Calculate the weight (in mg) for 0.364 mole of HNO_3.

$$mole = \frac{wt}{m.wt}$$

0.364 mole = wt/ 63

wt= 23.1 g

= 2.31 x 10^4 mg

Calculate the number of mmoles of solute in 750 ml of 3.25 x 10^{-3} M of KSCN

$$mmoles = M * v\ (mL)$$

= 3.25 x 10^{-3} x 750

= 2.44 mmole

$$aA + bB \longrightarrow P$$

$$mmoles\ of\ A = mmoles\ of\ B * \frac{a}{b}$$

Calculate the volume of 0.25 M H_2SO_4 required to react with 10 mL of 0.25 M NaOH.

$H_2SO_4 + 2NaOH \longrightarrow Na_2SO_4 + 2H_2O$

$$mmoles\ of\ A = mmoles\ of\ B * \frac{a}{b}$$

M_{H2SO4} x V_{H2SO4} = M_{NaOH} x V_{NaOH} x (a/b)

0.25 x V_{H2SO4} = 0.25 x 10 x (1/2)

V_{H2SO4} = 5 mL

Assume a fluoride (AW = 19.0 g/mol) solution that is a 54.66 ppm. Express the concentration as molarity.

$$ppm = M * m.wt * 1000$$

54.66 = M * 19.00 *1000

M = 0.0029

Prepare 500 mL of 10 ppm of Na^+ (A.wt=23) from Na_2CO_3 salt.

$$ppm = M * m.wt * 1000$$

10 = M * 23 *1000

M = $4.35 *10^{-4}$

Na_2CO_3 → $2Na^+$ (*means conc. Of the salt is half of conc. Of Na^+*)

So, $M_{Na2CO3} = (4.35 *10^{-4} / 2)$

$= 2.17 *10^{-4}$

Then it will be easy to calculate the weight of Na_2CO_3 from:

$$M = \frac{wt*1000}{m.wt*v(mL)}$$

$2.17 *10^{-4}$ = (wt * 1000)/ (106 * 500)

wt= 0.00115 g or 11.5 mg of Na_2CO_3

According to the chemical equation (below), calculate the number of moles (or the weight) of HCl required to react with 2.3 mole of Zn.

$Zn + 2HCl \rightarrow ZnCl_2 + 2H^+$

1 mole 2 mole

2.3 mole X → X= 4.6 moles

What is the volume of HNO3 in 30 mL of 18% (v/v)?

18% (v/v) means 18 mL of acid in 100 mL of H2O

HNO3	Solution
18	100
X	30

X= 5.4 mL

For the following data:

1 4 3 6 2 7 18 3 7 2 4 3

Calculate the mean, standard deviation, and median.

Xi	Xi - X_{ave}	$(Xi - X_{ave})^2$
1	-4	16
4	-1	1
3	-2	4
6	1	1
2	-3	9
7	2	4
18	13	169
3	-2	4
7	2	4
2	-3	9
4	-1	1
3	-2	4
5		226

Standard deviation

$$s = \sqrt{\frac{\sum_{i=1}^{N}(x_i - \bar{x})^2}{N-1}}$$

$$s = \sqrt{\frac{226}{11}} = \mathbf{4.34}$$

Median

1, 2, 2, 3, 3, **3, 4**, 4, 6, 7, 7, 18 $\quad median = \frac{3+4}{2} = 3.5$