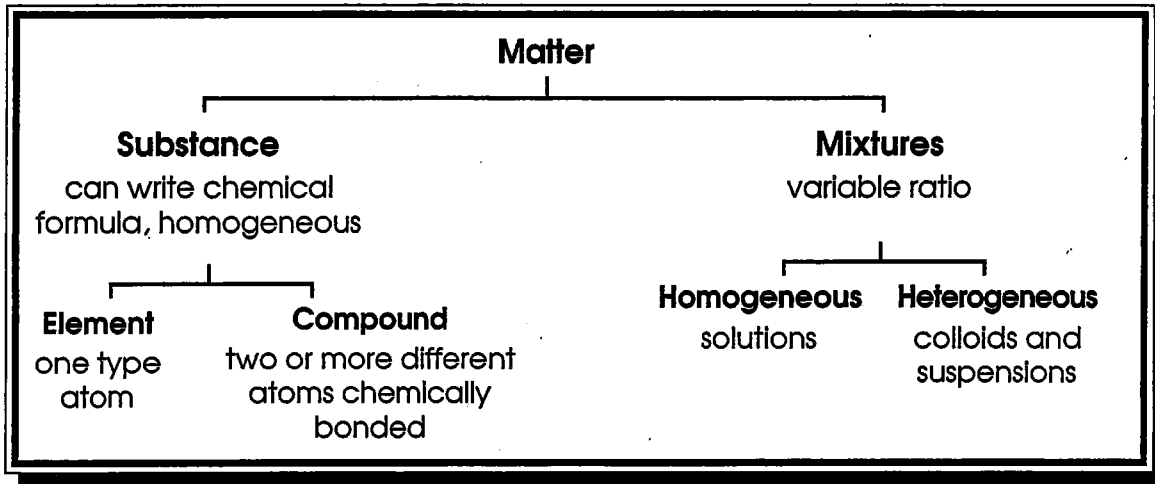


MATTER—SUBSTANCES

MIXTURES

Name Key

All matter can be classified as either a substance (element or compound) or a mixture (heterogeneous or homogeneous).



Classify each of the following as to whether it is a substance or a mixture. If it is a substance, write Element or Compound in the substance column. If it is a mixture, write Heterogeneous or Homogeneous in the mixture column.

Type of Matter	Substance	Mixture
1. chlorine	element	
2. water	compound	
3. soil		heterogeneous
4. sugar water		homogeneous
5. oxygen	element	
6. carbon dioxide	compound	
7. rocky road ice cream		heterogeneous
8. alcohol	compound	
9. pure air		homogeneous
10. iron	element	

ELEMENT SYMBOLS

Name _____

An element symbol can stand for one atom of the element or one mole of atoms of the element. (One mole = 6.02×10^{23} atoms of an element.)

Write the symbol for the following elements.

- | | |
|-----------------------|-------------------------|
| 1. oxygen <u>O</u> | 11. plutonium <u>Pu</u> |
| 2. hydrogen <u>H</u> | 12. americium <u>Am</u> |
| 3. chlorine <u>Cl</u> | 13. radium <u>Ra</u> |
| 4. mercury <u>Hg</u> | 14. germanium <u>Ge</u> |
| 5. fluorine <u>F</u> | 15. zinc <u>Zn</u> |
| 6. barium <u>Ba</u> | 16. arsenic <u>As</u> |
| 7. helium <u>He</u> | 17. lead <u>Pb</u> |
| 8. uranium <u>U</u> | 18. iron <u>Fe</u> |
| 9. radon <u>Rn</u> | 19. calcium <u>Ca</u> |
| 10. sulfur <u>S</u> | 20. cobalt <u>Co</u> |

Write the name of the element that corresponds to each of the following symbols.

- | | |
|-------------------------|-------------------------|
| 21. Kr <u>Krypton</u> | 31. Cu <u>copper</u> |
| 22. K <u>potassium</u> | 32. Ag <u>silver</u> |
| 23. C <u>carbon</u> | 33. P <u>phosphorus</u> |
| 24. Ne <u>neon</u> | 34. Mn <u>manganese</u> |
| 25. Si <u>silicon</u> | 35. I <u>iodine</u> |
| 26. Zr <u>zirconium</u> | 36. Au <u>gold</u> |
| 27. Sn <u>tin</u> | 37. Mg <u>magnesium</u> |
| 28. Pt <u>platinum</u> | 38. Ni <u>nickel</u> |
| 29. Na <u>sodium</u> | 39. Br <u>bromine</u> |
| 30. Al <u>aluminum</u> | 40. Hg <u>mercury</u> |

Name _____

Date _____

Use with textbook pages 43–44.

Element names

1. Identify the element based on the clues given. The first one is done to help guide you.

	General clue	Element
(a)	policeman	copper
(b)	to press clothes	iron
(c)	planet closest to the Sun	mercury
(d)	5 cents	nickel
(e)	to be shown the way	lead

2. What is the English name for each of these Latin names of elements?

- (a) *plumbum* lead (e) *natrium* sodium
 (b) *ferrum* iron (f) *kaliūm* potassium
 (c) *argentum* silver (g) *fluere* fluorine
 (d) *carbo* carbon (h) *hydrargyrum* mercury

3. Which elements' names have the following meanings?

- (a) bringer of light phosphorus (e) emerald beryllium
 (b) stone lithium (f) heavy barium
 (c) violet indium (g) sun helium
 (d) colour chromium (g) smelly bromine

Use with textbook pages 43-44.

Learning chemical symbols

Write the element name in the blank beside its symbol.

1. Symbols that come from the first letter of the element's name

- (a) P phosphorus (d) I iodine
 (b) S sulfur (e) F fluorine
 (c) O oxygen (f) N nitrogen

2. Symbols that come from the first two letters of the element's name

- (a) He helium (c) Be beryllium
 (b) Li lithium (d) Ne neon

3. Symbols that come from the first letter and another letter in the name

- (a) Cl chlorine (c) Zn zinc
 (b) Mg magnesium (d) Mn manganese

4. Symbols that come from the name of the element in Latin

- (a) Pb lead (e) Cu copper
 (b) Au gold (f) Fe iron
 (c) Ag silver (g) Na sodium
 (d) Sn tin (h) Rb rubidium

5. Use the chemical symbols to write three English words. An example is provided for you.

English word	Symbols	Names of elements used
none	N-O-Ne	nitrogen-oxygen-neon
FUN	F-U-N	fluorine - oxygen - neon
blink	B-Li-N-K	boron, lithium - nitrogen - potassium
life	Li-Fe	lithium - iron



Monica Pasta

Mo • Ni • Ca P • As • Ta

molybdenum • nickel • calcium • phosphorus • arsenic • tantalum

Name _____

Date _____

Use with textbook pages 42–47.

Elements

Match the Element on the left with the corresponding Symbol on the right. Each Symbol may be used only once.

Element	Symbol
1. <u>Ca</u> calcium	A. C
2. <u>C</u> carbon	B. Ca
3. <u>Cl</u> chlorine	C. Ch
4. <u>K</u> potassium	D. Cl
5. <u>P</u> phosphorus	E. K
6. <u>S</u> sulphur	F. Na
7. <u>Na</u> sodium	G. P
	H. Ph
	I. Po
	J. S
	K. So
	L. Su

Circle the letter of the best answer.

8. Which of the following are rules for writing a chemical symbol?

I.	first letter must be capitalized
II.	symbol is made of either one or two letters
III.	second letter, if present, must be lower case

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II, and III

9. What is the chemical symbol for helium?

- A. H
- B. He
- C. HI
- D. Hi

10. Which of the following correctly matches the name of the element with the chemical symbol?

- A. magnesium=Mg
- B. aluminum=A
- C. oxygen=Ox
- D. nitrogen=Ni

11. Which of the following is a gas at room temperature?

- A. calcium
- B. carbon
- C. chlorine
- D. copper

12. Which of the following metals is a liquid at room temperature?

- A. silver
- B. sodium
- C. mercury
- D. manganese

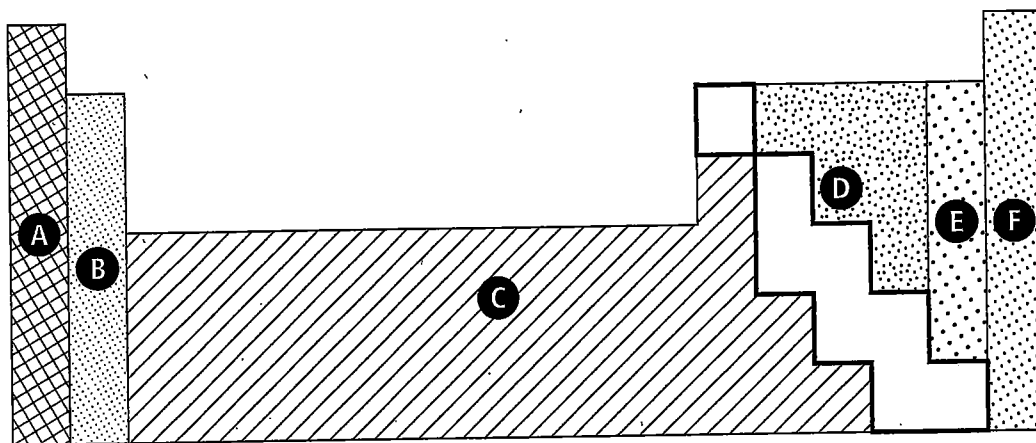
13. Which of the following are physical properties of metals?

I.	ductile
II.	malleable
III.	good conductors of heat and electricity

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II, and III

Use with textbook pages 52-57.

Families of elements



Use the simplified periodic table shown above to answer questions 1 to 12. To which region does each element or family belong? Place the letter corresponding to the shaded region on the blank line. You can use regions more than once.

You can use the periodic table on page 201 to help you answer these questions.

1. helium F
2. lithium A
3. fluorine E
4. beryllium B
5. halogens E
6. noble gases F
7. alkali metals A
8. alkaline earth metals B
9. non-metallic elements that are strongly reactive E
10. metallic elements that are strongly reactive A/B
11. metallic elements that are reactive C
12. non-metallic elements that are very unreactive D

Name _____

Date _____

Use with textbook pages 52-57.

Using the periodic table

Vocabulary

average atomic mass
atomic number
electrons
families
good
halogens
ions
ion charge
metals

metalloids
multiple ion charge
noble gases
non-metals
periodic table
periods
poor
properties

Use the terms in the vocabulary box to fill in the blanks. You can use each term more than once. You will not need to use every term.

- The periodic table organizes the elements according to their physical and chemical properties.
- The periodic table is divided into seven horizontal rows called periods and 18 vertical columns called groups/families.
- Metals appear on the left side of the periodic table. These elements are good conductors of heat and electricity.
- Non-metals appear on the right side of the periodic table. These elements are poor conductors of heat and electricity.
- The metalloids form a zigzag staircase arrangement on the periodic table. These elements have properties similar to both metals and non-metals.
- * The atomic number refers to the number of protons that an atom has in the nucleus.
- * The atomic mass is the weighted average of the masses of the atoms of an element.
- * A(n) ion is an electric charge that forms on an atom when it gains or loses electrons.
- * Some metals, like platinum and cobalt, form ions in more than one way. In other words, they have a(n) multiple ion charges.

Use with textbook pages 52-57.

The periodic table and chemical properties

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. <u>B</u> halogens	A. most reactive metals
2. <u>D</u> noble gases	B. most reactive non-metals
3. <u>A</u> alkali metals	C. have properties of both metals and non-metals
4. <u>E</u> alkaline earth metals	D. most unreactive elements
	E. includes beryllium and magnesium

Circle the letter of the best answer.

5. What is the name of a horizontal row in the periodic table?

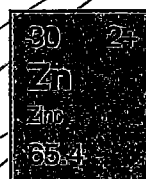
- A. column
- B. family
- C. period
- D. group

6. Which of the following are metalloids?

I.	silicon
II.	boron
III.	neon

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II, and III

Use the following diagram to answer questions 7 and 8.



7. What does the "30" refer to?

- A. ion charge
- B. average atomic mass
- C. atomic number
- D. family number

8. What does the "2+" refer to?

- A. ion charge
- B. average atomic mass
- C. atomic number
- D. family number

9. To which of the following groups does oxygen belong?

- A. gas
- B. metal
- C. metalloid
- D. non-metal

10. Which of the following is the same as the atomic number of an element?

- A. number of protons
- B. number of neutrons
- C. number of electrons
- D. number of ion charges