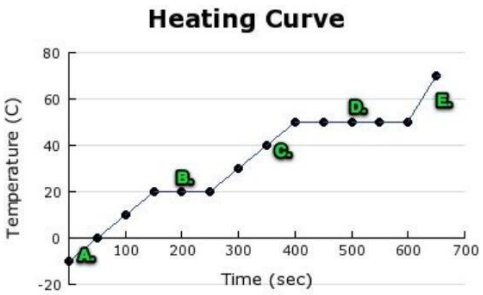
Section 2C Review

1) Using the following heating curve, fill in the table:

Part of the curve	State(s) of Matter	Process that is happening	Temperature Range
A	Solid	Heating	Below 20
B	Solid & liquid	Melting	20
C	Liquid	Heating	20 – 50
D	Liquid & Gas	Boiling	50
E	Gas	Heating	Above 50



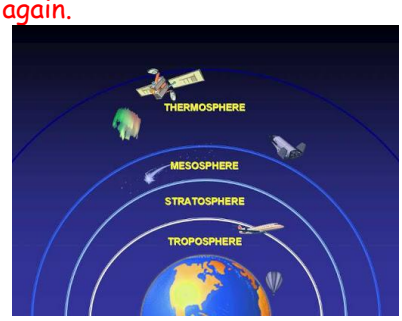
3) Earth's atmosphere is composed of a mixture of gases. List the three most plentiful gases found in the atmosphere.

Nitrogen (78%), Oxygen (21%), Argon (0.9%). All other gases make up the last 0.1%

4) List three changes in the atmosphere as the altitude increases from sea level to high altitude.

As you increase altitude, the number of molecules decrease, the pressure decreases and the temperature goes down, then up, then down again.

5) Sketch and label the four layers of the atmosphere.



6) This equation represents the production of ammonia (NH_3) by the reaction of nitrogen gas with hydrogen gas:

$$N_2\ (g) + 3\ H_2\ (g) \rightarrow 2\ NH_3\ (g)$$

a) If 1 mol $N_2(g)$ reacts with 3 mol $H_2(g)$ in a flexible container at constant temperature and pressure, would you expect the total gas volume to increase or decrease? Why?

Volume should go down. 2 mol of NH_3 takes up less volume than the 4 mol (1 + 3) of reactants.

b) How many moles of NH_3 would form if 12.0 mol N_2 react completely with hydrogen gas?

24 mol NH_3

7) In a chemical reaction, 1 L hydrogen gas (H_2) reacts with 1 L chlorine gas (Cl_2) to produce 2 L hydrogen chloride gas (HCl). All volumes are measured at the same temperature and pressure.

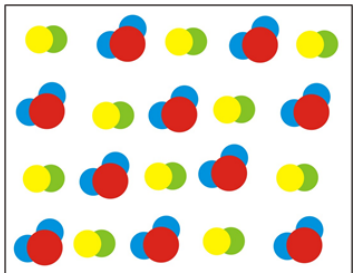
a) Write a balanced chemical reaction.

$H_2 + Cl_2 \rightarrow 2\ HCl$

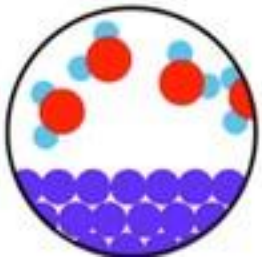
b) If 19 L of H_2 gas react, how many liters of Cl_2 gas will need to react with it? How many liters of HCl gas will be made?

19 L Cl_2, 38 L HCl

8a) Draw a homogeneous mixture of three different compounds.



8b) Draw a heterogeneous mixture of a compound and an element.



9a) Generation of carbon dioxide for the lab we did happened in a syringe. Why couldn't we do the mixing in a beaker?

If we were to do the reaction in a beaker, the gas would escape. We needed to do the reaction in a confined space so we could save it.

9b) What are the 4 properties of carbon dioxide we observed from the lab?

- CO_2 extinguishes a flame
- CO_2 is absorbed by NaOH
- CO_2 creates a solid in Ca(OH)2
- CO_2 turns indicator water from green to orange (pH goes down)

10) Rank the different types of electromagnetic radiation from lowest to highest energy.

- radio
- microwave
- infrared
- visible light
- ultraviolet
- X-rays
- gamma rays

11) List one use of each of the 7 types of EM radiation.

- radio - communication (TV)
- microwave - heating food, WiFi
- infrared - heat
- visible light - to see things
- ultraviolet - killing bacteria
- X-rays - seeing broken bones
- gamma rays -radiation treatment for cancer

12) What is the greenhouse effect? What are the greenhouse gases?

The greenhouse effect is the phenomenon that infrared light and visible light hit the surface of the Earth. When they reflect off, some leave the atmosphere. However, some of the light gets trapped in the atmosphere in the form of heat. This heat is trapped by carbon dioxide, water and methane. The heat trapped will keep the surface of the Earth hospitable to life.

13) List one piece of information that suggests humans are causing climate change. Also, list one piece of information that climate change is a naturally occurring process.

This question will have various answers depending on their research