Contents

TEACHER GUIDE

STUDENT HANDOUTS

NAME: _____

Before You Read

Patterns In the Periodic Table

1. Circle T if the statement is TRUE or F if it is FALSE.

T F **a)** The periodic table came before the atomic model.

T F **b)** Each element in the periodic table has one more proton than the element to its left.

T F **c)** Only the most important elements are included in the periodic table.

T F **d)** The symbol "W" in the periodic table stands for water.

T F **e)** "Inert" means the same as "reactive."

2. Draw a line from each word or words on the left to its meaning on the right.

inert	**a**	an up-and-down row in the periodic table
bonds	**b**	a material made of one kind of atom
group	**c**	connections between atoms in a molecule
atomic number	**d**	almost never forms compounds with other elements
element	**e**	equal to the number of protons in each atom of an element

After You Read

NAME: _____

Patterns In the Periodic Table

You learned that the number of electrons increases from left to right in a row of the periodic table. The elements in group 18, at the far right, have a full set of outer electrons. These elements almost never form compounds with anything. We say these elements are **inert**. Since they are all gases, they are called the **inert gases**.

Elements in group 17 are one electron short of a full outer set. They form compounds very easily. This means that they are very **reactive**. The elements in group 1 have just one outer electron, and they are also very reactive.

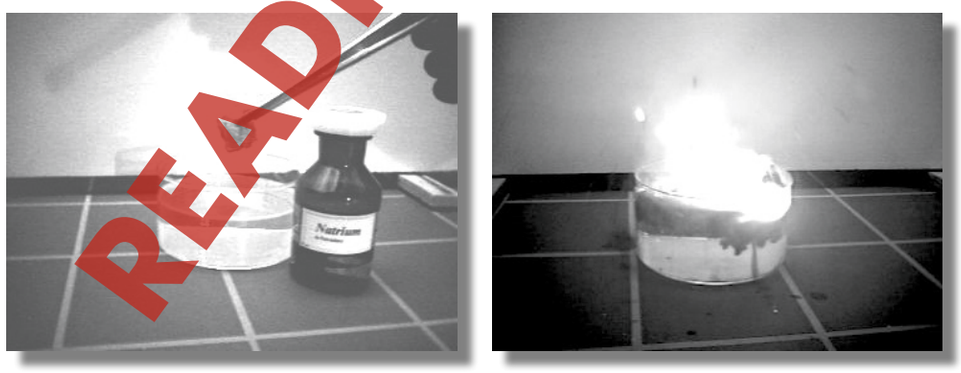
You wouldn't think that a metal would react with water. But sodium metal (Na) from group 1 reacts with water very quickly. In fact, flames appear when the two materials are put together! Elements in group 1 are most reactive with elements in group 17. Sodium reacts with the element chlorine (Cl) in group 17 to form sodium chloride. Sodium chloride is the scientific name for table salt.

STOP

Name an element with ONE outer electron. Name an element with TWO outer electrons. Use the periodic table to help you choose your answers.

_____

_____



Pictures of sodium reacting with water

After You Read

NAME: _____

Patterns In the Periodic Table

Look at the periodic table to help you answer these questions.

1. Number the elements from 1 to 5 in the order of **most** reactive (1) to **least** reactive (5).

☐	**a)** silver (Ag)
☐	**b)** arsenic (As)
☐	**c)** fluorine (F)
☐	**d)** krypton (Kr)
☐	**e)** nitrogen (N)

2. Put a check mark (✓) next to the answer that is most correct.

a) Lithium (Li) forms a compound most easily with

- ○ **A** beryllium (Be)
- ○ **B** fluorine (F)
- ○ **C** neon (Ne)
- ○ **D** sodium (Na)

b) Where are the *most* reactive elements in the periodic table?

- ○ **A** far right row
- ○ **B** top and bottom rows
- ○ **C** lower left and lower right
- ○ **D** upper left and upper right

c) Which of these elements has properties *most* like those of sodium (Na)?

- ○ **A** argon (Ar)
- ○ **B** chlorine (Cl)
- ○ **C** magnesium (Mg)
- ○ **D** potassium (K)

NAME: _____

After You Read

Patterns In the Periodic Table

3. Explain why elements in the same group have many of the same chemical properties.

_____

_____

4. Explain why atoms of elements in the bottom rows of the periodic table are larger than those in the top rows.

_____

_____

Extensions & Applications

Find calcium (Ca), chlorine (Cl), and helium (He) in the periodic table. For each of these elements answer the questions below.

5. Calcium (Ca):

a) Name the two elements with properties most like calcium.

_____

b) How many electrons and protons does an atom of calcium have?

_____

c) Is calcium more reactive than potassium (K)? _____

d) Is a calcium atom larger than a magnesium (Mg) atom? _____

6. Chlorine (Cl):

a) Name the two elements with properties most like chlorine.

_____

b) How many electrons and protons does an atom of chlorine have?

_____

c) Is chlorine more reactive than sulfur (S)? _____

d) Is a chlorine atom larger than a bromine (Br) atom? _____

7. Helium (He):

a) Name the two elements with properties most like helium.

_____

b) How many electrons and protons does an atom of helium have?

_____

c) Is helium more reactive than hydrogen (H)? _____

d) Is a helium atom larger than a neon (Ne) atom? _____

Hands-On Activity #3

The Lives of Elements

Choose several elements and see how many interesting FACTS you can find out about them.

Some things you might look for are:

- **When the element was discovered**
- **Why its symbol doesn't sound like its name**
- **What its name means—was it named after a person?**
- **Where on Earth it can be found**
- **What it is used for**
- **What unusual properties it has**

For example, the metal element tungsten has the symbol W because "wolfram" is the German word for tungsten. Tungsten was discovered by Carl Scheele in 1783. Tungsten has the highest melting point of any metal. The glowing wire in the middle of a light bulb is made of tungsten.

You will find interesting facts about most of the elements. You might try **one** element each from groups 1, 17, and 18, and **one** or **two** of the metals in the middle of the periodic table.

NAME: _____

After You Read

Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

B	O	C	P	E	R	I	O	D	I	C
D	X	F	G	H	P	J	N	K	L	W
R	I	T	Y	U	R	U	P	S	D	L
E	D	K	R	J	O	H	O	G	F	A
L	E	E	L	P	T	E	Z	R	X	I
C	S	Y	M	B	O	L	S	A	G	R
I	N	O	O	O	N	E	B	V	C	E
T	C	M	T	N	L	M	R	W	L	T
R	L	P	A	D	Y	E	T	E	R	A
A	E	K	J	H	B	N	C	G	F	M
P	V	T	C	M	X	T	Z	U	S	D
B	N	M	U	T	R	E	N	I	L	Q
Y	T	N	M	O	D	E	L	R	W	E
P	S	D	N	E	U	T	R	O	N	F

ATOM
BOND
COMPOUND
ELECTRON
ELEMENT
GAS
GROUP
INERT
MATERIAL
MOLECULE
NUMBER
OUTER
OXIDE
PARTICLE
PERIODIC
PROTON
SYMBOLS
NEUTRON
MODEL

NAME: _____

Reading Passage

Comprehension Quiz

Part B

Answer each question in complete sentences.

1. Use the word "particle" to explain what a **pure material** is. Name the **two** kinds of particles. (3)

2. Use the words "atom" and "material" to explain what an **element** is. (3)

3. Use the words "element" and "material" to explain what a **compound** is. (3)

4. Tell how the elements in a "group" in the periodic table are arranged. Use the word "electrons" to explain why elements in a group have the same kind of properties. Where are the elements with the smallest atoms found in a group? (4)

5. Where are the **metals**, **nonmetals**, and **inert gases** found in the periodic table? (3)

SUBTOTAL: /16

After You Read

NAME: _____

Patterns In the Periodic Table

Look at the periodic table to help you answer these questions.

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- [ ] **a)** silver (Ag)
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- [ ] **c)** fluorine (F)
- [ ] **d)** krypton (Kr)
- [ ] **e)** nitrogen (N)

2. Put a check mark (✓) next to the answer that is most correct.

a) Lithium (Li) forms a compound most easily with

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b) Where are the *most* reactive elements in the periodic table?

- ○ **A** far right row
- ○ **B** top and bottom rows
- ○ **C** lower left and lower right
- ○ **D** upper left and upper right

c) Which of these elements has properties *most* like those of sodium (Na)?

- ○ **A** argon (Ar)
- ○ **B** chlorine (Cl)
- ○ **C** magnesium (Mg)
- ○ **D** potassium (K)

EASY MARKING ANSWER KEY

1.

a) 4

b) 3

c) 1

d) 5

e) 2

2.

a) ✓ **B**

b) ✓ **D**

c) ✓ **D**

3.

Elements in the same group have the same number of outer electrons.

4.

Atoms of elements in the bottom have more electrons (or electrons are farther from the nucleus). Answers will vary.

5.

a) magnesium, strontium

b) 20 electrons, 20 protons

c) No

d) Yes

6.

a) fluorine, bromine

b) 17 electrons, 17 protons

c) Yes

d) No

7.

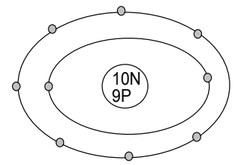
a) neon, argon

b) 2 electrons, 2 protons

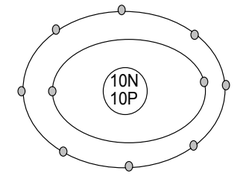
c) No

d) No

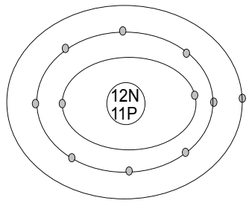
Fluorine:



Neon:



Sodium:



EZ