

Analemmatic Sundial

Latitude: 41.5° N/S

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 662.6 mm
 Sunrise/Sunset Markers: X = ± 530.4 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	662.6	662.6	0.0						
11:55	12:05	21.8	662.5	662.8	21.8	8:25	3:35	806.4	391.8	896.6	850.7
11:50	12:10	43.6	662.0	663.4	43.6	8:20	3:40	819.2	380.1	903.0	866.5
11:45	12:15	65.4	661.2	664.4	65.4	8:15	3:45	831.5	368.1	909.3	882.1
11:40	12:20	87.2	660.1	665.8	87.2	8:10	3:50	843.4	356.0	915.5	897.4
11:35	12:25	108.9	658.7	667.6	108.9	8:05	3:55	854.9	343.7	921.4	912.4
11:30	12:30	130.5	657.0	669.8	130.6	8:00	4:00	866.0	331.3	927.2	927.2
11:25	12:35	152.1	654.9	672.3	152.3	7:55	4:05	876.7	318.7	932.9	941.8
11:20	12:40	173.6	652.6	675.3	173.9	7:50	4:10	887.0	306.0	938.3	956.0
11:15	12:45	195.1	649.9	678.5	195.5	7:45	4:15	896.9	293.1	943.5	970.0
11:10	12:50	216.4	646.9	682.2	217.0	7:40	4:20	906.3	280.0	948.6	983.8
11:05	12:55	237.7	643.6	686.1	238.4	7:35	4:25	915.3	266.9	953.4	997.2
11:00	1:00	258.8	640.0	690.4	259.8	7:30	4:30	923.9	253.6	958.0	1010.4
10:55	1:05	279.8	636.1	695.0	281.1	7:25	4:35	932.0	240.2	962.5	1023.3
10:50	1:10	300.7	632.0	699.8	302.3	7:20	4:40	939.7	226.6	966.6	1035.9
10:45	1:15	321.4	627.5	705.0	323.4	7:15	4:45	946.9	213.0	970.6	1048.3
10:40	1:20	342.0	622.7	710.4	344.3	7:10	4:50	953.7	199.3	974.3	1060.3
10:35	1:25	362.4	617.6	716.1	365.2	7:05	4:55	960.0	185.4	977.8	1072.1
10:30	1:30	382.7	612.2	722.0	386.0	7:00	5:00	965.9	171.5	981.0	1083.6
10:25	1:35	402.7	606.5	728.0	406.6	6:55	5:05	971.3	157.5	984.0	1094.8
10:20	1:40	422.6	600.5	734.3	427.2	6:50	5:10	976.3	143.4	986.8	1105.8
10:15	1:45	442.3	594.3	740.8	447.5	6:45	5:15	980.8	129.3	989.3	1116.4
10:10	1:50	461.7	587.8	747.4	467.8	6:40	5:20	984.8	115.1	991.5	1126.8
10:05	1:55	481.0	580.9	754.2	487.9	6:35	5:25	988.4	100.8	993.5	1136.9
10:00	2:00	500.0	573.8	761.1	507.8	6:30	5:30	991.4	86.5	995.2	1146.7
9:55	2:05	518.8	566.5	768.1	527.6	6:25	5:35	994.1	72.1	996.7	1156.2
9:50	2:10	537.3	558.8	775.2	547.2	6:20	5:40	996.2	57.8	997.9	1165.4
9:45	2:15	555.6	550.9	782.4	566.7	6:15	5:45	997.9	43.3	998.8	1174.4
9:40	2:20	573.6	542.8	789.7	586.0	6:10	5:50	999.0	28.9	999.5	1183.1
9:35	2:25	591.3	534.4	797.0	605.1	6:05	5:55	999.8	14.5	999.9	1191.5
9:30	2:30	608.8	525.7	804.3	624.0	6:00	6:00	1000.0	0.0	1000.0	1199.6
9:25	2:35	625.9	516.8	811.7	642.7	5:55	6:05	999.8	-14.5	999.9	1207.5
9:20	2:40	642.8	507.6	819.0	661.2	5:50	6:10	999.0	-28.9	999.5	1215.0
9:15	2:45	659.3	498.2	826.4	679.5	5:45	6:15	997.9	-43.3	998.8	1222.3
9:10	2:50	675.6	488.5	833.7	697.7	5:40	6:20	996.2	-57.8	997.9	1229.4
9:05	2:55	691.5	478.7	841.0	715.6	5:35	6:25	994.1	-72.1	996.7	1236.1
9:00	3:00	707.1	468.5	848.3	733.3	5:30	6:30	991.4	-86.5	995.2	1242.6
8:55	3:05	722.4	458.2	855.4	750.7	5:25	6:35	988.4	-100.8	993.5	1248.9
8:50	3:10	737.3	447.7	862.5	768.0	5:20	6:40	984.8	-115.1	991.5	1254.8
8:45	3:15	751.8	436.9	869.6	785.0	5:15	6:45	980.8	-129.3	989.3	1260.6
8:40	3:20	766.0	425.9	876.5	801.8	5:10	6:50	976.3	-143.4	986.8	1266.0
8:35	3:25	779.9	414.7	883.3	818.3	5:05	6:55	971.3	-157.5	984.0	1271.3
8:30	3:30	793.4	403.4	890.0	834.6	5:00	7:00	965.9	-171.5	981.0	1276.2

Analemmatic Sundial**Latitude: 41.5° N/S**

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 662.6 mm
 Sunrise/Sunset Markers: X = ± 530.4 mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-185.4	977.8	1281.0
4:50	7:10	953.7	-199.3	974.3	1285.5
4:45	7:15	946.9	-213.0	970.6	1289.7
4:40	7:20	939.7	-226.6	966.6	1293.7
4:35	7:25	932.0	-240.2	962.5	1297.6
4:30	7:30	923.9	-253.6	958.0	1301.1
4:25	7:35	915.3	-266.9	953.4	1304.5
4:20	7:40	906.3	-280.0	948.6	1307.7
4:15	7:45	896.9	-293.1	943.5	1310.6

Analemmatic Sundial

Latitude: 41.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 662.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-317.8	-311.8	-309.9	-301.7	-299.3	-289.0	-286.1	-273.9	-270.7	-256.9	-253.2
February	-229.8	-213.1	-208.7	-190.9	-186.5	-167.8	-163.0	-143.8	-138.9	-119.2	-114.1
March	-99.0	-78.7	-73.6	-53.0	-47.9	-27.2	-22.1	-1.3	3.8	24.5	29.6
April	60.3	80.4	85.5	105.3	110.2	129.6	134.4	153.3	158.0	176.2	180.6
May	202.4	219.0	223.0	238.4	242.2	256.4	259.8	272.7	275.9	287.2	289.7
June	303.8	311.1	312.8	318.2	319.5	322.9	323.3	324.6	324.7	322.4	323.5
July	319.5	314.4	312.8	305.9	304.0	295.0	292.6	282.0	279.1	267.0	263.7
August	243.1	228.0	224.1	208.0	203.9	186.9	182.4	164.7	160.2	141.7	136.9
September	108.3	88.8	83.9	63.9	58.9	38.9	33.9	13.6	8.5	-11.9	-17.0
October	-42.4	-62.8	-67.8	-88.0	-92.9	-112.9	-117.8	-137.3	-142.2	-161.2	-165.9
November	-193.3	-210.8	-215.0	-231.6	-235.6	-250.9	-254.5	-268.5	-271.7	-284.1	-287.0
December	-299.9	-308.5	-310.4	-316.7	-318.1	-322.1	-322.9	-324.6	-324.7	-323.9	-323.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	317.8	311.8	309.9	301.7	299.3	289.0	286.1	273.9	270.7	256.9	253.2
February	229.8	213.1	208.7	190.9	186.5	167.8	163.0	143.8	138.9	119.2	114.1
March	99.0	78.7	73.6	53.0	47.9	27.2	22.1	1.3	-3.8	-24.5	-29.6
April	-60.3	-80.4	-85.5	-105.3	-110.2	-129.6	-134.4	-153.3	-158.0	-176.2	-180.6
May	-202.4	-219.0	-223.0	-238.4	-242.2	-256.4	-259.8	-272.7	-275.9	-287.2	-289.7
June	-303.8	-311.1	-312.8	-318.2	-319.5	-322.9	-323.3	-324.6	-324.7	-322.4	-323.5
July	-319.5	-314.4	-312.8	-305.9	-304.0	-295.0	-292.6	-282.0	-279.1	-267.0	-263.7
August	-243.1	-228.0	-224.1	-208.0	-203.9	-186.9	-182.4	-164.7	-160.2	-141.7	-136.9
September	-108.3	-88.8	-83.9	-63.9	-58.9	-38.9	-33.9	-13.6	-8.5	11.9	17.0
October	42.4	62.8	67.8	88.0	92.9	112.9	117.8	137.3	142.2	161.2	165.9
November	193.3	210.8	215.0	231.6	235.6	250.9	254.5	268.5	271.7	284.1	287.0
December	299.9	308.5	310.4	316.7	318.1	322.1	322.9	324.6	324.7	323.9	323.5

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: 41.5° N/S

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 993.9 mm
 Sunrise/Sunset Markers: X = ± 795.6 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	993.9	993.9	0.0						
11:55	12:05	32.7	993.7	994.2	32.7	8:25	3:35	1209.7	587.7	1344.9	1276.0
11:50	12:10	65.4	993.0	995.1	65.4	8:20	3:40	1228.7	570.1	1354.5	1299.8
11:45	12:15	98.1	991.8	996.6	98.1	8:15	3:45	1247.2	552.2	1364.0	1323.1
11:40	12:20	130.7	990.1	998.7	130.8	8:10	3:50	1265.1	534.0	1373.2	1346.1
11:35	12:25	163.3	988.0	1001.4	163.4	8:05	3:55	1282.4	515.6	1382.1	1368.7
11:30	12:30	195.8	985.4	1004.7	196.0	8:00	4:00	1299.0	497.0	1390.9	1390.9
11:25	12:35	228.2	982.4	1008.5	228.5	7:55	4:05	1315.1	478.1	1399.3	1412.6
11:20	12:40	260.5	978.8	1012.9	260.9	7:50	4:10	1330.5	458.9	1407.4	1434.0
11:15	12:45	292.6	974.8	1017.8	293.3	7:45	4:15	1345.3	439.6	1415.3	1455.0
11:10	12:50	324.7	970.4	1023.2	325.5	7:40	4:20	1359.5	420.1	1422.9	1475.6
11:05	12:55	356.5	965.4	1029.2	357.7	7:35	4:25	1373.0	400.3	1430.1	1495.8
11:00	1:00	388.2	960.1	1035.6	389.7	7:30	4:30	1385.8	380.4	1437.1	1515.6
10:55	1:05	419.7	954.2	1042.5	421.6	7:25	4:35	1398.0	360.2	1443.7	1534.9
10:50	1:10	451.1	947.9	1049.8	453.4	7:20	4:40	1409.5	339.9	1450.0	1553.9
10:45	1:15	482.2	941.2	1057.5	485.0	7:15	4:45	1420.4	319.5	1455.9	1572.4
10:40	1:20	513.0	934.0	1065.6	516.5	7:10	4:50	1430.6	298.9	1461.5	1590.5
10:35	1:25	543.7	926.4	1074.1	547.8	7:05	4:55	1440.1	278.1	1466.7	1608.2
10:30	1:30	574.0	918.3	1082.9	579.0	7:00	5:00	1448.9	257.2	1471.5	1625.4
10:25	1:35	604.1	909.8	1092.1	610.0	6:55	5:05	1457.0	236.2	1476.0	1642.2
10:20	1:40	633.9	900.8	1101.5	640.7	6:50	5:10	1464.4	215.1	1480.2	1658.7
10:15	1:45	663.4	891.4	1111.2	671.3	6:45	5:15	1471.2	193.9	1483.9	1674.6
10:10	1:50	692.6	881.6	1121.2	701.7	6:40	5:20	1477.2	172.6	1487.3	1690.2
10:05	1:55	721.5	871.4	1131.3	731.8	6:35	5:25	1482.5	151.2	1490.2	1705.3
10:00	2:00	750.0	860.8	1141.7	761.7	6:30	5:30	1487.2	129.7	1492.8	1720.0
9:55	2:05	778.2	849.7	1152.2	791.4	6:25	5:35	1491.1	108.2	1495.0	1734.3
9:50	2:10	805.9	838.3	1162.9	820.8	6:20	5:40	1494.3	86.6	1496.8	1748.2
9:45	2:15	833.4	826.4	1173.7	850.0	6:15	5:45	1496.8	65.0	1498.2	1761.6
9:40	2:20	860.4	814.2	1184.5	878.9	6:10	5:50	1498.6	43.4	1499.2	1774.6
9:35	2:25	887.0	801.5	1195.5	907.6	6:05	5:55	1499.6	21.7	1499.8	1787.2
9:30	2:30	913.1	788.5	1206.5	936.0	6:00	6:00	1500.0	0.0	1500.0	1799.4
9:25	2:35	938.9	775.2	1217.5	964.0	5:55	6:05	1499.6	-21.7	1499.8	1811.2
9:20	2:40	964.2	761.4	1228.6	991.8	5:50	6:10	1498.6	-43.4	1499.2	1822.5
9:15	2:45	989.0	747.3	1239.6	1019.3	5:45	6:15	1496.8	-65.0	1498.2	1833.5
9:10	2:50	1013.4	732.8	1250.6	1046.5	5:40	6:20	1494.3	-86.6	1496.8	1844.0
9:05	2:55	1037.3	718.0	1261.5	1073.3	5:35	6:25	1491.1	-108.2	1495.0	1854.2
9:00	3:00	1060.7	702.8	1272.4	1099.9	5:30	6:30	1487.2	-129.7	1492.8	1863.9
8:55	3:05	1083.5	687.3	1283.2	1126.1	5:25	6:35	1482.5	-151.2	1490.2	1873.3
8:50	3:10	1105.9	671.5	1293.8	1152.0	5:20	6:40	1477.2	-172.6	1487.3	1882.3
8:45	3:15	1127.8	655.3	1304.3	1177.5	5:15	6:45	1471.2	-193.9	1483.9	1890.9
8:40	3:20	1149.1	638.9	1314.7	1202.7	5:10	6:50	1464.4	-215.1	1480.2	1899.1
8:35	3:25	1169.8	622.1	1325.0	1227.5	5:05	6:55	1457.0	-236.2	1476.0	1906.9
8:30	3:30	1190.0	605.1	1335.0	1252.0	5:00	7:00	1448.9	-257.2	1471.5	1914.3

Analemmatic Sundial**Latitude: 41.5° N/S**

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 993.9 mm
 Sunrise/Sunset Markers: $X = \pm 795.6$ mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-278.1	1466.7	1921.4
4:50	7:10	1430.6	-298.9	1461.5	1928.2
4:45	7:15	1420.4	-319.5	1455.9	1934.6
4:40	7:20	1409.5	-339.9	1450.0	1940.6
4:35	7:25	1398.0	-360.2	1443.7	1946.3
4:30	7:30	1385.8	-380.4	1437.1	1951.7
4:25	7:35	1373.0	-400.3	1430.1	1956.8
4:20	7:40	1359.5	-420.1	1422.9	1961.5
4:15	7:45	1345.3	-439.6	1415.3	1965.9

Analemmatic Sundial

Latitude: 41.5° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 993.9 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-476.6	-467.6	-464.9	-452.5	-448.9	-433.5	-429.2	-410.9	-406.0	-385.3	-379.8
February	-344.8	-319.6	-313.0	-286.4	-279.7	-251.7	-244.5	-215.7	-208.4	-178.7	-171.1
March	-148.5	-118.1	-110.4	-79.5	-71.9	-40.8	-33.1	-2.0	5.7	36.7	44.3
April	90.4	120.7	128.2	157.9	165.3	194.5	201.5	230.0	236.9	264.3	271.0
May	303.5	328.5	334.5	357.7	363.3	384.6	389.7	409.1	413.8	430.8	434.6
June	455.7	466.7	469.3	477.3	479.2	484.3	485.0	486.9	487.1	483.6	485.2
July	479.2	471.6	469.3	458.9	456.0	442.5	438.9	422.9	418.7	400.5	395.6
August	364.6	342.0	336.2	312.0	305.9	280.3	273.7	247.0	240.2	212.5	205.4
September	162.5	133.2	125.8	95.9	88.4	58.3	50.8	20.4	12.7	-17.8	-25.5
October	-63.6	-94.1	-101.6	-132.0	-139.3	-169.3	-176.7	-206.0	-213.3	-241.9	-248.9
November	-289.9	-316.2	-322.6	-347.3	-353.4	-376.3	-381.8	-402.7	-407.6	-426.1	-430.6
December	-449.8	-462.8	-465.6	-475.0	-477.1	-483.1	-484.3	-486.9	-487.1	-485.9	-485.2

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	476.6	467.6	464.9	452.5	448.9	433.5	429.2	410.9	406.0	385.3	379.8
February	344.8	319.6	313.0	286.4	279.7	251.7	244.5	215.7	208.4	178.7	171.1
March	148.5	118.1	110.4	79.5	71.9	40.8	33.1	2.0	-5.7	-36.7	-44.3
April	-90.4	-120.7	-128.2	-157.9	-165.3	-194.5	-201.5	-230.0	-236.9	-264.3	-271.0
May	-303.5	-328.5	-334.5	-357.7	-363.3	-384.6	-389.7	-409.1	-413.8	-430.8	-434.6
June	-455.7	-466.7	-469.3	-477.3	-479.2	-484.3	-485.0	-486.9	-487.1	-483.6	-485.2
July	-479.2	-471.6	-469.3	-458.9	-456.0	-442.5	-438.9	-422.9	-418.7	-400.5	-395.6
August	-364.6	-342.0	-336.2	-312.0	-305.9	-280.3	-273.7	-247.0	-240.2	-212.5	-205.4
September	-162.5	-133.2	-125.8	-95.9	-88.4	-58.3	-50.8	-20.4	-12.7	17.8	25.5
October	63.6	94.1	101.6	132.0	139.3	169.3	176.7	206.0	213.3	241.9	248.9
November	289.9	316.2	322.6	347.3	353.4	376.3	381.8	402.7	407.6	426.1	430.6
December	449.8	462.8	465.6	475.0	477.1	483.1	484.3	486.9	487.1	485.9	485.2

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: 41.5° N/S

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1325.2 mm
 Sunrise/Sunset Markers: X = ± 1060.8 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1325.2	1325.2	0.0						
11:55	12:05	43.6	1324.9	1325.6	43.6	8:25	3:35	1612.9	783.6	1793.2	1701.4
11:50	12:10	87.2	1324.0	1326.8	87.2	8:20	3:40	1638.3	760.1	1806.1	1733.0
11:45	12:15	130.8	1322.4	1328.9	130.8	8:15	3:45	1662.9	736.3	1818.6	1764.2
11:40	12:20	174.3	1320.2	1331.7	174.4	8:10	3:50	1686.8	712.1	1830.9	1794.8
11:35	12:25	217.7	1317.4	1335.2	217.9	8:05	3:55	1709.8	687.5	1842.9	1824.9
11:30	12:30	261.1	1313.9	1339.6	261.3	8:00	4:00	1732.1	662.6	1854.5	1854.5
11:25	12:35	304.2	1309.8	1344.7	304.6	7:55	4:05	1753.5	637.4	1865.7	1883.5
11:20	12:40	347.3	1305.1	1350.5	347.9	7:50	4:10	1774.0	611.9	1876.6	1912.1
11:15	12:45	390.2	1299.8	1357.1	391.0	7:45	4:15	1793.7	586.1	1887.1	1940.0
11:10	12:50	432.9	1293.8	1364.3	434.0	7:40	4:20	1812.6	560.1	1897.2	1967.5
11:05	12:55	475.4	1287.3	1372.2	476.9	7:35	4:25	1830.6	533.7	1906.8	1994.4
11:00	1:00	517.6	1280.1	1380.8	519.6	7:30	4:30	1847.8	507.1	1916.1	2020.8
10:55	1:05	559.7	1272.3	1389.9	562.2	7:25	4:35	1864.0	480.3	1924.9	2046.6
10:50	1:10	601.4	1263.9	1399.7	604.5	7:20	4:40	1879.4	453.3	1933.3	2071.8
10:45	1:15	642.9	1254.9	1410.0	646.7	7:15	4:45	1893.9	426.0	1941.2	2096.5
10:40	1:20	684.0	1245.3	1420.8	688.7	7:10	4:50	1907.4	398.5	1948.6	2120.6
10:35	1:25	724.9	1235.1	1432.1	730.5	7:05	4:55	1920.1	370.8	1955.6	2144.2
10:30	1:30	765.4	1224.4	1443.9	772.0	7:00	5:00	1931.9	343.0	1962.1	2167.2
10:25	1:35	805.5	1213.0	1456.1	813.3	6:55	5:05	1942.7	315.0	1968.1	2189.7
10:20	1:40	845.2	1201.1	1468.7	854.3	6:50	5:10	1952.6	286.8	1973.5	2211.5
10:15	1:45	884.6	1188.6	1481.6	895.1	6:45	5:15	1961.6	258.5	1978.5	2232.8
10:10	1:50	923.5	1175.5	1494.9	935.6	6:40	5:20	1969.6	230.1	1983.0	2253.6
10:05	1:55	962.0	1161.9	1508.4	975.8	6:35	5:25	1976.7	201.6	1987.0	2273.8
10:00	2:00	1000.0	1147.7	1522.2	1015.6	6:30	5:30	1982.9	173.0	1990.4	2293.4
9:55	2:05	1037.5	1133.0	1536.3	1055.2	6:25	5:35	1988.1	144.3	1993.3	2312.4
9:50	2:10	1074.6	1117.7	1550.5	1094.5	6:20	5:40	1992.4	115.5	1995.7	2330.9
9:45	2:15	1111.1	1101.9	1564.9	1133.4	6:15	5:45	1995.7	86.7	1997.6	2348.8
9:40	2:20	1147.2	1085.6	1579.4	1171.9	6:10	5:50	1998.1	57.8	1998.9	2366.2
9:35	2:25	1182.6	1068.7	1594.0	1210.1	6:05	5:55	1999.5	28.9	1999.7	2383.0
9:30	2:30	1217.5	1051.4	1608.7	1247.9	6:00	6:00	2000.0	0.0	2000.0	2399.2
9:25	2:35	1251.8	1033.5	1623.4	1285.4	5:55	6:05	1999.5	-28.9	1999.7	2414.9
9:20	2:40	1285.6	1015.2	1638.1	1322.4	5:50	6:10	1998.1	-57.8	1998.9	2430.1
9:15	2:45	1318.7	996.4	1652.8	1359.1	5:45	6:15	1995.7	-86.7	1997.6	2444.7
9:10	2:50	1351.2	977.1	1667.4	1395.3	5:40	6:20	1992.4	-115.5	1995.7	2458.7
9:05	2:55	1383.0	957.3	1682.0	1431.1	5:35	6:25	1988.1	-144.3	1993.3	2472.3
9:00	3:00	1414.2	937.1	1696.5	1466.5	5:30	6:30	1982.9	-173.0	1990.4	2485.3
8:55	3:05	1444.7	916.4	1710.9	1501.5	5:25	6:35	1976.7	-201.6	1987.0	2497.7
8:50	3:10	1474.6	895.3	1725.1	1536.0	5:20	6:40	1969.6	-230.1	1983.0	2509.7
8:45	3:15	1503.7	873.8	1739.1	1570.0	5:15	6:45	1961.6	-258.5	1978.5	2521.1
8:40	3:20	1532.1	851.8	1753.0	1603.6	5:10	6:50	1952.6	-286.8	1973.5	2532.1
8:35	3:25	1559.8	829.5	1766.6	1636.7	5:05	6:55	1942.7	-315.0	1968.1	2542.5
8:30	3:30	1586.7	806.8	1780.0	1669.3	5:00	7:00	1931.9	-343.0	1962.1	2552.5

Analemmatic Sundial**Latitude: 41.5° N/S**

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1325.2 mm
 Sunrise/Sunset Markers: $X = \pm 1060.8$ mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-370.8	1955.6	2561.9
4:50	7:10	1907.4	-398.5	1948.6	2570.9
4:45	7:15	1893.9	-426.0	1941.2	2579.4
4:40	7:20	1879.4	-453.3	1933.3	2587.5
4:35	7:25	1864.0	-480.3	1924.9	2595.1
4:30	7:30	1847.8	-507.1	1916.1	2602.3
4:25	7:35	1830.6	-533.7	1906.8	2609.0
4:20	7:40	1812.6	-560.1	1897.2	2615.3
4:15	7:45	1793.7	-586.1	1887.1	2621.2

Analematic Sundial

Latitude: 41.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1325.2 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-635.5	-623.5	-619.8	-603.4	-598.5	-578.0	-572.3	-547.9	-541.3	-513.7	-506.4
February	-459.7	-426.1	-417.4	-381.8	-372.9	-335.6	-326.0	-287.6	-277.9	-238.3	-228.1
March	-198.0	-157.4	-147.1	-106.1	-95.8	-54.4	-44.2	-2.6	7.6	48.9	59.1
April	120.5	160.9	170.9	210.5	220.4	259.3	268.7	306.7	315.9	352.4	361.3
May	404.7	438.0	446.0	476.9	484.4	512.8	519.6	545.5	551.7	574.4	579.5
June	607.6	622.3	625.7	636.4	638.9	645.7	646.7	649.1	649.4	644.8	647.0
July	638.9	628.7	625.7	611.9	607.9	590.0	585.2	563.9	558.3	534.0	527.5
August	486.1	456.0	448.3	416.0	407.8	373.7	364.9	329.3	320.3	283.3	273.8
September	216.7	177.6	167.8	127.9	117.9	77.7	67.8	27.2	17.0	-23.8	-34.0
October	-84.8	-125.5	-135.5	-176.0	-185.8	-225.7	-235.6	-274.6	-284.4	-322.5	-331.8
November	-386.5	-421.6	-430.1	-463.1	-471.1	-501.8	-509.1	-536.9	-543.4	-568.1	-574.1
December	-599.7	-617.1	-620.8	-633.4	-636.1	-644.2	-645.7	-649.1	-649.4	-647.9	-647.0

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	635.5	623.5	619.8	603.4	598.5	578.0	572.3	547.9	541.3	513.7	506.4
February	459.7	426.1	417.4	381.8	372.9	335.6	326.0	287.6	277.9	238.3	228.1
March	198.0	157.4	147.1	106.1	95.8	54.4	44.2	2.6	-7.6	-48.9	-59.1
April	-120.5	-160.9	-170.9	-210.5	-220.4	-259.3	-268.7	-306.7	-315.9	-352.4	-361.3
May	-404.7	-438.0	-446.0	-476.9	-484.4	-512.8	-519.6	-545.5	-551.7	-574.4	-579.5
June	-607.6	-622.3	-625.7	-636.4	-638.9	-645.7	-646.7	-649.1	-649.4	-644.8	-647.0
July	-638.9	-628.7	-625.7	-611.9	-607.9	-590.0	-585.2	-563.9	-558.3	-534.0	-527.5
August	-486.1	-456.0	-448.3	-416.0	-407.8	-373.7	-364.9	-329.3	-320.3	-283.3	-273.8
September	-216.7	-177.6	-167.8	-127.9	-117.9	-77.7	-67.8	-27.2	-17.0	23.8	34.0
October	84.8	125.5	135.5	176.0	185.8	225.7	235.6	274.6	284.4	322.5	331.8
November	386.5	421.6	430.1	463.1	471.1	501.8	509.1	536.9	543.4	568.1	574.1
December	599.7	617.1	620.8	633.4	636.1	644.2	645.7	649.1	649.4	647.9	647.0

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: 41.5° N/S

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1656.6 mm
 Sunrise/Sunset Markers: X = ± 1326.0 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1656.6	1656.6	0.0						
11:55	12:05	54.5	1656.2	1657.1	54.5	8:25	3:35	2016.1	979.5	2241.5	2126.7
11:50	12:10	109.0	1655.0	1658.6	109.1	8:20	3:40	2047.9	950.2	2257.6	2166.3
11:45	12:15	163.5	1653.0	1661.1	163.5	8:15	3:45	2078.7	920.3	2273.3	2205.2
11:40	12:20	217.9	1650.2	1664.6	218.0	8:10	3:50	2108.5	890.1	2288.6	2243.5
11:35	12:25	272.2	1646.7	1669.0	272.3	8:05	3:55	2137.3	859.4	2303.6	2281.1
11:30	12:30	326.3	1642.4	1674.5	326.6	8:00	4:00	2165.1	828.3	2318.1	2318.1
11:25	12:35	380.3	1637.3	1680.9	380.8	7:55	4:05	2191.8	796.8	2332.1	2354.4
11:20	12:40	434.1	1631.4	1688.2	434.8	7:50	4:10	2217.5	764.9	2345.7	2390.1
11:15	12:45	487.7	1624.7	1696.3	488.8	7:45	4:15	2242.2	732.7	2358.9	2425.1
11:10	12:50	541.1	1617.3	1705.4	542.5	7:40	4:20	2265.8	700.1	2371.5	2459.4
11:05	12:55	594.2	1609.1	1715.3	596.1	7:35	4:25	2288.3	667.2	2383.6	2493.0
11:00	1:00	647.0	1600.1	1726.0	649.5	7:30	4:30	2309.7	633.9	2395.1	2526.0
10:55	1:05	699.6	1590.4	1737.4	702.7	7:25	4:35	2330.0	600.4	2406.1	2558.2
10:50	1:10	751.8	1579.9	1749.6	755.7	7:20	4:40	2349.2	566.6	2416.6	2589.8
10:45	1:15	803.6	1568.6	1762.5	808.4	7:15	4:45	2367.3	532.5	2426.5	2620.6
10:40	1:20	855.1	1556.6	1776.0	860.9	7:10	4:50	2384.3	498.1	2435.8	2650.8
10:35	1:25	906.1	1543.9	1790.2	913.1	7:05	4:55	2400.1	463.6	2444.5	2680.3
10:30	1:30	956.7	1530.5	1804.9	965.0	7:00	5:00	2414.8	428.7	2452.6	2709.0
10:25	1:35	1006.9	1516.3	1820.1	1016.6	6:55	5:05	2428.4	393.7	2460.1	2737.1
10:20	1:40	1056.5	1501.3	1835.8	1067.9	6:50	5:10	2440.7	358.5	2466.9	2764.4
10:15	1:45	1105.7	1485.7	1852.0	1118.8	6:45	5:15	2452.0	323.2	2473.2	2791.1
10:10	1:50	1154.4	1469.4	1868.6	1169.4	6:40	5:20	2462.0	287.7	2478.8	2817.0
10:05	1:55	1202.5	1452.3	1885.5	1219.7	6:35	5:25	2470.9	252.0	2483.7	2842.2
10:00	2:00	1250.0	1434.6	1902.8	1269.5	6:30	5:30	2478.6	216.2	2488.0	2866.7
9:55	2:05	1296.9	1416.2	1920.3	1319.0	6:25	5:35	2485.1	180.3	2491.7	2890.5
9:50	2:10	1343.2	1397.1	1938.1	1368.1	6:20	5:40	2490.5	144.4	2494.7	2913.6
9:45	2:15	1388.9	1377.4	1956.1	1416.7	6:15	5:45	2494.6	108.3	2497.0	2936.0
9:40	2:20	1433.9	1357.0	1974.2	1464.9	6:10	5:50	2497.6	72.3	2498.7	2957.7
9:35	2:25	1478.3	1335.9	1992.5	1512.6	6:05	5:55	2499.4	36.1	2499.7	2978.7
9:30	2:30	1521.9	1314.2	2010.8	1559.9	6:00	6:00	2500.0	0.0	2500.0	2999.0
9:25	2:35	1564.8	1291.9	2029.2	1606.7	5:55	6:05	2499.4	-36.1	2499.7	3018.6
9:20	2:40	1607.0	1269.0	2047.6	1653.0	5:50	6:10	2497.6	-72.3	2498.7	3037.6
9:15	2:45	1648.4	1245.5	2066.0	1698.9	5:45	6:15	2494.6	-108.3	2497.0	3055.8
9:10	2:50	1689.0	1221.3	2084.3	1744.1	5:40	6:20	2490.5	-144.4	2494.7	3073.4
9:05	2:55	1728.8	1196.6	2102.5	1788.9	5:35	6:25	2485.1	-180.3	2491.7	3090.3
9:00	3:00	1767.8	1171.4	2120.6	1833.1	5:30	6:30	2478.6	-216.2	2488.0	3106.6
8:55	3:05	1805.9	1145.5	2138.6	1876.8	5:25	6:35	2470.9	-252.0	2483.7	3122.2
8:50	3:10	1843.2	1119.1	2156.4	1919.9	5:20	6:40	2462.0	-287.7	2478.8	3137.1
8:45	3:15	1879.6	1092.2	2173.9	1962.5	5:15	6:45	2452.0	-323.2	2473.2	3151.4
8:40	3:20	1915.1	1064.8	2191.2	2004.4	5:10	6:50	2440.7	-358.5	2466.9	3165.1
8:35	3:25	1949.7	1036.9	2208.3	2045.8	5:05	6:55	2428.4	-393.7	2460.1	3178.1
8:30	3:30	1983.4	1008.4	2225.0	2086.6	5:00	7:00	2414.8	-428.7	2452.6	3190.6

Analemmatic Sundial**Latitude: 41.5° N/S**

Earliest Sunrise: 4:24 a.m. Latest Sunset: 7:36 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1656.6 mm
 Sunrise/Sunset Markers: $X = \pm 1326.0$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-463.6	2444.5	3202.4
4:50	7:10	2384.3	-498.1	2435.8	3213.6
4:45	7:15	2367.3	-532.5	2426.5	3224.3
4:40	7:20	2349.2	-566.6	2416.6	3234.4
4:35	7:25	2330.0	-600.4	2406.1	3243.9
4:30	7:30	2309.7	-633.9	2395.1	3252.8
4:25	7:35	2288.3	-667.2	2383.6	3261.3
4:20	7:40	2265.8	-700.1	2371.5	3269.2
4:15	7:45	2242.2	-732.7	2358.9	3276.5

Analematic Sundial

Latitude: 41.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1656.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-794.4	-779.4	-774.8	-754.2	-748.1	-722.5	-715.4	-684.8	-676.7	-642.2	-633.0
February	-574.6	-532.7	-521.7	-477.3	-466.1	-419.6	-407.6	-359.5	-347.4	-297.9	-285.2
March	-247.5	-196.8	-183.9	-132.6	-119.8	-68.0	-55.2	-3.3	9.5	61.1	73.9
April	150.6	201.1	213.7	263.1	275.5	324.1	335.9	383.3	394.9	440.5	451.6
May	505.9	547.5	557.5	596.1	605.5	641.1	649.5	681.9	689.6	718.0	724.4
June	759.5	777.9	782.1	795.6	798.6	807.2	808.3	811.4	811.8	806.0	808.7
July	798.6	785.9	782.1	764.9	759.9	737.6	731.5	704.9	697.8	667.5	659.4
August	607.7	569.9	560.3	520.0	509.8	467.2	456.1	411.7	400.4	354.1	342.3
September	270.8	221.9	209.7	159.9	147.4	97.1	84.7	34.0	21.2	-29.7	-42.5
October	-106.0	-156.9	-169.4	-220.0	-232.2	-282.2	-294.5	-343.3	-355.5	-403.1	-414.8
November	-483.2	-527.0	-537.6	-578.9	-588.9	-627.2	-636.3	-671.1	-679.3	-710.1	-717.6
December	-749.7	-771.4	-776.0	-791.7	-795.2	-805.2	-807.2	-811.4	-811.8	-809.9	-808.7

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	794.4	779.4	774.8	754.2	748.1	722.5	715.4	684.8	676.7	642.2	633.0
February	574.6	532.7	521.7	477.3	466.1	419.6	407.6	359.5	347.4	297.9	285.2
March	247.5	196.8	183.9	132.6	119.8	68.0	55.2	3.3	-9.5	-61.1	-73.9
April	-150.6	-201.1	-213.7	-263.1	-275.5	-324.1	-335.9	-383.3	-394.9	-440.5	-451.6
May	-505.9	-547.5	-557.5	-596.1	-605.5	-641.1	-649.5	-681.9	-689.6	-718.0	-724.4
June	-759.5	-777.9	-782.1	-795.6	-798.6	-807.2	-808.3	-811.4	-811.8	-806.0	-808.7
July	-798.6	-785.9	-782.1	-764.9	-759.9	-737.6	-731.5	-704.9	-697.8	-667.5	-659.4
August	-607.7	-569.9	-560.3	-520.0	-509.8	-467.2	-456.1	-411.7	-400.4	-354.1	-342.3
September	-270.8	-221.9	-209.7	-159.9	-147.4	-97.1	-84.7	-34.0	-21.2	29.7	42.5
October	106.0	156.9	169.4	220.0	232.2	282.2	294.5	343.3	355.5	403.1	414.8
November	483.2	527.0	537.6	578.9	588.9	627.2	636.3	671.1	679.3	710.1	717.6
December	749.7	771.4	776.0	791.7	795.2	805.2	807.2	811.4	811.8	809.9	808.7

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 |