

Analemmatic Sundial

Latitude: 40.5° N/S

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 649.4 mm
 Sunrise/Sunset Markers: X = ± 548.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	649.4	649.4	0.0						
11:55	12:05	21.8	649.3	649.7	21.8	8:25	3:35	806.4	384.0	893.2	849.0
11:50	12:10	43.6	648.8	650.3	43.6	8:20	3:40	819.2	372.5	899.9	864.7
11:45	12:15	65.4	648.1	651.3	65.4	8:15	3:45	831.5	360.8	906.4	880.1
11:40	12:20	87.2	647.0	652.8	87.2	8:10	3:50	843.4	348.9	912.7	895.3
11:35	12:25	108.9	645.6	654.7	108.9	8:05	3:55	854.9	336.9	918.9	910.2
11:30	12:30	130.5	643.9	657.0	130.6	8:00	4:00	866.0	324.7	924.9	924.9
11:25	12:35	152.1	641.9	659.7	152.3	7:55	4:05	876.7	312.4	930.7	939.3
11:20	12:40	173.6	639.6	662.7	173.9	7:50	4:10	887.0	299.9	936.3	953.4
11:15	12:45	195.1	637.0	666.2	195.5	7:45	4:15	896.9	287.2	941.7	967.3
11:10	12:50	216.4	634.1	670.0	217.0	7:40	4:20	906.3	274.5	947.0	980.8
11:05	12:55	237.7	630.8	674.1	238.4	7:35	4:25	915.3	261.6	952.0	994.1
11:00	1:00	258.8	627.3	678.6	259.8	7:30	4:30	923.9	248.5	956.7	1007.1
10:55	1:05	279.8	623.5	683.4	281.0	7:25	4:35	932.0	235.4	961.3	1019.8
10:50	1:10	300.7	619.4	688.5	302.2	7:20	4:40	939.7	222.1	965.6	1032.3
10:45	1:15	321.4	615.0	693.9	323.3	7:15	4:45	946.9	208.8	969.7	1044.5
10:40	1:20	342.0	610.3	699.6	344.3	7:10	4:50	953.7	195.3	973.5	1056.3
10:35	1:25	362.4	605.3	705.5	365.1	7:05	4:55	960.0	181.7	977.1	1067.9
10:30	1:30	382.7	600.0	711.7	385.9	7:00	5:00	965.9	168.1	980.4	1079.2
10:25	1:35	402.7	594.4	718.0	406.5	6:55	5:05	971.3	154.4	983.5	1090.2
10:20	1:40	422.6	588.6	724.6	427.0	6:50	5:10	976.3	140.6	986.4	1101.0
10:15	1:45	442.3	582.5	731.4	447.3	6:45	5:15	980.8	126.7	988.9	1111.4
10:10	1:50	461.7	576.1	738.3	467.5	6:40	5:20	984.8	112.8	991.2	1121.5
10:05	1:55	481.0	569.4	745.4	487.6	6:35	5:25	988.4	98.8	993.3	1131.4
10:00	2:00	500.0	562.4	752.6	507.5	6:30	5:30	991.4	84.8	995.1	1141.0
9:55	2:05	518.8	555.2	759.9	527.3	6:25	5:35	994.1	70.7	996.6	1150.3
9:50	2:10	537.3	547.7	767.3	546.8	6:20	5:40	996.2	56.6	997.8	1159.3
9:45	2:15	555.6	540.0	774.8	566.2	6:15	5:45	997.9	42.5	998.8	1168.0
9:40	2:20	573.6	532.0	782.3	585.5	6:10	5:50	999.0	28.3	999.4	1176.4
9:35	2:25	591.3	523.7	789.9	604.5	6:05	5:55	999.8	14.2	999.9	1184.5
9:30	2:30	608.8	515.2	797.5	623.4	6:00	6:00	1000.0	0.0	1000.0	1192.4
9:25	2:35	625.9	506.5	805.2	642.0	5:55	6:05	999.8	-14.2	999.9	1200.0
9:20	2:40	642.8	497.5	812.8	660.5	5:50	6:10	999.0	-28.3	999.4	1207.3
9:15	2:45	659.3	488.3	820.5	678.8	5:45	6:15	997.9	-42.5	998.8	1214.3
9:10	2:50	675.6	478.8	828.1	696.8	5:40	6:20	996.2	-56.6	997.8	1221.0
9:05	2:55	691.5	469.1	835.6	714.6	5:35	6:25	994.1	-70.7	996.6	1227.5
9:00	3:00	707.1	459.2	843.1	732.2	5:30	6:30	991.4	-84.8	995.1	1233.7
8:55	3:05	722.4	449.1	850.6	749.6	5:25	6:35	988.4	-98.8	993.3	1239.6
8:50	3:10	737.3	438.8	858.0	766.8	5:20	6:40	984.8	-112.8	991.2	1245.3
8:45	3:15	751.8	428.2	865.2	783.7	5:15	6:45	980.8	-126.7	988.9	1250.7
8:40	3:20	766.0	417.5	872.4	800.4	5:10	6:50	976.3	-140.6	986.4	1255.9
8:35	3:25	779.9	406.5	879.5	816.8	5:05	6:55	971.3	-154.4	983.5	1260.8
8:30	3:30	793.4	395.4	886.4	833.0	5:00	7:00	965.9	-168.1	980.4	1265.5

Analemmatic Sundial**Latitude: 40.5° N/S**

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 649.4 mm
 Sunrise/Sunset Markers: $X = \pm 548.9$ mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-181.7	977.1	1269.9
4:50	7:10	953.7	-195.3	973.5	1274.0
4:45	7:15	946.9	-208.8	969.7	1278.0
4:40	7:20	939.7	-222.1	965.6	1281.7
4:35	7:25	932.0	-235.4	961.3	1285.1
4:30	7:30	923.9	-248.5	956.7	1288.4
4:25	7:35	915.3	-261.6	952.0	1291.4
4:20	7:40	906.3	-274.5	947.0	1294.2
4:15	7:45	896.9	-287.2	941.7	1296.8

Analemmatic Sundial

Latitude: 40.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 649.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-322.6	-316.5	-314.7	-306.3	-303.8	-293.4	-290.5	-278.1	-274.8	-260.8	-257.1
February	-233.4	-216.3	-211.9	-193.8	-189.3	-170.4	-165.5	-146.0	-141.1	-121.0	-115.8
March	-100.5	-79.9	-74.7	-53.8	-48.6	-27.6	-22.4	-1.3	3.8	24.8	30.0
April	61.2	81.7	86.8	106.9	111.9	131.6	136.4	155.7	160.4	178.9	183.4
May	205.5	222.4	226.4	242.1	245.9	260.3	263.8	276.9	280.1	291.6	294.2
June	308.5	315.9	317.6	323.1	324.3	327.8	328.3	329.5	329.7	327.3	328.4
July	324.3	319.2	317.6	310.6	308.6	299.5	297.1	286.3	283.4	271.1	267.8
August	246.8	231.5	227.6	211.2	207.0	189.7	185.2	167.2	162.6	143.8	139.0
September	110.0	90.1	85.2	64.9	59.8	39.5	34.4	13.8	8.6	-12.1	-17.3
October	-43.0	-63.7	-68.8	-89.3	-94.3	-114.6	-119.6	-139.4	-144.4	-163.7	-168.4
November	-196.2	-214.0	-218.3	-235.1	-239.2	-254.7	-258.4	-272.6	-275.9	-288.4	-291.4
December	-304.4	-313.3	-315.1	-321.5	-322.9	-327.0	-327.8	-329.5	-329.7	-328.9	-328.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	322.6	316.5	314.7	306.3	303.8	293.4	290.5	278.1	274.8	260.8	257.1
February	233.4	216.3	211.9	193.8	189.3	170.4	165.5	146.0	141.1	121.0	115.8
March	100.5	79.9	74.7	53.8	48.6	27.6	22.4	1.3	-3.8	-24.8	-30.0
April	-61.2	-81.7	-86.8	-106.9	-111.9	-131.6	-136.4	-155.7	-160.4	-178.9	-183.4
May	-205.5	-222.4	-226.4	-242.1	-245.9	-260.3	-263.8	-276.9	-280.1	-291.6	-294.2
June	-308.5	-315.9	-317.6	-323.1	-324.3	-327.8	-328.3	-329.5	-329.7	-327.3	-328.4
July	-324.3	-319.2	-317.6	-310.6	-308.6	-299.5	-297.1	-286.3	-283.4	-271.1	-267.8
August	-246.8	-231.5	-227.6	-211.2	-207.0	-189.7	-185.2	-167.2	-162.6	-143.8	-139.0
September	-110.0	-90.1	-85.2	-64.9	-59.8	-39.5	-34.4	-13.8	-8.6	12.1	17.3
October	43.0	63.7	68.8	89.3	94.3	114.6	119.6	139.4	144.4	163.7	168.4
November	196.2	214.0	218.3	235.1	239.2	254.7	258.4	272.6	275.9	288.4	291.4
December	304.4	313.3	315.1	321.5	322.9	327.0	327.8	329.5	329.7	328.9	328.4

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: 40.5° N/S

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 974.2 mm
 Sunrise/Sunset Markers: X = ± 823.4 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	974.2	974.2	0.0						
11:55	12:05	32.7	973.9	974.5	32.7	8:25	3:35	1209.7	576.0	1339.8	1273.5
11:50	12:10	65.4	973.2	975.4	65.4	8:20	3:40	1228.7	558.8	1349.8	1297.0
11:45	12:15	98.1	972.1	977.0	98.1	8:15	3:45	1247.2	541.2	1359.6	1320.2
11:40	12:20	130.7	970.5	979.2	130.8	8:10	3:50	1265.1	523.4	1369.1	1343.0
11:35	12:25	163.3	968.4	982.1	163.4	8:05	3:55	1282.4	505.4	1378.4	1365.4
11:30	12:30	195.8	965.8	985.5	196.0	8:00	4:00	1299.0	487.1	1387.4	1387.4
11:25	12:35	228.2	962.8	989.5	228.5	7:55	4:05	1315.1	468.6	1396.1	1408.9
11:20	12:40	260.5	959.4	994.1	260.9	7:50	4:10	1330.5	449.8	1404.5	1430.1
11:15	12:45	292.6	955.5	999.3	293.2	7:45	4:15	1345.3	430.9	1412.6	1450.9
11:10	12:50	324.7	951.1	1005.0	325.5	7:40	4:20	1359.5	411.7	1420.4	1471.2
11:05	12:55	356.5	946.3	1011.2	357.6	7:35	4:25	1373.0	392.3	1427.9	1491.2
11:00	1:00	388.2	941.0	1017.9	389.6	7:30	4:30	1385.8	372.8	1435.1	1510.7
10:55	1:05	419.7	935.3	1025.1	421.5	7:25	4:35	1398.0	353.1	1441.9	1529.8
10:50	1:10	451.1	929.1	1032.8	453.3	7:20	4:40	1409.5	333.2	1448.4	1548.4
10:45	1:15	482.2	922.5	1040.9	484.9	7:15	4:45	1420.4	313.1	1454.5	1566.7
10:40	1:20	513.0	915.4	1049.4	516.4	7:10	4:50	1430.6	292.9	1460.3	1584.5
10:35	1:25	543.7	907.9	1058.3	547.7	7:05	4:55	1440.1	272.6	1465.6	1601.9
10:30	1:30	574.0	900.0	1067.5	578.8	7:00	5:00	1448.9	252.1	1470.7	1618.8
10:25	1:35	604.1	891.7	1077.1	609.7	6:55	5:05	1457.0	231.5	1475.3	1635.4
10:20	1:40	633.9	882.9	1086.9	640.5	6:50	5:10	1464.4	210.8	1479.5	1651.4
10:15	1:45	663.4	873.7	1097.0	671.0	6:45	5:15	1471.2	190.1	1483.4	1667.1
10:10	1:50	692.6	864.1	1107.4	701.3	6:40	5:20	1477.2	169.2	1486.9	1682.3
10:05	1:55	721.5	854.1	1118.0	731.4	6:35	5:25	1482.5	148.2	1489.9	1697.1
10:00	2:00	750.0	843.7	1128.8	761.3	6:30	5:30	1487.2	127.2	1492.6	1711.5
9:55	2:05	778.2	832.8	1139.8	790.9	6:25	5:35	1491.1	106.1	1494.9	1725.4
9:50	2:10	805.9	821.6	1150.9	820.3	6:20	5:40	1494.3	84.9	1496.7	1738.9
9:45	2:15	833.4	810.0	1162.1	849.4	6:15	5:45	1496.8	63.7	1498.1	1751.9
9:40	2:20	860.4	798.0	1173.5	878.2	6:10	5:50	1498.6	42.5	1499.2	1764.6
9:35	2:25	887.0	785.6	1184.9	906.8	6:05	5:55	1499.6	21.3	1499.8	1776.8
9:30	2:30	913.1	772.9	1196.3	935.1	6:00	6:00	1500.0	0.0	1500.0	1788.6
9:25	2:35	938.9	759.7	1207.8	963.1	5:55	6:05	1499.6	-21.3	1499.8	1799.9
9:20	2:40	964.2	746.3	1219.2	990.8	5:50	6:10	1498.6	-42.5	1499.2	1810.9
9:15	2:45	989.0	732.4	1230.7	1018.1	5:45	6:15	1496.8	-63.7	1498.1	1821.4
9:10	2:50	1013.4	718.2	1242.1	1045.2	5:40	6:20	1494.3	-84.9	1496.7	1831.5
9:05	2:55	1037.3	703.7	1253.4	1072.0	5:35	6:25	1491.1	-106.1	1494.9	1841.3
9:00	3:00	1060.7	688.8	1264.7	1098.4	5:30	6:30	1487.2	-127.2	1492.6	1850.6
8:55	3:05	1083.5	673.7	1275.9	1124.4	5:25	6:35	1482.5	-148.2	1489.9	1859.5
8:50	3:10	1105.9	658.1	1286.9	1150.2	5:20	6:40	1477.2	-169.2	1486.9	1868.0
8:45	3:15	1127.8	642.3	1297.8	1175.6	5:15	6:45	1471.2	-190.1	1483.4	1876.1
8:40	3:20	1149.1	626.2	1308.6	1200.6	5:10	6:50	1464.4	-210.8	1479.5	1883.8
8:35	3:25	1169.8	609.8	1319.2	1225.3	5:05	6:55	1457.0	-231.5	1475.3	1891.2
8:30	3:30	1190.0	593.0	1329.6	1249.6	5:00	7:00	1448.9	-252.1	1470.7	1898.2

Analemmatic Sundial**Latitude: 40.5° N/S**

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 974.2 mm
 Sunrise/Sunset Markers: $X = \pm 823.4$ mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-272.6	1465.6	1904.8
4:50	7:10	1430.6	-292.9	1460.3	1911.1
4:45	7:15	1420.4	-313.1	1454.5	1916.9
4:40	7:20	1409.5	-333.2	1448.4	1922.5
4:35	7:25	1398.0	-353.1	1441.9	1927.7
4:30	7:30	1385.8	-372.8	1435.1	1932.6
4:25	7:35	1373.0	-392.3	1427.9	1937.1
4:20	7:40	1359.5	-411.7	1420.4	1941.3
4:15	7:45	1345.3	-430.9	1412.6	1945.2

Analemmatic Sundial

Latitude: 40.5° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 974.2 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-483.9	-474.8	-472.0	-459.4	-455.7	-440.1	-435.8	-417.2	-412.2	-391.2	-385.6
February	-350.0	-324.5	-317.8	-290.7	-284.0	-255.6	-248.3	-219.0	-211.6	-181.5	-173.7
March	-150.8	-119.9	-112.0	-80.8	-73.0	-41.4	-33.7	-2.0	5.8	37.2	45.0
April	91.8	122.5	130.2	160.3	167.8	197.4	204.6	233.5	240.6	268.4	275.1
May	308.2	333.5	339.6	363.1	368.8	390.5	395.6	415.4	420.1	437.4	441.3
June	462.7	473.9	476.4	484.6	486.5	491.7	492.4	494.3	494.5	491.0	492.6
July	486.5	478.8	476.4	465.9	462.9	449.3	445.6	429.4	425.1	406.6	401.7
August	370.2	347.2	341.3	316.7	310.5	284.6	277.8	250.8	243.9	215.7	208.5
September	165.0	135.2	127.7	97.4	89.8	59.2	51.6	20.7	12.9	-18.1	-25.9
October	-64.6	-95.6	-103.2	-134.0	-141.5	-171.9	-179.4	-209.1	-216.6	-245.6	-252.7
November	-294.3	-321.0	-327.5	-352.6	-358.8	-382.1	-387.6	-408.8	-413.8	-432.6	-437.2
December	-456.7	-469.9	-472.7	-482.3	-484.4	-490.5	-491.7	-494.3	-494.5	-493.3	-492.6

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	483.9	474.8	472.0	459.4	455.7	440.1	435.8	417.2	412.2	391.2	385.6
February	350.0	324.5	317.8	290.7	284.0	255.6	248.3	219.0	211.6	181.5	173.7
March	150.8	119.9	112.0	80.8	73.0	41.4	33.7	2.0	-5.8	-37.2	-45.0
April	-91.8	-122.5	-130.2	-160.3	-167.8	-197.4	-204.6	-233.5	-240.6	-268.4	-275.1
May	-308.2	-333.5	-339.6	-363.1	-368.8	-390.5	-395.6	-415.4	-420.1	-437.4	-441.3
June	-462.7	-473.9	-476.4	-484.6	-486.5	-491.7	-492.4	-494.3	-494.5	-491.0	-492.6
July	-486.5	-478.8	-476.4	-465.9	-462.9	-449.3	-445.6	-429.4	-425.1	-406.6	-401.7
August	-370.2	-347.2	-341.3	-316.7	-310.5	-284.6	-277.8	-250.8	-243.9	-215.7	-208.5
September	-165.0	-135.2	-127.7	-97.4	-89.8	-59.2	-51.6	-20.7	-12.9	18.1	25.9
October	64.6	95.6	103.2	134.0	141.5	171.9	179.4	209.1	216.6	245.6	252.7
November	294.3	321.0	327.5	352.6	358.8	382.1	387.6	408.8	413.8	432.6	437.2
December	456.7	469.9	472.7	482.3	484.4	490.5	491.7	494.3	494.5	493.3	492.6

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: 40.5° N/S

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1298.9 mm
 Sunrise/Sunset Markers: X = ± 1097.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1298.9	1298.9	0.0						
11:55	12:05	43.6	1298.6	1299.3	43.6	8:25	3:35	1612.9	768.0	1786.4	1698.0
11:50	12:10	87.2	1297.7	1300.6	87.2	8:20	3:40	1638.3	745.0	1799.7	1729.4
11:45	12:15	130.8	1296.1	1302.7	130.8	8:15	3:45	1662.9	721.6	1812.8	1760.3
11:40	12:20	174.3	1294.0	1305.6	174.4	8:10	3:50	1686.8	697.9	1825.5	1790.7
11:35	12:25	217.7	1291.2	1309.4	217.9	8:05	3:55	1709.8	673.8	1837.8	1820.5
11:30	12:30	261.1	1287.8	1314.0	261.3	8:00	4:00	1732.1	649.4	1849.8	1849.8
11:25	12:35	304.2	1283.8	1319.3	304.6	7:55	4:05	1753.5	624.8	1861.4	1878.6
11:20	12:40	347.3	1279.2	1325.5	347.9	7:50	4:10	1774.0	599.8	1872.7	1906.8
11:15	12:45	390.2	1273.9	1332.4	391.0	7:45	4:15	1793.7	574.5	1883.5	1934.5
11:10	12:50	432.9	1268.1	1340.0	434.0	7:40	4:20	1812.6	548.9	1893.9	1961.6
11:05	12:55	475.4	1261.7	1348.3	476.8	7:35	4:25	1830.6	523.1	1903.9	1988.2
11:00	1:00	517.6	1254.6	1357.2	519.5	7:30	4:30	1847.8	497.1	1913.4	2014.2
10:55	1:05	559.7	1247.0	1366.8	562.1	7:25	4:35	1864.0	470.8	1922.5	2039.7
10:50	1:10	601.4	1238.8	1377.1	604.4	7:20	4:40	1879.4	444.2	1931.2	2064.6
10:45	1:15	642.9	1230.0	1387.8	646.6	7:15	4:45	1893.9	417.5	1939.3	2088.9
10:40	1:20	684.0	1220.6	1399.2	688.5	7:10	4:50	1907.4	390.6	1947.0	2112.7
10:35	1:25	724.9	1210.6	1411.0	730.2	7:05	4:55	1920.1	363.5	1954.2	2135.8
10:30	1:30	765.4	1200.0	1423.3	771.7	7:00	5:00	1931.9	336.2	1960.9	2158.4
10:25	1:35	805.5	1188.9	1436.1	813.0	6:55	5:05	1942.7	308.7	1967.1	2180.5
10:20	1:40	845.2	1177.2	1449.2	854.0	6:50	5:10	1952.6	281.1	1972.7	2201.9
10:15	1:45	884.6	1164.9	1462.7	894.7	6:45	5:15	1961.6	253.4	1977.9	2222.8
10:10	1:50	923.5	1152.1	1476.6	935.1	6:40	5:20	1969.6	225.6	1982.5	2243.1
10:05	1:55	962.0	1138.8	1490.7	975.2	6:35	5:25	1976.7	197.6	1986.6	2262.8
10:00	2:00	1000.0	1124.9	1505.1	1015.0	6:30	5:30	1982.9	169.5	1990.1	2282.0
9:55	2:05	1037.5	1110.4	1519.7	1054.5	6:25	5:35	1988.1	141.4	1993.1	2300.5
9:50	2:10	1074.6	1095.5	1534.5	1093.7	6:20	5:40	1992.4	113.2	1995.6	2318.5
9:45	2:15	1111.1	1080.0	1549.5	1132.5	6:15	5:45	1995.7	85.0	1997.5	2335.9
9:40	2:20	1147.2	1064.0	1564.6	1171.0	6:10	5:50	1998.1	56.7	1998.9	2352.8
9:35	2:25	1182.6	1047.5	1579.8	1209.0	6:05	5:55	1999.5	28.3	1999.7	2369.1
9:30	2:30	1217.5	1030.5	1595.1	1246.8	6:00	6:00	2000.0	0.0	2000.0	2384.8
9:25	2:35	1251.8	1013.0	1610.4	1284.1	5:55	6:05	1999.5	-28.3	1999.7	2399.9
9:20	2:40	1285.6	995.0	1625.7	1321.0	5:50	6:10	1998.1	-56.7	1998.9	2414.5
9:15	2:45	1318.7	976.6	1640.9	1357.5	5:45	6:15	1995.7	-85.0	1997.5	2428.6
9:10	2:50	1351.2	957.6	1656.1	1393.6	5:40	6:20	1992.4	-113.2	1995.6	2442.1
9:05	2:55	1383.0	938.3	1671.3	1429.3	5:35	6:25	1988.1	-141.4	1993.1	2455.0
9:00	3:00	1414.2	918.5	1686.3	1464.5	5:30	6:30	1982.9	-169.5	1990.1	2467.4
8:55	3:05	1444.7	898.2	1701.2	1499.3	5:25	6:35	1976.7	-197.6	1986.6	2479.3
8:50	3:10	1474.6	877.5	1715.9	1533.6	5:20	6:40	1969.6	-225.6	1982.5	2490.6
8:45	3:15	1503.7	856.4	1730.5	1567.4	5:15	6:45	1961.6	-253.4	1977.9	2501.5
8:40	3:20	1532.1	834.9	1744.8	1600.8	5:10	6:50	1952.6	-281.1	1972.7	2511.8
8:35	3:25	1559.8	813.0	1758.9	1633.7	5:05	6:55	1942.7	-308.7	1967.1	2521.6
8:30	3:30	1586.7	790.7	1772.8	1666.1	5:00	7:00	1931.9	-336.2	1960.9	2530.9

Analemmatic Sundial**Latitude: 40.5° N/S**

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1298.9 mm

Sunrise/Sunset Markers: $X = \pm 1097.9$ mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-363.5	1954.2	2539.7
4:50	7:10	1907.4	-390.6	1947.0	2548.1
4:45	7:15	1893.9	-417.5	1939.3	2555.9
4:40	7:20	1879.4	-444.2	1931.2	2563.3
4:35	7:25	1864.0	-470.8	1922.5	2570.3
4:30	7:30	1847.8	-497.1	1913.4	2576.8
4:25	7:35	1830.6	-523.1	1903.9	2582.8
4:20	7:40	1812.6	-548.9	1893.9	2588.4
4:15	7:45	1793.7	-574.5	1883.5	2593.7

Analematic Sundial

Latitude: 40.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1298.9 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-645.2	-633.1	-629.3	-612.6	-607.7	-586.8	-581.0	-556.2	-549.6	-521.6	-514.2
February	-466.7	-432.6	-423.8	-387.7	-378.6	-340.8	-331.0	-292.0	-282.1	-242.0	-231.6
March	-201.0	-159.8	-149.4	-107.7	-97.3	-55.2	-44.9	-2.7	7.7	49.7	60.0
April	122.4	163.3	173.5	213.7	223.8	263.2	272.8	311.3	320.8	357.8	366.8
May	410.9	444.7	452.8	484.2	491.8	520.7	527.5	553.8	560.2	583.2	588.4
June	616.9	631.8	635.2	646.2	648.7	655.6	656.5	659.1	659.4	654.7	656.9
July	648.7	638.4	635.2	621.3	617.2	599.1	594.2	572.5	566.8	542.1	535.6
August	493.6	462.9	455.1	422.3	414.1	379.5	370.5	334.4	325.2	287.6	278.0
September	220.0	180.3	170.3	129.8	119.7	78.9	68.8	27.6	17.3	-24.2	-34.5
October	-86.1	-127.4	-137.6	-178.7	-188.6	-229.2	-239.2	-278.8	-288.7	-327.4	-336.9
November	-392.5	-428.1	-436.7	-470.2	-478.3	-509.4	-516.8	-545.1	-551.7	-576.8	-582.9
December	-608.9	-626.5	-630.3	-643.0	-645.9	-654.0	-655.6	-659.1	-659.4	-657.8	-656.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	645.2	633.1	629.3	612.6	607.7	586.8	581.0	556.2	549.6	521.6	514.2
February	466.7	432.6	423.8	387.7	378.6	340.8	331.0	292.0	282.1	242.0	231.6
March	201.0	159.8	149.4	107.7	97.3	55.2	44.9	2.7	-7.7	-49.7	-60.0
April	-122.4	-163.3	-173.5	-213.7	-223.8	-263.2	-272.8	-311.3	-320.8	-357.8	-366.8
May	-410.9	-444.7	-452.8	-484.2	-491.8	-520.7	-527.5	-553.8	-560.2	-583.2	-588.4
June	-616.9	-631.8	-635.2	-646.2	-648.7	-655.6	-656.5	-659.1	-659.4	-654.7	-656.9
July	-648.7	-638.4	-635.2	-621.3	-617.2	-599.1	-594.2	-572.5	-566.8	-542.1	-535.6
August	-493.6	-462.9	-455.1	-422.3	-414.1	-379.5	-370.5	-334.4	-325.2	-287.6	-278.0
September	-220.0	-180.3	-170.3	-129.8	-119.7	-78.9	-68.8	-27.6	-17.3	24.2	34.5
October	86.1	127.4	137.6	178.7	188.6	229.2	239.2	278.8	288.7	327.4	336.9
November	392.5	428.1	436.7	470.2	478.3	509.4	516.8	545.1	551.7	576.8	582.9
December	608.9	626.5	630.3	643.0	645.9	654.0	655.6	659.1	659.4	657.8	656.9

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

Analemmatic Sundial

Latitude: 40.5° N/S

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1623.6 mm
 Sunrise/Sunset Markers: X = ± 1372.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1623.6	1623.6	0.0						
11:55	12:05	54.5	1623.2	1624.1	54.5	8:25	3:35	2016.1	960.1	2233.0	2122.5
11:50	12:10	109.0	1622.1	1625.7	109.1	8:20	3:40	2047.9	931.3	2249.7	2161.7
11:45	12:15	163.5	1620.1	1628.4	163.5	8:15	3:45	2078.7	902.0	2266.0	2200.4
11:40	12:20	217.9	1617.4	1632.1	218.0	8:10	3:50	2108.5	872.4	2281.8	2238.3
11:35	12:25	272.2	1614.0	1636.8	272.3	8:05	3:55	2137.3	842.3	2297.3	2275.6
11:30	12:30	326.3	1609.7	1642.5	326.6	8:00	4:00	2165.1	811.8	2312.3	2312.3
11:25	12:35	380.3	1604.7	1649.2	380.8	7:55	4:05	2191.8	780.9	2326.8	2348.2
11:20	12:40	434.1	1599.0	1656.8	434.8	7:50	4:10	2217.5	749.7	2340.8	2383.5
11:15	12:45	487.7	1592.4	1665.4	488.7	7:45	4:15	2242.2	718.1	2354.4	2418.1
11:10	12:50	541.1	1585.1	1674.9	542.5	7:40	4:20	2265.8	686.2	2367.4	2452.0
11:05	12:55	594.2	1577.1	1685.3	596.0	7:35	4:25	2288.3	653.9	2379.9	2485.3
11:00	1:00	647.0	1568.3	1696.5	649.4	7:30	4:30	2309.7	621.3	2391.8	2517.8
10:55	1:05	699.6	1558.8	1708.5	702.6	7:25	4:35	2330.0	588.5	2403.2	2549.6
10:50	1:10	751.8	1548.5	1721.3	755.5	7:20	4:40	2349.2	555.3	2414.0	2580.7
10:45	1:15	803.6	1537.5	1734.8	808.2	7:15	4:45	2367.3	521.9	2424.2	2611.1
10:40	1:20	855.1	1525.7	1749.0	860.6	7:10	4:50	2384.3	488.2	2433.8	2640.8
10:35	1:25	906.1	1513.2	1763.8	912.8	7:05	4:55	2400.1	454.3	2442.7	2669.8
10:30	1:30	956.7	1500.0	1779.2	964.7	7:00	5:00	2414.8	420.2	2451.1	2698.1
10:25	1:35	1006.9	1486.1	1795.1	1016.2	6:55	5:05	2428.4	385.9	2458.8	2725.6
10:20	1:40	1056.5	1471.5	1811.5	1067.4	6:50	5:10	2440.7	351.4	2465.9	2752.4
10:15	1:45	1105.7	1456.2	1828.4	1118.3	6:45	5:15	2452.0	316.8	2472.3	2778.5
10:10	1:50	1154.4	1440.2	1845.7	1168.9	6:40	5:20	2462.0	281.9	2478.1	2803.9
10:05	1:55	1202.5	1423.5	1863.4	1219.0	6:35	5:25	2470.9	247.0	2483.2	2828.5
10:00	2:00	1250.0	1406.1	1881.4	1268.8	6:30	5:30	2478.6	211.9	2487.7	2852.4
9:55	2:05	1296.9	1388.1	1899.7	1318.2	6:25	5:35	2485.1	176.8	2491.4	2875.6
9:50	2:10	1343.2	1369.3	1918.2	1367.1	6:20	5:40	2490.5	141.5	2494.5	2898.1
9:45	2:15	1388.9	1350.0	1936.9	1415.6	6:15	5:45	2494.6	106.2	2496.9	2919.9
9:40	2:20	1433.9	1330.0	1955.8	1463.7	6:10	5:50	2497.6	70.8	2498.6	2941.0
9:35	2:25	1478.3	1309.4	1974.8	1511.3	6:05	5:55	2499.4	35.4	2499.7	2961.3
9:30	2:30	1521.9	1288.1	1993.8	1558.4	6:00	6:00	2500.0	0.0	2500.0	2981.0
9:25	2:35	1564.8	1266.2	2013.0	1605.1	5:55	6:05	2499.4	-35.4	2499.7	2999.9
9:20	2:40	1607.0	1243.8	2032.1	1651.3	5:50	6:10	2497.6	-70.8	2498.6	3018.2
9:15	2:45	1648.4	1220.7	2051.2	1696.9	5:45	6:15	2494.6	-106.2	2496.9	3035.7
9:10	2:50	1689.0	1197.1	2070.2	1742.0	5:40	6:20	2490.5	-141.5	2494.5	3052.6
9:05	2:55	1728.8	1172.8	2089.1	1786.6	5:35	6:25	2485.1	-176.8	2491.4	3068.8
9:00	3:00	1767.8	1148.1	2107.9	1830.6	5:30	6:30	2478.6	-211.9	2487.7	3084.3
8:55	3:05	1805.9	1122.8	2126.5	1874.1	5:25	6:35	2470.9	-247.0	2483.2	3099.1
8:50	3:10	1843.2	1096.9	2144.9	1917.0	5:20	6:40	2462.0	-281.9	2478.1	3113.3
8:45	3:15	1879.6	1070.5	2163.1	1959.3	5:15	6:45	2452.0	-316.8	2472.3	3126.8
8:40	3:20	1915.1	1043.6	2181.0	2001.0	5:10	6:50	2440.7	-351.4	2465.9	3139.7
8:35	3:25	1949.7	1016.3	2198.7	2042.1	5:05	6:55	2428.4	-385.9	2458.8	3152.0
8:30	3:30	1983.4	988.4	2216.0	2082.6	5:00	7:00	2414.8	-420.2	2451.1	3163.6

Analemmatic Sundial**Latitude: 40.5° N/S**

Earliest Sunrise: 4:28 a.m. Latest Sunset: 7:32 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1623.6 mm
 Sunrise/Sunset Markers: $X = \pm 1372.3$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-454.3	2442.7	3174.7
4:50	7:10	2384.3	-488.2	2433.8	3185.1
4:45	7:15	2367.3	-521.9	2424.2	3194.9
4:40	7:20	2349.2	-555.3	2414.0	3204.2
4:35	7:25	2330.0	-588.5	2403.2	3212.8
4:30	7:30	2309.7	-621.3	2391.8	3221.0
4:25	7:35	2288.3	-653.9	2379.9	3228.5
4:20	7:40	2265.8	-686.2	2367.4	3235.6
4:15	7:45	2242.2	-718.1	2354.4	3242.1

Analematic Sundial

Latitude: 40.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1623.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-806.5	-791.3	-786.6	-765.7	-759.6	-733.5	-726.3	-695.3	-687.0	-652.0	-642.7
February	-583.4	-540.8	-529.7	-484.6	-473.3	-426.0	-413.8	-365.0	-352.7	-302.5	-289.5
March	-251.3	-199.8	-186.7	-134.6	-121.6	-69.0	-56.1	-3.3	9.6	62.1	75.0
April	153.0	204.2	216.9	267.2	279.7	329.0	341.0	389.2	401.0	447.3	458.5
May	513.6	555.9	566.0	605.2	614.7	650.9	659.4	692.3	700.2	729.0	735.4
June	771.1	789.8	794.0	807.7	810.9	819.5	820.7	823.8	824.2	818.3	821.1
July	810.9	797.9	794.0	776.6	771.5	748.8	742.7	715.7	708.5	677.7	669.5
August	616.9	578.7	568.9	527.9	517.6	474.3	463.1	418.0	406.5	359.5	347.5
September	275.0	225.3	212.9	162.3	149.6	98.6	86.0	34.5	21.6	-30.2	-43.1
October	-107.6	-159.3	-172.0	-223.3	-235.8	-286.5	-299.1	-348.6	-360.9	-409.3	-421.1
November	-490.6	-535.1	-545.8	-587.7	-597.9	-636.8	-646.0	-681.4	-689.7	-721.0	-728.6
December	-761.1	-783.2	-787.8	-803.8	-807.3	-817.5	-819.5	-823.8	-824.2	-822.2	-821.1

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	806.5	791.3	786.6	765.7	759.6	733.5	726.3	695.3	687.0	652.0	642.7
February	583.4	540.8	529.7	484.6	473.3	426.0	413.8	365.0	352.7	302.5	289.5
March	251.3	199.8	186.7	134.6	121.6	69.0	56.1	3.3	-9.6	-62.1	-75.0
April	-153.0	-204.2	-216.9	-267.2	-279.7	-329.0	-341.0	-389.2	-401.0	-447.3	-458.5
May	-513.6	-555.9	-566.0	-605.2	-614.7	-650.9	-659.4	-692.3	-700.2	-729.0	-735.4
June	-771.1	-789.8	-794.0	-807.7	-810.9	-819.5	-820.7	-823.8	-824.2	-818.3	-821.1
July	-810.9	-797.9	-794.0	-776.6	-771.5	-748.8	-742.7	-715.7	-708.5	-677.7	-669.5
August	-616.9	-578.7	-568.9	-527.9	-517.6	-474.3	-463.1	-418.0	-406.5	-359.5	-347.5
September	-275.0	-225.3	-212.9	-162.3	-149.6	-98.6	-86.0	-34.5	-21.6	30.2	43.1
October	107.6	159.3	172.0	223.3	235.8	286.5	299.1	348.6	360.9	409.3	421.1
November	490.6	535.1	545.8	587.7	597.9	636.8	646.0	681.4	689.7	721.0	728.6
December	761.1	783.2	787.8	803.8	807.3	817.5	819.5	823.8	824.2	822.2	821.1

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