

Analemmatic Sundial

Latitude: 39.0° N/S

Earliest Sunrise: 4:32 a.m.    Latest Sunset: 7:28 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 629.3 mm  
 Sunrise/Sunset Markers: X = ± 576.5 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	629.3	629.3	0.0							
11:55	12:05	21.8	629.2	629.5	21.8	8:10	3:50	843.4	338.1	908.6	892.2
11:50	12:10	43.6	628.7	630.2	43.6	8:05	3:55	854.9	326.5	915.1	907.0
11:45	12:15	65.4	628.0	631.4	65.4	8:00	4:00	866.0	314.7	921.4	921.4
11:40	12:20	87.2	626.9	633.0	87.2	7:55	4:05	876.7	302.7	927.5	935.6
11:35	12:25	108.9	625.6	635.0	108.9	7:50	4:10	887.0	290.6	933.4	949.5
11:30	12:30	130.5	623.9	637.4	130.6	7:45	4:15	896.9	278.3	939.1	963.1
11:25	12:35	152.1	622.0	640.3	152.3	7:40	4:20	906.3	266.0	944.5	976.4
11:20	12:40	173.6	619.8	643.6	173.9	7:35	4:25	915.3	253.5	949.8	989.5
11:15	12:45	195.1	617.2	647.3	195.5	7:30	4:30	923.9	240.8	954.8	1002.2
11:10	12:50	216.4	614.4	651.4	217.0	7:25	4:35	932.0	228.1	959.5	1014.7
11:05	12:55	237.7	611.3	655.9	238.4	7:20	4:40	939.7	215.2	964.0	1026.9
11:00	1:00	258.8	607.9	660.7	259.7	7:15	4:45	946.9	202.3	968.3	1038.8
10:55	1:05	279.8	604.2	665.8	281.0	7:10	4:50	953.7	189.2	972.3	1050.4
10:50	1:10	300.7	600.2	671.3	302.1	7:05	4:55	960.0	176.1	976.1	1061.7
10:45	1:15	321.4	595.9	677.1	323.2	7:00	5:00	965.9	162.9	979.6	1072.7
10:40	1:20	342.0	591.4	683.1	344.1	6:55	5:05	971.3	149.6	982.8	1083.4
10:35	1:25	362.4	586.5	689.5	365.0	6:50	5:10	976.3	136.2	985.8	1093.8
10:30	1:30	382.7	581.4	696.1	385.7	6:45	5:15	980.8	122.8	988.4	1103.9
10:25	1:35	402.7	576.0	702.9	406.3	6:40	5:20	984.8	109.3	990.9	1113.7
10:20	1:40	422.6	570.4	709.9	426.7	6:35	5:25	988.4	95.7	993.0	1123.2
10:15	1:45	442.3	564.4	717.1	447.0	6:30	5:30	991.4	82.1	994.8	1132.4
10:10	1:50	461.7	558.2	724.4	467.2	6:25	5:35	994.1	68.5	996.4	1141.3
10:05	1:55	481.0	551.7	732.0	487.2	6:20	5:40	996.2	54.8	997.7	1150.0
10:00	2:00	500.0	545.0	739.6	507.1	6:15	5:45	997.9	41.2	998.7	1158.3
9:55	2:05	518.8	538.0	747.4	526.7	6:10	5:50	999.0	27.5	999.4	1166.3
9:50	2:10	537.3	530.8	755.2	546.3	6:05	5:55	999.8	13.7	999.9	1174.1
9:45	2:15	555.6	523.3	763.2	565.6	6:00	6:00	1000.0	0.0	1000.0	1181.5
9:40	2:20	573.6	515.5	771.2	584.8	5:55	6:05	999.8	-13.7	999.9	1188.7
9:35	2:25	591.3	507.5	779.2	603.7	5:50	6:10	999.0	-27.5	999.4	1195.6
9:30	2:30	608.8	499.3	787.3	622.5	5:45	6:15	997.9	-41.2	998.7	1202.2
9:25	2:35	625.9	490.8	795.4	641.1	5:40	6:20	996.2	-54.8	997.7	1208.5
9:20	2:40	642.8	482.1	803.5	659.4	5:35	6:25	994.1	-68.5	996.4	1214.5
9:15	2:45	659.3	473.1	811.5	677.6	5:30	6:30	991.4	-82.1	994.8	1220.3
9:10	2:50	675.6	464.0	819.6	695.5	5:25	6:35	988.4	-95.7	993.0	1225.8
9:05	2:55	691.5	454.6	827.6	713.2	5:20	6:40	984.8	-109.3	990.9	1231.0
9:00	3:00	707.1	445.0	835.5	730.7	5:15	6:45	980.8	-122.8	988.4	1236.0
8:55	3:05	722.4	435.2	843.3	748.0	5:10	6:50	976.3	-136.2	985.8	1240.6
8:50	3:10	737.3	425.2	851.1	765.0	5:05	6:55	971.3	-149.6	982.8	1245.1
8:45	3:15	751.8	414.9	858.7	781.8	5:00	7:00	965.9	-162.9	979.6	1249.2
8:40	3:20	766.0	404.5	866.3	798.3	4:55	7:05	960.0	-176.1	976.1	1253.2
8:35	3:25	779.9	393.9	873.7	814.6	4:50	7:10	953.7	-189.2	972.3	1256.8
8:30	3:30	793.4	383.1	881.0	830.7	4:45	7:15	946.9	-202.3	968.3	1260.3
8:25	3:35	806.4	372.1	888.2	846.5	4:40	7:20	939.7	-215.2	964.0	1263.4
8:20	3:40	819.2	361.0	895.2	862.0	4:35	7:25	932.0	-228.1	959.5	1266.4
8:15	3:45	831.5	349.6	902.0	877.2	4:30	7:30	923.9	-240.8	954.8	1269.1

## Analematic Sundial

Latitude: 39.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 629.3 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-329.7	-323.5	-321.6	-313.0	-310.5	-299.9	-296.9	-284.2	-280.9	-266.5	-262.7
February	-238.5	-221.1	-216.5	-198.1	-193.5	-174.1	-169.2	-149.2	-144.2	-123.6	-118.4
March	-102.7	-81.7	-76.3	-55.0	-49.7	-28.2	-22.9	-1.4	3.9	25.4	30.7
April	62.5	83.5	88.7	109.2	114.3	134.5	139.4	159.1	163.9	182.9	187.4
May	210.0	227.3	231.4	247.4	251.3	266.1	269.6	283.0	286.2	298.0	300.7
June	315.3	322.9	324.6	330.2	331.5	335.0	335.5	336.8	336.9	334.5	335.7
July	331.5	326.2	324.6	317.5	315.4	306.1	303.6	292.6	289.6	277.0	273.7
August	252.2	236.6	232.6	215.8	211.6	193.9	189.3	170.9	166.2	147.0	142.1
September	112.4	92.1	87.0	66.4	61.2	40.3	35.2	14.1	8.8	-12.3	-17.6
October	-44.0	-65.1	-70.3	-91.3	-96.4	-117.1	-122.3	-142.5	-147.5	-167.3	-172.1
November	-200.5	-218.7	-223.1	-240.3	-244.4	-260.3	-264.1	-278.6	-281.9	-294.7	-297.9
December	-311.2	-320.2	-322.1	-328.6	-330.0	-334.2	-335.0	-336.8	-336.9	-336.1	-335.7

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	329.7	323.5	321.6	313.0	310.5	299.9	296.9	284.2	280.9	266.5	262.7
February	238.5	221.1	216.5	198.1	193.5	174.1	169.2	149.2	144.2	123.6	118.4
March	102.7	81.7	76.3	55.0	49.7	28.2	22.9	1.4	-3.9	-25.4	-30.7
April	-62.5	-83.5	-88.7	-109.2	-114.3	-134.5	-139.4	-159.1	-163.9	-182.9	-187.4
May	-210.0	-227.3	-231.4	-247.4	-251.3	-266.1	-269.6	-283.0	-286.2	-298.0	-300.7
June	-315.3	-322.9	-324.6	-330.2	-331.5	-335.0	-335.5	-336.8	-336.9	-334.5	-335.7
July	-331.5	-326.2	-324.6	-317.5	-315.4	-306.1	-303.6	-292.6	-289.6	-277.0	-273.7
August	-252.2	-236.6	-232.6	-215.8	-211.6	-193.9	-189.3	-170.9	-166.2	-147.0	-142.1
September	-112.4	-92.1	-87.0	-66.4	-61.2	-40.3	-35.2	-14.1	-8.8	12.3	17.6
October	44.0	65.1	70.3	91.3	96.4	117.1	122.3	142.5	147.5	167.3	172.1
November	200.5	218.7	223.1	240.3	244.4	260.3	264.1	278.6	281.9	294.7	297.9
December	311.2	320.2	322.1	328.6	330.0	334.2	335.0	336.8	336.9	336.1	335.7

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: 39.0° N/S

Earliest Sunrise: 4:32 a.m.    Latest Sunset: 7:28 p.m.  
 Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 944.0 mm  
 Sunrise/Sunset Markers: X = ± 864.8 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	944.0	944.0	0.0							
11:55	12:05	32.7	943.8	944.3	32.7	8:10	3:50	1265.1	507.2	1363.0	1338.4
11:50	12:10	65.4	943.1	945.3	65.4	8:05	3:55	1282.4	489.7	1372.7	1360.5
11:45	12:15	98.1	942.0	947.1	98.1	8:00	4:00	1299.0	472.0	1382.1	1382.1
11:40	12:20	130.7	940.4	949.4	130.8	7:55	4:05	1315.1	454.0	1391.3	1403.4
11:35	12:25	163.3	938.4	952.5	163.4	7:50	4:10	1330.5	435.9	1400.1	1424.2
11:30	12:30	195.8	935.9	956.2	196.0	7:45	4:15	1345.3	417.5	1408.6	1444.7
11:25	12:35	228.2	933.0	960.5	228.4	7:40	4:20	1359.5	398.9	1416.8	1464.7
11:20	12:40	260.5	929.6	965.4	260.9	7:35	4:25	1373.0	380.2	1424.6	1484.2
11:15	12:45	292.6	925.8	971.0	293.2	7:30	4:30	1385.8	361.2	1432.1	1503.4
11:10	12:50	324.7	921.6	977.1	325.4	7:25	4:35	1398.0	342.1	1439.3	1522.1
11:05	12:55	356.5	916.9	983.8	357.6	7:20	4:40	1409.5	322.9	1446.0	1540.3
11:00	1:00	388.2	911.8	991.0	389.6	7:15	4:45	1420.4	303.4	1452.4	1558.1
10:55	1:05	419.7	906.3	998.8	421.4	7:10	4:50	1430.6	283.9	1458.5	1575.5
10:50	1:10	451.1	900.3	1007.0	453.2	7:05	4:55	1440.1	264.2	1464.1	1592.5
10:45	1:15	482.2	893.9	1015.6	484.8	7:00	5:00	1448.9	244.3	1469.3	1609.0
10:40	1:20	513.0	887.1	1024.7	516.2	6:55	5:05	1457.0	224.4	1474.2	1625.0
10:35	1:25	543.7	879.8	1034.2	547.4	6:50	5:10	1464.4	204.3	1478.6	1640.6
10:30	1:30	574.0	872.1	1044.1	578.5	6:45	5:15	1471.2	184.2	1482.7	1655.8
10:25	1:35	604.1	864.0	1054.3	609.4	6:40	5:20	1477.2	163.9	1486.3	1670.5
10:20	1:40	633.9	855.5	1064.8	640.1	6:35	5:25	1482.5	143.6	1489.5	1684.8
10:15	1:45	663.4	846.6	1075.6	670.5	6:30	5:30	1487.2	123.2	1492.3	1698.6
10:10	1:50	692.6	837.3	1086.7	700.8	6:25	5:35	1491.1	102.8	1494.6	1712.0
10:05	1:55	721.5	827.6	1097.9	730.8	6:20	5:40	1494.3	82.3	1496.6	1724.9
10:00	2:00	750.0	817.5	1109.4	760.6	6:15	5:45	1496.8	61.7	1498.1	1737.4
9:55	2:05	778.2	807.0	1121.1	790.1	6:10	5:50	1498.6	41.2	1499.1	1749.5
9:50	2:10	805.9	796.1	1132.9	819.4	6:05	5:55	1499.6	20.6	1499.8	1761.1
9:45	2:15	833.4	784.9	1144.8	848.4	6:00	6:00	1500.0	0.0	1500.0	1772.3
9:40	2:20	860.4	773.3	1156.8	877.1	5:55	6:05	1499.6	-20.6	1499.8	1783.1
9:35	2:25	887.0	761.3	1168.9	905.6	5:50	6:10	1498.6	-41.2	1499.1	1793.4
9:30	2:30	913.1	748.9	1181.0	933.7	5:45	6:15	1496.8	-61.7	1498.1	1803.3
9:25	2:35	938.9	736.2	1193.1	961.6	5:40	6:20	1494.3	-82.3	1496.6	1812.8
9:20	2:40	964.2	723.1	1205.2	989.2	5:35	6:25	1491.1	-102.8	1494.6	1821.8
9:15	2:45	989.0	709.7	1217.3	1016.4	5:30	6:30	1487.2	-123.2	1492.3	1830.5
9:10	2:50	1013.4	696.0	1229.4	1043.3	5:25	6:35	1482.5	-143.6	1489.5	1838.7
9:05	2:55	1037.3	681.9	1241.3	1069.9	5:20	6:40	1477.2	-163.9	1486.3	1846.5
9:00	3:00	1060.7	667.5	1253.2	1096.1	5:15	6:45	1471.2	-184.2	1482.7	1853.9
8:55	3:05	1083.5	652.8	1265.0	1122.0	5:10	6:50	1464.4	-204.3	1478.6	1861.0
8:50	3:10	1105.9	637.7	1276.6	1147.5	5:05	6:55	1457.0	-224.4	1474.2	1867.6
8:45	3:15	1127.8	622.4	1288.1	1172.7	5:00	7:00	1448.9	-244.3	1469.3	1873.9
8:40	3:20	1149.1	606.8	1299.4	1197.5	4:55	7:05	1440.1	-264.2	1464.1	1879.7
8:35	3:25	1169.8	590.9	1310.6	1222.0	4:50	7:10	1430.6	-283.9	1458.5	1885.2
8:30	3:30	1190.0	574.7	1321.5	1246.0	4:45	7:15	1420.4	-303.4	1452.4	1890.4
8:25	3:35	1209.7	558.2	1332.2	1269.7	4:40	7:20	1409.5	-322.9	1446.0	1895.2
8:20	3:40	1228.7	541.4	1342.7	1293.0	4:35	7:25	1398.0	-342.1	1439.3	1899.6
8:15	3:45	1247.2	524.4	1353.0	1315.9	4:30	7:30	1385.8	-361.2	1432.1	1903.7

## Analemmatic Sundial

Latitude: 39.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 944.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-494.6	-485.2	-482.4	-469.6	-465.8	-449.8	-445.4	-426.4	-421.3	-399.8	-394.1
February	-357.7	-331.6	-324.8	-297.1	-290.2	-261.2	-253.7	-223.8	-216.3	-185.5	-177.5
March	-154.1	-122.5	-114.5	-82.5	-74.6	-42.3	-34.4	-2.0	5.9	38.1	46.0
April	93.8	125.2	133.0	163.8	171.5	201.8	209.1	238.7	245.9	274.3	281.2
May	315.0	340.9	347.1	371.1	377.0	399.1	404.4	424.5	429.4	447.0	451.0
June	472.9	484.3	486.9	495.3	497.2	502.5	503.2	505.2	505.4	501.8	503.5
July	497.2	489.3	486.9	476.2	473.1	459.2	455.4	438.9	434.5	415.6	410.5
August	378.3	354.8	348.8	323.7	317.4	290.9	284.0	256.3	249.3	220.5	213.1
September	168.6	138.2	130.6	99.5	91.7	60.5	52.7	21.2	13.2	-18.5	-26.5
October	-66.0	-97.7	-105.5	-136.9	-144.6	-175.7	-183.4	-213.7	-221.3	-251.0	-258.2
November	-300.8	-328.1	-334.7	-360.4	-366.7	-390.5	-396.2	-417.8	-422.9	-442.1	-446.8
December	-466.7	-480.2	-483.1	-492.9	-495.1	-501.3	-502.5	-505.2	-505.4	-504.2	-503.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	494.6	485.2	482.4	469.6	465.8	449.8	445.4	426.4	421.3	399.8	394.1
February	357.7	331.6	324.8	297.1	290.2	261.2	253.7	223.8	216.3	185.5	177.5
March	154.1	122.5	114.5	82.5	74.6	42.3	34.4	2.0	-5.9	-38.1	-46.0
April	-93.8	-125.2	-133.0	-163.8	-171.5	-201.8	-209.1	-238.7	-245.9	-274.3	-281.2
May	-315.0	-340.9	-347.1	-371.1	-377.0	-399.1	-404.4	-424.5	-429.4	-447.0	-451.0
June	-472.9	-484.3	-486.9	-495.3	-497.2	-502.5	-503.2	-505.2	-505.4	-501.8	-503.5
July	-497.2	-489.3	-486.9	-476.2	-473.1	-459.2	-455.4	-438.9	-434.5	-415.6	-410.5
August	-378.3	-354.8	-348.8	-323.7	-317.4	-290.9	-284.0	-256.3	-249.3	-220.5	-213.1
September	-168.6	-138.2	-130.6	-99.5	-91.7	-60.5	-52.7	-21.2	-13.2	18.5	26.5
October	66.0	97.7	105.5	136.9	144.6	175.7	183.4	213.7	221.3	251.0	258.2
November	300.8	328.1	334.7	360.4	366.7	390.5	396.2	417.8	422.9	442.1	446.8
December	466.7	480.2	483.1	492.9	495.1	501.3	502.5	505.2	505.4	504.2	503.5

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: 39.0° N/S

Earliest Sunrise: 4:32 a.m. Latest Sunset: 7:28 p.m.  
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1258.6 mm  
 Sunrise/Sunset Markers: X = ± 1153.1 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1258.6	1258.6	0.0							
11:55	12:05	43.6	1258.3	1259.1	43.6	8:10	3:50	1686.8	676.3	1817.3	1784.5
11:50	12:10	87.2	1257.4	1260.5	87.2	8:05	3:55	1709.8	652.9	1830.3	1813.9
11:45	12:15	130.8	1255.9	1262.7	130.8	8:00	4:00	1732.1	629.3	1842.8	1842.8
11:40	12:20	174.3	1253.9	1265.9	174.4	7:55	4:05	1753.5	605.4	1855.0	1871.2
11:35	12:25	217.7	1251.2	1270.0	217.9	7:50	4:10	1774.0	581.2	1866.8	1899.0
11:30	12:30	261.1	1247.9	1274.9	261.3	7:45	4:15	1793.7	556.7	1878.1	1926.2
11:25	12:35	304.2	1244.0	1280.7	304.6	7:40	4:20	1812.6	531.9	1889.1	1952.9
11:20	12:40	347.3	1239.5	1287.3	347.8	7:35	4:25	1830.6	506.9	1899.5	1979.0
11:15	12:45	390.2	1234.5	1294.7	390.9	7:30	4:30	1847.8	481.7	1909.5	2004.5
11:10	12:50	432.9	1228.8	1302.8	433.9	7:25	4:35	1864.0	456.2	1919.0	2029.4
11:05	12:55	475.4	1222.6	1311.7	476.7	7:20	4:40	1879.4	430.5	1928.1	2053.8
11:00	1:00	517.6	1215.8	1321.4	519.4	7:15	4:45	1893.9	404.6	1936.6	2077.5
10:55	1:05	559.7	1208.4	1331.7	561.9	7:10	4:50	1907.4	378.5	1944.6	2100.7
10:50	1:10	601.4	1200.4	1342.6	604.2	7:05	4:55	1920.1	352.2	1952.1	2123.3
10:45	1:15	642.9	1191.8	1354.2	646.3	7:00	5:00	1931.9	325.8	1959.1	2145.3
10:40	1:20	684.0	1182.7	1366.3	688.2	6:55	5:05	1942.7	299.2	1965.6	2166.7
10:35	1:25	724.9	1173.1	1379.0	729.9	6:50	5:10	1952.6	272.4	1971.5	2187.5
10:30	1:30	765.4	1162.8	1392.1	771.3	6:45	5:15	1961.6	245.5	1976.9	2207.7
10:25	1:35	805.5	1152.0	1405.7	812.5	6:40	5:20	1969.6	218.6	1981.7	2227.4
10:20	1:40	845.2	1140.7	1419.7	853.4	6:35	5:25	1976.7	191.5	1986.0	2246.4
10:15	1:45	884.6	1128.8	1434.1	894.0	6:30	5:30	1982.9	164.3	1989.7	2264.8
10:10	1:50	923.5	1116.4	1448.9	934.4	6:25	5:35	1988.1	137.0	1992.8	2282.7
10:05	1:55	962.0	1103.5	1463.9	974.4	6:20	5:40	1992.4	109.7	1995.4	2299.9
10:00	2:00	1000.0	1090.0	1479.2	1014.1	6:15	5:45	1995.7	82.3	1997.4	2316.6
9:55	2:05	1037.5	1076.0	1494.8	1053.5	6:10	5:50	1998.1	54.9	1998.9	2332.7
9:50	2:10	1074.6	1061.5	1510.5	1092.5	6:05	5:55	1999.5	27.5	1999.7	2348.2
9:45	2:15	1111.1	1046.5	1526.4	1131.2	6:00	6:00	2000.0	0.0	2000.0	2363.1
9:40	2:20	1147.2	1031.0	1542.4	1169.5	5:55	6:05	1999.5	-27.5	1999.7	2377.4
9:35	2:25	1182.6	1015.0	1558.5	1207.5	5:50	6:10	1998.1	-54.9	1998.9	2391.2
9:30	2:30	1217.5	998.5	1574.6	1245.0	5:45	6:15	1995.7	-82.3	1997.4	2404.4
9:25	2:35	1251.8	981.6	1590.8	1282.1	5:40	6:20	1992.4	-109.7	1995.4	2417.0
9:20	2:40	1285.6	964.2	1607.0	1318.9	5:35	6:25	1988.1	-137.0	1992.8	2429.1
9:15	2:45	1318.7	946.3	1623.1	1355.2	5:30	6:30	1982.9	-164.3	1989.7	2440.6
9:10	2:50	1351.2	928.0	1639.1	1391.1	5:25	6:35	1976.7	-191.5	1986.0	2451.6
9:05	2:55	1383.0	909.2	1655.1	1426.5	5:20	6:40	1969.6	-218.6	1981.7	2462.0
9:00	3:00	1414.2	890.0	1671.0	1461.5	5:15	6:45	1961.6	-245.5	1976.9	2471.9
8:55	3:05	1444.7	870.4	1686.6	1496.0	5:10	6:50	1952.6	-272.4	1971.5	2481.3
8:50	3:10	1474.6	850.3	1702.2	1530.0	5:05	6:55	1942.7	-299.2	1965.6	2490.1
8:45	3:15	1503.7	829.9	1717.5	1563.6	5:00	7:00	1931.9	-325.8	1959.1	2498.5
8:40	3:20	1532.1	809.0	1732.6	1596.7	4:55	7:05	1920.1	-352.2	1952.1	2506.3
8:35	3:25	1559.8	787.8	1747.4	1629.3	4:50	7:10	1907.4	-378.5	1944.6	2513.7
8:30	3:30	1586.7	766.2	1762.0	1661.4	4:45	7:15	1893.9	-404.6	1936.6	2520.5
8:25	3:35	1612.9	744.2	1776.3	1692.9	4:40	7:20	1879.4	-430.5	1928.1	2526.9
8:20	3:40	1638.3	721.9	1790.3	1724.0	4:35	7:25	1864.0	-456.2	1919.0	2532.8
8:15	3:45	1662.9	699.3	1804.0	1754.5	4:30	7:30	1847.8	-481.7	1909.5	2538.3

## Analematic Sundial

Latitude: 39.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1258.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-659.4	-647.0	-643.2	-626.1	-621.0	-599.8	-593.8	-568.5	-561.7	-533.1	-525.5
February	-477.0	-442.2	-433.1	-396.2	-387.0	-348.3	-338.3	-298.5	-288.4	-247.3	-236.7
March	-205.5	-163.4	-152.7	-110.0	-99.4	-56.5	-45.9	-2.7	7.9	50.7	61.3
April	125.1	166.9	177.4	218.4	228.7	269.0	278.8	318.2	327.8	365.7	374.9
May	420.0	454.5	462.8	494.8	502.6	532.2	539.1	566.0	572.5	596.0	601.3
June	630.5	645.7	649.2	660.4	663.0	670.0	671.0	673.6	673.9	669.1	671.3
July	663.0	652.4	649.2	634.9	630.8	612.3	607.2	585.1	579.3	554.1	547.4
August	504.4	473.1	465.1	431.6	423.2	387.8	378.6	341.7	332.4	294.0	284.1
September	224.8	184.2	174.1	132.7	122.3	80.6	70.3	28.2	17.6	-24.7	-35.3
October	-88.0	-130.2	-140.6	-182.6	-192.8	-234.2	-244.5	-285.0	-295.1	-334.6	-344.3
November	-401.1	-437.5	-446.3	-480.5	-488.9	-520.7	-528.2	-557.1	-563.9	-589.5	-595.7
December	-622.3	-640.3	-644.1	-657.2	-660.1	-668.4	-670.0	-673.6	-673.9	-672.3	-671.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	659.4	647.0	643.2	626.1	621.0	599.8	593.8	568.5	561.7	533.1	525.5
February	477.0	442.2	433.1	396.2	387.0	348.3	338.3	298.5	288.4	247.3	236.7
March	205.5	163.4	152.7	110.0	99.4	56.5	45.9	2.7	-7.9	-50.7	-61.3
April	-125.1	-166.9	-177.4	-218.4	-228.7	-269.0	-278.8	-318.2	-327.8	-365.7	-374.9
May	-420.0	-454.5	-462.8	-494.8	-502.6	-532.2	-539.1	-566.0	-572.5	-596.0	-601.3
June	-630.5	-645.7	-649.2	-660.4	-663.0	-670.0	-671.0	-673.6	-673.9	-669.1	-671.3
July	-663.0	-652.4	-649.2	-634.9	-630.8	-612.3	-607.2	-585.1	-579.3	-554.1	-547.4
August	-504.4	-473.1	-465.1	-431.6	-423.2	-387.8	-378.6	-341.7	-332.4	-294.0	-284.1
September	-224.8	-184.2	-174.1	-132.7	-122.3	-80.6	-70.3	-28.2	-17.6	24.7	35.3
October	88.0	130.2	140.6	182.6	192.8	234.2	244.5	285.0	295.1	334.6	344.3
November	401.1	437.5	446.3	480.5	488.9	520.7	528.2	557.1	563.9	589.5	595.7
December	622.3	640.3	644.1	657.2	660.1	668.4	670.0	673.6	673.9	672.3	671.3

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 |

Analemmatic Sundial

Latitude: 39.0° N/S

Earliest Sunrise: 4:32 a.m. Latest Sunset: 7:28 p.m.  
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1573.3 mm  
 Sunrise/Sunset Markers: X = ± 1441.3 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1573.3	1573.3	0.0							
11:55	12:05	54.5	1572.9	1573.9	54.5	8:10	3:50	2108.5	845.3	2271.6	2230.6
11:50	12:10	109.0	1571.8	1575.6	109.1	8:05	3:55	2137.3	816.2	2287.8	2267.4
11:45	12:15	163.5	1569.9	1578.4	163.5	8:00	4:00	2165.1	786.7	2303.5	2303.5
11:40	12:20	217.9	1567.3	1582.4	218.0	7:55	4:05	2191.8	756.7	2318.8	2339.0
11:35	12:25	272.2	1563.9	1587.5	272.3	7:50	4:10	2217.5	726.5	2333.5	2373.7
11:30	12:30	326.3	1559.8	1593.6	326.6	7:45	4:15	2242.2	695.9	2347.7	2407.8
11:25	12:35	380.3	1555.0	1600.8	380.7	7:40	4:20	2265.8	664.9	2361.3	2441.1
11:20	12:40	434.1	1549.4	1609.1	434.8	7:35	4:25	2288.3	633.6	2374.4	2473.7
11:15	12:45	487.7	1543.1	1618.3	488.7	7:30	4:30	2309.7	602.1	2386.9	2505.6
11:10	12:50	541.1	1536.0	1628.5	542.4	7:25	4:35	2330.0	570.2	2398.8	2536.8
11:05	12:55	594.2	1528.2	1639.7	595.9	7:20	4:40	2349.2	538.1	2410.1	2567.2
11:00	1:00	647.0	1519.7	1651.7	649.3	7:15	4:45	2367.3	505.7	2420.7	2596.9
10:55	1:05	699.6	1510.4	1664.6	702.4	7:10	4:50	2384.3	473.1	2430.8	2625.9
10:50	1:10	751.8	1500.5	1678.3	755.3	7:05	4:55	2400.1	440.3	2440.2	2654.1
10:45	1:15	803.6	1489.8	1692.7	807.9	7:00	5:00	2414.8	407.2	2448.9	2681.6
10:40	1:20	855.1	1478.4	1707.9	860.3	6:55	5:05	2428.4	374.0	2457.0	2708.4
10:35	1:25	906.1	1466.3	1723.7	912.4	6:50	5:10	2440.7	340.5	2464.4	2734.4
10:30	1:30	956.7	1453.5	1740.1	964.2	6:45	5:15	2452.0	306.9	2471.1	2759.7
10:25	1:35	1006.9	1440.1	1757.1	1015.6	6:40	5:20	2462.0	273.2	2477.1	2784.2
10:20	1:40	1056.5	1425.9	1774.7	1066.8	6:35	5:25	2470.9	239.3	2482.5	2808.0
10:15	1:45	1105.7	1411.1	1792.7	1117.6	6:30	5:30	2478.6	205.4	2487.1	2831.0
10:10	1:50	1154.4	1395.5	1811.1	1168.0	6:25	5:35	2485.1	171.3	2491.0	2853.3
10:05	1:55	1202.5	1379.4	1829.9	1218.0	6:20	5:40	2490.5	137.1	2494.3	2874.9
10:00	2:00	1250.0	1362.5	1849.0	1267.6	6:15	5:45	2494.6	102.9	2496.8	2895.7
9:55	2:05	1296.9	1345.0	1868.5	1316.9	6:10	5:50	2497.6	68.6	2498.6	2915.8
9:50	2:10	1343.2	1326.9	1888.1	1365.7	6:05	5:55	2499.4	34.3	2499.6	2935.2
9:45	2:15	1388.9	1308.2	1908.0	1414.0	6:00	6:00	2500.0	0.0	2500.0	2953.9
9:40	2:20	1433.9	1288.8	1928.0	1461.9	5:55	6:05	2499.4	-34.3	2499.6	2971.8
9:35	2:25	1478.3	1268.8	1948.1	1509.3	5:50	6:10	2497.6	-68.6	2498.6	2989.0
9:30	2:30	1521.9	1248.2	1968.3	1556.2	5:45	6:15	2494.6	-102.9	2496.8	3005.5
9:25	2:35	1564.8	1227.0	1988.5	1602.7	5:40	6:20	2490.5	-137.1	2494.3	3021.3
9:20	2:40	1607.0	1205.2	2008.7	1648.6	5:35	6:25	2485.1	-171.3	2491.0	3036.4
9:15	2:45	1648.4	1182.9	2028.9	1694.0	5:30	6:30	2478.6	-205.4	2487.1	3050.8
9:10	2:50	1689.0	1160.0	2048.9	1738.8	5:25	6:35	2470.9	-239.3	2482.5	3064.5
9:05	2:55	1728.8	1136.5	2068.9	1783.1	5:20	6:40	2462.0	-273.2	2477.1	3077.5
9:00	3:00	1767.8	1112.5	2088.7	1826.8	5:15	6:45	2452.0	-306.9	2471.1	3089.9
8:55	3:05	1805.9	1088.0	2108.3	1870.0	5:10	6:50	2440.7	-340.5	2464.4	3101.6
8:50	3:10	1843.2	1062.9	2127.7	1912.6	5:05	6:55	2428.4	-374.0	2457.0	3112.7
8:45	3:15	1879.6	1037.3	2146.9	1954.5	5:00	7:00	2414.8	-407.2	2448.9	3123.1
8:40	3:20	1915.1	1011.3	2165.7	1995.9	4:55	7:05	2400.1	-440.3	2440.2	3132.9
8:35	3:25	1949.7	984.8	2184.3	2036.6	4:50	7:10	2384.3	-473.1	2430.8	3142.1
8:30	3:30	1983.4	957.8	2202.5	2076.7	4:45	7:15	2367.3	-505.7	2420.7	3150.6
8:25	3:35	2016.1	930.3	2220.4	2116.2	4:40	7:20	2349.2	-538.1	2410.1	3158.6
8:20	3:40	2047.9	902.4	2237.9	2155.0	4:35	7:25	2330.0	-570.2	2398.8	3166.0
8:15	3:45	2078.7	874.1	2255.0	2193.1	4:30	7:30	2309.7	-602.1	2386.9	3172.8

## Analemmatic Sundial

Latitude: 39.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 1573.3 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-824.3	-808.7	-804.0	-782.6	-776.3	-749.7	-742.3	-710.6	-702.2	-666.3	-656.9
February	-596.2	-552.7	-541.4	-495.2	-483.7	-435.3	-422.9	-373.1	-360.4	-309.1	-295.9
March	-256.8	-204.2	-190.8	-137.6	-124.3	-70.6	-57.3	-3.4	9.8	63.4	76.7
April	156.3	208.7	221.7	273.1	285.9	336.3	348.5	397.8	409.8	457.1	468.6
May	525.0	568.1	578.5	618.6	628.3	665.2	673.9	707.5	715.6	745.0	751.6
June	788.1	807.1	811.5	825.5	828.7	837.5	838.7	842.0	842.4	836.3	839.1
July	828.7	815.5	811.5	793.7	788.5	765.3	759.1	731.4	724.1	692.6	684.2
August	630.5	591.4	581.4	539.5	529.0	484.8	473.3	427.2	415.5	367.5	355.2
September	281.0	230.3	217.6	165.9	152.9	100.8	87.9	35.3	22.0	-30.9	-44.1
October	-110.0	-162.8	-175.8	-228.2	-241.0	-292.8	-305.6	-356.2	-368.9	-418.3	-430.4
November	-501.4	-546.8	-557.8	-600.7	-611.1	-650.8	-660.3	-696.4	-704.8	-736.9	-744.6
December	-777.9	-800.4	-805.2	-821.5	-825.1	-835.5	-837.5	-842.0	-842.4	-840.4	-839.1

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	824.3	808.7	804.0	782.6	776.3	749.7	742.3	710.6	702.2	666.3	656.9
February	596.2	552.7	541.4	495.2	483.7	435.3	422.9	373.1	360.4	309.1	295.9
March	256.8	204.2	190.8	137.6	124.3	70.6	57.3	3.4	-9.8	-63.4	-76.7
April	-156.3	-208.7	-221.7	-273.1	-285.9	-336.3	-348.5	-397.8	-409.8	-457.1	-468.6
May	-525.0	-568.1	-578.5	-618.6	-628.3	-665.2	-673.9	-707.5	-715.6	-745.0	-751.6
June	-788.1	-807.1	-811.5	-825.5	-828.7	-837.5	-838.7	-842.0	-842.4	-836.3	-839.1
July	-828.7	-815.5	-811.5	-793.7	-788.5	-765.3	-759.1	-731.4	-724.1	-692.6	-684.2
August	-630.5	-591.4	-581.4	-539.5	-529.0	-484.8	-473.3	-427.2	-415.5	-367.5	-355.2
September	-281.0	-230.3	-217.6	-165.9	-152.9	-100.8	-87.9	-35.3	-22.0	30.9	44.1
October	110.0	162.8	175.8	228.2	241.0	292.8	305.6	356.2	368.9	418.3	430.4
November	501.4	546.8	557.8	600.7	611.1	650.8	660.3	696.4	704.8	736.9	744.6
December	777.9	800.4	805.2	821.5	825.1	835.5	837.5	842.0	842.4	840.4	839.1

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 |