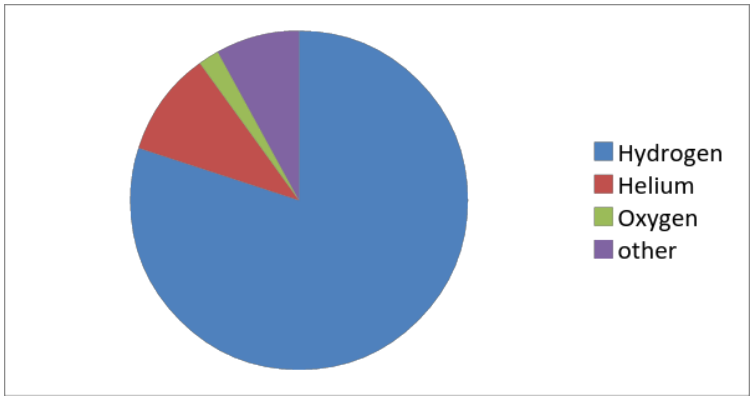
Standard 1 Review Answer Key

Express the following quantities in scientific notation:	**Write the quantities in standard notation:**
1) 0.000063 6.3×10^{-5} s 2) 660m 6.6×10^{2} m 3) 6850000000 m 6.86×10^{10} m 4) 0.00000082 kg 8.2×10^{-7} kg 5) 3050 s **3.05×10^{3} s**	6) 2×10^{-4} cm **0.0002 cm** 7) 3×10^{5} s **300000s** 8) 4.11×10^{6} m **4,110,000m** 9) 4.62×10^{-2} kg **0.0462 kg** 10) 2.204×10^{4} nm **22040 nm**

1) Draw a pie chart showing the distribution of the elements in the universe:



12) Draw the atomic model for each of the following scientist AND what they contributed to the atomic theory:

1st to proposed the existence of atoms "atomos"	**Original Atomic Theory**	**Gold Foil Experiment -Discovered the nucleus**	**Plum pudding model -discovered the electron**	**Orbital Model - electron orbital**	
Democritus	Dalton	Rutherford	Thomson	Bohr	

13) Complete the following table:

Element	Mass Number	# of Protons	# of Neutrons	# of Electrons
Mg	24	12	12	12
P	31	15	16	15
Sn	119	50	69	50
Na	23	11	12	11

14) What is the mole and why do we use it? What is the value of a mole?

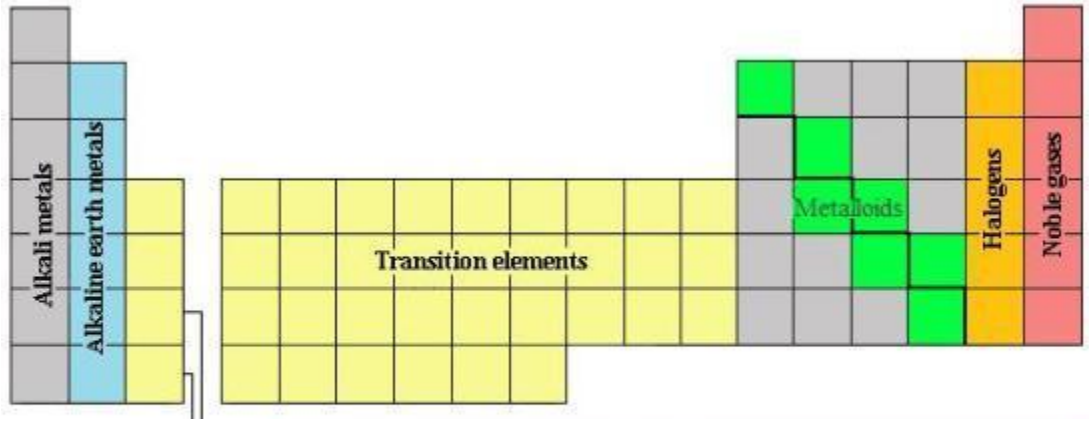
The mole is a unit of measurement. A mole is used to measure the atoms since they are too small to count. The value of a 1 mole = 6.02 x 10^{23} particles.

15) What is the difference between the mass number and the atomic mass?

The atomic mass is weighted average of all the mass numbers of all the isotopes of the atoms. The mass number is the exact number of protons plus neutrons.

16) Label the following groups in the periodic table: Nobel Gases, Alkali metals,

Transition metals, Halogen, Alkali Earth Metals, Metalloids



17) Label the following elements as metal, nonmetal or metalloid

a) Mg- **Metal**

b) N -**Nonmetal**

c) B - **Metalloid**

d) Si - **Metalloid**

e) H- **nonmetal**

f) Co - **metal**

18) Determine if the following changes are chemical or physical

a. boil -- **Physical**	j. ferment -- **Chemical**
b. burn (combustion) -- **Chemical**	k. melt -- **Physical**
c. condense -- **Physical**	l. rust -- **Chemical**
d. corrode -- **Chemical**	m. crush -- **Physical**
e. crumple -- **Physical**	n. freeze -- **Physical**
f. grind -- **Physical**	o. explode-- **Chemical**
g. rot -- **Chemical**	p. photosynthesis -- **Chemical**
h. vaporize -- **Physical**	q. sublimation -- **Physical**

19) Define or draw a picture to describe the following characteristics:

a) Malleable : **shapeable**

b) Luster: **shine**

c) Flammable: **ability to burn**

d) Reactivity: **ability to react**

e) Conductive: **ability to conduct an electrical current**

f) Ductile : **can be drawn into a wire**

20) Classify the following properties as chemical or physical properties:

a) Color**- Physical**

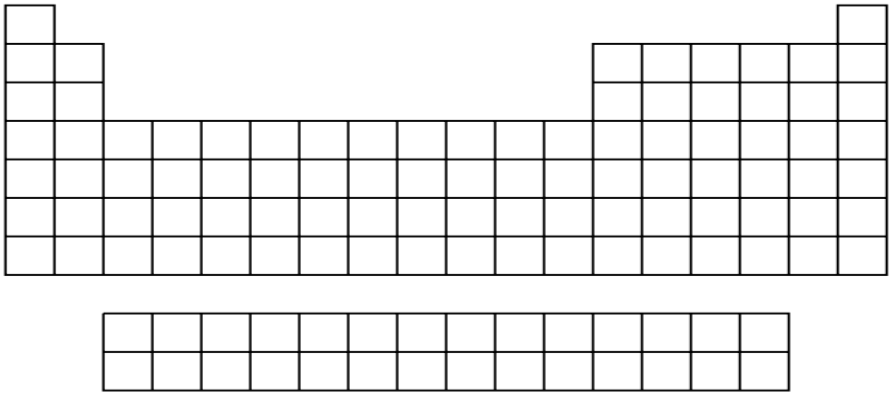
b) Temperature**- Physical**

c) Flammability- **chemical**

d) Density **- Physical**

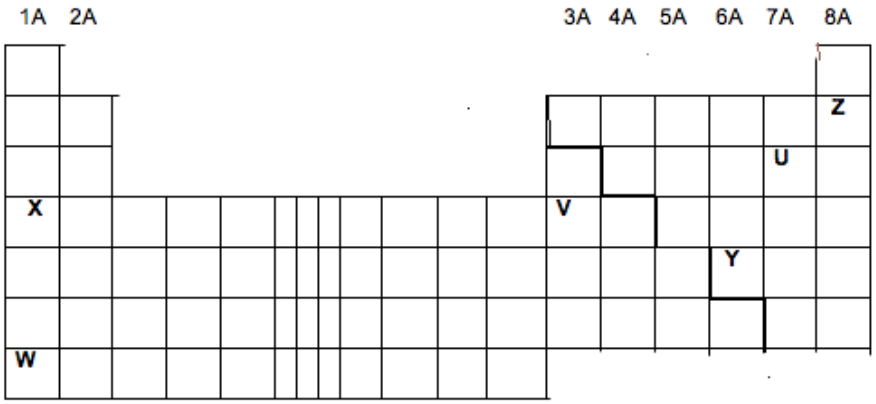
d) Reactivity- **chemical**

21) Label the following trends increase/decrease (atomic radius, ionization energy, electronegativity) on the following periodic table **Refer to Notes**



22) For each of the following , circle the correct element

a.	**Li**	Si	S	Metal
b.	N	P	**As**	Smallest ionization energy
c.	K	Ca	**Sc**	Largest atomic **mass**
d.	**H**	Li	Na	nonmetal
e.	Pb	Bi	**Si**	Metalloid
f.	B	C	**N**	Gas at room Temperature
g.	N	P	**O**	Largest Ionization Energy
h.	**Cs**	K	Ca	Largest Atomic Radius
i.	Mg	**P**	K	Highest Electronegativity
j.	Na	**Rb**	Li	Most Reactive Metal



__D__ 23) What element on the table would you expect to be most chemically **similar** to "X"?

A. V B. Y C. Z D. W

__C__ 24) "X" and "W" are tested by placing a small piece of them in water. What would you expect to see happen?

A. X and W will react the same in water

B. X will react more strongly than W

C. W will react more strongly than X

D. X will react and W will not.

__B__ 25) Which substances would you group together as metals?

A. Y, Z, U B. X, V, W C. X, W D. Y, V, X, W

__C__ 26) Which group of elements includes gases and does not conduct electricity or heat well?

A. metals B. metalloids C. nonmetals D. radioactive elements

27) Explain **why** atomic radius __decreases__ as you go from left to right across the periodic table:

Atomic radii decreases left to right because the number of protons increases, which increases the attractive force on the electrons, and pulls the electrons in the same energy level closer to the nucleus.

b) Explain **why** atomic radius **Increases** as you go down a group on the periodic table:

Atomic radii increases top to bottom because the number of energy levels increases, decreasing the "pull" on the electrons from the protons in the nucleus and making the size of the atom larger. The highest occupied energy level (ring) has the greatest radius because as the number of electrons increases, new energy levels need to be added further away from the nucleus, making the size of the atom increase.

28) Explain **why** ionization energy **increases** as you go from left to right across the periodic table:

This trend is because the outermost electrons are about the same distance from the nucleus, but there are more protons as you move across a row. The increased pull on the electrons requires more energy to remove electrons.

29) Explain **why** electronegativity **decreases** as you go down a group on the periodic table:

As you move down a column the atom gets larger. The attractive force of the nucleus will get weaker the further an electron is from the nucleus.

30) Write the electron configuration for each of the given elements:

a. Fe- $[Ar]\ 4s^2 3d^6$

b. Ba- $[Xe]\ 6s^2$

c. Es- $[Rn]\ 7s^2 5f^{11}$

d. V- $[Ar]\ 4s^2 3d^3$

e. Pb -$[Xe]\ 6s^2 4f^{14}\ 5d^{10} 6p^2$