

Worksheet 4: Instrumental Calibration

1. The data for replicate blanks and replicate low-concentration standards are given in the table below. Use it to calculate the minimum detectable signal for this method.

Concentration (ppm)	Absorbance
0.000	0.009
0.000	0.007
0.000	0.008
0.000	0.003
0.000	0.001
1.000	0.065
1.000	0.059
1.000	0.068
1.000	0.048
1.000	0.051

2. Use the calibration data below to determine:

- (a) The linear dynamic range for this method
- (b) The molar absorptivity of the analyte
- (c) The lower limit of detection
- (d) The lower limit of quantitation

Concentration (ppm)	Absorbance
1	0.058
3	0.174
6	0.349
9	0.523
12	0.698
15	0.810
18	0.850
21	0.875

3. Use the calibration data from the Question 2 to calculate the minimum detectable signal. Compare this to your answer from Question 1. Which do you think is a better answer?