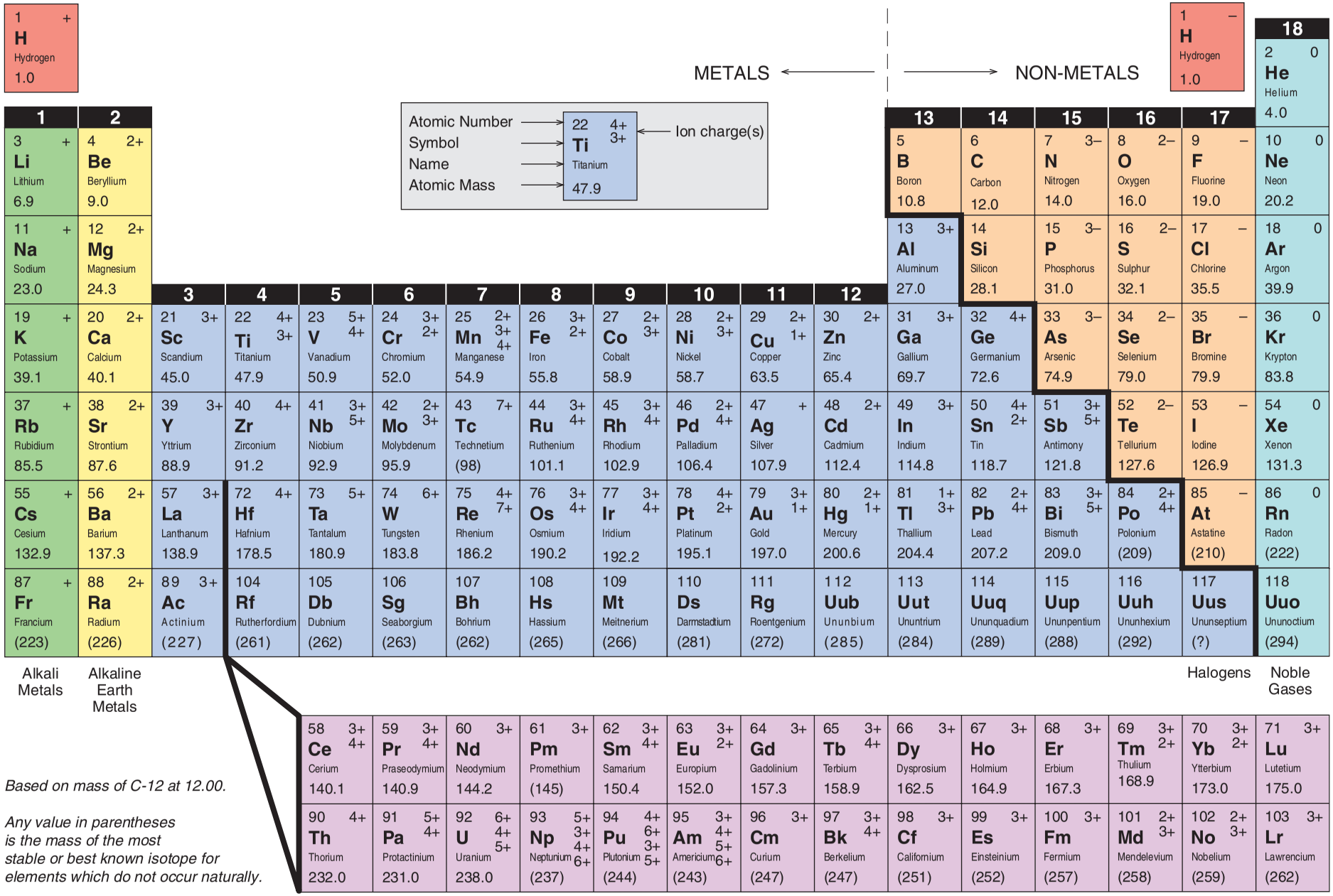
PERIODIC TABLE OF THE ELEMENTS



Based on mass of C-12 at 12.00.

Any value in parentheses is the mass of the most stable or best known isotope for elements which do not occur naturally.

NAMES, FORMULAE, AND CHARGES OF SOME COMMON IONS

* *Aqueous solutions are readily oxidized by air.*
** *Not stable in aqueous solutions.*

Positive Ions (Cations)			
Al^{3+}	Aluminum	Pb^{4+}	Lead(IV), plumbic
NH_4^+	Ammonium	Li^+	Lithium
Ba^{2+}	Barium	Mg^{2+}	Magnesium
Ca^{2+}	Calcium	Mn^{2+}	Manganese(II), manganous
Cr^{2+}	Chromium(II), chromous	Mn^{4+}	Manganese(IV)
Cr^{3+}	Chromium(III), chromic	Hg_2^{2+}	Mercury(I)*, mercurous
Cu^+	Copper(I)*, cuprous	Hg^{2+}	Mercury(II), mercuric
Cu^{2+}	Copper(II), cupric	K^+	Potassium
H^+	Hydrogen	Ag^+	Silver
H_3O^+	Hydronium	Na^+	Sodium
Fe^{2+}	Iron(II)*, ferrous	Sn^{2+}	Tin(II)*, stannous
Fe^{3+}	Iron(III), ferric	Sn^{4+}	Tin(IV), stannic
Pb^{2+}	Lead(II), plumbous	Zn^{2+}	Zinc

Negative Ions (Anions)			
Br^-	Bromide	OH^-	Hydroxide
CO_3^{2-}	Carbonate	ClO^-	Hypochlorite
ClO_3^-	Chlorate	I^-	Iodide
Cl^-	Chloride	HPO_4^{2-}	Monohydrogen phosphate
ClO_2^-	Chlorite	NO_3^-	Nitrate
CrO_4^{2-}	Chromate	NO_2^-	Nitrite
CN^-	Cyanide	$C_2O_4^{2-}$	Oxalate
$Cr_2O_7^{2-}$	Dichromate	O^{2-}	Oxide**
$H_2PO_4^-$	Dihydrogen phosphate	ClO_4^-	Perchlorate
CH_3COO^-	Ethanoate, acetate	MnO_4^-	Permanganate
F^-	Fluoride	PO_4^{3-}	Phosphate
HCO_3^-	Hydrogen carbonate, bicarbonate	SO_4^{2-}	Sulphate
$HC_2O_4^-$	Hydrogen oxalate, binoxalate	S^{2-}	Sulphide
HSO_4^-	Hydrogen sulphate, bisulphate	SO_3^{2-}	Sulphite
HS^-	Hydrogen sulphide, bisulphide	SCN^-	Thiocyanate
HSO_3^-	Hydrogen sulphite, bisulphite		

MOLE

$$RE = \frac{measured - accepted}{accepted} \times 100$$

$$density = \frac{mass}{volume}$$

$$molar\ mass = \frac{mass}{mole}$$

$$percent\ composition = \frac{mass\ of\ part}{mass\ of\ whole} \times 100$$

$$Avagadro's\ Number = 6.02 \times 10^{23}$$

$$molar\ volume\ at\ STP = 22.4\ L \cdot mol^{-1}$$

GAS LAWS

PRESSURE CONVERSION TABLE						
	atm	kPa	Torr	mmHg	bar	psi
1 atm =	1	101.325	760.	760.	1.01325	14.7

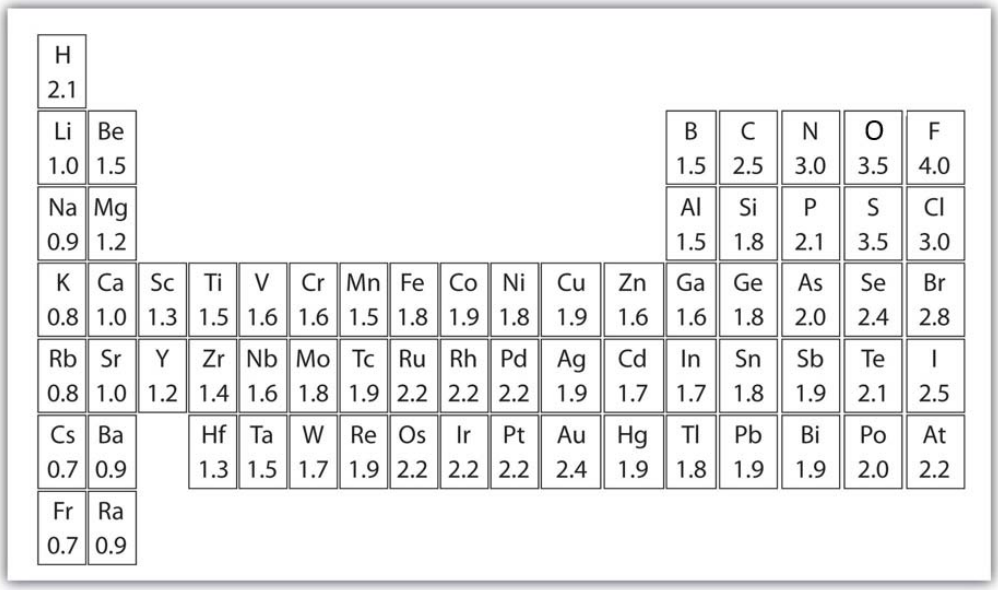
R = 8.314 kpa·L·mol^{-1}K^{-1} R = 0.0821 atm·L·mol^{-1}K^{-1} 0°C = 273 K STP = 1 atm, 0°C

$$PV = nRT$$

$$P_{tot} = pp_a + pp_b + pp_c \ldots$$

$$pp_a = \left(\frac{n_a}{n_{tot}}\right) P_{tot}$$

TABLE OF ELECTRONEGATIVITIES



SOLUTION CHEMISTRY

$$C = \frac{n}{V}$$

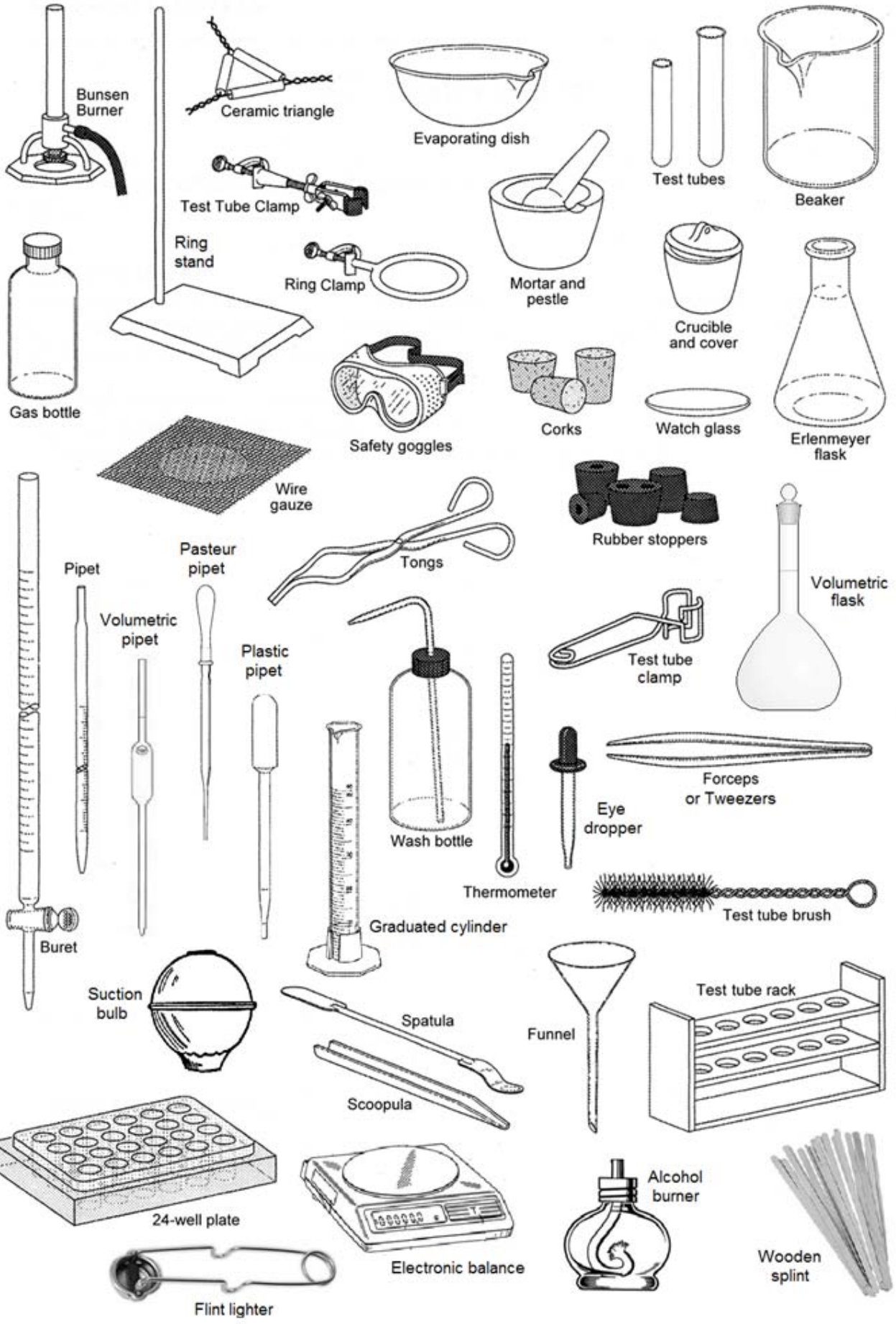
$$C_1V_1 = C_2V_2$$

SOLUBILITY OF COMMON COMPOUNDS IN WATER

The term soluble here means > 0.1 mol/L at 25°C.

Negative Ions (Anions)	Positive Ions (Cations)	Solubility of Compounds
All	Alkali ions: Li^+, Na^+, K^+, Rb^+, Cs^+, Fr^+	Soluble
All	Hydrogen ion: H^+	Soluble
All	Ammonium ion: NH_4^+	Soluble
Nitrate, NO_3^-	All	Soluble
Chloride, Cl^- or Bromide, Br^- or Iodide, I^-	All others	Soluble
	Ag^+, Pb^{2+}, Cu^+	Low Solubility
Sulphate, SO_4^{2-}	All others	Soluble
	Ag^+, Ca^{2+}, Sr^{2+}, Ba^{2+}, Pb^{2+}	Low Solubility
Sulphide, S^{2-}	Alkali ions, H^+, NH_4^+, Be^{2+}, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}	Soluble
	All others	Low Solubility
Hydroxide, OH^-	Alkali ions, H^+, NH_4^+, Sr^{2+}	Soluble
	All others	Low Solubility
Phosphate, PO_4^{3-} or Carbonate, CO_3^{2-} or Sulphite, SO_3^{2-}	Alkali ions, H^+, NH_4^+	Soluble
	All others	Low Solubility

Common Laboratory Equipment



Formal Lab Report Format

Introduction

Write a paragraph to introduce the concepts covered in the lab. For example, if the lab is about chromatography, write a paragraph about what is chromatography, what is it used for in the world, etc.

Purpose

What is the purpose of the lab? Why are you doing the lab? What are you going to learn? You can write this section in point form.

Materials and Procedures

Write this sentence: "Refer to the _____ lab handout." If the lab is called Factors Affecting Reaction Rates, the sentence in this section should read "Refer to the Factors Affecting Reaction Rates lab handout."
Never copy down all the materials and procedures from the lab handout. If the teacher makes any changes to the list of materials and procedures, write them down here. If you changed anything during the lab, write them down here.

Observations and Data

Put all the data you have collected in an organized table. Data tables should have a name on top of them like the following:

Table 1: Volume of NaOH added per trial.

Trial	Volume of NaOH (mL)
1	20.55
2	20.61

Write down important qualitative observations.

Results

Answer all the calculation questions here. If there are graphs, place them here. Any pictures or graphs should have an italicized title underneath them like the following:

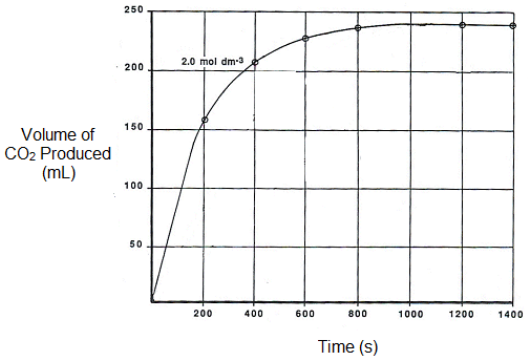


Figure 1: Volume of CO_2 produced in mL over time.

Discussion

Answer all the written lab questions here in complete sentences.

Conclusion

Write a short paragraph to summarize your final results. The paragraph should answer any questions stated in the purpose.

Lab Report Grading

Section	Marks
Prelab • Prelab quiz or questions completed • All safety procedures followed during the lab	3
Format • There is a title page with the title underlined. The title page also includes your name, partner(s) name(s), and date • All sections are in the correct order • All section titles are underlined • If the report is typed, the font is Times New Roman, size 11-12, 1.5 spaced. • The report is written in third person, passive voice (no "I", "we", "you")	No marks for correct formatting. Incorrect formatting results in a maximum of -2 marks.
Introduction	3
Purpose	1
Materials and Procedure	1
Observations and Data • Data is in an organized and neat table, with proper units in the headings • Data is recorded to the correct number of significant figures • Data tables are correctly labeled above the table • Qualitative observations	2
Results • All calculations are done neatly and with correct significant figures • Graphs are done on Excel and have correct axis labels • Graphs are labeled with a descriptive title beneath	Based on the lab
Discussion • All questions are answered in complete sentences	Based on the lab
Conclusion • Conclusion is written in paragraph form • Final results are summarized	3