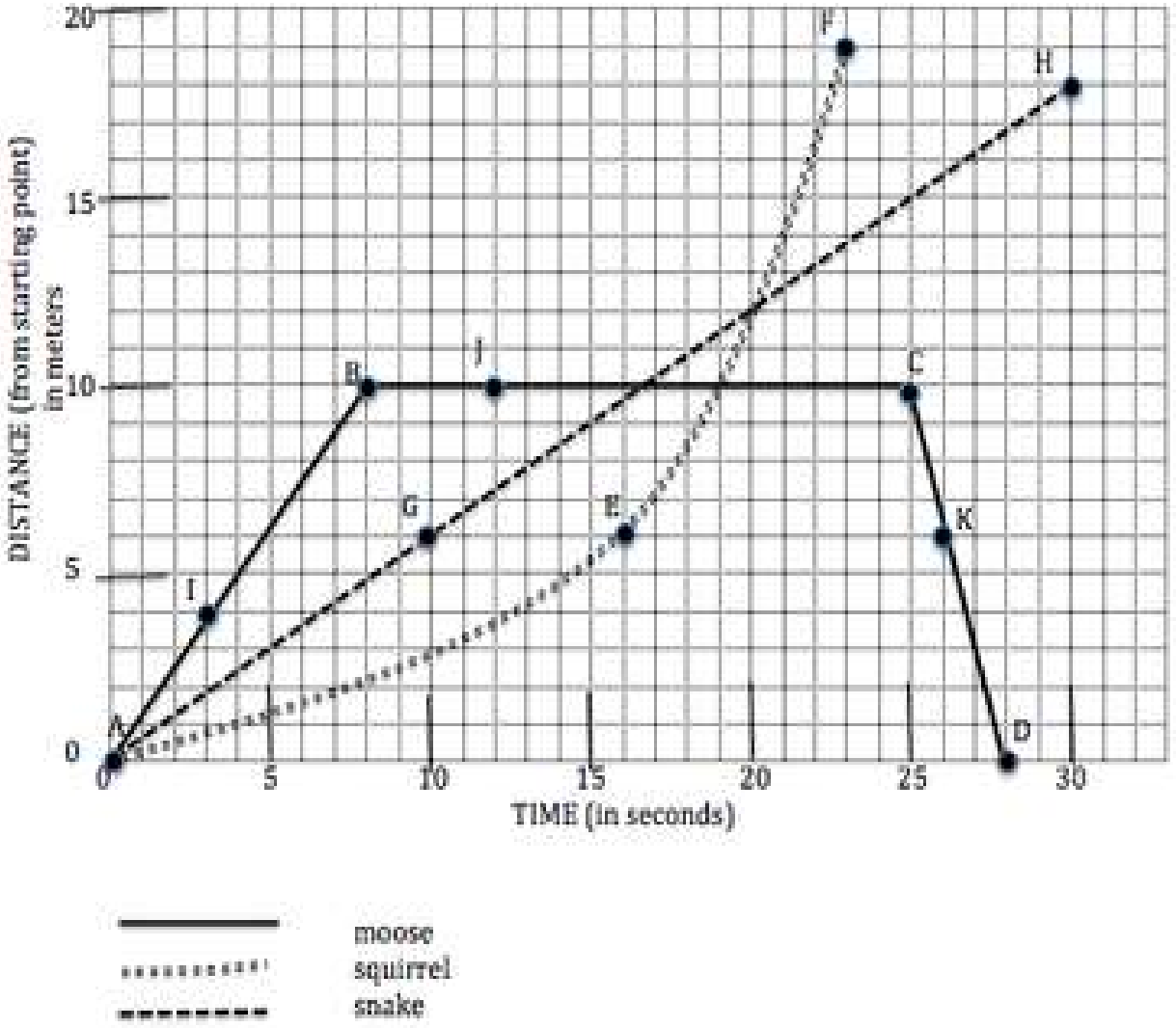
Physical Science

Review Graphs and Charts



Describe the motion between:

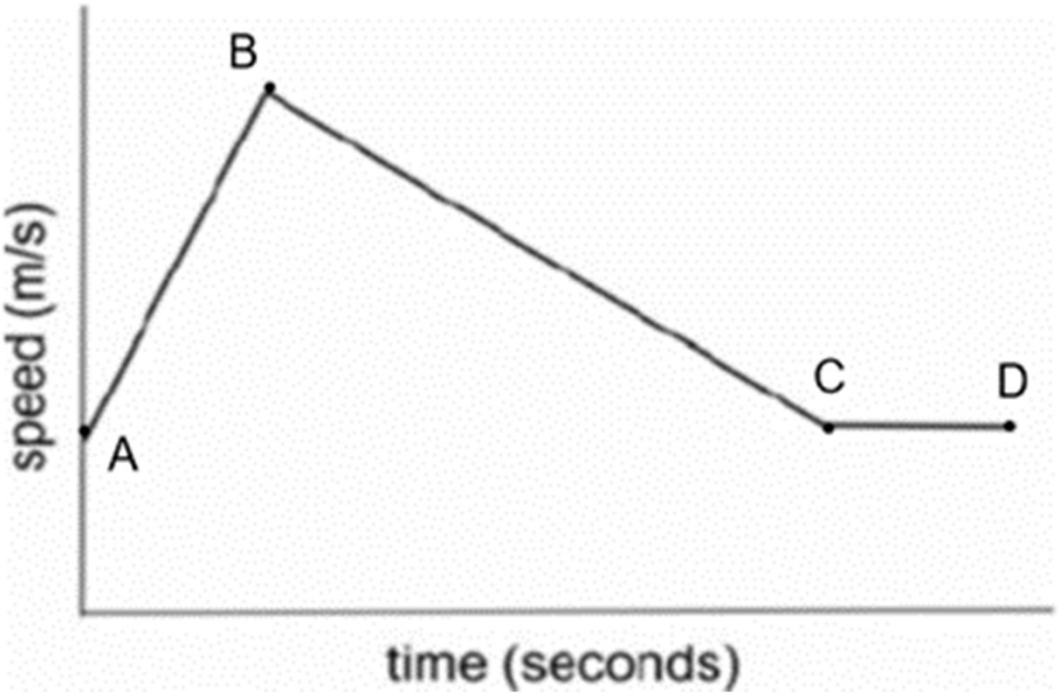
1. B and C

2. E and F

3. A and B

4. C and D

5. G and H



Describe the motion between:

1. A and B

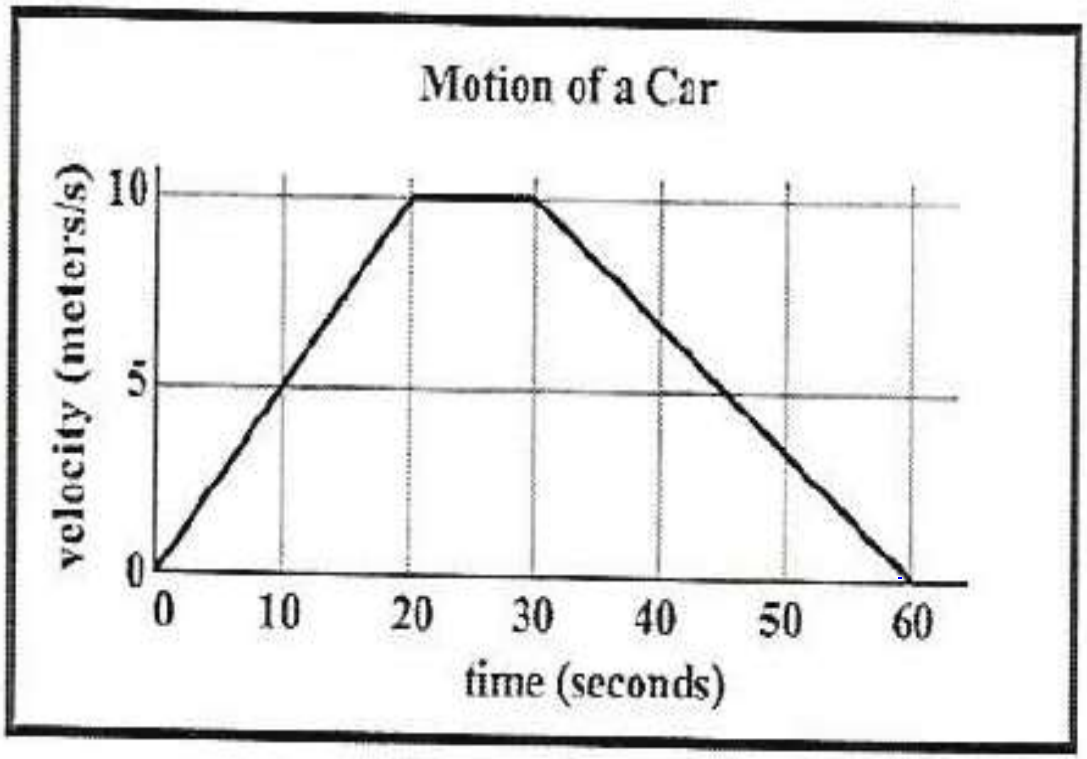
2. B and C

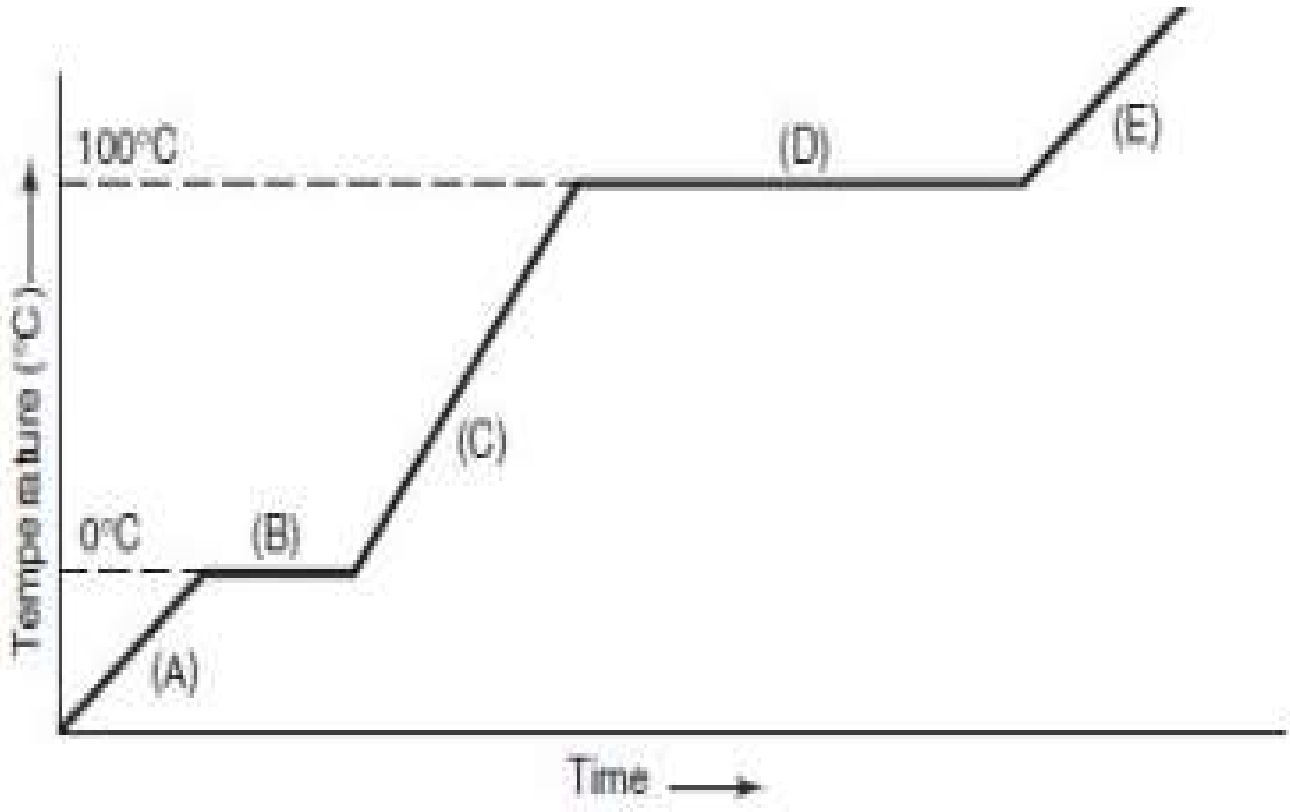
3. C and D

1. Calculate the acceleration of the car between 0 and 20 seconds.

2. At 25 seconds, what is the car's acceleration?

3. Calculate the acceleration of the car between 30 and 60 seconds.





1. Melting _____
2. Freezing _____
3. Boiling _____
4. Gas _____
5. Solid _____
6. Liquid _____

1. Which part of the graph shows a phase change requiring the greatest amount of energy? _____
2. Which part of the graph show a liquid heating up? _____
3. Which part(s) of the graph show(s) a phase change? _____

Specific Heats of Selected Materials	
Material	**C (J/kg·K)**
Aluminum	897
Concrete	850
Diamond	509
Glass	840
Helium	5193
Water	4181

Which Material_____?

1. **cools the fastest _____**
2. **holds the most energy _____**
3. **heats the slowest _____**
4. **exchange heat similarly _____**

Which of Newton's Three Laws Applies?

1. ___ a paddle-wheel boat pushes on the water and the water pushed back to move the boat
2. ___ a tractor trailer truck takes longer to accelerate
3. ___ a rolling ball hit your leg and is hard to stop
4. ___ a heaver animal has to use more muscle to speed up
5. ___ you push on the wall and you don't move
6. ___ Fighter pilot feels massive amount of force when their plane turns quickly
7. ___ a ball won't move until it is kicked

Endothermic or Exothermic

1 If it gets cold

_____

2. If it gets hot

_____

3. Condensation:

_____

4. Vaporization:

_____

5. If it absorbs heat

_____

6. If it releases heat

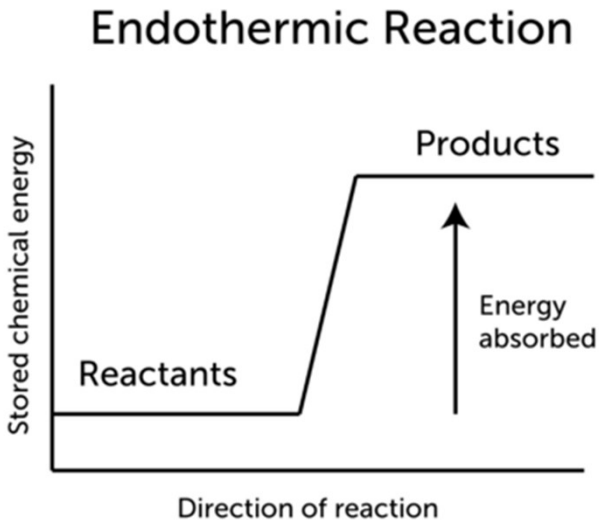
_____

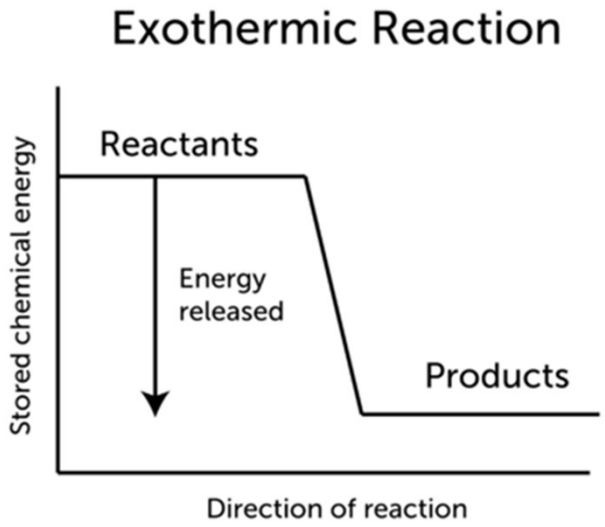
7. Melting

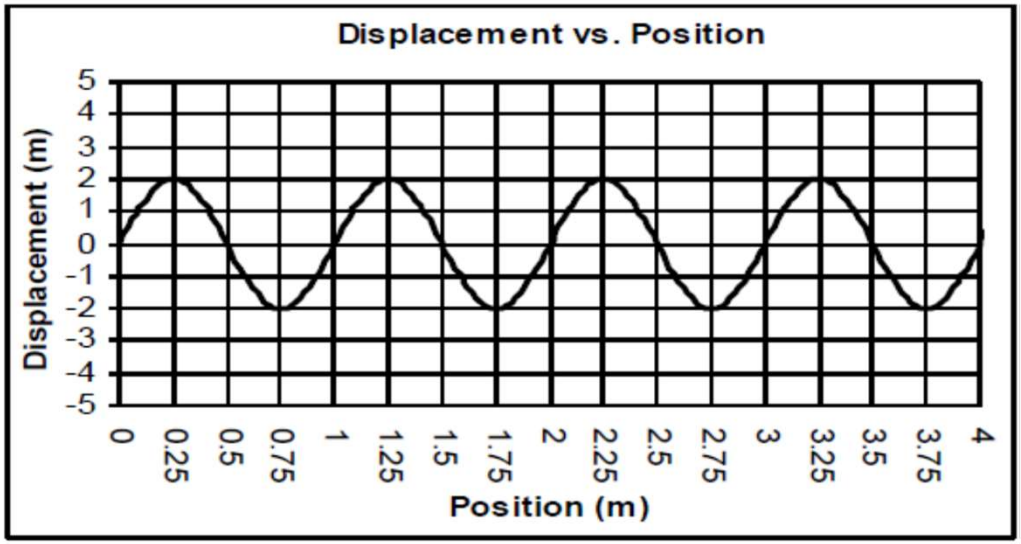
_____

8. Freezing

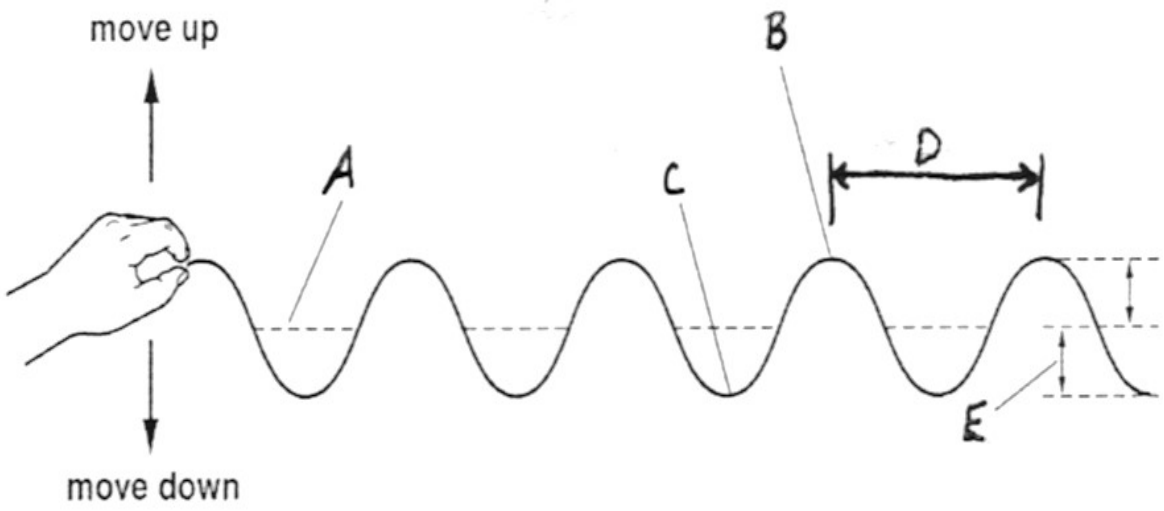
_____







1. Mark one cycle on the wave above
2. Starting at 0.75m, where does the 2nd cycle end
3. How many cycles are in the graph
4. Calculate the length of one wave
5. Calculate Amplitude of wave



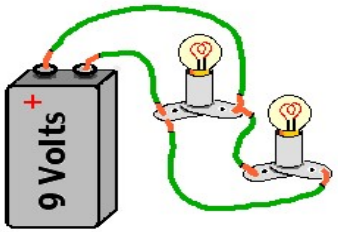
Wave type: _____

A _____ B_____

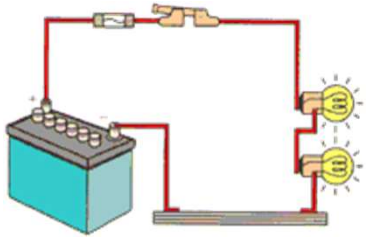
C _____ D_____

E_____

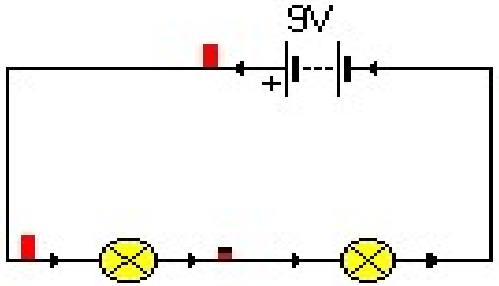
Identify circuits as Series or Parallel



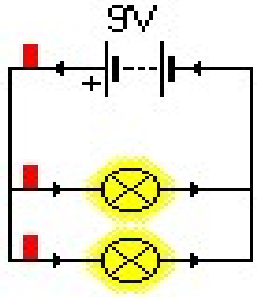
A. _____



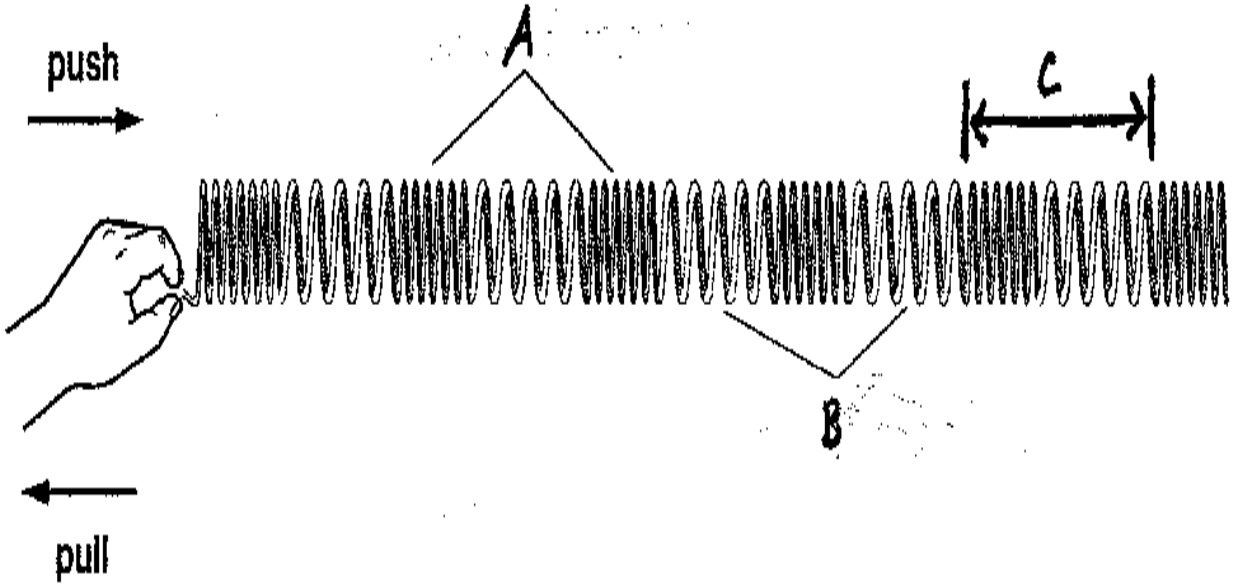
B. _____



C. _____



D. _____



Wave Type: _____

A _____

B_____

C _____

Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
^{23}Na					
K		40		19	
F					10
	20	41		18	
	50			50	72
^{131}I					
		109	47	46	
	1	2		1	
^{36}S					

1. Give the number of Valance Electrons for:

Lithium ___ Nitrogen ___ Chlorine ___ Calcium ___

Phosphorous ____ Aluminum _____ Selenium _____

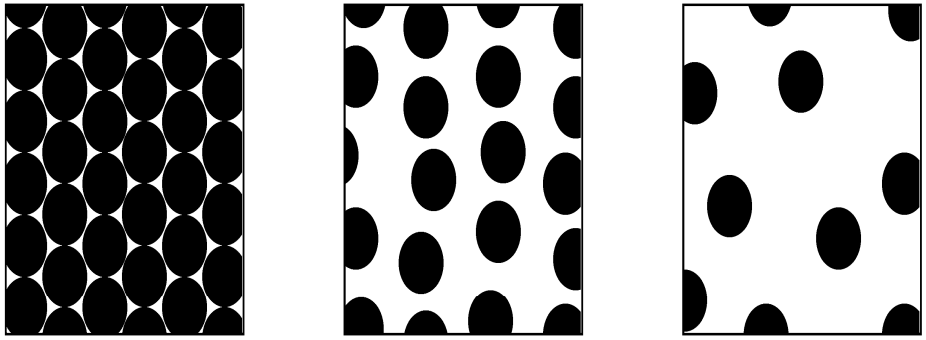
2. Give oxidation number (charge) for:

Lithium ____ Nitrogen ____ Chlorine ____ Calcium ____

Phosphorous ____ Aluminum _____ Selenium _____

Melting and Boiling Points of Some Substances		
Substance	**Melting Point**	**Boiling Point**
Hydrogen	–259.3˚C	–252.9˚C
Nitrogen	–210.0˚C	–195.8˚C
Acetic Acid	16.6˚C	117.9˚C
Gold	1064.2˚C	2856˚C

1. Based on the information in the table above, the melting point of acetic acid is_____.
2. Based on the information in the table above, the freezing point of nitrogen is _____.
3. Based on the information in the table above, which substances would be a gas at 0ºC?



1. In the above picture, which substance is a liquid?

2. In the above picture, which substance is a solid?

3. In the above picture, which substance is a gas?
4. In the above picture, which substance are the forces of attraction among the particles so weak that they can be ignored under ordinary conditions?

Ionic/Covalent	1st element w/ charge if ionic	2nd element w/ charge if ionic	Chemical formula	Chemical Name
	Na^{+1}	Cl^{-1}	NaCl	Sodium Chloride
	K	S		
	Ca	Cl		
	C	O		Carbon dioxide
	N	O	N_2O_5	
	Mg	O		Magnesium oxide
	S	O		Sulfur trioxide
	Mg	P		
	Al	O		
				Oxygen triflouride
			CCl_4	
	Al	Cl		
	Ca	O		
			P_2O_5	
	Na	S		

$$Li_2O + MgCl_2 \rightarrow 2\ LiCl + MgO$$

Write the second reactant: _____

Write the first product:_____

How many Lithium atoms are on the product side? _____

What is coefficient for lithium chloride? _____

Type of reaction: _____

Identify the type of reaction for each of the following equations

a) ____$NaBr$ + ____ $Ca(OH)_2$ → ____$CaBr_2$ + ____ $NaOH$ reaction type _____

a) ____ NH_3 + ____ H_2SO_4 → ____$(NH_4)_2SO_4$ reaction type _____

a) ____ C_5H_{10} + ____ O_2 → ____CO_2 + ____H_2O reaction type _____

b) ____ Pb + ____ H_3PO_4 → ____H_2 + ____$Pb_3(PO_4)_2$ reaction type _____

c) ____ Li_3N + ____ NH_4NO_3 → ____$LiNO_3$ + ____ $(NH_4)_3N$ reaction type _____

d) ____HBr + ____ $Al(OH)_3$ → ____ H_2O + ____$AlBr_3$ reaction type _____

1. The half-life of hydrogen-3 is 12.3 years. Given 100 g of hydrogen-3, how many grams will be left after 5 half-lives?

1. A patient is administered 20 mg of iodine-131. How much of this isotope will remain in the body after 40 days if the half-life for iodine-131 is 8 days?

Indicate whether the following substances are **strong acids**, **weak acids**, **neutral**, **weak bases**, or **strong bases** based on their pH.

a. _____ Baking soda pH = 8

b. _____ Lye pH = 13

c. _____ Liquid plumber pH = 12

d. _____ Ajax liquid pH = 7.8

e. _____ Pepsi pH = 2.6

f. _____ Nail polish Remover pH = 6.5

g. _____ Pickle juice pH = 5

h. _____ Purified water pH = 7

Identify as Homogenous or Heterogeneous Mixtures.

Sugar Water _____

Vegetable Soup _____

Chex Mix _____

Jello w/ fruit _____

Milk _____

Plain Jello _____

1. At 40°C, how much potassium nitrate can be dissolved in 100 g of water?

2. Which salt shows the least change in solubility from 0°C to 100°C?

3. At 30°C, 90 g of sodium nitrate is dissolved in 100 g of water. Is this solution saturated, unsaturated, or supersaturated?

4.Which salt is least soluble at 90°C?