

Problem: There has been a string of crimes in Charlotte. The weapons used for these crimes have been different and the materials that make them up could lead to catching the criminal.

A break-in occurred in West Charlotte. The tool used for the break in was found at the scene of the crime. The tool was shiny and would easily hammer into sheets.

1. The tool is a [metal/nonmetal/metalloid] because _____.
2. After further testing, the tool was found to belong to Period III and is highly reactive. What element could the tool be made of?

A robbery occurred in Ballantyne. The weapon found at the scene of the crime could not conduct electricity and would break every time we tried to pull it into a long wire.

3. The tool is a [metal/nonmetal/metalloid] because _____.
4. After further testing, the tool was found to belong to Group 14 and is very light (it has a LOW mass). What element could the weapon be made of?

A poisoning occurred in Uptown. The poison could conduct electricity and could be easily molded into different shapes.

5. The poison is a [metal/nonmetal/metalloid] because _____.
6. After further testing, the weapon was found to be made of one of the densest/heaviest elements in Group 1. What element could the weapon be made of?

An attack occurred on the UNC- Charlotte campus. The weapon used in the attack was able to conduct electricity and was in the shape of a long wire.

7. The weapon is a [metal/nonmetal/metalloid] because _____.
8. After further testing, the weapon was found to be made of one of an element with 79 protons. What element is the weapon be made of?

A poisoning occurred at a restaurant on Albemarle Road. The poison was brittle (easily crushed or broken) and did not stick to a magnet. What type of element is it made of (metal, non-metal or metalloid)?

9. The poison is a [metal/nonmetal/metalloid] because _____.
10. After further testing, the weapon was found to be very dense and was UNREACTIVE, or STABLE. What element could the poison be made of?

An attack occurred in Dilworth. The weapon used in the attack would sometimes conduct electricity, but other times it would not.

11. The weapon is a [metal/nonmetal/metalloid] because _____.
12. The weapon was later found to be very light (with a LOW atomic mass). What element could the weapon be made of?

Name: _____

Use the words in the below to fill in the appropriate paragraphs.

Non-metals	Metals	Conductors	Insulators	Periods	Groups
Elements	Malleable	Non-metals	Metalloids	Ductile	

1. Periodic Table: A chart that organizes the _____.

- Row= _____
- Column= _____

2. There are three types of elements on Earth: _____, _____ and _____.

3. Most metals are _____, or able to be bent or shaped without breaking. This property allows many metals to be rolled into very thin sheets known as foils or shaped into jewelry.

4. Many metal elements are _____, which means that they can be stretched into wires without breaking. This property is one reason why metals are used for electrical wiring.

5. Metals are good _____ of electricity that allows electrons to flow through it easily. This property allows metals to be useful as electrical wires and in cookware.

6. Most _____ do not allow electricity to flow through them easily. Materials that do not allow electricity to flow through them easily are called _____.

Name: _____

Use the words in the below to fill in the appropriate paragraphs.

Non-metals	Metals	Conductors	Insulators	Periods	Groups
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6. Most _____ do not allow electricity to flow through them easily. Materials that do not allow electricity to flow through them easily are called _____.

Name _____

Study Guide: Quiz 2

Use the words below to help you complete the vocabulary fill in the blanks #1-7 below.

Ion	electricity	malleable	metal
Insulator	non-metals	ductile	metalloid

1. Many metal elements are _____, which means that they can be stretched into wires without breaking. This property is one reason why metals are used for electrical wiring.
2. Most _____ do not allow electricity to flow through them easily. Materials that do not allow electricity to flow through them easily are called _____.
3. Most metals are good conductors of _____. This property makes metals useful in cooking pots and pans. Materials not made of metal tend to be poor conductors of heat.
4. Most metals are _____, or able to be bent or shaped without breaking. This property allows many metals to be rolled into very thin sheets known as foils or shaped into jewelry.
5. Many metal elements are _____, which means that they can be stretched into wires without breaking. This property is one reason why metals are used for electrical wiring.
6. A break-in occurred in West Charlotte. The tool used for the break in was found at the scene of the crime. The tool was shiny and would easily hammer into sheets.
The tool is a _____.
7. An attack occurred in Dilworth. The weapon used in the attack would *sometimes* conduct electricity, but other times it would not. The weapon is a _____.

8. How many **neutrons** does an atom of Beryllium (Be) have? (Show your math)
9. How many **protons** does Copper (Cu) have? What did you look at to get its number of protons?
10. How many **electrons** does Copper (Cu) have? What did you look at to get its number of electrons?
11. What happens when an atom loses one electron?
 - a. Becomes a different element
 - b. Becomes a positive ion
 - c. Becomes a negative ion
12. Periodic Table: A chart that organizes the _____
 - Row= _____
 - Column= _____

There are three types of elements on Earth: _____, _____ and _____

13. How can a scientist, using the periodic table, find an element with **properties similar** to another element?

14. Which element is a poor conductor of heat and electricity?

- a. F
- b. K
- c. Fe
- d. Ag

15. Which two families/groups (columns) are the **MOST** reactive _____ and _____. These two families are the most reactive because _____.

16. The least reactive family (column) is _____, because _____.

17. Which element is **non-reactive** when exposed to heat?

- a. F
- b. Al
- c. Ne
- d. Na

18. What are the three **subatomic particles**: _____, _____, and _____.

19. Which of these is not made up of two or more substances that are combined physically?

- a. homogeneous mixture
- b. compound
- c. heterogeneous mixture

20. An unknown substance is provided in a science class. Looking at the substance, a student observes different colors and different sizes of particles unevenly distributed throughout the substance. What type of substance is this?

- a. Solution
- b. Compound
- c. Heterogeneous mixture
- d. Homogenous mixture

You will be asked to label a blank periodic table tomorrow on your quiz--- please study your periodic table.

Name: _____

Date: _____ Quiz 2

Use the word bank below to complete the statements with the correct vocabulary.

malleable metal conductors

Insulator ductile metalloid

1. Most nonmetals do not allow electricity to flow through them easily. Materials that do not allow electricity to flow through them easily are called _____.
2. Most metals are _____, or able to be bent or shaped without breaking. This property allows many metals to be rolled into very thin sheets known as foils or shaped into jewelry.
3. Many metal elements are _____, which means that they can be stretched into wires without breaking. This property is one reason why metals are used for electrical wiring.
4. A break-in occurred in West Charlotte. The tool used for the break in was found at the scene of the crime. The tool was shiny and would easily hammer into sheets. The tool is a _____.
5. An attack occurred in Dilworth. The weapon used in the attack would sometimes conduct electricity, but other times it would not. The weapon is a _____.
6. Most metals are good _____ of electricity. This property makes metals useful in cooking pots and pans. Materials not made of metal tend to be poor conductors of heat.

7-8. The least reactive family (column) is _____, because _____.

9. What is the **main advantage (purpose)** of the periodic table?
 - a. It lists all of the elements alphabetically.
 - b. It randomly numbers the elements so they can be referred by name.
 - c. It organizes the elements.
 - d. It shows how chemicals are dangerous.
10. Based on the periodic table below, which of the following **groups of elements** should have very similar chemical properties?
 - a. Lithium (Li), sodium (Na), potassium (K)
 - b. Potassium (K), aluminum (Al), neon (Ne)
 - c. Carbon (C), iodine (I), hydrogen (H)
 - d. Manganese (Mn), Magnesium (Mg), Molybdenum (Mo)

11. Metalloids, such as silicon, can be found on the periodic table along the border between metals and nonmetals. Which of the following best describes the physical and chemical properties of metalloids?
- Metalloids have some of the physical and chemical properties of nonmetals.
 - Metalloids have exactly the same physical and chemical properties of elements.
 - Metalloids have exactly the same physical and chemical elements.
 - Metalloids have physical and chemical properties of both metals and nonmetals.
12. Which statement is true about the properties of the majority of the elements in the far left column of the periodic table (Group 1)?
- They are highly reactive.
 - They have no luster.
 - They have low heat conductivity.
 - They have low electrical conductivity.
13. Based on the periodic table, elements in which the following groups are the poorest conductors of electricity?
- Group 17
 - Group 7
 - Group 13
 - Group 2
14. Helium (He), neon (Ne) and argon (Ar) are all colorless, odorless gases with low chemical reactivity. Based on the periodic table above, which of the following is correct?
- Chlorine (Cl) is colorless, odorless gas with low chemical reactivity.
 - Carbon (C) is colorless, odorless gas with low chemical reactivity.
 - Xenon (Xe) is a colorless, odorless gas with low chemical reactivity.
15. Which element is non-reactive when exposed to heat?
- F
 - Al
 - Ne
 - Na

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