

Gilbert Ordaz
ENGR 115
Friday 11:00
April 1,2016

#### Input Parameters:

Measured Coutdoor	446.8
Assumed Coutdoor	400
Correction Factor	-46.8
Room Volume (ft^3)	925.2
Room Capacity (People)	2.0

#### Calculations:

Air Exchange Rate (1/hr) 0.4582

Time to remove non-reactive chemical (hr) 6.55

Ventilation Rate (ft^3/min/person) 3.53

#	Date Time	CO2, ppm
0	4/1/2016 12:23	2058.6
1	4/1/2016 12:24	2055.6
2	4/1/2016 12:25	2051.9
3	4/1/2016 12:26	2036
4	4/1/2016 12:27	2017.1
5	4/1/2016 12:28	2009.8
6	4/1/2016 12:29	1996.3
7	4/1/2016 12:30	1989
8	4/1/2016 12:31	1972.5
9	4/1/2016 12:32	1963.4
10	4/1/2016 12:33	1946.3
11	4/1/2016 12:34	1929.8
12	4/1/2016 12:35	1915.1
13	4/1/2016 12:36	1896.2
14	4/1/2016 12:37	1888.3
15	4/1/2016 12:38	1873
16	4/1/2016 12:39	1860.2
17	4/1/2016 12:40	1851
18	4/1/2016 12:41	1845.5
19	4/1/2016 12:42	1837
20	4/1/2016 12:43	1825.4
21	4/1/2016 12:44	1816.2
22	4/1/2016 12:45	1809.5
23	4/1/2016 12:46	1803.4
24	4/1/2016 12:47	1795.5
25	4/1/2016 12:48	1786.9
26	4/1/2016 12:49	1775.3
27	4/1/2016 12:50	1756.4

Actual CO2 Concentration PPM	Experiment Time (hr)	$-\ln((C_{room}(t)-C_{outdoor})/(C_0-C_{outdoor}))$
2011.8	0.000	0.00000
2008.8	0.017	0.00186
2005.1	0.033	0.00417
1989.2	0.050	0.01412
1970.3	0.067	0.02608
1963.0	0.083	0.03074
1949.5	0.100	0.03942
1942.2	0.117	0.04414
1925.7	0.133	0.05490
1916.6	0.150	0.06088
1899.5	0.167	0.07222
1883.0	0.183	0.08328
1868.3	0.200	0.09325
1849.4	0.217	0.10620
1841.5	0.233	0.11167
1826.2	0.250	0.12234
1813.4	0.267	0.13135
1804.2	0.283	0.13788
1798.7	0.300	0.14181
1790.2	0.317	0.14790
1778.6	0.333	0.15628
1769.4	0.350	0.16298
1762.7	0.367	0.16788
1756.6	0.383	0.17237
1748.7	0.400	0.17821
1740.1	0.417	0.18461
1728.5	0.433	0.19330
1709.6	0.450	0.20763

Plot Title: Romero's Room						
#	Date Time	CO2, ppm				
1	4/1/2016 11:42	807.1				
2	4/1/2016 11:43	633.7				
3	4/1/2016 11:44	486.6				
4	4/1/2016 11:45	468.3				
5	4/1/2016 11:46	460.3				
6	4/1/2016 11:47	434.7				
7	4/1/2016 11:48	456				
8	4/1/2016 11:49	707				
9	4/1/2016 11:50	1037.2				
10	4/1/2016 11:51	1264.3				
11	4/1/2016 11:52	1187.4				
12	4/1/2016 11:53	1182.5				
13	4/1/2016 11:54	1182.5				
14	4/1/2016 11:55	1235				
15	4/1/2016 11:56	1288.8				
16	4/1/2016 11:57	1333.9				
17	4/1/2016 11:58	1371.2				
18	4/1/2016 11:59	1426.7				
19	4/1/2016 12:00	1448.1				
20	4/1/2016 12:01	1484.1				
21	4/1/2016 12:02	1513.4				
22	4/1/2016 12:03	1553.1				
23	4/1/2016 12:04	1583				
24	4/1/2016 12:05	1617.2				
25	4/1/2016 12:06	1656.3				
26	4/1/2016 12:07	1691.7				
27	4/1/2016 12:08	1731.4				
28	4/1/2016 12:09	1752.1				
29	4/1/2016 12:10	1771.7				
30	4/1/2016 12:11	1806.5				
31	4/1/2016 12:12	1824.2				
32	4/1/2016 12:13	1845.5				
33	4/1/2016 12:14	1859				
34	4/1/2016 12:15	1890.1				
35	4/1/2016 12:16	1917				
36	4/1/2016 12:17	1946.9				
37	4/1/2016 12:18	1979.2				
38	4/1/2016 12:19	2011.6				
39	4/1/2016 12:20	2023.8				
40	4/1/2016 12:21	2047				
41	4/1/2016 12:22	2056.2				

42	4/1/2016 12:23	2058.6				
43	4/1/2016 12:24	2055.6				
44	4/1/2016 12:25	2051.9				
45	4/1/2016 12:26	2036				
46	4/1/2016 12:27	2017.1				
47	4/1/2016 12:28	2009.8				
48	4/1/2016 12:29	1996.3				
49	4/1/2016 12:30	1989				
50	4/1/2016 12:31	1972.5				
51	4/1/2016 12:32	1963.4				
52	4/1/2016 12:33	1946.3				
53	4/1/2016 12:34	1929.8				
54	4/1/2016 12:35	1915.1				
55	4/1/2016 12:36	1896.2				
56	4/1/2016 12:37	1888.3				
57	4/1/2016 12:38	1873				
58	4/1/2016 12:39	1860.2				
59	4/1/2016 12:40	1851				
60	4/1/2016 12:41	1845.5				
61	4/1/2016 12:42	1837				
62	4/1/2016 12:43	1825.4				
63	4/1/2016 12:44	1816.2				
64	4/1/2016 12:45	1809.5				
65	4/1/2016 12:46	1803.4				
66	4/1/2016 12:47	1795.5				
67	4/1/2016 12:48	1786.9				
68	4/1/2016 12:49	1775.3				
69	4/1/2016 12:50	1756.4				
70	4/1/2016 12:51	1310.7				
71	4/1/2016 12:52	1280.8				
72	4/1/2016 12:53	1283.3				
73	4/1/2016 12:54	1055.6				
74	4/1/2016 12:55	486				
75	4/1/2016 12:56	456				
76	4/1/2016 12:57	448.1				
77	4/1/2016 12:58	446.9				
78	4/1/2016 12:59	441.4				
79	4/1/2016 13:00	440.2				
80	4/1/2016 13:01	436.5				
81	4/1/2016 13:02	440.2				
82	4/1/2016 13:03	437.7				
83	4/1/2016 13:04	433.5				
84	4/1/2016 13:05	446.3				
85	4/1/2016 13:06	454.8				

86	4/1/2016 13:07	445.1				
87	4/1/2016 13:08	481.1				
88	4/1/2016 13:09		Logged			
89	4/1/2016 13:09	487.2				
90	4/1/2016 13:10			Logged	Logged	

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 Assumed Coutdoor 400  
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#	Date Time	CO2, ppm	Actual CO2 Concentration PPM	Time
1	4/1/2016 11:42	807.1	760.3	11:42:57 AM
2	4/1/2016 11:43	633.7	586.9	11:43:57 AM
3	4/1/2016 11:44	486.6	439.8	11:44:57 AM
4	4/1/2016 11:45	468.3	421.5	11:45:57 AM
5	4/1/2016 11:46	460.3	413.5	11:46:57 AM
6	4/1/2016 11:47	434.7	387.9	11:47:57 AM
7	4/1/2016 11:48	456	409.2	11:48:57 AM
8	4/1/2016 11:49	707	660.2	11:49:57 AM
9	4/1/2016 11:50	1037.2	990.4	11:50:57 AM
10	4/1/2016 11:51	1264.3	1217.5	11:51:57 AM
11	4/1/2016 11:52	1187.4	1140.6	11:52:57 AM
12	4/1/2016 11:53	1182.5	1135.7	11:53:57 AM
13	4/1/2016 11:54	1182.5	1135.7	11:54:57 AM
14	4/1/2016 11:55	1235	1188.2	11:55:57 AM
15	4/1/2016 11:56	1288.8	1242.0	11:56:57 AM
16	4/1/2016 11:57	1333.9	1287.1	11:57:57 AM
17	4/1/2016 11:58	1371.2	1324.4	11:58:57 AM
18	4/1/2016 11:59	1426.7	1379.9	11:59:57 AM
19	4/1/2016 12:00	1448.1	1401.3	12:00:57 PM
20	4/1/2016 12:01	1484.1	1437.3	12:01:57 PM
21	4/1/2016 12:02	1513.4	1466.6	12:02:57 PM
22	4/1/2016 12:03	1553.1	1506.3	12:03:57 PM
23	4/1/2016 12:04	1583	1536.2	12:04:57 PM
24	4/1/2016 12:05	1617.2	1570.4	12:05:57 PM
25	4/1/2016 12:06	1656.3	1609.5	12:06:57 PM
26	4/1/2016 12:07	1691.7	1644.9	12:07:57 PM
27	4/1/2016 12:08	1731.4	1684.6	12:08:57 PM
28	4/1/2016 12:09	1752.1	1705.3	12:09:57 PM
29	4/1/2016 12:10	1771.7	1724.9	12:10:57 PM
30	4/1/2016 12:11	1806.5	1759.7	12:11:57 PM
31	4/1/2016 12:12	1824.2	1777.4	12:12:57 PM

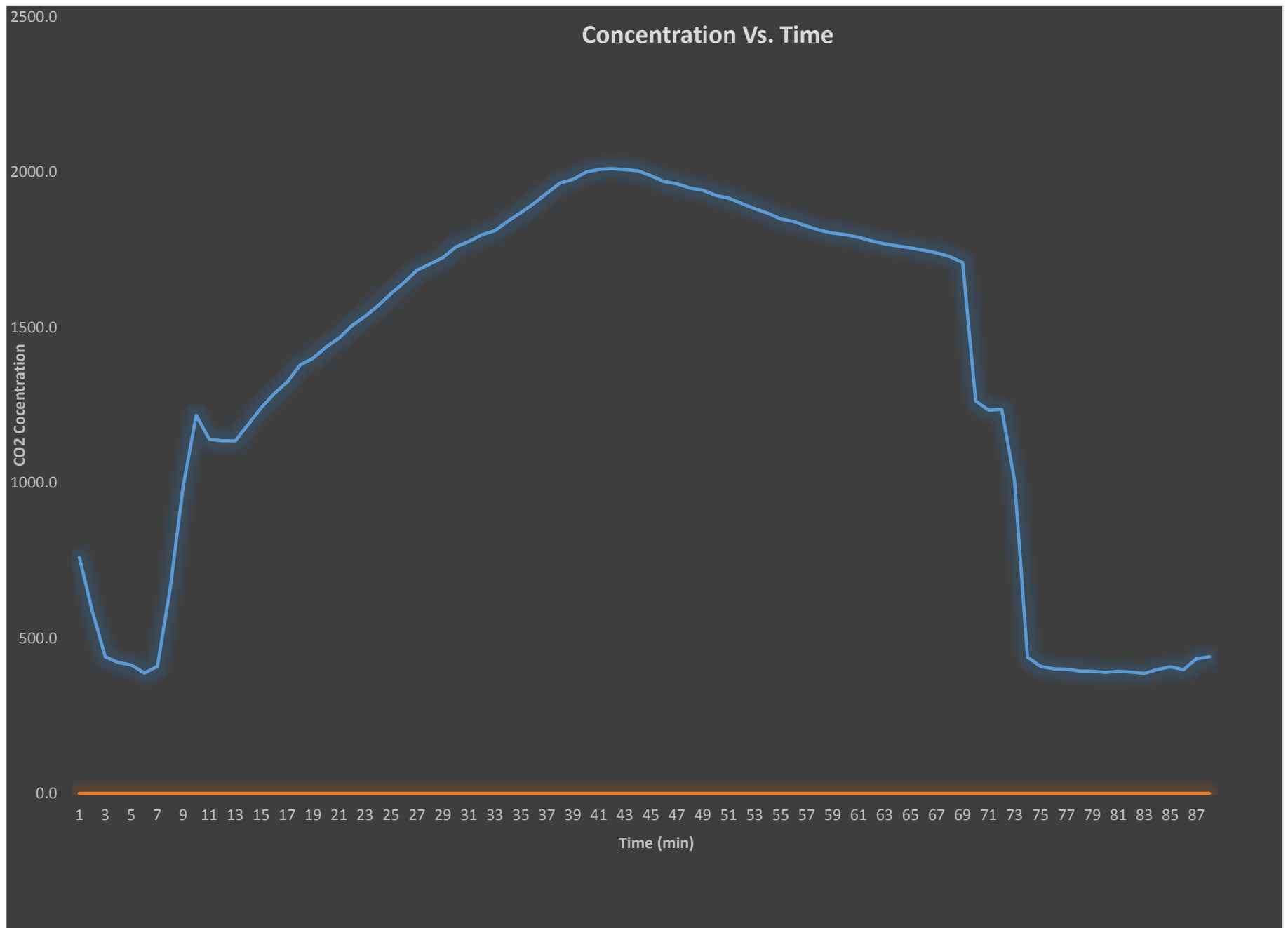
32	4/1/2016 12:13	1845.5
33	4/1/2016 12:14	1859
34	4/1/2016 12:15	1890.1
35	4/1/2016 12:16	1917
36	4/1/2016 12:17	1946.9
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69	4/1/2016 12:50	1756.4
70	4/1/2016 12:51	1310.7
71	4/1/2016 12:52	1280.8
72	4/1/2016 12:53	1283.3
73	4/1/2016 12:54	1055.6
74	4/1/2016 12:55	486
75	4/1/2016 12:56	456

1798.7	12:13:57 PM
1812.2	12:14:57 PM
1843.3	12:15:57 PM
1870.2	12:16:57 PM
1900.1	12:17:57 PM
1932.4	12:18:57 PM
1964.8	12:19:57 PM
1977.0	12:20:57 PM
2000.2	12:21:57 PM
2009.4	12:22:57 PM
2011.8	12:23:57 PM
2008.8	12:24:57 PM
2005.1	12:25:57 PM
1989.2	12:26:57 PM
1970.3	12:27:57 PM
1963.0	12:28:57 PM
1949.5	12:29:57 PM
1942.2	12:30:57 PM
1925.7	12:31:57 PM
1916.6	12:32:57 PM
1899.5	12:33:57 PM
1883.0	12:34:57 PM
1868.3	12:35:57 PM
1849.4	12:36:57 PM
1841.5	12:37:57 PM
1826.2	12:38:57 PM
1813.4	12:39:57 PM
1804.2	12:40:57 PM
1798.7	12:41:57 PM
1790.2	12:42:57 PM
1778.6	12:43:57 PM
1769.4	12:44:57 PM
1762.7	12:45:57 PM
1756.6	12:46:57 PM
1748.7	12:47:57 PM
1740.1	12:48:57 PM
1728.5	12:49:57 PM
1709.6	12:50:57 PM
1263.9	12:51:57 PM
1234.0	12:52:57 PM
1236.5	12:53:57 PM
1008.8	12:54:57 PM
439.2	12:55:57 PM
409.2	12:56:57 PM

76	4/1/2016 12:57	448.1
77	4/1/2016 12:58	446.9
78	4/1/2016 12:59	441.4
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87	4/1/2016 13:08	481.1
88	4/1/2016 13:09	487.2

401.3	12:57:57 PM
400.1	12:58:57 PM
394.6	12:59:57 PM
393.4	1:00:57 PM
389.7	1:01:57 PM
393.4	1:02:57 PM
390.9	1:03:57 PM
386.7	1:04:57 PM
399.5	1:05:57 PM
408.0	1:06:57 PM
398.3	1:07:57 PM
434.3	1:08:57 PM
440.4	1:10:57 PM





## Determining the Air Exchange Rate From Romero's Room

