Name _____ Date _____ Class _____

Lesson Outline LESSON 1

Matter and Its Properties

A. What is matter?

1. Anything that takes up space and has mass is _____.

2. _____ from the Sun is not matter, although you can see it.

B. States of Matter

1. The amount of space a material occupies is its _____.

2. Any matter that has a definite shape and a definite volume is a(n) _____.

3. Any matter that has a definite volume but does not have a definite shape is a(n) _____.

4. Any matter that does not have a definite shape or a definite volume is a(n) _____.

5. All matter is formed of tiny particles that are constantly _____.

a. The particles in a(n) _____ stay in one place but move quickly back and forth in all directions.

b. The particles in a(n) _____ can slide past one another.

c. The particles in a(n) _____ move freely.

6. The particles in matter _____ one another.

C. What are physical properties?

1. A physical property is any characteristic of a material that you can observe without _____ the identity of the material.

2. One physical property is _____, which is the amount of matter in an object.

3. _____ is the gravitational pull on an object.

4. The weight of an object depends on the _____ of an object; for example, objects weigh more on Earth than on the Moon.

5. Multiply the length, width, and height of a regular object to calculate its _____.

6. The mass per unit volume of a substance is its _____.

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Lesson Outline continued

7. The ability of one material to dissolve in another is _____.
8. The _____ point is the temperature at which a solid changes to a liquid.
9. The _____ point is the temperature at which a liquid changes to a gas.
10. _____ is a property that allows some materials to attract certain metals.

D. What are chemical properties?

1. A chemical property is a characteristic of a material that you can observe as it _____ to a different substance.
2. _____ is the ability of a material to burn easily.
3. _____ changes to rust when it reacts with water and oxygen in the air.

E. Identifying Matter Using Physical Properties

1. _____ and boiling points do not depend on the amount of the material, so they are good properties for identifying unknown substances.
2. Sometimes you have to observe more than one _____ to identify an unknown material.

F. Sorting Materials Using Properties

1. Physical properties and chemical properties are useful for _____ materials.
2. An example of a(n) _____ property is the tendency for milk or yogurt to spoil.

G. Separating Mixtures Using Physical Properties

1. You can separate mixed materials by melting or _____ the mixture.
2. You can separate some mixed materials using a(n) _____ to attract some materials and not others.

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Content Practice A LESSON 1

Matter and Its Properties

Directions: *On the line before each definition, write the letter of the term that matches it correctly. Each term is used only once.*

_____ **1.** anything that has mass and takes up space

_____ **2.** a state of matter with a definite shape and volume

_____ **3.** a state of matter with a definite volume but no definite shape

_____ **4.** a state of matter that does not have a definite volume or a definite shape

_____ **5.** the amount of matter in an object

_____ **6.** the gravitational pull on an object

_____ **7.** the amount of space an object occupies

_____ **8.** the mass per cubic volume of a substance

_____ **9.** a characteristic of a material that can be observed without changing the identity of the material

_____ **10.** a characteristic of a material that can be observed as the material reacts with or changes into a different substance

_____ **11.** the ability of one material to dissolve in another

_____ **12.** the ability to burn easily

A. liquid
B. mass
C. physical property
D. volume
E. gas
F. solubility
G. chemical property
H. solid
I. weight
J. flammability
K. matter
L. density

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Content Practice B LESSON 1

Matter and Its Properties

Directions: *Answer each question or respond to each statement on the lines provided.*

1. What is matter?

_____

2. **Explain** the properties of a solid, a liquid, and a gas.

   a. solid: _____

   b. liquid: _____

   c. gas: _____

3. **Explain** the difference between mass and weight.

_____

_____

4. What are physical properties of a material?

_____

_____

5. What are chemical properties of a material?

_____

_____

6. What is density?

_____

_____

7. What happens when iron rusts?

_____

_____

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Lesson Quiz A

LESSON 1

Matter and Its Properties

Multiple Choice

Directions: *On the line before each question, write the letter of the correct answer.*

_____ **1.** Which description identifies a solid?
- **A.** definite volume and definite shape
- **B.** definite volume but no definite shape
- **C.** definite shape but no definite volume

_____ **2.** Which properties must matter have?
- **A.** weight and mass
- **B.** shape and energy
- **C.** mass and the ability to take up space

_____ **3.** What is solubility?
- **A.** the ability of a substance to change state
- **B.** the ability of one material to dissolve in another
- **C.** the ability of a substance to have magnetic attraction

_____ **4.** Which state of matter is modeled by a box of marbles sliding around each other?
- **A.** gas
- **B.** liquid
- **C.** plasma

_____ **5.** Which ability illustrates a chemical property of matter?
- **A.** ability to rust
- **B.** ability to melt
- **C.** ability to change state

_____ **6.** What happens when a liquid reaches its boiling point?
- **A.** It gains mass.
- **B.** It gains density.
- **C.** It turns into a gas.

_____ **7.** Which method could you use to separate a mixture of iron filings and sand?
- **A.** separation by burning
- **B.** separation by magnetism
- **C.** separation by boiling point

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Lesson Quiz B LESSON 1

Matter and Its Properties

Completion

Directions: *On each line, write the term that correctly completes each sentence.*

1. A(n) _____ has a definite volume and a definite shape.

2. The two main properties of matter are that it has _____ and _____.

3. When salt dissolves in water, it shows the property of _____.

4. Marbles sliding over and around each other in a box model the behavior of matter in the _____ state.

5. The ability to rust is a(n) _____ property of matter.

6. When a liquid reaches its _____ point, it changes from a liquid to a gas.

7. You can separate a mixture of sand and iron filings with the use of a material that shows the property of _____.

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Lesson Outline LESSON 2

Matter and Its Changes

A. Changes of Matter

1. Matter changes with the season, including changes in the _____ of leaves and in the _____ of the air.
2. Matter can change in many ways, including _____ changes and _____ changes.

B. What are physical changes?

1. In a physical change, the _____ of the substance does not change.
2. _____ one substance in another does not change the identities of the substances.
3. The formation of ice on the surface of a lake is an example of a(n) _____.
4. Changes in state involve changes in the amount of _____ that the particles in a substance have.
5. The _____ at which one state of matter changes into another depends on how much energy is added or taken away from the substance.

C. What are chemical changes?

1. In a chemical change, the substances that make up matter change into other substances with _____ physical properties and chemical properties.
2. Changes in _____, density, and state of matter can be signs of a chemical change.
3. The formation of a(n) _____ substance is the only sure sign of a chemical change.
   - **a.** Formation of a(n) _____ might be signaled by bubbles or an odor.
   - **b.** Formation of a(n) _____, a solid that sometimes forms when two liquids combine, is a sign of a chemical change.
   - **c.** A change in _____ might or might not be a sign of a chemical change. It depends on whether a(n) _____ forms.

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Lesson Outline continued

4. Energy _____ is a sign that chemical change is involved.
5. Energy in the form of _____ is needed for chemical reactions such as photosynthesis.
6. _____ is a chemical reaction that only occurs if plants are exposed to light.
7. Many changes cannot be _____.
8. _____ is always conserved during physical and chemical changes.
9. The law of conservation of mass states that the total mass before a(n) _____ is the same as the total mass after it.
10. The mass of an unburned match plus the mass of the oxygen it reacts with _____ the mass of the ashes and of all the gases given off when the match burns.

D. Comparing Physical and Chemical Changes

1. Changing the shape of a piece of clay is a(n) _____ change.
2. Spoiling foods are examples of _____ change.

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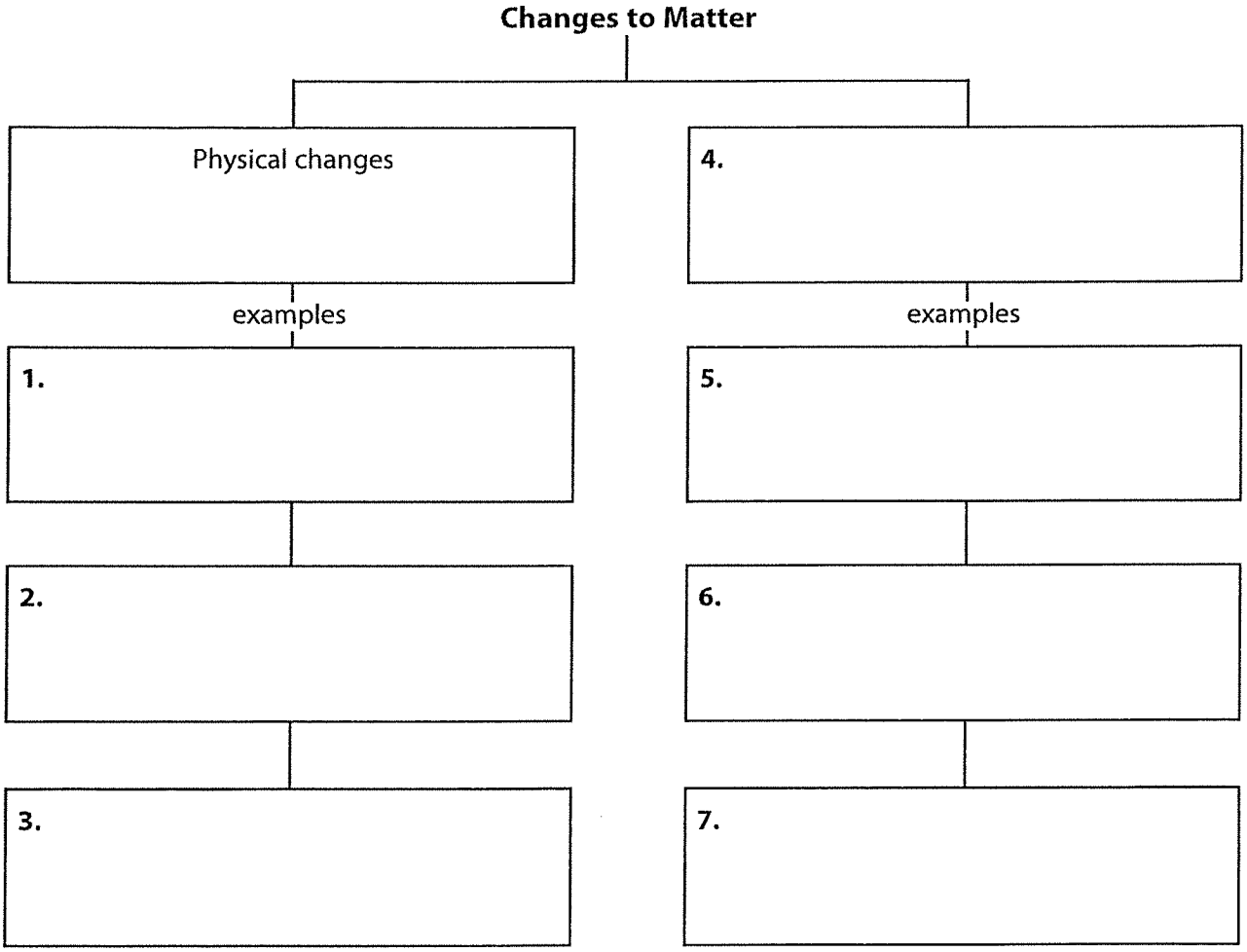
Content Practice A LESSON 2

Matter and Its Changes

Directions: *Complete this chart by choosing terms from the word bank and writing them in the correct spaces.*

boiling	**burning**	**chemical changes**	**dissolving**
melting	**photosynthesis**	**rusting**	



Directions: *Circle the term in parentheses that correctly completes each sentence.*

8. When matter undergoes a physical or chemical change, the amount of mass (changes/stays the same).
9. All chemical reactions result in the production of a new substance and involve a change in (energy/volume).
10. Some changes cannot be (repeated/reversed).
11. Photosynthesis is an example of a (physical/chemical) change that almost all living things rely on.

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Content Practice B LESSON 2

Matter and Its Changes

Directions: *Complete each item on the lines provided.*

1. What is a physical change in matter?

_____

2. All changes in the _____ of matter are physical changes.

3. What is a chemical change in matter?

_____

_____

4. **Name** three signs of a chemical change that are mentioned in the lesson.

_____

5. What is the only sure sign of a chemical change?

_____

6. What kind of energy do plants need to perform photosynthesis?

_____

7. What happens to the total amount of mass during a physical or chemical change?

_____

Directions: *Tell whether the following changes are physical* (P) *or chemical* (C) *and whether they are reversible* (R) *or nonreversible* (N).

_____ **8.** iron rusting

_____ **9.** salt dissolving

_____ **10.** water freezing

_____ **11.** wood burning

_____ **12.** pottery shattering

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