

Analemmatic Sundial

Latitude: 37.0° N/S

Earliest Sunrise: 4:38 a.m.    Latest Sunset: 7:22 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 601.8 mm  
 Sunrise/Sunset Markers: X = ± 612.8 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	601.8	601.8	0.0							
11:55	12:05	21.8	601.7	602.1	21.8	8:10	3:50	843.4	323.4	903.3	888.2
11:50	12:10	43.6	601.2	602.8	43.6	8:05	3:55	854.9	312.2	910.1	902.6
11:45	12:15	65.4	600.5	604.1	65.4	8:00	4:00	866.0	300.9	916.8	916.8
11:40	12:20	87.2	599.5	605.8	87.2	7:55	4:05	876.7	289.5	923.3	930.7
11:35	12:25	108.9	598.2	608.1	108.9	7:50	4:10	887.0	277.9	929.5	944.3
11:30	12:30	130.5	596.7	610.8	130.6	7:45	4:15	896.9	266.2	935.5	957.6
11:25	12:35	152.1	594.8	614.0	152.3	7:40	4:20	906.3	254.3	941.3	970.6
11:20	12:40	173.6	592.7	617.6	173.9	7:35	4:25	915.3	242.4	946.9	983.4
11:15	12:45	195.1	590.3	621.7	195.4	7:30	4:30	923.9	230.3	952.2	995.8
11:10	12:50	216.4	587.5	626.1	216.9	7:25	4:35	932.0	218.1	957.2	1007.9
11:05	12:55	237.7	584.6	631.0	238.3	7:20	4:40	939.7	205.8	962.0	1019.7
11:00	1:00	258.8	581.3	636.3	259.6	7:15	4:45	946.9	193.4	966.5	1031.2
10:55	1:05	279.8	577.8	642.0	280.9	7:10	4:50	953.7	181.0	970.7	1042.4
10:50	1:10	300.7	574.0	648.0	302.0	7:05	4:55	960.0	168.4	974.7	1053.3
10:45	1:15	321.4	569.9	654.3	323.0	7:00	5:00	965.9	155.8	978.4	1063.9
10:40	1:20	342.0	565.5	660.9	343.9	6:55	5:05	971.3	143.0	981.8	1074.2
10:35	1:25	362.4	560.9	667.8	364.7	6:50	5:10	976.3	130.3	984.9	1084.2
10:30	1:30	382.7	556.0	675.0	385.4	6:45	5:15	980.8	117.4	987.8	1093.9
10:25	1:35	402.7	550.8	682.4	406.0	6:40	5:20	984.8	104.5	990.3	1103.3
10:20	1:40	422.6	545.4	690.0	426.4	6:35	5:25	988.4	91.6	992.6	1112.3
10:15	1:45	442.3	539.8	697.8	446.6	6:30	5:30	991.4	78.6	994.6	1121.1
10:10	1:50	461.7	533.8	705.8	466.7	6:25	5:35	994.1	65.5	996.2	1129.5
10:05	1:55	481.0	527.6	714.0	486.7	6:20	5:40	996.2	52.5	997.6	1137.6
10:00	2:00	500.0	521.2	722.2	506.5	6:15	5:45	997.9	39.4	998.6	1145.5
9:55	2:05	518.8	514.5	730.6	526.1	6:10	5:50	999.0	26.3	999.4	1153.0
9:50	2:10	537.3	507.6	739.1	545.5	6:05	5:55	999.8	13.1	999.8	1160.2
9:45	2:15	555.6	500.4	747.7	564.8	6:00	6:00	1000.0	0.0	1000.0	1167.1
9:40	2:20	573.6	493.0	756.3	583.8	5:55	6:05	999.8	-13.1	999.8	1173.7
9:35	2:25	591.3	485.3	765.0	602.7	5:50	6:10	999.0	-26.3	999.4	1180.1
9:30	2:30	608.8	477.5	773.7	621.3	5:45	6:15	997.9	-39.4	998.6	1186.1
9:25	2:35	625.9	469.3	782.3	639.8	5:40	6:20	996.2	-52.5	997.6	1191.8
9:20	2:40	642.8	461.0	791.0	658.0	5:35	6:25	994.1	-65.5	996.2	1197.3
9:15	2:45	659.3	452.5	799.7	676.0	5:30	6:30	991.4	-78.6	994.6	1202.4
9:10	2:50	675.6	443.7	808.3	693.8	5:25	6:35	988.4	-91.6	992.6	1207.3
9:05	2:55	691.5	434.7	816.8	711.4	5:20	6:40	984.8	-104.5	990.3	1211.9
9:00	3:00	707.1	425.5	825.3	728.7	5:15	6:45	980.8	-117.4	987.8	1216.2
8:55	3:05	722.4	416.2	833.7	745.8	5:10	6:50	976.3	-130.3	984.9	1220.3
8:50	3:10	737.3	406.6	842.0	762.7	5:05	6:55	971.3	-143.0	981.8	1224.1
8:45	3:15	751.8	396.8	850.1	779.3	5:00	7:00	965.9	-155.8	978.4	1227.6
8:40	3:20	766.0	386.8	858.2	795.6	4:55	7:05	960.0	-168.4	974.7	1230.8
8:35	3:25	779.9	376.7	866.1	811.7	4:50	7:10	953.7	-181.0	970.7	1233.8
8:30	3:30	793.4	366.4	873.9	827.6	4:45	7:15	946.9	-193.4	966.5	1236.6
8:25	3:35	806.4	355.9	881.5	843.1	4:40	7:20	939.7	-205.8	962.0	1239.1
8:20	3:40	819.2	345.2	888.9	858.4	4:35	7:25	932.0	-218.1	957.2	1241.3
8:15	3:45	831.5	334.4	896.2	873.4	4:30	7:30	923.9	-230.3	952.2	1243.4

## Analemmatic Sundial

Latitude: 37.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 601.8 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-338.8	-332.4	-330.5	-321.7	-319.1	-308.2	-305.1	-292.1	-288.6	-273.9	-270.0
February	-245.1	-227.2	-222.5	-203.6	-198.8	-179.0	-173.8	-153.4	-148.2	-127.1	-121.6
March	-105.6	-83.9	-78.4	-56.5	-51.1	-29.0	-23.6	-1.4	4.0	26.1	31.5
April	64.3	85.8	91.1	112.2	117.5	138.2	143.3	163.5	168.4	187.9	192.6
May	215.8	233.5	237.8	254.3	258.3	273.4	277.0	290.8	294.2	306.2	309.0
June	324.0	331.8	333.6	339.3	340.6	344.3	344.8	346.1	346.3	343.8	344.9
July	340.6	335.2	333.6	326.2	324.1	314.6	312.0	300.7	297.6	284.7	281.2
August	259.2	243.1	239.0	221.8	217.4	199.3	194.5	175.6	170.8	151.0	146.0
September	115.5	94.7	89.4	68.2	62.9	41.4	36.1	14.5	9.1	-12.7	-18.1
October	-45.2	-66.9	-72.3	-93.8	-99.1	-120.4	-125.6	-146.4	-151.6	-171.9	-176.9
November	-206.1	-224.8	-229.3	-246.9	-251.2	-267.5	-271.4	-286.3	-289.7	-302.9	-306.1
December	-319.8	-329.0	-331.0	-337.7	-339.2	-343.5	-344.3	-346.1	-346.3	-345.4	-344.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	338.8	332.4	330.5	321.7	319.1	308.2	305.1	292.1	288.6	273.9	270.0
February	245.1	227.2	222.5	203.6	198.8	179.0	173.8	153.4	148.2	127.1	121.6
March	105.6	83.9	78.4	56.5	51.1	29.0	23.6	1.4	-4.0	-26.1	-31.5
April	-64.3	-85.8	-91.1	-112.2	-117.5	-138.2	-143.3	-163.5	-168.4	-187.9	-192.6
May	-215.8	-233.5	-237.8	-254.3	-258.3	-273.4	-277.0	-290.8	-294.2	-306.2	-309.0
June	-324.0	-331.8	-333.6	-339.3	-340.6	-344.3	-344.8	-346.1	-346.3	-343.8	-344.9
July	-340.6	-335.2	-333.6	-326.2	-324.1	-314.6	-312.0	-300.7	-297.6	-284.7	-281.2
August	-259.2	-243.1	-239.0	-221.8	-217.4	-199.3	-194.5	-175.6	-170.8	-151.0	-146.0
September	-115.5	-94.7	-89.4	-68.2	-62.9	-41.4	-36.1	-14.5	-9.1	12.7	18.1
October	45.2	66.9	72.3	93.8	99.1	120.4	125.6	146.4	151.6	171.9	176.9
November	206.1	224.8	229.3	246.9	251.2	267.5	271.4	286.3	289.7	302.9	306.1
December	319.8	329.0	331.0	337.7	339.2	343.5	344.3	346.1	346.3	345.4	344.9

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: 37.0° N/S

Earliest Sunrise: 4:38 a.m.    Latest Sunset: 7:22 p.m.  
 Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 902.7 mm  
 Sunrise/Sunset Markers: X = ± 919.2 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	902.7	902.7	0.0							
11:55	12:05	32.7	902.5	903.1	32.7	8:10	3:50	1265.1	485.0	1354.9	1332.3
11:50	12:10	65.4	901.9	904.2	65.4	8:05	3:55	1282.4	468.3	1365.2	1354.0
11:45	12:15	98.1	900.8	906.1	98.1	8:00	4:00	1299.0	451.4	1375.2	1375.2
11:40	12:20	130.7	899.3	908.7	130.8	7:55	4:05	1315.1	434.2	1384.9	1396.1
11:35	12:25	163.3	897.4	912.1	163.4	7:50	4:10	1330.5	416.8	1394.3	1416.5
11:30	12:30	195.8	895.0	916.2	195.9	7:45	4:15	1345.3	399.3	1403.3	1436.4
11:25	12:35	228.2	892.2	920.9	228.4	7:40	4:20	1359.5	381.5	1412.0	1456.0
11:20	12:40	260.5	889.0	926.4	260.8	7:35	4:25	1373.0	363.6	1420.3	1475.0
11:15	12:45	292.6	885.4	932.5	293.1	7:30	4:30	1385.8	345.5	1428.2	1493.7
11:10	12:50	324.7	881.3	939.2	325.4	7:25	4:35	1398.0	327.2	1435.8	1511.8
11:05	12:55	356.5	876.9	946.6	357.5	7:20	4:40	1409.5	308.7	1443.0	1529.6
11:00	1:00	388.2	872.0	954.5	389.4	7:15	4:45	1420.4	290.2	1449.7	1546.8
10:55	1:05	419.7	866.7	963.0	421.3	7:10	4:50	1430.6	271.5	1456.1	1563.7
10:50	1:10	451.1	860.9	971.9	453.0	7:05	4:55	1440.1	252.6	1462.1	1580.0
10:45	1:15	482.2	854.8	981.4	484.5	7:00	5:00	1448.9	233.6	1467.6	1595.9
10:40	1:20	513.0	848.3	991.4	515.9	6:55	5:05	1457.0	214.6	1472.7	1611.3
10:35	1:25	543.7	841.3	1001.7	547.1	6:50	5:10	1464.4	195.4	1477.4	1626.3
10:30	1:30	574.0	834.0	1012.5	578.1	6:45	5:15	1471.2	176.1	1481.7	1640.8
10:25	1:35	604.1	826.3	1023.6	608.9	6:40	5:20	1477.2	156.8	1485.5	1654.9
10:20	1:40	633.9	818.1	1035.0	639.5	6:35	5:25	1482.5	137.3	1488.9	1668.5
10:15	1:45	663.4	809.6	1046.7	669.9	6:30	5:30	1487.2	117.8	1491.8	1681.6
10:10	1:50	692.6	800.7	1058.7	700.1	6:25	5:35	1491.1	98.3	1494.3	1694.2
10:05	1:55	721.5	791.4	1070.9	730.0	6:20	5:40	1494.3	78.7	1496.4	1706.4
10:00	2:00	750.0	781.8	1083.4	759.7	6:15	5:45	1496.8	59.0	1498.0	1718.2
9:55	2:05	778.2	771.7	1096.0	789.1	6:10	5:50	1498.6	39.4	1499.1	1729.5
9:50	2:10	805.9	761.3	1108.7	818.3	6:05	5:55	1499.6	19.7	1499.8	1740.3
9:45	2:15	833.4	750.6	1121.5	847.1	6:00	6:00	1500.0	0.0	1500.0	1750.7
9:40	2:20	860.4	739.5	1134.5	875.7	5:55	6:05	1499.6	-19.7	1499.8	1760.6
9:35	2:25	887.0	728.0	1147.5	904.0	5:50	6:10	1498.6	-39.4	1499.1	1770.1
9:30	2:30	913.1	716.2	1160.5	932.0	5:45	6:15	1496.8	-59.0	1498.0	1779.1
9:25	2:35	938.9	704.0	1173.5	959.7	5:40	6:20	1494.3	-78.7	1496.4	1787.8
9:20	2:40	964.2	691.5	1186.5	987.0	5:35	6:25	1491.1	-98.3	1494.3	1795.9
9:15	2:45	989.0	678.7	1199.5	1014.1	5:30	6:30	1487.2	-117.8	1491.8	1803.7
9:10	2:50	1013.4	665.6	1212.4	1040.8	5:25	6:35	1482.5	-137.3	1488.9	1811.0
9:05	2:55	1037.3	652.1	1225.2	1067.1	5:20	6:40	1477.2	-156.8	1485.5	1817.9
9:00	3:00	1060.7	638.3	1237.9	1093.1	5:15	6:45	1471.2	-176.1	1481.7	1824.3
8:55	3:05	1083.5	624.2	1250.5	1118.8	5:10	6:50	1464.4	-195.4	1477.4	1830.4
8:50	3:10	1105.9	609.9	1262.9	1144.0	5:05	6:55	1457.0	-214.6	1472.7	1836.1
8:45	3:15	1127.8	595.2	1275.2	1168.9	5:00	7:00	1448.9	-233.6	1467.6	1841.4
8:40	3:20	1149.1	580.3	1287.3	1193.5	4:55	7:05	1440.1	-252.6	1462.1	1846.2
8:35	3:25	1169.8	565.0	1299.1	1217.6	4:50	7:10	1430.6	-271.5	1456.1	1850.7
8:30	3:30	1190.0	549.5	1310.8	1241.3	4:45	7:15	1420.4	-290.2	1449.7	1854.9
8:25	3:35	1209.7	533.8	1322.2	1264.7	4:40	7:20	1409.5	-308.7	1443.0	1858.6
8:20	3:40	1228.7	517.8	1333.4	1287.6	4:35	7:25	1398.0	-327.2	1435.8	1862.0
8:15	3:45	1247.2	501.5	1344.3	1310.1	4:30	7:30	1385.8	-345.5	1428.2	1865.1

## Analemmatic Sundial

Latitude: 37.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 902.7 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-508.3	-498.7	-495.7	-482.5	-478.7	-462.3	-457.7	-438.2	-432.9	-410.9	-405.0
February	-367.6	-340.8	-333.8	-305.4	-298.2	-268.4	-260.8	-230.0	-222.2	-190.6	-182.5
March	-158.4	-125.9	-117.7	-84.8	-76.6	-43.5	-35.3	-2.1	6.1	39.1	47.3
April	96.4	128.7	136.7	168.4	176.3	207.4	214.9	245.3	252.7	281.9	288.9
May	323.7	350.3	356.7	381.4	387.4	410.2	415.5	436.3	441.2	459.4	463.5
June	486.0	497.7	500.4	509.0	511.0	516.4	517.2	519.1	519.4	515.7	517.4
July	511.0	502.8	500.4	489.4	486.2	471.9	468.0	451.0	446.5	427.0	421.9
August	388.8	364.7	358.5	332.7	326.2	298.9	291.8	263.4	256.2	226.6	219.0
September	173.3	142.0	134.2	102.3	94.3	62.2	54.2	21.7	13.6	-19.0	-27.2
October	-67.8	-100.4	-108.4	-140.7	-148.6	-180.5	-188.5	-219.6	-227.4	-257.9	-265.4
November	-309.1	-337.2	-344.0	-370.4	-376.8	-401.3	-407.1	-429.4	-434.6	-454.3	-459.1
December	-479.6	-493.5	-496.5	-506.5	-508.7	-515.2	-516.4	-519.1	-519.4	-518.2	-517.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	508.3	498.7	495.7	482.5	478.7	462.3	457.7	438.2	432.9	410.9	405.0
February	367.6	340.8	333.8	305.4	298.2	268.4	260.8	230.0	222.2	190.6	182.5
March	158.4	125.9	117.7	84.8	76.6	43.5	35.3	2.1	-6.1	-39.1	-47.3
April	-96.4	-128.7	-136.7	-168.4	-176.3	-207.4	-214.9	-245.3	-252.7	-281.9	-288.9
May	-323.7	-350.3	-356.7	-381.4	-387.4	-410.2	-415.5	-436.3	-441.2	-459.4	-463.5
June	-486.0	-497.7	-500.4	-509.0	-511.0	-516.4	-517.2	-519.1	-519.4	-515.7	-517.4
July	-511.0	-502.8	-500.4	-489.4	-486.2	-471.9	-468.0	-451.0	-446.5	-427.0	-421.9
August	-388.8	-364.7	-358.5	-332.7	-326.2	-298.9	-291.8	-263.4	-256.2	-226.6	-219.0
September	-173.3	-142.0	-134.2	-102.3	-94.3	-62.2	-54.2	-21.7	-13.6	19.0	27.2
October	67.8	100.4	108.4	140.7	148.6	180.5	188.5	219.6	227.4	257.9	265.4
November	309.1	337.2	344.0	370.4	376.8	401.3	407.1	429.4	434.6	454.3	459.1
December	479.6	493.5	496.5	506.5	508.7	515.2	516.4	519.1	519.4	518.2	517.4

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: 37.0° N/S

Earliest Sunrise: 4:38 a.m. Latest Sunset: 7:22 p.m.  
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1203.6 mm  
 Sunrise/Sunset Markers: X = ± 1225.6 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1203.6	1203.6	0.0							
11:55	12:05	43.6	1203.3	1204.1	43.6	8:10	3:50	1686.8	646.7	1806.5	1776.3
11:50	12:10	87.2	1202.5	1205.6	87.2	8:05	3:55	1709.8	624.4	1820.3	1805.3
11:45	12:15	130.8	1201.1	1208.2	130.8	8:00	4:00	1732.1	601.8	1833.6	1833.6
11:40	12:20	174.3	1199.0	1211.7	174.4	7:55	4:05	1753.5	578.9	1846.6	1861.4
11:35	12:25	217.7	1196.5	1216.1	217.9	7:50	4:10	1774.0	555.8	1859.0	1888.6
11:30	12:30	261.1	1193.3	1221.6	261.3	7:45	4:15	1793.7	532.4	1871.1	1915.2
11:25	12:35	304.2	1189.6	1227.9	304.6	7:40	4:20	1812.6	508.7	1882.6	1941.3
11:20	12:40	347.3	1185.3	1235.2	347.8	7:35	4:25	1830.6	484.8	1893.7	1966.7
11:15	12:45	390.2	1180.5	1243.3	390.9	7:30	4:30	1847.8	460.6	1904.3	1991.6
11:10	12:50	432.9	1175.1	1252.3	433.8	7:25	4:35	1864.0	436.2	1914.4	2015.8
11:05	12:55	475.4	1169.1	1262.1	476.6	7:20	4:40	1879.4	411.7	1923.9	2039.4
11:00	1:00	517.6	1162.6	1272.6	519.3	7:15	4:45	1893.9	386.9	1933.0	2062.5
10:55	1:05	559.7	1155.5	1283.9	561.7	7:10	4:50	1907.4	361.9	1941.5	2084.9
10:50	1:10	601.4	1147.9	1295.9	604.0	7:05	4:55	1920.1	336.8	1949.4	2106.7
10:45	1:15	642.9	1139.8	1308.6	646.0	7:00	5:00	1931.9	311.5	1956.8	2127.9
10:40	1:20	684.0	1131.0	1321.8	687.9	6:55	5:05	1942.7	286.1	1963.6	2148.5
10:35	1:25	724.9	1121.8	1335.6	729.5	6:50	5:10	1952.6	260.5	1969.9	2168.4
10:30	1:30	765.4	1112.0	1349.9	770.8	6:45	5:15	1961.6	234.8	1975.6	2187.8
10:25	1:35	805.5	1101.7	1364.8	811.9	6:40	5:20	1969.6	209.0	1980.7	2206.5
10:20	1:40	845.2	1090.9	1380.0	852.7	6:35	5:25	1976.7	183.1	1985.2	2224.6
10:15	1:45	884.6	1079.5	1395.6	893.2	6:30	5:30	1982.9	157.1	1989.1	2242.1
10:10	1:50	923.5	1067.6	1411.6	933.5	6:25	5:35	1988.1	131.0	1992.4	2259.0
10:05	1:55	962.0	1055.3	1427.9	973.4	6:20	5:40	1992.4	104.9	1995.1	2275.3
10:00	2:00	1000.0	1042.4	1444.5	1012.9	6:15	5:45	1995.7	78.7	1997.3	2290.9
9:55	2:05	1037.5	1029.0	1461.3	1052.1	6:10	5:50	1998.1	52.5	1998.8	2306.0
9:50	2:10	1074.6	1015.1	1478.3	1091.0	6:05	5:55	1999.5	26.3	1999.7	2320.4
9:45	2:15	1111.1	1000.8	1495.4	1129.5	6:00	6:00	2000.0	0.0	2000.0	2334.3
9:40	2:20	1147.2	986.0	1512.6	1167.6	5:55	6:05	1999.5	-26.3	1999.7	2347.5
9:35	2:25	1182.6	970.7	1530.0	1205.3	5:50	6:10	1998.1	-52.5	1998.8	2360.1
9:30	2:30	1217.5	954.9	1547.3	1242.7	5:45	6:15	1995.7	-78.7	1997.3	2372.2
9:25	2:35	1251.8	938.7	1564.7	1279.6	5:40	6:20	1992.4	-104.9	1995.1	2383.7
9:20	2:40	1285.6	922.0	1582.0	1316.1	5:35	6:25	1988.1	-131.0	1992.4	2394.6
9:15	2:45	1318.7	904.9	1599.3	1352.1	5:30	6:30	1982.9	-157.1	1989.1	2404.9
9:10	2:50	1351.2	887.4	1616.5	1387.7	5:25	6:35	1976.7	-183.1	1985.2	2414.6
9:05	2:55	1383.0	869.5	1633.6	1422.8	5:20	6:40	1969.6	-209.0	1980.7	2423.8
9:00	3:00	1414.2	851.1	1650.6	1457.5	5:15	6:45	1961.6	-234.8	1975.6	2432.5
8:55	3:05	1444.7	832.3	1667.3	1491.7	5:10	6:50	1952.6	-260.5	1969.9	2440.6
8:50	3:10	1474.6	813.2	1683.9	1525.4	5:05	6:55	1942.7	-286.1	1963.6	2448.1
8:45	3:15	1503.7	793.6	1700.3	1558.6	5:00	7:00	1931.9	-311.5	1956.8	2455.1
8:40	3:20	1532.1	773.7	1716.4	1591.3	4:55	7:05	1920.1	-336.8	1949.4	2461.7
8:35	3:25	1559.8	753.4	1732.2	1623.5	4:50	7:10	1907.4	-361.9	1941.5	2467.7
8:30	3:30	1586.7	732.7	1747.7	1655.1	4:45	7:15	1893.9	-386.9	1933.0	2473.2
8:25	3:35	1612.9	711.7	1762.9	1686.2	4:40	7:20	1879.4	-411.7	1923.9	2478.2
8:20	3:40	1638.3	690.4	1777.8	1716.8	4:35	7:25	1864.0	-436.2	1914.4	2482.7
8:15	3:45	1662.9	668.7	1792.4	1746.9	4:30	7:30	1847.8	-460.6	1904.3	2486.7

## Analemmatic Sundial

Latitude: 37.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1203.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-677.7	-664.9	-661.0	-643.4	-638.2	-616.3	-610.3	-584.2	-577.3	-547.8	-540.0
February	-490.2	-454.4	-445.1	-407.1	-397.7	-357.9	-347.7	-306.7	-296.3	-254.1	-243.3
March	-211.1	-167.9	-156.9	-113.1	-102.2	-58.0	-47.1	-2.8	8.1	52.1	63.0
April	128.5	171.5	182.3	224.5	235.0	276.5	286.5	327.0	336.9	375.8	385.2
May	431.6	467.1	475.6	508.5	516.5	546.9	554.0	581.7	588.3	612.5	617.9
June	647.9	663.6	667.2	678.7	681.3	688.6	689.5	692.2	692.5	687.6	689.9
July	681.3	670.4	667.2	652.5	648.3	629.2	624.0	601.3	595.3	569.4	562.5
August	518.4	486.2	478.0	443.6	434.9	398.5	389.1	351.2	341.6	302.1	292.0
September	231.0	189.3	178.9	136.4	125.7	82.9	72.3	29.0	18.1	-25.4	-36.2
October	-90.4	-133.8	-144.5	-187.6	-198.1	-240.7	-251.3	-292.9	-303.3	-343.9	-353.8
November	-412.2	-449.6	-458.6	-493.8	-502.4	-535.1	-542.8	-572.5	-579.5	-605.8	-612.2
December	-639.5	-658.0	-661.9	-675.4	-678.3	-686.9	-688.6	-692.2	-692.5	-690.9	-689.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	677.7	664.9	661.0	643.4	638.2	616.3	610.3	584.2	577.3	547.8	540.0
February	490.2	454.4	445.1	407.1	397.7	357.9	347.7	306.7	296.3	254.1	243.3
March	211.1	167.9	156.9	113.1	102.2	58.0	47.1	2.8	-8.1	-52.1	-63.0
April	-128.5	-171.5	-182.3	-224.5	-235.0	-276.5	-286.5	-327.0	-336.9	-375.8	-385.2
May	-431.6	-467.1	-475.6	-508.5	-516.5	-546.9	-554.0	-581.7	-588.3	-612.5	-617.9
June	-647.9	-663.6	-667.2	-678.7	-681.3	-688.6	-689.5	-692.2	-692.5	-687.6	-689.9
July	-681.3	-670.4	-667.2	-652.5	-648.3	-629.2	-624.0	-601.3	-595.3	-569.4	-562.5
August	-518.4	-486.2	-478.0	-443.6	-434.9	-398.5	-389.1	-351.2	-341.6	-302.1	-292.0
September	-231.0	-189.3	-178.9	-136.4	-125.7	-82.9	-72.3	-29.0	-18.1	25.4	36.2
October	90.4	133.8	144.5	187.6	198.1	240.7	251.3	292.9	303.3	343.9	353.8
November	412.2	449.6	458.6	493.8	502.4	535.1	542.8	572.5	579.5	605.8	612.2
December	639.5	658.0	661.9	675.4	678.3	686.9	688.6	692.2	692.5	690.9	689.9

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: 37.0° N/S

Earliest Sunrise: 4:38 a.m.    Latest Sunset: 7:22 p.m.  
 Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 1504.5 mm  
 Sunrise/Sunset Markers: X = ± 1532.0 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1504.5	1504.5	0.0							
11:55	12:05	54.5	1504.2	1505.2	54.5	8:10	3:50	2108.5	808.4	2258.1	2220.4
11:50	12:10	109.0	1503.1	1507.1	109.1	8:05	3:55	2137.3	780.5	2275.3	2256.6
11:45	12:15	163.5	1501.3	1510.2	163.5	8:00	4:00	2165.1	752.3	2292.0	2292.0
11:40	12:20	217.9	1498.8	1514.6	218.0	7:55	4:05	2191.8	723.7	2308.2	2326.8
11:35	12:25	272.2	1495.6	1520.2	272.3	7:50	4:10	2217.5	694.7	2323.8	2360.8
11:30	12:30	326.3	1491.7	1526.9	326.6	7:45	4:15	2242.2	665.4	2338.8	2394.0
11:25	12:35	380.3	1487.0	1534.9	380.7	7:40	4:20	2265.8	635.8	2353.3	2426.6
11:20	12:40	434.1	1481.7	1544.0	434.7	7:35	4:25	2288.3	605.9	2367.1	2458.4
11:15	12:45	487.7	1475.6	1554.1	488.6	7:30	4:30	2309.7	575.8	2380.4	2489.4
11:10	12:50	541.1	1468.9	1565.4	542.3	7:25	4:35	2330.0	545.3	2393.0	2519.7
11:05	12:55	594.2	1461.4	1577.6	595.8	7:20	4:40	2349.2	514.6	2404.9	2549.3
11:00	1:00	647.0	1453.3	1590.8	649.1	7:15	4:45	2367.3	483.6	2416.2	2578.1
10:55	1:05	699.6	1444.4	1604.9	702.1	7:10	4:50	2384.3	452.4	2426.8	2606.1
10:50	1:10	751.8	1434.9	1619.9	755.0	7:05	4:55	2400.1	421.0	2436.8	2633.4
10:45	1:15	803.6	1424.7	1635.7	807.6	7:00	5:00	2414.8	389.4	2446.0	2659.9
10:40	1:20	855.1	1413.8	1652.3	859.9	6:55	5:05	2428.4	357.6	2454.5	2685.6
10:35	1:25	906.1	1402.2	1669.5	911.9	6:50	5:10	2440.7	325.6	2462.4	2710.5
10:30	1:30	956.7	1390.0	1687.4	963.5	6:45	5:15	2452.0	293.5	2469.5	2734.7
10:25	1:35	1006.9	1377.1	1705.9	1014.9	6:40	5:20	2462.0	261.3	2475.8	2758.1
10:20	1:40	1056.5	1363.6	1725.0	1065.9	6:35	5:25	2470.9	228.9	2481.5	2780.8
10:15	1:45	1105.7	1349.4	1744.5	1116.6	6:30	5:30	2478.6	196.4	2486.4	2802.6
10:10	1:50	1154.4	1334.5	1764.5	1166.8	6:25	5:35	2485.1	163.8	2490.5	2823.7
10:05	1:55	1202.5	1319.1	1784.9	1216.7	6:20	5:40	2490.5	131.1	2493.9	2844.1
10:00	2:00	1250.0	1303.0	1805.6	1266.1	6:15	5:45	2494.6	98.4	2496.6	2863.6
9:55	2:05	1296.9	1286.2	1826.6	1315.2	6:10	5:50	2497.6	65.6	2498.5	2882.5
9:50	2:10	1343.2	1268.9	1847.8	1363.8	6:05	5:55	2499.4	32.8	2499.6	2900.5
9:45	2:15	1388.9	1251.0	1869.2	1411.9	6:00	6:00	2500.0	0.0	2500.0	2917.8
9:40	2:20	1433.9	1232.4	1890.8	1459.5	5:55	6:05	2499.4	-32.8	2499.6	2934.4
9:35	2:25	1478.3	1213.3	1912.4	1506.7	5:50	6:10	2497.6	-65.6	2498.5	2950.2
9:30	2:30	1521.9	1193.6	1934.2	1553.3	5:45	6:15	2494.6	-98.4	2496.6	2965.2
9:25	2:35	1564.8	1173.4	1955.9	1599.5	5:40	6:20	2490.5	-131.1	2493.9	2979.6
9:20	2:40	1607.0	1152.5	1977.5	1645.1	5:35	6:25	2485.1	-163.8	2490.5	2993.2
9:15	2:45	1648.4	1131.2	1999.2	1690.1	5:30	6:30	2478.6	-196.4	2486.4	3006.1
9:10	2:50	1689.0	1109.3	2020.7	1734.6	5:25	6:35	2470.9	-228.9	2481.5	3018.3
9:05	2:55	1728.8	1086.8	2042.0	1778.5	5:20	6:40	2462.0	-261.3	2475.8	3029.8
9:00	3:00	1767.8	1063.9	2063.2	1821.9	5:15	6:45	2452.0	-293.5	2469.5	3040.6
8:55	3:05	1805.9	1040.4	2084.2	1864.6	5:10	6:50	2440.7	-325.6	2462.4	3050.7
8:50	3:10	1843.2	1016.5	2104.9	1906.7	5:05	6:55	2428.4	-357.6	2454.5	3060.1
8:45	3:15	1879.6	992.0	2125.3	1948.2	5:00	7:00	2414.8	-389.4	2446.0	3068.9
8:40	3:20	1915.1	967.1	2145.4	1989.1	4:55	7:05	2400.1	-421.0	2436.8	3077.1
8:35	3:25	1949.7	941.7	2165.2	2029.3	4:50	7:10	2384.3	-452.4	2426.8	3084.6
8:30	3:30	1983.4	915.9	2184.6	2068.9	4:45	7:15	2367.3	-483.6	2416.2	3091.4
8:25	3:35	2016.1	889.6	2203.7	2107.8	4:40	7:20	2349.2	-514.6	2404.9	3097.7
8:20	3:40	2047.9	863.0	2222.3	2146.0	4:35	7:25	2330.0	-545.3	2393.0	3103.4
8:15	3:45	2078.7	835.9	2240.4	2183.6	4:30	7:30	2309.7	-575.8	2380.4	3108.4

## Analematic Sundial

Latitude: 37.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 1504.5 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-847.1	-831.1	-826.2	-804.2	-797.8	-770.4	-762.8	-730.3	-721.6	-684.8	-675.0
February	-612.7	-568.0	-556.3	-508.9	-497.1	-447.4	-434.6	-383.4	-370.4	-317.7	-304.1
March	-263.9	-209.8	-196.1	-141.4	-127.7	-72.5	-58.9	-3.5	10.1	65.2	78.8
April	160.6	214.4	227.8	280.6	293.8	345.6	358.2	408.8	421.1	469.8	481.6
May	539.5	583.8	594.5	635.7	645.7	683.6	692.6	727.1	735.4	765.6	772.4
June	809.9	829.5	834.0	848.3	851.6	860.7	861.9	865.2	865.7	859.5	862.3
July	851.6	838.1	834.0	815.6	810.3	786.5	780.0	751.7	744.1	711.7	703.1
August	648.0	607.8	597.5	554.5	543.6	498.2	486.3	439.0	426.9	377.6	365.0
September	288.8	236.7	223.6	170.5	157.1	103.6	90.3	36.2	22.7	-31.7	-45.3
October	-113.0	-167.3	-180.6	-234.5	-247.6	-300.9	-314.1	-366.1	-379.1	-429.9	-442.3
November	-515.2	-562.0	-573.3	-617.3	-628.0	-668.8	-678.5	-715.7	-724.3	-757.2	-765.2
December	-799.4	-822.5	-827.4	-844.2	-847.9	-858.6	-860.7	-865.2	-865.7	-863.6	-862.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	847.1	831.1	826.2	804.2	797.8	770.4	762.8	730.3	721.6	684.8	675.0
February	612.7	568.0	556.3	508.9	497.1	447.4	434.6	383.4	370.4	317.7	304.1
March	263.9	209.8	196.1	141.4	127.7	72.5	58.9	3.5	-10.1	-65.2	-78.8
April	-160.6	-214.4	-227.8	-280.6	-293.8	-345.6	-358.2	-408.8	-421.1	-469.8	-481.6
May	-539.5	-583.8	-594.5	-635.7	-645.7	-683.6	-692.6	-727.1	-735.4	-765.6	-772.4
June	-809.9	-829.5	-834.0	-848.3	-851.6	-860.7	-861.9	-865.2	-865.7	-859.5	-862.3
July	-851.6	-838.1	-834.0	-815.6	-810.3	-786.5	-780.0	-751.7	-744.1	-711.7	-703.1
August	-648.0	-607.8	-597.5	-554.5	-543.6	-498.2	-486.3	-439.0	-426.9	-377.6	-365.0
September	-288.8	-236.7	-223.6	-170.5	-157.1	-103.6	-90.3	-36.2	-22.7	31.7	45.3
October	113.0	167.3	180.6	234.5	247.6	300.9	314.1	366.1	379.1	429.9	442.3
November	515.2	562.0	573.3	617.3	628.0	668.8	678.5	715.7	724.3	757.2	765.2
December	799.4	822.5	827.4	844.2	847.9	858.6	860.7	865.2	865.7	863.6	862.3

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 |