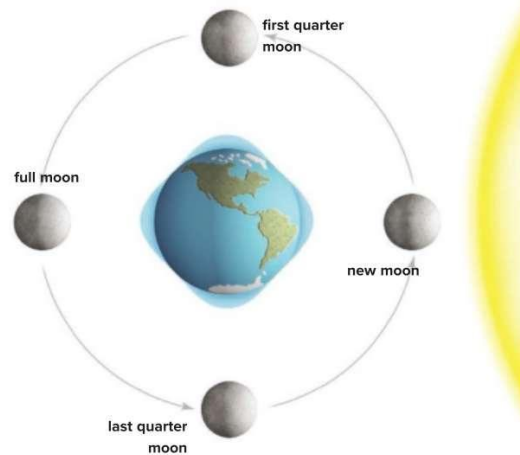
The **Moon's gravitational force** causes Earth's tides





Three-Dimensional Thinking

The Moon orbits around Earth due to gravity. Throughout the Moon's orbit, there appears to be changes in Earth's water level. You have learned that these are called tides.



1. Based on what you know about gravity, what causes Earth's changing tides?
 - A. Tides are caused by tropical storms such as hurricanes.
 - ☒ B. Tides are caused by the pull of gravity between Earth and the Moon.
2. What causes the tide to bulge on the side of Earth facing the Moon?
 - ☒ A. Earth's water bulges on the side facing the Moon because of the pull of gravity.
 - B. The Moon reverses its orbit and causes the tides to change.

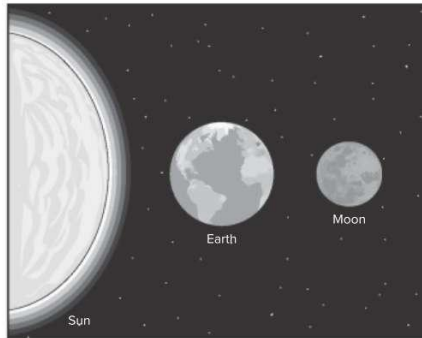
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EVALUATE Lesson 1 The Role of Gravity 21



LESSON 2 LAUNCH

Phases of the Moon



Look at the diagram of the Sun, Earth, and Moon. What would a nighttime observer on Earth see? Circle the answer that best matches your thinking.

A.



A full moon

B.



A crescent moon

C.



A quarter moon

D.



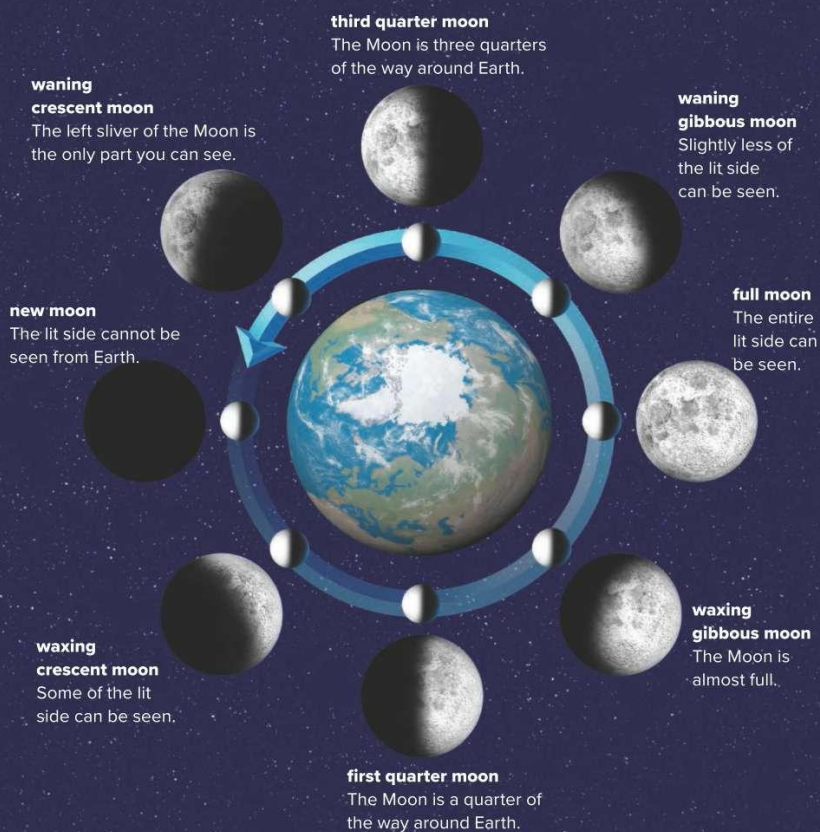
No moon is seen

Explain why you agree.

Sample answer: The answer is A. This diagram shows a full moon. The Sun is shining on the half of the Moon that is facing Earth. The Moon is not in Earth's shadow.

You will revisit the Page Keeley Science Probe later in the lesson.

Phases of the Moon



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The "mini-moons" along the blue inner circle indicate the direction from which the Sun's rays are shining.



Revisit the Page Keeley Science Probe on page 23.



Three-Dimensional Thinking

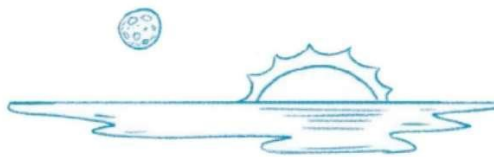
1. Based on the data table, what conclusion can you draw?

Planet	Length of Day (hours)	Length of Year (Earth years)	Distance from the Sun (AU)
Mercury	1,408	0.2	0.4
Venus	5,832	0.6	0.7
Earth	24	1.0	1.0
Mars	25	1.9	1.5
Jupiter	10	11.9	5.2
Saturn	10	29.4	9.5
Uranus	17	84.0	19.2
Neptune	16	164.8	30.0

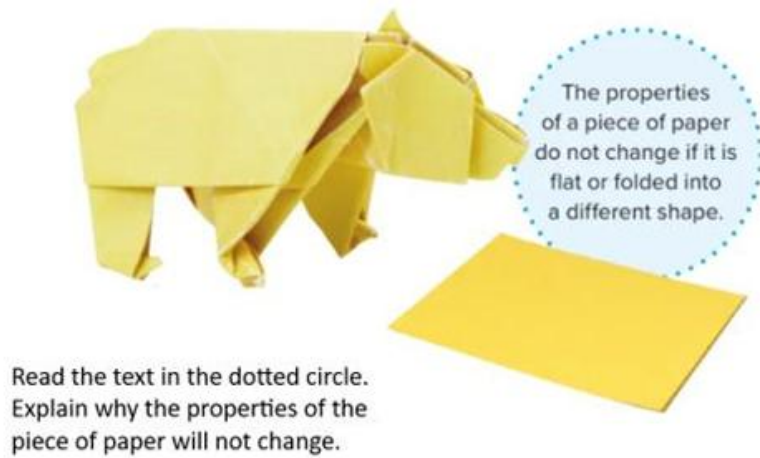
- A. The farther a planet is from the Sun, the longer its day.
☒ B. The farther a planet is from the Sun, the longer its year.
 C. A day on Earth is longer than a day on Venus.
 D. Uranus is the coldest of all the planets.
2. A planet is a large, round space object that _____ the Sun.
 A. attracts C. follows
☒ B. orbits D. reflects
3. Circle all that apply.

Stars appear to move in the sky because of Earth's _____.

- A. axis
☒ B. rotation
 C. poles
 D. galaxies
☒ E. revolution



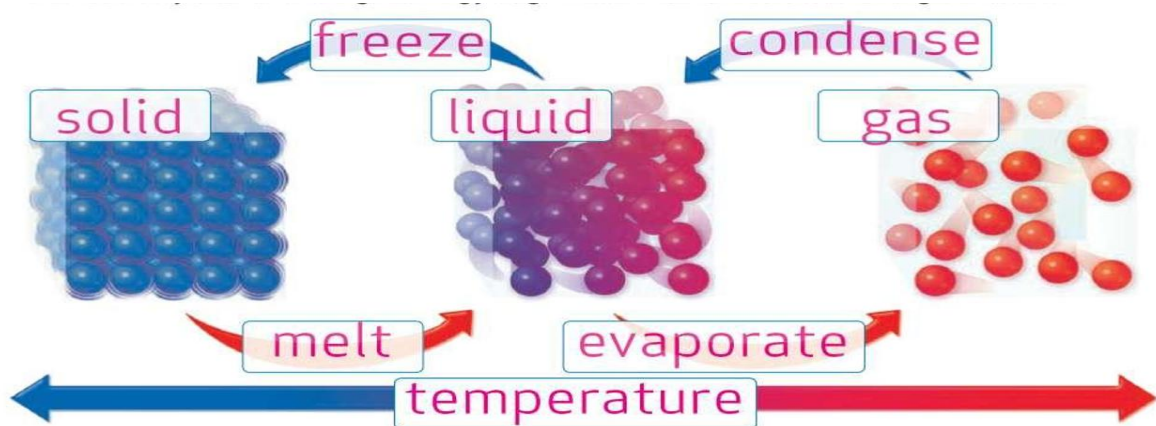
17



Because it is physical change begins and ends with the same kind (type) of matter

18

Identify states of matter represented with letters A, B, and C in the image below.



Summarize It

Use what you have learned to explain what pulls objects toward Earth's surface.

- ✓ **Gravity** is a force of attraction, or pull, between any two objects.

VOCABULARY

Look for these words as you read:

gravity

meteor

meteorite

tides

The Pull of Earth's Gravity

Gravity is a force of attraction, or pull, between any two objects. The Barringer Crater is the result of gravity pulling a meteor to Earth's surface. The strength of gravity is affected by the total mass of the objects and the distance between them. The pull of gravity decreases when the total mass of the two objects decreases or they are further apart.

On Earth, gravitational pull is the attraction between an object and Earth. No matter the location on Earth's surface, gravity pulls objects on all sides down toward the center. Every object that has mass experiences a gravitational pull. When an object is dropped from a certain height on Earth, it rushes downward due to gravity.

These skydivers have mass. Gravity is pulling them down toward Earth.



EXPLAIN
THE PHENOMENON

Why are some stars
brighter than others?

Summarize It

Use what you have learned to explain what stars are and why some appear brighter than others when we look at the night sky.

Stars are spheres of hot gas that give off heat and light.

Some stars appear brighter due to

1- Their size

2- their relative distance from Earth. (closer more bright)

3- Star Temperatures

For example, the Sun is the closest star to Earth, which is why it is brighter than all the other stars and visible during the day.

FAR Questions 1-A

LESSON 3 LAUNCH

Chemical Change

~~Frying an egg~~	Tearing up paper	~~Burning wood~~
~~A nail rusting~~	~~Grilling a hamburger~~	Dissolving salt in water
~~Exploding fireworks~~	Melting butter	~~Baking a cake~~
~~Rotting banana~~	~~Mixing baking soda and vinegar~~	Evaporating water
~~Lighting a match~~	Crushing a sugar cube	~~Milk going sour~~

Changes in matter can be chemical or physical. Put an X in any of the boxes that are examples of chemical changes.

Explain your thinking. How did you decide if something is a chemical change?

Sample answer: I chose these as examples of chemical change because they transform into a new type of matter.

You will revisit the Page Keeley Science Probe later in the lesson.

B



Three-Dimensional Thinking

Think about a scenario for an experiment. You combine 500 g of one material and 200 g of another in a closed container. A chemical reaction occurs. What can you say about the mass of the materials after they combine and go through the reaction? Choose a simple mathematical equation to support your answer.

- A. $500\text{ g} - 200\text{ g} = 700\text{ g}$
- B. $500\text{ g} + 200\text{ g} = 700\text{ g}$
- C. $700\text{ g} - 500\text{ g} = 200\text{ g}$
- D. $500\text{ g} \times 200\text{ g} = 700\text{ g}$

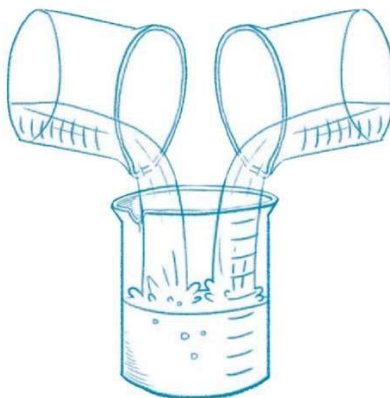


Three-Dimensional Thinking

Think about a scenario for an experiment. You combine 500 g of one material and 200 g of another in a closed container. A chemical reaction occurs. What can you say about the mass of the materials after they combine and go through the reaction? Choose a simple mathematical equation to support your answer.

- A. $500\text{ g} - 200\text{ g} = 700\text{ g}$
- ☒ B. $500\text{ g} + 200\text{ g} = 700\text{ g}$
- C. $700\text{ g} - 500\text{ g} = 200\text{ g}$
- D. $500\text{ g} \times 200\text{ g} = 700\text{ g}$

Sample answer: The mass of the materials after they go through the reaction would be the same as the sum of the materials before they react. Since it is in a closed container, if there are any gases that are a result of the reaction, they will be part of the total mass.



LESSON 4 LAUNCH

Particles in Matter



Four friends were talking about the particles that make up matter and give matter its properties. They each had different ideas. This is what they said:

Joyce: *I think you can't see the particles that make up solids, liquids, and gases. They are too small to see.*

Harold: *I think you can see the particles that make up solids, liquids, and gases.*

Royce: *I think you can see the particles that make up solids and liquids, but you can't see the particles that make up gases.*

Benito: *I think you can see the particles that make up solids, but you can't see the particles that make up liquids and gases.*

Who do you agree with most? **Joyce**

Explain why you agree.

Sample answer: Particles in matter are too small to see with ordinary magnification tools. The arrangement and movement of particles determine the state of matter.

You will revisit the Page Keeley Science Probe later in the lesson.

INQUIRY ACTIVITY

Hands On

Test Matter's Properties

Think about the egg cracking. The egg has many different properties. All matter has different properties based on how it interacts with other matter.

Make a Prediction How can we test the properties of matter?

Sample answer: We can test how well matter conducts heat or is magnetic.

Carry Out an Investigation

BE CAREFUL Wear safety goggles. Be careful with any sharp or pointy edges on the materials.

1. Hold one end of each object (one at a time) in the ice water for thirty seconds. Did the end you were holding get cold? Record the results in the table on the next page.
2. Pick up each object and gently try to bend it. Did it bend easily? Record the results.
3. Touch the magnet to each of the objects. Did it stick? Record the results.
4. Hold each object under a light. Is it shiny? Record the results.
5. Leave the last column empty for now. You will be revisiting this activity later in the lesson.

Materials



safety goggles



acrylic rod



paper clip



rubber eraser



aluminum foil



copper wire



wooden toothpicks



magnet



plastic bowl



ice cubes



water

How could you compare how much flexibility different materials have?

Sample answer: We could measure how much force it takes to bend different materials.

Record Data

Object	Did it get cold?	Could you bend it?	Did the magnet stick to it?	Is it shiny?	What property does it have?
Acrylic Rod	No	No	No	Yes	reflectivity
Paper Clip	Yes	Yes	Yes	Yes	magnetism
Rubber Eraser	No	Yes	No	No	flexibility
Aluminum Foil	Yes	Yes	No	Yes	conductivity
Copper Wire	Yes	Yes	No	Yes	conductivity
Wooden Toothpick	No	No	No	No	other

Communicate Information

6. Compare your results with your classmates. Would you expect to have similar results by following the same procedure? Explain.

Sample answer: I expect everyone to have similar results by carefully following the steps. Some difference might be a result of not measuring correctly.



Talk About It

Did your results support your prediction? Explain.

Why do you think the results of the class are mostly the same?

Sample answer: We all tested the same types of materials. The properties of each of these materials were consistent when the materials were tested by each group

INQUIRY ACTIVITY

Page 8

Hands On

Test Matter's Properties

Think about the egg cracking. The egg has many different properties. All matter has different properties based on how it interacts with other matter.

Make a Prediction How can we test the properties of matter?

We can test how will matter conduct heat or magnetic

Carry Out an Investigation

BE CAREFUL Wear safety goggles. Be careful with any sharp or pointy edges on the materials.

1. Hold one end of each object (one at a time) in the ice water for thirty seconds. Did the end you were holding get cold? Record the results in the table on the next page.
2. Pick up each object and gently try to bend it. Did it bend easily? Record the results.
3. Touch the magnet to each of the objects. Did it stick? Record the results.
4. Hold each object under a light. Is it shiny? Record the results.
5. Leave the last column empty for now. You will be revisiting this activity later in the lesson.



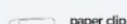
Materials



safety goggles



acrylic rod



paper clip



rubber eraser



aluminum foil



copper wire



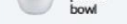
wooden toothpicks



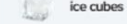
magnet



plastic bowl



ice cubes



water

Page 9

Record Data

Object	Did it get cold?	Could you bend it?	Did the magnet stick to it?	Is it shiny?	What property does it have?
Acrylic Rod	✗	✗	✗	✓	Reflectivity
Paper Clip	✓	✓	✓	✓	Magnetism
Rubber Eraser	✗	✓	✗	✗	flexibility
Aluminum Foil	✓	✓	✗	✓	conductivity
Copper Wire	✓	✓	✗	✓	conductivity
Wooden Toothpick	✗	✗	✗	✗	other

Communicate Information

6. Compare your results with your classmates. Would you expect to have similar results by following the same procedure? Explain.

I expect everyone to have similar results by carefully following the step.

Talk About It

Did your results support your prediction? Explain.

A

Define the terms: physical property, conductivity, reflectivity, solubility

Physical properties: Characteristics of matter that can be observed and measured. (Can be observed without changing materials)

Examples of physical properties

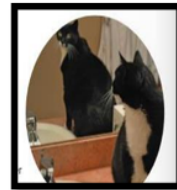
- 1- **Conductivity:** Describe how **energy** such as **heat** or **electricity** can move through materials.

Example: **Metal** such as iron, copper, and silver has conductivity.



- 2- **Reflectivity:** the way light reflects or bounces off an object.

Example: Smooth, flat surfaces such as **mirror** and **shiny pans** has reflectivity.



- 3- **Solubility:** the ability of matter to dissolve in a liquid.

Example: **Salt** has solubility.



- 4- **Magnetism:** is the ability of a material to **be attracted to a magnet**, without needing to be a magnet itself.

Physical Properties

A characteristic of matter that can be observed and or measured is known as its **physical property**. These properties can be observed without changing the material. Some physical properties include the following:



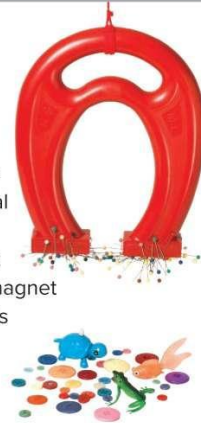
Conductivity describes how energy, such as electricity or heat, can move through material. Metals such as iron, silver, and copper are good conductors of heat and electricity.



Reflectivity is the way light reflects, or bounces off, an object. Smooth, flat surfaces, such as mirrors and shiny pans, reflect light evenly.

Solubility is the ability of matter to dissolve in a liquid. Think about sugar in a glass of ice tea. The tiny sugar particles disperse evenly throughout the liquid. It might seem like the sugar disappeared, but it is easy to tell it is still there because the tea tastes sweet.

Magnetism is the ability of a material to be attracted to a magnet, without needing to be a magnet itself. Some metals are magnetic.



GO ONLINE Learn more about properties by watching the video *Using Properties of Matter*. Answer the question after you have finished.

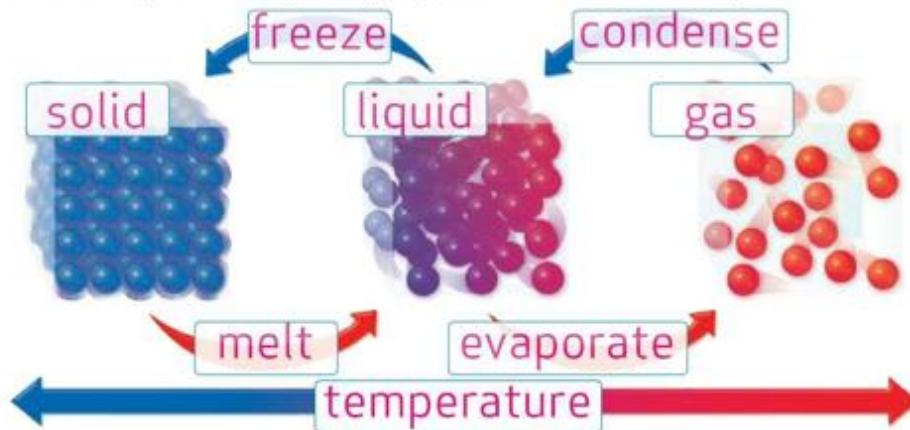
1. How can we use the properties of matter to identify materials?

Sample answer: The physical properties of matter can help us identify matter. For example, we know most metals are reflective because light bounces off of them.

REVISIT PAGE KEELEY SCIENCE PROBES Revist the Page Keeley Science Probe.

Changing States of Matter

The average movement of particles in an object is determined by the amount of energy in the object. Temperature is a measurement of this movement. When energy is added, the particles move faster. When energy is lost, the particles move more slowly. When enough energy is gained or lost, there is a change of state.



Adding Energy When energy is added to a solid, the particles start to move more quickly. When the particles move quickly enough that they slide past each other, the solid becomes a liquid by melting. If even more energy is added to this liquid, the particles' speed continues to increase and they move away from each other. As the particles spread out enough, liquid evaporates, becoming a gas.

Removing Energy If a gas loses energy, its particles slow down and move closer together. They start to slide past each other again. A liquid forms through a process called condensation. If the liquid loses enough energy, freezing occurs and a solid forms.

LESSON 1 LAUNCH

Earth's Gravity



Four friends were talking about gravity. They each had a different idea. This is what they said:

Angie: I think Earth's gravity only pulls on things that are close to Earth's surface.

Tamara: I think Earth's gravity only pulls on things that are close to Earth and in Earth's atmosphere.

Carlos: I think Earth's gravity pulls on things close to Earth, including some things in space.

Mi-Ling: I think Earth's gravity pulls everything in the solar system toward it.

Who do you agree with most? **Carlos**

Explain why you agree.

Sample answer: Objects on or near Earth, including objects in space such as the Moon, satellites, and meteors, are pulled toward Earth due to the gravitational attraction of Earth and these objects.

You will revisit the Page Keeley Science Probe later in the lesson.

B

Describe the effects of gravity. Use the text below.

Unit 4 pg 12

The Pull of Earth's Gravity

✓ **Gravity** is a force of attraction, or pull, between any two objects. The Barringer Crater is the result of gravity pulling a meteor to Earth's surface. ✓ The strength of gravity is affected by the total mass of the objects and the distance between them.

✓ The pull of gravity decreases when the total mass of the two objects decreases or they are further apart.

✓ On Earth, gravitational pull is the attraction between an object and Earth. No matter the location on Earth's surface, gravity pulls objects on all sides down toward the center. Every object that has mass experiences a gravitational pull. When an object is dropped from a certain height on Earth, it rushes downward due to gravity.

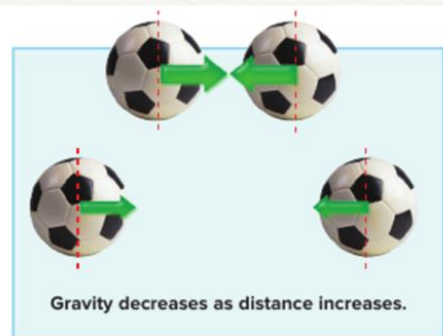
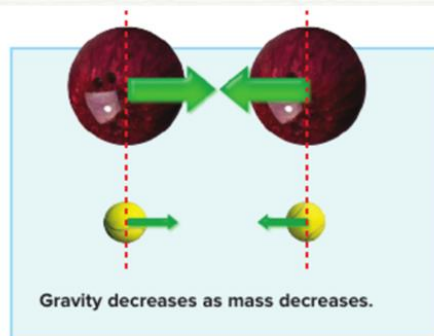


The Pull of Earth's Gravity

Gravity

The strength of gravity is affected by,

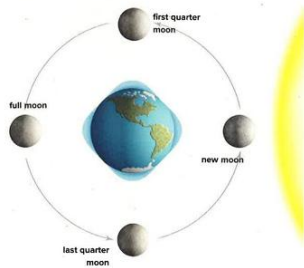
- The total mass of the objects
- The distance between the object





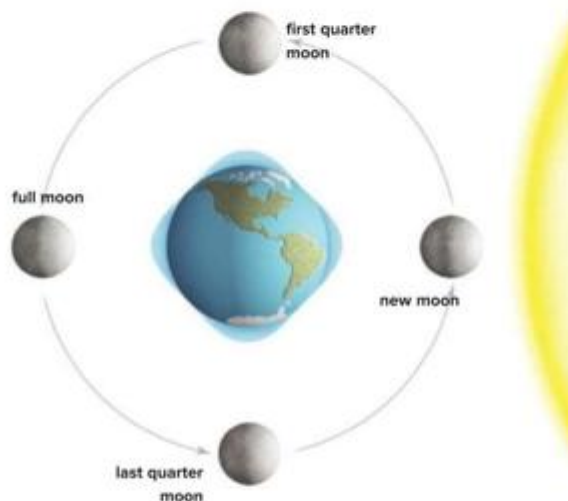
Three-Dimensional Thinking

The Moon orbits around Earth due to gravity. Throughout the Moon's orbit, there appears to be changes in Earth's water level. You have learned that these are called tides.



Three-Dimensional Thinking

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- Based on what you know about gravity, what causes Earth's changing tides?
 - Tides are caused by tropical storms such as hurricanes.
 - ☒ Tides are caused by the pull of gravity between Earth and the Moon.
- What causes the tide to bulge on the side of Earth facing the Moon?
 - ☒ Earth's water bulges on the side facing the Moon because of the pull of gravity.
 - The Moon reverses its orbit and causes the tides to change.

4A	Summarize It Explain how Earth moves through space and how it affects life on Earth.	Unit 4 pg. 40
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- 1-Earth rotation causing day and night
- 2-Earth revolution around sun causes four seasons.
- 3-Also, because Earth's movement we see moon phases

Summarize It

Explain how Earth moves through space and how it affects life on Earth.

Sample answer: Earth rotates causing day and night. Earth revolves around the Sun, resulting in the seasons. Because of Earth's movement, we also see the different phases of the Moon and can tell time on a sundial.

a- Explain why the seasons in the Northern and Southern Hemisphere are always opposite.

b- Explain why in spring and autumn, the temperatures are similar in both hemispheres.

Use the text below:

Seasons

As Earth revolves around the Sun, the tilted axis always points in the same direction. When the Northern Hemisphere tilts away from the Sun, the Northern Hemisphere's surface does not receive as much energy, and temperatures are lower. In the Northern Hemisphere, this is winter.

✓ At the same time, it is summer in the Southern Hemisphere. The Southern Hemisphere tilts toward the Sun, so Sun's energy is more concentrated. The surface receives more energy, and temperatures are warmer.

✓ Because the tilt of Earth's axis always points in the same direction, the seasons in the Northern Hemisphere and the Southern Hemisphere are always opposite. ✓ In spring and autumn, both hemispheres receive equal warmth from the Sun, making temperatures similar in both hemispheres.

A-Because the tilt of earth's axis

B-Both hemispheres receive equal warmth from sun making temperatures similar

Seasons

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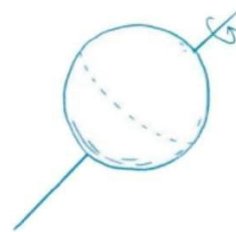
Because the tilt of Earth's axis always points in the same direction, the seasons in the Northern Hemisphere and the Southern Hemisphere are always opposite. In spring and autumn, both hemispheres receive equal warmth from the Sun, making temperatures similar in both hemispheres.



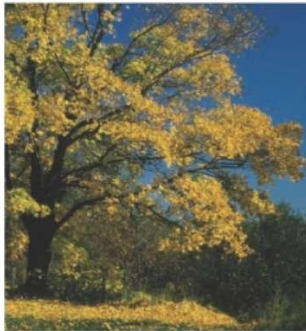
Winter
about December 21–March 20



Spring
about March 20–June 21



Summer
about June 21–September 22



Autumn
about September 22–December 21

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The Solar System

Within the Milky Way galaxy is our solar system, which consists of the Sun and all of the objects that orbit around it. One type of object that orbits the Sun are planets. A **planet** is a large, round object in space that orbits a star.

Planets of the Solar System From nearest to farthest from the Sun, the planets in our solar system are Mercury, Venus, Earth, and Mars, or the inner planets. Next are Jupiter, Saturn, Uranus, and Neptune, or the outer planets. The planets revolve in elliptical, or nearly circular, orbits around the Sun. Several planets are visible in the night sky from Earth from time to time, even without a telescope. Visible planets include Mercury, Venus, Mars, Jupiter, and Saturn. Planets do not make their own light, but reflect the light from the Sun.

Between the inner and outer planets is a belt of space rocks called asteroids. These are rocky or metallic objects that also orbit the Sun within the solar system.

