Atoms and Elements

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An is any substance made of .

- Atoms are the smallest building blocks of matter and can <u>not</u> be broken down using chemical reactions.
- For example:

Carbon is an element made of only carbon atoms.

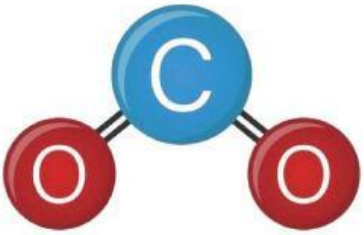
Copper is an element made of only copper atoms.

Helium is an element made of only helium atoms.

Compounds

A is a substance formed when are .

- The elements in compounds are always present in fixed ratios.
- Compounds can be broken down into the elements that make them, but only using chemical reactions.



CO_2 is <u>always</u> 1 carbon:2 oxygen

What are some examples of compounds?

Examples: H_2O (water), CH_4 (methane), NaCl (salt), $C_6H_{12}O_6$ (glucose/sugar).

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Mixtures

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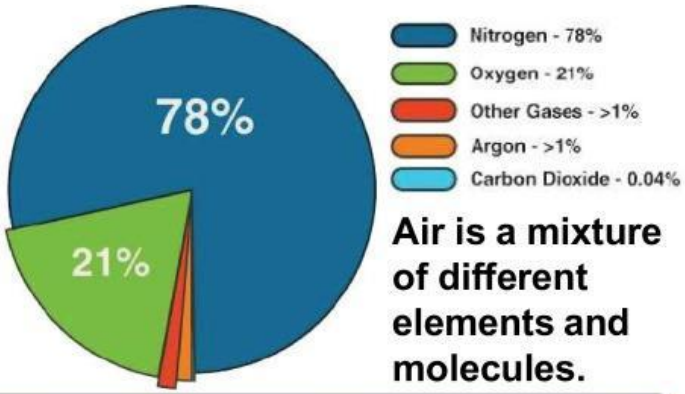
A _____ is made when _____ are combined, but _____.

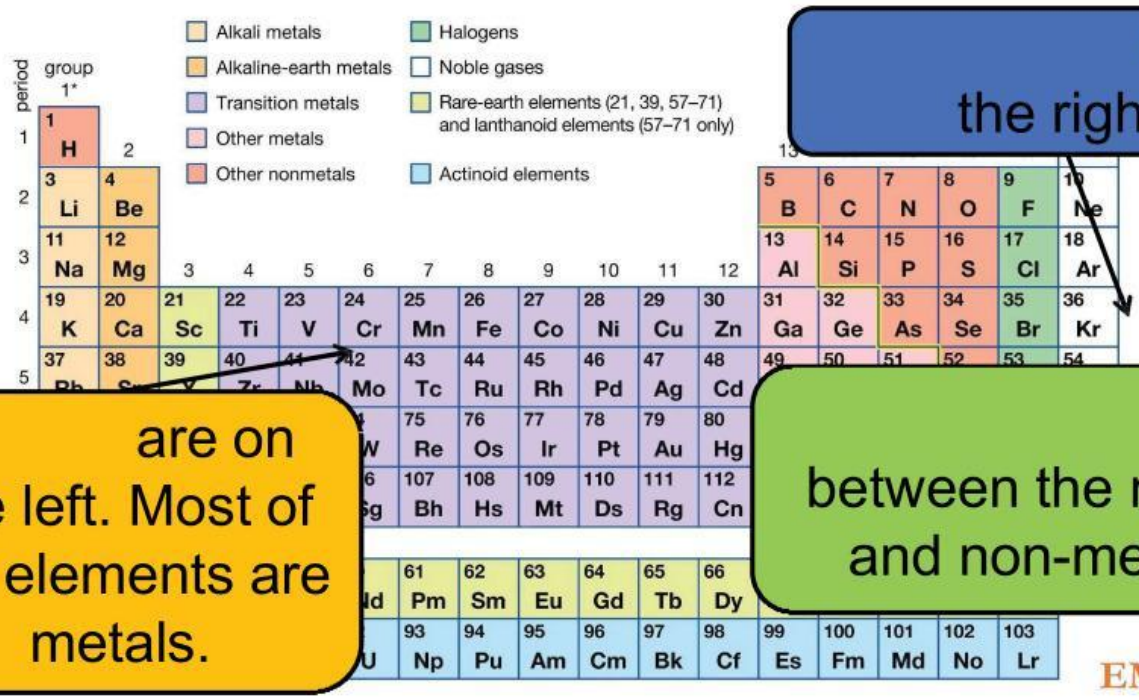
- In a mixture, the substances can be easily _____.
- Each substance in a mixture keeps its original properties.
- The proportion of the substances can vary (change).



Air is a mixture of different elements and molecules.

Example: Salt water, sand, salt and pepper, oil and water.

Metals, Non-Metals and Metalloids



are on the right.

are on the left. Most of the elements are metals.

are between the metals and non-metals.

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Metals and Non-Metals

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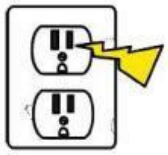
Physical properties of metals

Physical properties of non-metals





Metals and Non-Metals

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Physical properties of metals

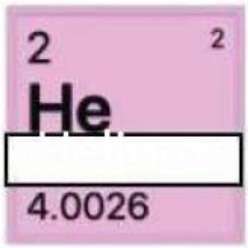
Physical properties of non-metals

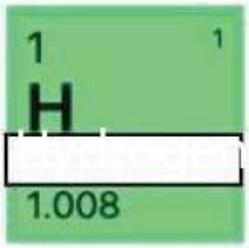
7) What is an element?

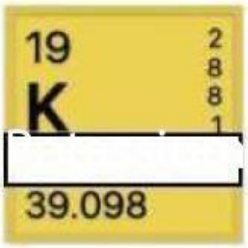
8) What is a compound?

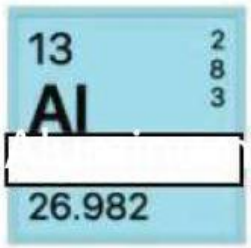
9) What is a mixture?

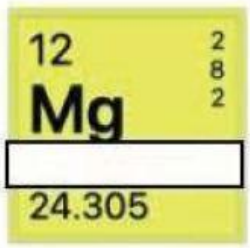
10) Identify the name of the elements below:

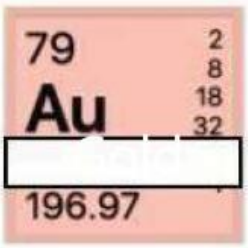


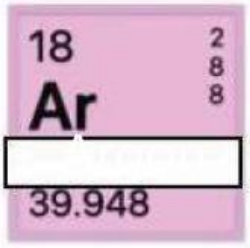












11) Helium, Hydrogen, Argon, Chlorine are examples of what?

12) Aluminum, Potassium, Magnesium, Gold are examples of what?

13) List the physical properties of metal.

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Week 4: Atoms and Elements 2

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LIVEWORKSHEETS

Periods

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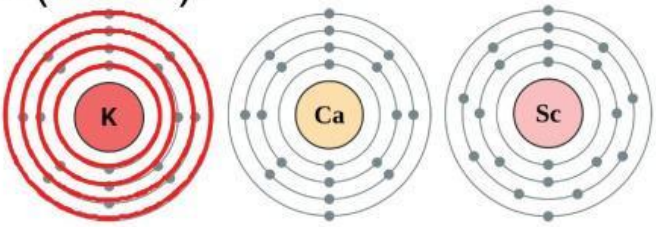
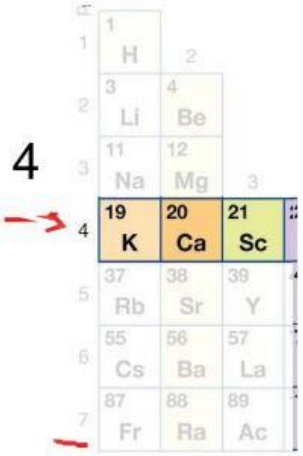
The horizontal rows are called periods.

- There are in the periodic table.
- All the elements in a period share the of electron shells (energy levels).
- For example, all of the elements in period 4 have 4 electron shells (levels).





Groups

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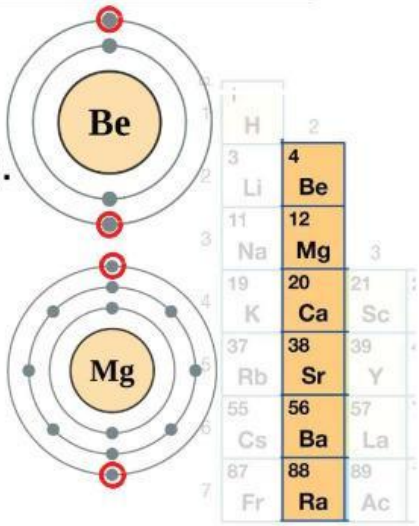
The vertical columns are called "groups" (sometimes called families).

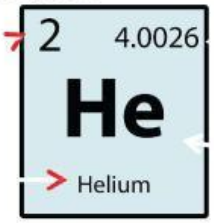
- There are in the periodic table.
- All elements in a group have of valence electrons (outer electrons).
- For example, all of the elements in group 2 have 2 valence electrons (outer electrons).
- This means the elements in each group share similar chemical and physical properties.

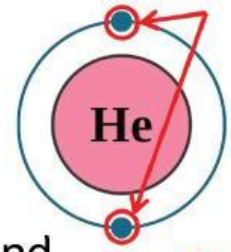


Atomic Structure

Atoms consist of three basic particles: protons, electrons, and neutrons.

- The tells us how many **protons** are in the nucleus of the atoms. The number of **electrons** is equal to the number of protons.





- The is how many protons and neutrons are in the nucleus.

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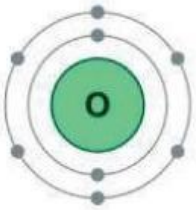
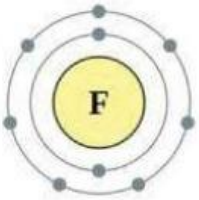
14) How many valence electrons and electron shells does Oxygen have?

What group and period does it belong to?



15) How many valence electrons and electron shells does Fluorine have?

What group and period does it belong to?



16) How many protons are in argon?