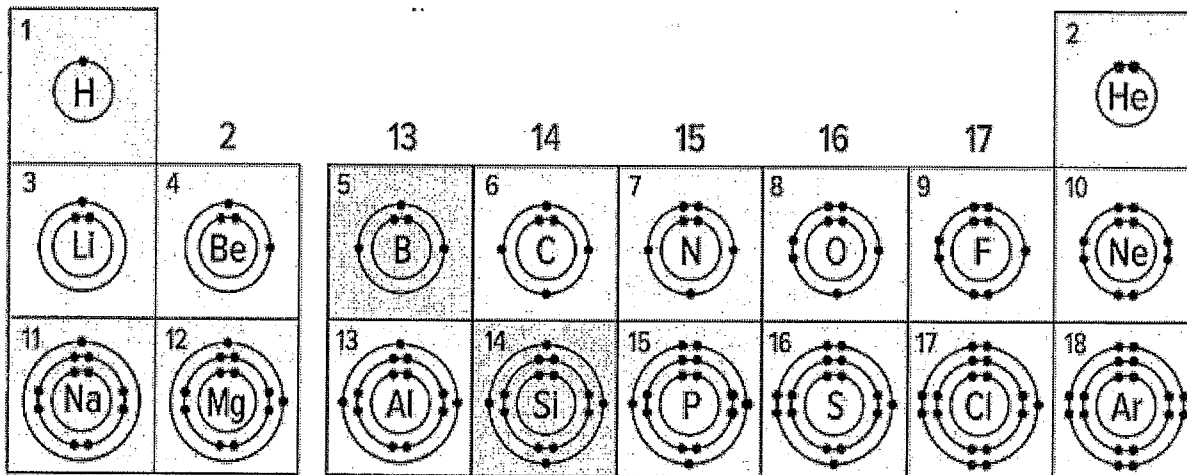


Periodic Table Trends

1. Consider the following diagram:

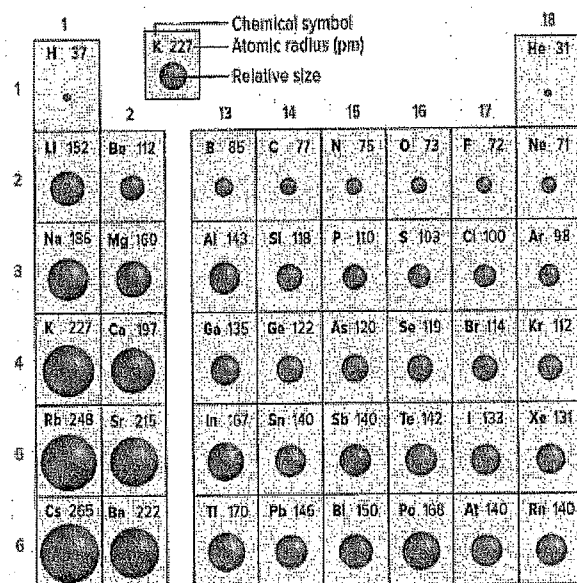


- a. Atoms in the same group have same number of valence electrons
- b. Atoms in the same period have the same number of occupied energy shells
- c. Noble gases have a full valence shell which is why they are stable and do not react.

2. Draw a Bohr Model for:

Magnesium	Neon	Oxygen
<ul style="list-style-type: none"> <li>• Mg has <u>2</u> valence electrons</li> <li>• it will <u>lose</u> (lose/gain) <u>2</u> electrons</li> </ul>	<ul style="list-style-type: none"> <li>• Ne has <u>8</u> valence electrons</li> <li>• it <u>will not</u> (will/will not) lose or gain electrons</li> </ul>	<ul style="list-style-type: none"> <li>• O has <u>6</u> valence electrons</li> <li>• it will <u>gain</u> (lose/gain) <u>2</u> electrons</li> </ul>

3. Describe the atomic size trend as illustrated in the diagram here:



Trend	Increases/Decreases	Explanation
As you move DOWN the periodic table, atomic size ...	increases	adding energy shells
As you move ACROSS the periodic table, atomic size ...	decreases	nucleus more attracted to electrons

4. There are two trends involving metal reactivity:

- As you move down a column on the periodic table, metal reactivity increases
- As you move across the periodic table to the right, metal reactivity decreases
- Which of the following pairs of metals would you expect to be more reactive?

i. lithium or sodium? Why?

Na - more energy levels - trying to get rid of electron

ii. sodium or magnesium? Why?

Na - fewer valence electrons to get rid of.

**Physical and Chemical Changes Review**

	Scenario	Type of Change	Evidence
1.	Sodium hydroxide dissolves in water.	Physical	No change in substances. No unexpected color change, sodium hydroxide only changing form.
2.	Hydrochloric acid reacts with potassium hydroxide to produce a salt, water and heat.	chemical	- new substance created - heat created
3.	A pellet of sodium is sliced in two.	physical	- no new substance - change in size
4.	Water is heated and changes into steam.	physical	- no new substance - change of state
5.	Potassium chlorate decomposes to potassium chloride and oxygen gas.	chemical	- gas formed - new substances
6.	Iron rusts.	chemical	- new substance - colour change
7.	When placed in water, a sodium pellet catches on fire as hydrogen gas is liberated and sodium hydroxide forms.	chemical	- new substance - gas formed - fire produced
8.	Evaporation of rubbing alcohol.	physical	- no new substance - change of state

9.	Sugar cube melting.	physical	-no new substance - change of state
10.	Milk sours.	chemical	-new substance
11.	Wood rotting.	chemical	-new substance
12.	Pancakes cooking on a griddle.	chemical	-new substance.
13.	Grass growing in a lawn chair.	chemical	- chemical reactions (photosynthesis)
14.	Sugar dissolves in water.	physical	- no new substance
15.	A tire is inflated with air.	physical	- no new substance - change in shape
16.	Dry ice sublimates into carbon dioxide gas.	physical	-no new substance - change in state
17.	Water is absorbed by a paper towel.	physical	-no new substance -change in state

18. Is a burning candle an example of a chemical or physical change or both? Explain using evidence.

physical - wax melts  
chemical - wick burns

19. Explain why digestion of food involves both physical and chemical changes.

physical - chew food makes it smaller  
chemical - saliva/stomach acid breaks down food.