Result of Standard chromatogram by Instructor			
Compound	Retention time (min)	Peak Area (μs ×min)	Conc. (ppm)
Fluoride	2.75	0.976	4.88
Chloride	3.70	3.836	20.0
Nitrate	5.72	3.858	40.0
Sulfate	6.72	5.207	40.0

Chromatogram of my Solution A (IC # 1)		
Compound	Retention time (min)	Peak Area (μs ×min)
Unknown	5.80	3.427
Compare to Standard compounds retention time: my Unknown is : **$NO3^-$** (as an example)		

Estimated concentration of unknown:

$$\frac{A_{unk}}{A_{known}} = \frac{C_{unk}}{C_{known}}$$

$$\frac{3.427}{3.858} = \frac{C_{unk}}{40.0}$$

C_{unk} = 35.5 ppm

Note: Do same calculation for the concentration of [F^-] in your home's tap water.

Make two lower and higher standard solutions (use volumetric flask & pipet):

[50% of conc. Of unknown]:

35.5 ppm × 0.5 = 17.75 ppm

Convert Stock Solution [$NaNO_3$] ppm, to [NO_3^-] ppm

$$[NO_3^-] = \frac{MW_{NO3^-}}{MW_{NaNO3}} \times [NaNO_3]_{ppm}$$

$$[NO_3^-] = \frac{62.01}{85.00} \times 2742_{ppm} = 2000.37\ ppm$$

2000.37 × V = 17.75 ×100

V = 0.8873 mL (use 1.0 mL volumetric pipet)

Re-calculate for the new conc.:

2000.37 ×1.0 = C × 100

C = 20.0037 ppm

[150% of conc. Of unknown]:

35.5 ppm × 1.50 = 53.25 ppm

Stock solution [$NaNO_3$] = 2000 ppm

$2000.37 \times V = 53.25 \times 100$

V = 2.6620 mL (use 3.0 mL volumetric pipet)

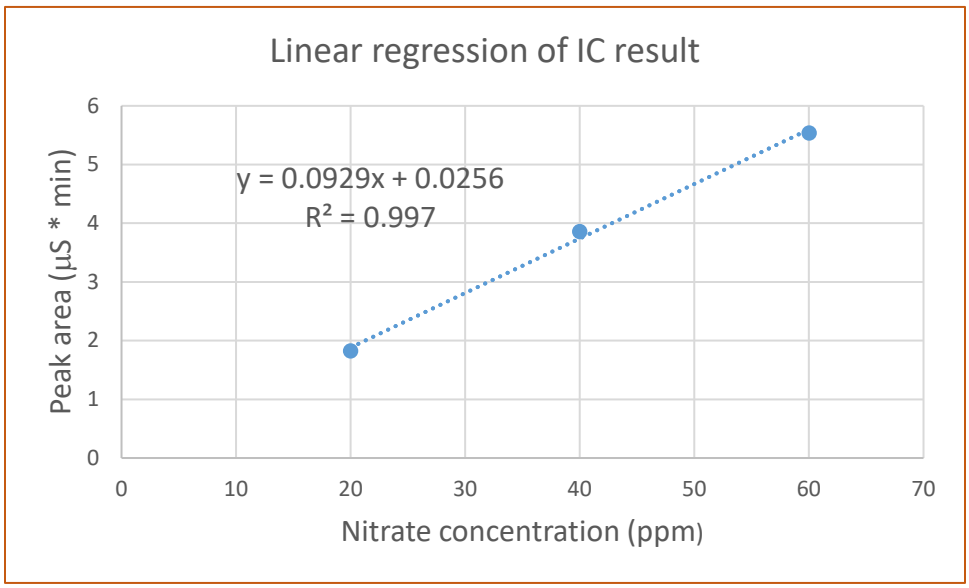
Re-calculate for the new conc.:

$2000.37 \times 3.0 = C \times 100$

C = 60.0111 ppm

Quantitative Analysis: Running Solutions A , STD 1 and STD 2		
Solution	Conc. (ppm)	Peak Area (µs ×min)
A	?	3.580
STD1	20.0037	1.824
STD2	60.0111	5.539
Instructor STD	40.00	3.858

Plot peak area (STD1, STD2 and Instructor STD) verses concentration of nitrate ion:



Use the line equation from your graph:

$P_{area} = 0.0929\ C - 0.0256$

Use the peak area of the solution A from the quantitative chromatogram:

3.580 = 0.0929 C - 0.0256

C = 38.8116 ppm

Calculate the concentration of your original unknown by using the dilution factor:

$$DF = \frac{100\ mL\ (flask)}{10\ mL\ (pipet)} = 10$$

$38.8116 \times 10 = 388.116 \approx 388$ ppm **NO_3^- ion**