

**Calibration Data**  
Work Sheet

School \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_  
Student Group \_\_\_\_\_

**DISSOLVED OXYGEN**

Temperature of distilled water \_\_\_\_\_ °C      Elevation of site \_\_\_\_\_ meters

Dissolved Oxygen for the shaken distilled water

Observer #1	Observer #2	Observer #3
mg/L	mg/L	mg/L

Average = \_\_\_\_\_ mg/L

Solubility of Oxygen in Water for your temperature at sea level from Table	Calibration Value for your elevation from Table	Expected Value for DO in your distilled water
mg/L	X	=mg/L

Kit manufacturer and model \_\_\_\_\_

**ALKALINITY for Baking Soda Standard**

For kits that read alkalinity directly

Observer #1	Observer #2	Observer #3
mg/L as CaCO <sub>3</sub>	mg/L as CaCO <sub>3</sub>	mg/L as CaCO <sub>3</sub>

Average = \_\_\_\_\_ mg/L as CaCO<sub>3</sub>

Hach kits or other kits in which drops are counted

	Observer #1	Observer #2	Observer #3	Average
Number of Drops				
Conversion Constant for your kit and procedure	X	X	X	X
Total Alkalinity (mg/L as CaCO <sub>3</sub> )	=mg/L	=mg/L	=mg/L	=mg/L

Kit manufacturer and model \_\_\_\_\_

**NITRATE**

Observer #1	Observer #2	Observer #3
mg/L NO <sub>3</sub> <sup>-</sup> - N	mg/L NO <sub>3</sub> <sup>-</sup> - N	mg/L NO <sub>3</sub> <sup>-</sup> - N

Average = \_\_\_\_\_ mg/L NO<sub>3</sub><sup>-</sup> - N

Kit manufacturer and model \_\_\_\_\_

**Data**  
Work Sheet

School \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Student Group \_\_\_\_\_

Site Name \_\_\_\_\_ Long. \_\_\_\_\_ Lat. \_\_\_\_\_

Sample collection date \_\_\_\_\_ Time \_\_\_\_\_ (hours/minutes) Lab \_\_\_ OR Field \_\_\_

**WATER TEMPERATURE**

Observer #1	Observer #2	Observer #3
_____ °C	_____ °C	_____ °C

Average = \_\_\_\_\_ °C

**DISSOLVED OXYGEN**

Observer #1	Observer #2	Observer #3
_____ mg/L	_____ mg/L	_____ mg/L

Average = \_\_\_\_\_ mg/L

Kit manufacturer and model \_\_\_\_\_

**pH**

Measurement method: \_\_\_\_\_ pen \_\_\_\_\_ meter

Value of buffers at site: pH 4 \_\_\_\_\_ pH 7 \_\_\_\_\_ pH 10 \_\_\_\_\_

Observer #1	Observer #2	Observer #3
_____	_____	_____

Average = \_\_\_\_\_

**CONDUCTIVITY**

Conductivity Standard: \_\_\_\_\_ MicoSiemens/cm (µS/cm)

Observer #1	Observer #2	Observer #3
_____ µS/cm	_____ µS/cm	_____ µS/cm

Average = \_\_\_\_\_ µS/cm



**Solubility of Oxygen in Water**

Table

Exposed to Air at 750mm Hg Pressure

TEMP °C	Solubility mg/L	TEMP °C	Solubility mg/L	TEMP °C	Solubility mg/L
0	14.6	16	9.9	32	7.3
1	14.2	17	9.7	33	7.2
2	13.8	18	9.5	34	7.1
3	13.5	19	9.3	35	7.0
4	13.1	20	9.1	36	6.8
5	12.8	21	8.9	37	6.7
6	12.5	22	8.7	38	6.6
7	12.1	23	8.6	39	6.5
8	11.9	24	8.4	40	6.4
9	11.6	25	8.3	41	6.3
10	11.3	26	8.1	42	6.2
11	11.0	27	8.0	43	6.1
12	10.8	28	7.8	44	6.0
13	10.5	29	7.7	45	5.9
14	10.3	30	7.6	46	5.8
15	10.1	31	7.4	47	5.7

**Calibration Values**

Table

For Various Atmospheric Pressures and Altitudes

<b>Pressure</b>	<b>mm Hg</b>	<b>Pressure</b>	<b>kPa</b>	<b>Elevation m</b>	<b>Calibration Value %</b>
	768		102.3	-84	1.01
	760		101.3	0	1
	752		100.3	85	0.99
	745		99.3	170	0.98
	787		98.8	256	0.97
	730		97.3	343	0.96
	722		96.3	431	0.95
	714		95.2	519	0.94
	707		94.2	608	0.93
	699		93.2	698	0.92
	692		92.2	789	0.91
	684		91.2	880	0.9
	676		90.2	972	0.89
	669		89.2	1066	0.88
	661		88.2	1160	0.87
	654		87.1	1254	0.86
	646		86.1	1350	0.85
	638		85.1	1447	0.84
	631		84.1	1544	0.83
	623		83.1	1643	0.82
	616		82.1	1743	0.81
	608		81.1	1843	0.8
	600		80	1945	0.79
	593		79	2047	0.78
	585		78	2151	0.77
	578		77	2256	0.76
	570		76	2362	0.75
	562		75	2469	0.74
	555		74	2577	0.73
	547		73	2687	0.72
	540		71.9	2797	0.71
	532		70.9	2909	0.7
	524		69.6	3203	0.69
	517		68.9	3137	0.68
	509		67.9	3253	0.67
	502		66.9	3371	0.66

Look at the Calibration Value Table corresponding to your elevation in meters and record it on the Calibration Data Work Sheet.

Example

An elevation of 1,544 meters has a corresponding saturation calibration value of 0.83.

Multiply the solubility of oxygen found in the second step by the calibration found in the third step. Example: At an altitude of 1,544 meters and a temperature of 22°C, you multiply  $(8.74 \text{ mg/L}) \times (0.83) = 7.25$ .

This value (7.25 in the example) is your expected value for a shaken, distilled water standard.

Compare this value to the value for DO that you found when you tested your shaken, distilled water standard. If the value is not within 0.4mg/L (LaMotte kit) or 1mg/L (Hach kit), try the measurement again on the distilled water. If it is still off, but by less than 1mg/L, record the DO value on the Calibration Data Work Sheet.

If you get a difference of more than 1mg/L, report the value you get and replace the chemicals in your test kit before making any more measurements. Recalibrate when you get fresh chemicals.