

## Analemmatic Sundial

Latitude: 41.0° N/S

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 656.1 mm  
 Sunrise/Sunset Markers: X = ± 539.7 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	656.1	656.1	0.0						
11:55	12:05	21.8	655.9	656.3	21.8	8:25	3:35	806.4	387.9	894.9	849.8
11:50	12:10	43.6	655.4	656.9	43.6	8:20	3:40	819.2	376.3	901.4	865.6
11:45	12:15	65.4	654.7	657.9	65.4	8:15	3:45	831.5	364.5	907.9	881.1
11:40	12:20	87.2	653.6	659.3	87.2	8:10	3:50	843.4	352.5	914.1	896.4
11:35	12:25	108.9	652.2	661.2	108.9	8:05	3:55	854.9	340.3	920.2	911.3
11:30	12:30	130.5	650.4	663.4	130.6	8:00	4:00	866.0	328.0	926.1	926.1
11:25	12:35	152.1	648.4	666.0	152.3	7:55	4:05	876.7	315.6	931.8	940.5
11:20	12:40	173.6	646.1	669.0	173.9	7:50	4:10	887.0	302.9	937.3	954.7
11:15	12:45	195.1	643.5	672.4	195.5	7:45	4:15	896.9	290.2	942.6	968.6
11:10	12:50	216.4	640.5	676.1	217.0	7:40	4:20	906.3	277.3	947.8	982.3
11:05	12:55	237.7	637.3	680.1	238.4	7:35	4:25	915.3	264.2	952.7	995.7
11:00	1:00	258.8	633.7	684.5	259.8	7:30	4:30	923.9	251.1	957.4	1008.7
10:55	1:05	279.8	629.8	689.2	281.1	7:25	4:35	932.0	237.8	961.9	1021.6
10:50	1:10	300.7	625.7	694.2	302.2	7:20	4:40	939.7	224.4	966.1	1034.1
10:45	1:15	321.4	621.2	699.5	323.3	7:15	4:45	946.9	210.9	970.1	1046.4
10:40	1:20	342.0	616.5	705.0	344.3	7:10	4:50	953.7	197.3	973.9	1058.3
10:35	1:25	362.4	611.5	710.8	365.2	7:05	4:55	960.0	183.6	977.4	1070.0
10:30	1:30	382.7	606.1	716.8	385.9	7:00	5:00	965.9	169.8	980.7	1081.4
10:25	1:35	402.7	600.5	723.1	406.6	6:55	5:05	971.3	155.9	983.8	1092.5
10:20	1:40	422.6	594.6	729.5	427.1	6:50	5:10	976.3	142.0	986.6	1103.4
10:15	1:45	442.3	588.4	736.1	447.4	6:45	5:15	980.8	128.0	989.1	1113.9
10:10	1:50	461.7	581.9	742.9	467.7	6:40	5:20	984.8	113.9	991.4	1124.2
10:05	1:55	481.0	575.2	749.8	487.7	6:35	5:25	988.4	99.8	993.4	1134.1
10:00	2:00	500.0	568.2	756.8	507.7	6:30	5:30	991.4	85.6	995.1	1143.8
9:55	2:05	518.8	560.9	764.0	527.4	6:25	5:35	994.1	71.4	996.6	1153.2
9:50	2:10	537.3	553.3	771.3	547.0	6:20	5:40	996.2	57.2	997.8	1162.4
9:45	2:15	555.6	545.5	778.6	566.5	6:15	5:45	997.9	42.9	998.8	1171.2
9:40	2:20	573.6	537.4	786.0	585.7	6:10	5:50	999.0	28.6	999.5	1179.7
9:35	2:25	591.3	529.1	793.5	604.8	6:05	5:55	999.8	14.3	999.9	1188.0
9:30	2:30	608.8	520.5	800.9	623.7	6:00	6:00	1000.0	0.0	1000.0	1196.0
9:25	2:35	625.9	511.7	808.4	642.4	5:55	6:05	999.8	-14.3	999.9	1203.7
9:20	2:40	642.8	502.6	815.9	660.9	5:50	6:10	999.0	-28.6	999.5	1211.1
9:15	2:45	659.3	493.3	823.4	679.1	5:45	6:15	997.9	-42.9	998.8	1218.3
9:10	2:50	675.6	483.7	830.9	697.2	5:40	6:20	996.2	-57.2	997.8	1225.2
9:05	2:55	691.5	473.9	838.3	715.1	5:35	6:25	994.1	-71.4	996.6	1231.8
9:00	3:00	707.1	463.9	845.7	732.8	5:30	6:30	991.4	-85.6	995.1	1238.2
8:55	3:05	722.4	453.7	853.0	750.2	5:25	6:35	988.4	-99.8	993.4	1244.3
8:50	3:10	737.3	443.2	860.2	767.4	5:20	6:40	984.8	-113.9	991.4	1250.1
8:45	3:15	751.8	432.6	867.4	784.4	5:15	6:45	980.8	-128.0	989.1	1255.7
8:40	3:20	766.0	421.7	874.4	801.1	5:10	6:50	976.3	-142.0	986.6	1261.0
8:35	3:25	779.9	410.6	881.4	817.6	5:05	6:55	971.3	-155.9	983.8	1266.0
8:30	3:30	793.4	399.4	888.2	833.8	5:00	7:00	965.9	-169.8	980.7	1270.8

**Analemmatic Sundial****Latitude: 41.0° N/S**

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 656.1 mm  
 Sunrise/Sunset Markers:  $X = \pm 539.7$  mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-183.6	977.4	1275.4
4:50	7:10	953.7	-197.3	973.9	1279.8
4:45	7:15	946.9	-210.9	970.1	1283.8
4:40	7:20	939.7	-224.4	966.1	1287.7
4:35	7:25	932.0	-237.8	961.9	1291.4
4:30	7:30	923.9	-251.1	957.4	1294.8
4:25	7:35	915.3	-264.2	952.7	1298.0
4:20	7:40	906.3	-277.3	947.8	1301.0
4:15	7:45	896.9	-290.2	942.6	1303.7

## Analematic Sundial

Latitude: 41.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 656.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-320.2	-314.2	-312.3	-304.0	-301.6	-291.2	-288.3	-276.0	-272.8	-258.8	-255.2
February	-231.6	-214.7	-210.3	-192.4	-187.9	-169.1	-164.3	-144.9	-140.0	-120.1	-114.9
March	-99.8	-79.3	-74.1	-53.4	-48.3	-27.4	-22.3	-1.3	3.8	24.6	29.8
April	60.7	81.1	86.1	106.1	111.0	130.6	135.4	154.5	159.2	177.6	182.0
May	203.9	220.7	224.7	240.3	244.1	258.4	261.8	274.8	278.0	289.4	292.0
June	306.1	313.5	315.2	320.7	321.9	325.3	325.8	327.1	327.2	324.9	326.0
July	321.9	316.8	315.2	308.3	306.3	297.3	294.9	284.1	281.3	269.0	265.8
August	244.9	229.7	225.8	209.6	205.5	188.3	183.8	165.9	161.4	142.7	138.0
September	109.2	89.5	84.5	64.4	59.4	39.2	34.1	13.7	8.6	-12.0	-17.1
October	-42.7	-63.2	-68.3	-88.7	-93.6	-113.7	-118.7	-138.4	-143.3	-162.5	-167.2
November	-194.8	-212.4	-216.7	-233.3	-237.4	-252.8	-256.5	-270.5	-273.8	-286.2	-289.3
December	-302.2	-310.9	-312.8	-319.1	-320.5	-324.6	-325.3	-327.1	-327.2	-326.4	-326.0

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	320.2	314.2	312.3	304.0	301.6	291.2	288.3	276.0	272.8	258.8	255.2
February	231.6	214.7	210.3	192.4	187.9	169.1	164.3	144.9	140.0	120.1	114.9
March	99.8	79.3	74.1	53.4	48.3	27.4	22.3	1.3	-3.8	-24.6	-29.8
April	-60.7	-81.1	-86.1	-106.1	-111.0	-130.6	-135.4	-154.5	-159.2	-177.6	-182.0
May	-203.9	-220.7	-224.7	-240.3	-244.1	-258.4	-261.8	-274.8	-278.0	-289.4	-292.0
June	-306.1	-313.5	-315.2	-320.7	-321.9	-325.3	-325.8	-327.1	-327.2	-324.9	-326.0
July	-321.9	-316.8	-315.2	-308.3	-306.3	-297.3	-294.9	-284.1	-281.3	-269.0	-265.8
August	-244.9	-229.7	-225.8	-209.6	-205.5	-188.3	-183.8	-165.9	-161.4	-142.7	-138.0
September	-109.2	-89.5	-84.5	-64.4	-59.4	-39.2	-34.1	-13.7	-8.6	12.0	17.1
October	42.7	63.2	68.3	88.7	93.6	113.7	118.7	138.4	143.3	162.5	167.2
November	194.8	212.4	216.7	233.3	237.4	252.8	256.5	270.5	273.8	286.2	289.3
December	302.2	310.9	312.8	319.1	320.5	324.6	325.3	327.1	327.2	326.4	326.0

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- |         |            |                    |
|---------|------------|--------------------|
| a) 1    | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

## Analemmatic Sundial

Latitude: 41.0° N/S

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 984.1 mm  
 Sunrise/Sunset Markers: X = ± 809.5 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	984.1	984.1	0.0						
11:55	12:05	32.7	983.9	984.4	32.7	8:25	3:35	1209.7	581.9	1342.3	1274.8
11:50	12:10	65.4	983.2	985.3	65.4	8:20	3:40	1228.7	564.4	1352.2	1298.4
11:45	12:15	98.1	982.0	986.9	98.1	8:15	3:45	1247.2	546.7	1361.8	1321.7
11:40	12:20	130.7	980.3	989.0	130.8	8:10	3:50	1265.1	528.8	1371.1	1344.5
11:35	12:25	163.3	978.2	991.8	163.4	8:05	3:55	1282.4	510.5	1380.3	1367.0
11:30	12:30	195.8	975.7	995.1	196.0	8:00	4:00	1299.0	492.0	1389.1	1389.1
11:25	12:35	228.2	972.6	999.0	228.5	7:55	4:05	1315.1	473.3	1397.7	1410.8
11:20	12:40	260.5	969.1	1003.5	260.9	7:50	4:10	1330.5	454.4	1406.0	1432.1
11:15	12:45	292.6	965.2	1008.6	293.2	7:45	4:15	1345.3	435.3	1414.0	1453.0
11:10	12:50	324.7	960.8	1014.1	325.5	7:40	4:20	1359.5	415.9	1421.7	1473.4
11:05	12:55	356.5	955.9	1020.2	357.6	7:35	4:25	1373.0	396.3	1429.0	1493.5
11:00	1:00	388.2	950.6	1026.8	389.7	7:30	4:30	1385.8	376.6	1436.1	1513.1
10:55	1:05	419.7	944.8	1033.8	421.6	7:25	4:35	1398.0	356.7	1442.8	1532.3
10:50	1:10	451.1	938.5	1041.3	453.4	7:20	4:40	1409.5	336.6	1449.2	1551.2
10:45	1:15	482.2	931.9	1049.2	485.0	7:15	4:45	1420.4	316.3	1455.2	1569.5
10:40	1:20	513.0	924.7	1057.5	516.5	7:10	4:50	1430.6	295.9	1460.9	1587.5
10:35	1:25	543.7	917.2	1066.2	547.8	7:05	4:55	1440.1	275.4	1466.2	1605.0
10:30	1:30	574.0	909.2	1075.2	578.9	7:00	5:00	1448.9	254.7	1471.1	1622.1
10:25	1:35	604.1	900.7	1084.6	609.8	6:55	5:05	1457.0	233.9	1475.7	1638.8
10:20	1:40	633.9	891.9	1094.2	640.6	6:50	5:10	1464.4	213.0	1479.9	1655.0
10:15	1:45	663.4	882.6	1104.1	671.2	6:45	5:15	1471.2	192.0	1483.7	1670.9
10:10	1:50	692.6	872.9	1114.3	701.5	6:40	5:20	1477.2	170.9	1487.1	1686.3
10:05	1:55	721.5	862.8	1124.7	731.6	6:35	5:25	1482.5	149.7	1490.1	1701.2
10:00	2:00	750.0	852.2	1135.3	761.5	6:30	5:30	1487.2	128.4	1492.7	1715.7
9:55	2:05	778.2	841.3	1146.0	791.2	6:25	5:35	1491.1	107.1	1494.9	1729.9
9:50	2:10	805.9	830.0	1156.9	820.6	6:20	5:40	1494.3	85.8	1496.8	1743.5
9:45	2:15	833.4	818.2	1167.9	849.7	6:15	5:45	1496.8	64.4	1498.2	1756.8
9:40	2:20	860.4	806.1	1179.0	878.6	6:10	5:50	1498.6	42.9	1499.2	1769.6
9:35	2:25	887.0	793.6	1190.2	907.2	6:05	5:55	1499.6	21.5	1499.8	1782.0
9:30	2:30	913.1	780.7	1201.4	935.5	6:00	6:00	1500.0	0.0	1500.0	1794.0
9:25	2:35	938.9	767.5	1212.7	963.5	5:55	6:05	1499.6	-21.5	1499.8	1805.6
9:20	2:40	964.2	753.9	1223.9	991.3	5:50	6:10	1498.6	-42.9	1499.2	1816.7
9:15	2:45	989.0	739.9	1235.1	1018.7	5:45	6:15	1496.8	-64.4	1498.2	1827.5
9:10	2:50	1013.4	725.5	1246.3	1045.8	5:40	6:20	1494.3	-85.8	1496.8	1837.8
9:05	2:55	1037.3	710.9	1257.5	1072.6	5:35	6:25	1491.1	-107.1	1494.9	1847.7
9:00	3:00	1060.7	695.9	1268.5	1099.1	5:30	6:30	1487.2	-128.4	1492.7	1857.3
8:55	3:05	1083.5	680.5	1279.5	1125.3	5:25	6:35	1482.5	-149.7	1490.1	1866.4
8:50	3:10	1105.9	664.8	1290.4	1151.1	5:20	6:40	1477.2	-170.9	1487.1	1875.1
8:45	3:15	1127.8	648.9	1301.1	1176.5	5:15	6:45	1471.2	-192.0	1483.7	1883.5
8:40	3:20	1149.1	632.6	1311.7	1201.6	5:10	6:50	1464.4	-213.0	1479.9	1891.5
8:35	3:25	1169.8	616.0	1322.1	1226.4	5:05	6:55	1457.0	-233.9	1475.7	1899.1
8:30	3:30	1190.0	599.1	1332.3	1250.8	5:00	7:00	1448.9	-254.7	1471.1	1906.3

**Analemmatic Sundial****Latitude: 41.0° N/S**

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 984.1 mm  
 Sunrise/Sunset Markers:  $X = \pm 809.5$  mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-275.4	1466.2	1913.1
4:50	7:10	1430.6	-295.9	1460.9	1919.6
4:45	7:15	1420.4	-316.3	1455.2	1925.8
4:40	7:20	1409.5	-336.6	1449.2	1931.6
4:35	7:25	1398.0	-356.7	1442.8	1937.0
4:30	7:30	1385.8	-376.6	1436.1	1942.2
4:25	7:35	1373.0	-396.3	1429.0	1947.0
4:20	7:40	1359.5	-415.9	1421.7	1951.4
4:15	7:45	1345.3	-435.3	1414.0	1955.6

## Analematic Sundial

Latitude: 41.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 984.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-480.3	-471.2	-468.5	-456.0	-452.3	-436.8	-432.5	-414.1	-409.1	-388.3	-382.7
February	-347.4	-322.0	-315.4	-288.6	-281.8	-253.7	-246.4	-217.4	-210.0	-180.1	-172.4
March	-149.6	-119.0	-111.2	-80.2	-72.4	-41.1	-33.4	-2.0	5.7	37.0	44.7
April	91.1	121.6	129.2	159.1	166.6	195.9	203.1	231.8	238.8	266.4	273.0
May	305.9	331.0	337.1	360.4	366.1	387.6	392.7	412.3	417.0	434.1	438.0
June	459.2	470.3	472.9	481.0	482.9	488.0	488.7	490.6	490.8	487.3	488.9
July	482.9	475.2	472.9	462.4	459.5	445.9	442.3	426.2	421.9	403.6	398.7
August	367.4	344.6	338.8	314.4	308.2	282.5	275.8	248.9	242.1	214.1	207.0
September	163.7	134.2	126.8	96.7	89.1	58.7	51.2	20.6	12.8	-18.0	-25.7
October	-64.1	-94.9	-102.4	-133.0	-140.4	-170.6	-178.1	-207.6	-214.9	-243.7	-250.8
November	-292.1	-318.6	-325.0	-350.0	-356.1	-379.2	-384.7	-405.8	-410.7	-429.4	-433.9
December	-453.3	-466.4	-469.1	-478.7	-480.8	-486.8	-488.0	-490.6	-490.8	-489.7	-488.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	480.3	471.2	468.5	456.0	452.3	436.8	432.5	414.1	409.1	388.3	382.7
February	347.4	322.0	315.4	288.6	281.8	253.7	246.4	217.4	210.0	180.1	172.4
March	149.6	119.0	111.2	80.2	72.4	41.1	33.4	2.0	-5.7	-37.0	-44.7
April	-91.1	-121.6	-129.2	-159.1	-166.6	-195.9	-203.1	-231.8	-238.8	-266.4	-273.0
May	-305.9	-331.0	-337.1	-360.4	-366.1	-387.6	-392.7	-412.3	-417.0	-434.1	-438.0
June	-459.2	-470.3	-472.9	-481.0	-482.9	-488.0	-488.7	-490.6	-490.8	-487.3	-488.9
July	-482.9	-475.2	-472.9	-462.4	-459.5	-445.9	-442.3	-426.2	-421.9	-403.6	-398.7
August	-367.4	-344.6	-338.8	-314.4	-308.2	-282.5	-275.8	-248.9	-242.1	-214.1	-207.0
September	-163.7	-134.2	-126.8	-96.7	-89.1	-58.7	-51.2	-20.6	-12.8	18.0	25.7
October	64.1	94.9	102.4	133.0	140.4	170.6	178.1	207.6	214.9	243.7	250.8
November	292.1	318.6	325.0	350.0	356.1	379.2	384.7	405.8	410.7	429.4	433.9
December	453.3	466.4	469.1	478.7	480.8	486.8	488.0	490.6	490.8	489.7	488.9

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- |         |            |                    |
|---------|------------|--------------------|
| a) 1    | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

## Analemmatic Sundial

Latitude: 41.0° N/S

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1312.1 mm  
 Sunrise/Sunset Markers: X = ± 1079.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1312.1	1312.1	0.0						
11:55	12:05	43.6	1311.8	1312.5	43.6	8:25	3:35	1612.9	775.9	1789.8	1699.7
11:50	12:10	87.2	1310.9	1313.8	87.2	8:20	3:40	1638.3	752.6	1802.9	1731.2
11:45	12:15	130.8	1309.3	1315.8	130.8	8:15	3:45	1662.9	729.0	1815.7	1762.2
11:40	12:20	174.3	1307.1	1318.7	174.4	8:10	3:50	1686.8	705.0	1828.2	1792.7
11:35	12:25	217.7	1304.3	1322.4	217.9	8:05	3:55	1709.8	680.7	1840.3	1822.7
11:30	12:30	261.1	1300.9	1326.8	261.3	8:00	4:00	1732.1	656.1	1852.1	1852.1
11:25	12:35	304.2	1296.8	1332.1	304.6	7:55	4:05	1753.5	631.1	1863.6	1881.1
11:20	12:40	347.3	1292.2	1338.0	347.9	7:50	4:10	1774.0	605.9	1874.6	1909.4
11:15	12:45	390.2	1286.9	1344.8	391.0	7:45	4:15	1793.7	580.3	1885.3	1937.3
11:10	12:50	432.9	1281.0	1352.2	434.0	7:40	4:20	1812.6	554.5	1895.5	1964.6
11:05	12:55	475.4	1274.5	1360.3	476.9	7:35	4:25	1830.6	528.5	1905.4	1991.3
11:00	1:00	517.6	1267.4	1369.0	519.6	7:30	4:30	1847.8	502.1	1914.8	2017.5
10:55	1:05	559.7	1259.7	1378.4	562.1	7:25	4:35	1864.0	475.6	1923.7	2043.1
10:50	1:10	601.4	1251.4	1388.4	604.5	7:20	4:40	1879.4	448.8	1932.2	2068.2
10:45	1:15	642.9	1242.5	1398.9	646.6	7:15	4:45	1893.9	421.8	1940.3	2092.7
10:40	1:20	684.0	1233.0	1410.0	688.6	7:10	4:50	1907.4	394.6	1947.8	2116.7
10:35	1:25	724.9	1222.9	1421.6	730.3	7:05	4:55	1920.1	367.2	1954.9	2140.0
10:30	1:30	765.4	1212.2	1433.6	771.9	7:00	5:00	1931.9	339.6	1961.5	2162.8
10:25	1:35	805.5	1201.0	1446.1	813.1	6:55	5:05	1942.7	311.9	1967.6	2185.1
10:20	1:40	845.2	1189.2	1459.0	854.1	6:50	5:10	1952.6	284.0	1973.1	2206.7
10:15	1:45	884.6	1176.8	1472.2	894.9	6:45	5:15	1961.6	256.0	1978.2	2227.8
10:10	1:50	923.5	1163.9	1485.7	935.3	6:40	5:20	1969.6	227.8	1982.8	2248.3
10:05	1:55	962.0	1150.4	1499.6	975.5	6:35	5:25	1976.7	199.6	1986.8	2268.3
10:00	2:00	1000.0	1136.3	1513.7	1015.3	6:30	5:30	1982.9	171.3	1990.3	2287.7
9:55	2:05	1037.5	1121.7	1528.0	1054.9	6:25	5:35	1988.1	142.8	1993.2	2306.5
9:50	2:10	1074.6	1106.6	1542.5	1094.1	6:20	5:40	1992.4	114.4	1995.7	2324.7
9:45	2:15	1111.1	1091.0	1557.2	1132.9	6:15	5:45	1995.7	85.8	1997.6	2342.4
9:40	2:20	1147.2	1074.8	1572.0	1171.4	6:10	5:50	1998.1	57.2	1998.9	2359.5
9:35	2:25	1182.6	1058.2	1586.9	1209.6	6:05	5:55	1999.5	28.6	1999.7	2376.0
9:30	2:30	1217.5	1041.0	1601.9	1247.3	6:00	6:00	2000.0	0.0	2000.0	2392.0
9:25	2:35	1251.8	1023.3	1616.9	1284.7	5:55	6:05	1999.5	-28.6	1999.7	2407.4
9:20	2:40	1285.6	1005.1	1631.9	1321.7	5:50	6:10	1998.1	-57.2	1998.9	2422.3
9:15	2:45	1318.7	986.5	1646.9	1358.3	5:45	6:15	1995.7	-85.8	1997.6	2436.6
9:10	2:50	1351.2	967.4	1661.8	1394.5	5:40	6:20	1992.4	-114.4	1995.7	2450.4
9:05	2:55	1383.0	947.8	1676.6	1430.2	5:35	6:25	1988.1	-142.8	1993.2	2463.6
9:00	3:00	1414.2	927.8	1691.4	1465.5	5:30	6:30	1982.9	-171.3	1990.3	2476.3
8:55	3:05	1444.7	907.3	1706.0	1500.4	5:25	6:35	1976.7	-199.6	1986.8	2488.5
8:50	3:10	1474.6	886.5	1720.5	1534.8	5:20	6:40	1969.6	-227.8	1982.8	2500.2
8:45	3:15	1503.7	865.1	1734.8	1568.7	5:15	6:45	1961.6	-256.0	1978.2	2511.3
8:40	3:20	1532.1	843.4	1748.9	1602.2	5:10	6:50	1952.6	-284.0	1973.1	2521.9
8:35	3:25	1559.8	821.3	1762.8	1635.2	5:05	6:55	1942.7	-311.9	1967.6	2532.1
8:30	3:30	1586.7	798.8	1776.4	1667.7	5:00	7:00	1931.9	-339.6	1961.5	2541.7

**Analemmatic Sundial****Latitude: 41.0° N/S**

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1312.1 mm  
 Sunrise/Sunset Markers:  $X = \pm 1079.3$  mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-367.2	1954.9	2550.8
4:50	7:10	1907.4	-394.6	1947.8	2559.5
4:45	7:15	1893.9	-421.8	1940.3	2567.7
4:40	7:20	1879.4	-448.8	1932.2	2575.4
4:35	7:25	1864.0	-475.6	1923.7	2582.7
4:30	7:30	1847.8	-502.1	1914.8	2589.5
4:25	7:35	1830.6	-528.5	1905.4	2595.9
4:20	7:40	1812.6	-554.5	1895.5	2601.9
4:15	7:45	1793.7	-580.3	1885.3	2607.5

## Analemmatic Sundial

Latitude: 41.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1312.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-640.4	-628.3	-624.6	-608.0	-603.1	-582.4	-576.7	-552.1	-545.5	-517.7	-510.3
February	-463.2	-429.4	-420.6	-384.7	-375.8	-338.2	-328.6	-289.8	-280.0	-240.1	-229.9
March	-199.5	-158.6	-148.3	-106.9	-96.6	-54.8	-44.5	-2.6	7.6	49.3	59.6
April	121.4	162.1	172.2	212.1	222.1	261.3	270.8	309.0	318.4	355.1	364.1
May	407.8	441.4	449.4	480.6	488.1	516.8	523.6	549.7	556.0	578.8	584.0
June	612.3	627.1	630.5	641.3	643.8	650.7	651.6	654.1	654.4	649.7	651.9
July	643.8	633.6	630.5	616.6	612.6	594.6	589.7	568.3	562.5	538.1	531.6
August	489.9	459.5	451.7	419.2	410.9	376.6	367.7	331.9	322.8	285.5	275.9
September	218.3	178.9	169.0	128.9	118.8	78.3	68.3	27.4	17.1	-24.0	-34.3
October	-85.4	-126.5	-136.6	-177.3	-187.2	-227.5	-237.4	-276.8	-286.6	-325.0	-334.4
November	-389.5	-424.8	-433.4	-466.7	-474.8	-505.6	-513.0	-541.0	-547.6	-572.5	-578.5
December	-604.3	-621.8	-625.5	-638.2	-641.0	-649.1	-650.7	-654.1	-654.4	-652.9	-651.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	640.4	628.3	624.6	608.0	603.1	582.4	576.7	552.1	545.5	517.7	510.3
February	463.2	429.4	420.6	384.7	375.8	338.2	328.6	289.8	280.0	240.1	229.9
March	199.5	158.6	148.3	106.9	96.6	54.8	44.5	2.6	-7.6	-49.3	-59.6
April	-121.4	-162.1	-172.2	-212.1	-222.1	-261.3	-270.8	-309.0	-318.4	-355.1	-364.1
May	-407.8	-441.4	-449.4	-480.6	-488.1	-516.8	-523.6	-549.7	-556.0	-578.8	-584.0
June	-612.3	-627.1	-630.5	-641.3	-643.8	-650.7	-651.6	-654.1	-654.4	-649.7	-651.9
July	-643.8	-633.6	-630.5	-616.6	-612.6	-594.6	-589.7	-568.3	-562.5	-538.1	-531.6
August	-489.9	-459.5	-451.7	-419.2	-410.9	-376.6	-367.7	-331.9	-322.8	-285.5	-275.9
September	-218.3	-178.9	-169.0	-128.9	-118.8	-78.3	-68.3	-27.4	-17.1	24.0	34.3
October	85.4	126.5	136.6	177.3	187.2	227.5	237.4	276.8	286.6	325.0	334.4
November	389.5	424.8	433.4	466.7	474.8	505.6	513.0	541.0	547.6	572.5	578.5
December	604.3	621.8	625.5	638.2	641.0	649.1	650.7	654.1	654.4	652.9	651.9

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- |         |            |                    |
|---------|------------|--------------------|
| a) 1    | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

Analemmatic Sundial

Latitude: 41.0° N/S

Earliest Sunrise: 4:26 a.m. Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1640.1 mm  
 Sunrise/Sunset Markers: X = ± 1349.2 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1640.1	1640.1	0.0						
11:55	12:05	54.5	1639.8	1640.7	54.5	8:25	3:35	2016.1	969.8	2237.2	2124.6
11:50	12:10	109.0	1638.6	1642.2	109.1	8:20	3:40	2047.9	940.7	2253.6	2164.0
11:45	12:15	163.5	1636.6	1644.8	163.5	8:15	3:45	2078.7	911.2	2269.6	2202.8
11:40	12:20	217.9	1633.9	1648.4	218.0	8:10	3:50	2108.5	881.3	2285.2	2240.9
11:35	12:25	272.2	1630.4	1653.0	272.3	8:05	3:55	2137.3	850.9	2300.4	2278.4
11:30	12:30	326.3	1626.1	1658.5	326.6	8:00	4:00	2165.1	820.1	2315.2	2315.2
11:25	12:35	380.3	1621.1	1665.1	380.8	7:55	4:05	2191.8	788.9	2329.5	2351.3
11:20	12:40	434.1	1615.2	1672.6	434.8	7:50	4:10	2217.5	757.3	2343.3	2386.8
11:15	12:45	487.7	1608.6	1680.9	488.7	7:45	4:15	2242.2	725.4	2356.6	2421.6
11:10	12:50	541.1	1601.3	1690.2	542.5	7:40	4:20	2265.8	693.2	2369.4	2455.7
11:05	12:55	594.2	1593.1	1700.4	596.1	7:35	4:25	2288.3	660.6	2381.7	2489.1
11:00	1:00	647.0	1584.3	1711.3	649.5	7:30	4:30	2309.7	627.7	2393.5	2521.9
10:55	1:05	699.6	1574.6	1723.0	702.6	7:25	4:35	2330.0	594.5	2404.7	2553.9
10:50	1:10	751.8	1564.2	1735.5	755.6	7:20	4:40	2349.2	561.0	2415.3	2585.3
10:45	1:15	803.6	1553.1	1748.7	808.3	7:15	4:45	2367.3	527.2	2425.3	2615.9
10:40	1:20	855.1	1541.2	1762.5	860.8	7:10	4:50	2384.3	493.2	2434.8	2645.8
10:35	1:25	906.1	1528.6	1777.0	912.9	7:05	4:55	2400.1	459.0	2443.6	2675.0
10:30	1:30	956.7	1515.3	1792.0	964.8	7:00	5:00	2414.8	424.5	2451.8	2703.5
10:25	1:35	1006.9	1501.2	1807.6	1016.4	6:55	5:05	2428.4	389.8	2459.4	2731.3
10:20	1:40	1056.5	1486.5	1823.7	1067.7	6:50	5:10	2440.7	355.0	2466.4	2758.4
10:15	1:45	1105.7	1471.0	1840.2	1118.6	6:45	5:15	2452.0	320.0	2472.8	2784.8
10:10	1:50	1154.4	1454.8	1857.2	1169.2	6:40	5:20	2462.0	284.8	2478.4	2810.4
10:05	1:55	1202.5	1438.0	1874.5	1219.4	6:35	5:25	2470.9	249.5	2483.5	2835.4
10:00	2:00	1250.0	1420.4	1892.1	1269.2	6:30	5:30	2478.6	214.1	2487.8	2859.6
9:55	2:05	1296.9	1402.2	1910.0	1318.6	6:25	5:35	2485.1	178.6	2491.5	2883.1
9:50	2:10	1343.2	1383.3	1928.2	1367.6	6:20	5:40	2490.5	142.9	2494.6	2905.9
9:45	2:15	1388.9	1363.7	1946.5	1416.2	6:15	5:45	2494.6	107.3	2497.0	2928.0
9:40	2:20	1433.9	1343.5	1965.0	1464.3	6:10	5:50	2497.6	71.5	2498.6	2949.3
9:35	2:25	1478.3	1322.7	1983.6	1512.0	6:05	5:55	2499.4	35.8	2499.7	2970.0
9:30	2:30	1521.9	1301.2	2002.3	1559.2	6:00	6:00	2500.0	0.0	2500.0	2990.0
9:25	2:35	1564.8	1279.1	2021.1	1605.9	5:55	6:05	2499.4	-35.8	2499.7	3009.3
9:20	2:40	1607.0	1256.4	2039.8	1652.1	5:50	6:10	2497.6	-71.5	2498.6	3027.9
9:15	2:45	1648.4	1233.1	2058.6	1697.9	5:45	6:15	2494.6	-107.3	2497.0	3045.8
9:10	2:50	1689.0	1209.2	2077.2	1743.1	5:40	6:20	2490.5	-142.9	2494.6	3063.0
9:05	2:55	1728.8	1184.8	2095.8	1787.7	5:35	6:25	2485.1	-178.6	2491.5	3079.5
9:00	3:00	1767.8	1159.8	2114.2	1831.9	5:30	6:30	2478.6	-214.1	2487.8	3095.4
8:55	3:05	1805.9	1134.2	2132.5	1875.4	5:25	6:35	2470.9	-249.5	2483.5	3110.7
8:50	3:10	1843.2	1108.1	2150.6	1918.5	5:20	6:40	2462.0	-284.8	2478.4	3125.2
8:45	3:15	1879.6	1081.4	2168.5	1960.9	5:15	6:45	2452.0	-320.0	2472.8	3139.1
8:40	3:20	1915.1	1054.3	2186.1	2002.7	5:10	6:50	2440.7	-355.0	2466.4	3152.4
8:35	3:25	1949.7	1026.6	2203.5	2044.0	5:05	6:55	2428.4	-389.8	2459.4	3165.1
8:30	3:30	1983.4	998.5	2220.5	2084.6	5:00	7:00	2414.8	-424.5	2451.8	3177.1

**Analemmatic Sundial****Latitude: 41.0° N/S**

Earliest Sunrise: 4:26 a.m.    Latest Sunset: 7:34 p.m.  
 Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 1640.1 mm  
 Sunrise/Sunset Markers:  $X = \pm 1349.2$  mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-459.0	2443.6	3188.6
4:50	7:10	2384.3	-493.2	2434.8	3199.4
4:45	7:15	2367.3	-527.2	2425.3	3209.6
4:40	7:20	2349.2	-561.0	2415.3	3219.3
4:35	7:25	2330.0	-594.5	2404.7	3228.4
4:30	7:30	2309.7	-627.7	2393.5	3236.9
4:25	7:35	2288.3	-660.6	2381.7	3244.9
4:20	7:40	2265.8	-693.2	2369.4	3252.4
4:15	7:45	2242.2	-725.4	2356.6	3259.3

## Analematic Sundial

Latitude: 41.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 1640.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-800.5	-785.4	-780.8	-760.0	-753.9	-728.0	-720.9	-690.1	-681.9	-647.1	-637.9
February	-579.0	-536.7	-525.7	-480.9	-469.7	-422.8	-410.7	-362.3	-350.0	-300.2	-287.4
March	-249.4	-198.3	-185.3	-133.6	-120.7	-68.5	-55.7	-3.3	9.5	61.6	74.5
April	151.8	202.6	215.3	265.2	277.6	326.6	338.5	386.3	397.9	443.9	455.1
May	509.8	551.7	561.8	600.7	610.1	646.0	654.5	687.1	694.9	723.5	729.9
June	765.4	783.8	788.1	801.7	804.8	813.4	814.5	817.7	818.0	812.2	814.9
July	804.8	792.0	788.1	770.7	765.8	743.2	737.1	710.3	703.2	672.6	664.4
August	612.3	574.3	564.6	524.0	513.7	470.8	459.6	414.8	403.5	356.9	344.9
September	272.9	223.6	211.3	161.1	148.5	97.9	85.3	34.3	21.4	-30.0	-42.8
October	-106.8	-158.1	-170.7	-221.6	-234.0	-284.3	-296.8	-345.9	-358.2	-406.2	-417.9
November	-486.9	-531.1	-541.7	-583.3	-593.4	-632.0	-641.2	-676.3	-684.5	-715.6	-723.1
December	-755.4	-777.3	-781.9	-797.8	-801.3	-811.4	-813.4	-817.7	-818.0	-816.1	-814.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	800.5	785.4	780.8	760.0	753.9	728.0	720.9	690.1	681.9	647.1	637.9
February	579.0	536.7	525.7	480.9	469.7	422.8	410.7	362.3	350.0	300.2	287.4
March	249.4	198.3	185.3	133.6	120.7	68.5	55.7	3.3	-9.5	-61.6	-74.5
April	-151.8	-202.6	-215.3	-265.2	-277.6	-326.6	-338.5	-386.3	-397.9	-443.9	-455.1
May	-509.8	-551.7	-561.8	-600.7	-610.1	-646.0	-654.5	-687.1	-694.9	-723.5	-729.9
June	-765.4	-783.8	-788.1	-801.7	-804.8	-813.4	-814.5	-817.7	-818.0	-812.2	-814.9
July	-804.8	-792.0	-788.1	-770.7	-765.8	-743.2	-737.1	-710.3	-703.2	-672.6	-664.4
August	-612.3	-574.3	-564.6	-524.0	-513.7	-470.8	-459.6	-414.8	-403.5	-356.9	-344.9
September	-272.9	-223.6	-211.3	-161.1	-148.5	-97.9	-85.3	-34.3	-21.4	30.0	42.8
October	106.8	158.1	170.7	221.6	234.0	284.3	296.8	345.9	358.2	406.2	417.9
November	486.9	531.1	541.7	583.3	593.4	632.0	641.2	676.3	684.5	715.6	723.1
December	755.4	777.3	781.9	797.8	801.3	811.4	813.4	817.7	818.0	816.1	814.9

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- |         |            |                    |
|---------|------------|--------------------|
| a) 1    | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |