

Analemmatic Sundial

Latitude: 45.5° N/S

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 713.3 mm
 Sunrise/Sunset Markers: X = ± 455.5 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	713.3	713.3	0.0							
11:55	12:05	21.8	713.1	713.4	21.8	8:25	3:35	806.4	421.8	910.1	857.5
11:50	12:10	43.6	712.6	713.9	43.6	8:20	3:40	819.2	409.1	915.6	873.8
11:45	12:15	65.4	711.7	714.7	65.4	8:15	3:45	831.5	396.3	921.1	889.8
11:40	12:20	87.2	710.5	715.9	87.2	8:10	3:50	843.4	383.2	926.4	905.7
11:35	12:25	108.9	709.0	717.3	108.9	8:05	3:55	854.9	370.0	931.6	921.2
11:30	12:30	130.5	707.1	719.1	130.7	8:00	4:00	866.0	356.6	936.6	936.6
11:25	12:35	152.1	704.9	721.2	152.3	7:55	4:05	876.7	343.1	941.5	951.7
11:20	12:40	173.6	702.4	723.6	174.0	7:50	4:10	887.0	329.3	946.2	966.5
11:15	12:45	195.1	699.5	726.2	195.6	7:45	4:15	896.9	315.5	950.7	981.1
11:10	12:50	216.4	696.3	729.2	217.1	7:40	4:20	906.3	301.4	955.1	995.5
11:05	12:55	237.7	692.8	732.4	238.6	7:35	4:25	915.3	287.3	959.3	1009.6
11:00	1:00	258.8	688.9	736.0	260.0	7:30	4:30	923.9	272.9	963.4	1023.4
10:55	1:05	279.8	684.8	739.7	281.3	7:25	4:35	932.0	258.5	967.2	1037.0
10:50	1:10	300.7	680.2	743.7	302.5	7:20	4:40	939.7	243.9	970.8	1050.4
10:45	1:15	321.4	675.4	748.0	323.7	7:15	4:45	946.9	229.3	974.3	1063.4
10:40	1:20	342.0	670.2	752.5	344.7	7:10	4:50	953.7	214.5	977.5	1076.3
10:35	1:25	362.4	664.8	757.1	365.7	7:05	4:55	960.0	199.6	980.6	1088.8
10:30	1:30	382.7	659.0	762.0	386.5	7:00	5:00	965.9	184.6	983.4	1101.1
10:25	1:35	402.7	652.8	767.1	407.3	6:55	5:05	971.3	169.5	986.0	1113.2
10:20	1:40	422.6	646.4	772.3	427.9	6:50	5:10	976.3	154.4	988.4	1124.9
10:15	1:45	442.3	639.7	777.7	448.4	6:45	5:15	980.8	139.1	990.6	1136.5
10:10	1:50	461.7	632.7	783.2	468.7	6:40	5:20	984.8	123.9	992.6	1147.7
10:05	1:55	481.0	625.3	788.9	489.0	6:35	5:25	988.4	108.5	994.3	1158.7
10:00	2:00	500.0	617.7	794.7	509.0	6:30	5:30	991.4	93.1	995.8	1169.4
9:55	2:05	518.8	609.8	800.6	529.0	6:25	5:35	994.1	77.6	997.1	1179.9
9:50	2:10	537.3	601.5	806.6	548.8	6:20	5:40	996.2	62.2	998.1	1190.1
9:45	2:15	555.6	593.0	812.6	568.4	6:15	5:45	997.9	46.6	998.9	1200.0
9:40	2:20	573.6	584.3	818.7	587.9	6:10	5:50	999.0	31.1	999.5	1209.7
9:35	2:25	591.3	575.2	824.9	607.2	6:05	5:55	999.8	15.6	999.9	1219.1
9:30	2:30	608.8	565.9	831.1	626.4	6:00	6:00	1000.0	0.0	1000.0	1228.3
9:25	2:35	625.9	556.3	837.4	645.3	5:55	6:05	999.8	-15.6	999.9	1237.2
9:20	2:40	642.8	546.4	843.6	664.1	5:50	6:10	999.0	-31.1	999.5	1245.9
9:15	2:45	659.3	536.3	849.9	682.7	5:45	6:15	997.9	-46.6	998.9	1254.3
9:10	2:50	675.6	525.9	856.1	701.1	5:40	6:20	996.2	-62.2	998.1	1262.4
9:05	2:55	691.5	515.2	862.4	719.3	5:35	6:25	994.1	-77.6	997.1	1270.3
9:00	3:00	707.1	504.3	868.5	737.3	5:30	6:30	991.4	-93.1	995.8	1278.0
8:55	3:05	722.4	493.2	874.7	755.1	5:25	6:35	988.4	-108.5	994.3	1285.4
8:50	3:10	737.3	481.9	880.8	772.7	5:20	6:40	984.8	-123.9	992.6	1292.5
8:45	3:15	751.8	470.3	886.8	790.1	5:15	6:45	980.8	-139.1	990.6	1299.4
8:40	3:20	766.0	458.5	892.8	807.3	5:10	6:50	976.3	-154.4	988.4	1306.1
8:35	3:25	779.9	446.4	898.6	824.3	5:05	6:55	971.3	-169.5	986.0	1312.6
8:30	3:30	793.4	434.2	904.4	841.0	5:00	7:00	965.9	-184.6	983.4	1318.8

Analemmatic Sundial

Latitude: 45.5° N/S

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 713.3 mm
 Sunrise/Sunset Markers: X = ± 455.5 mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-199.6	980.6	1324.8
4:50	7:10	953.7	-214.5	977.5	1330.5
4:45	7:15	946.9	-229.3	974.3	1336.0
4:40	7:20	939.7	-243.9	970.8	1341.4
4:35	7:25	932.0	-258.5	967.2	1346.5
4:30	7:30	923.9	-272.9	963.4	1351.3
4:25	7:35	915.3	-287.3	959.3	1356.0
4:20	7:40	906.3	-301.4	955.1	1360.5
4:15	7:45	896.9	-315.5	950.7	1364.8
4:10	7:50	887.0	-329.3	946.2	1368.9
4:05	7:55	876.7	-343.1	941.5	1372.8
4:00	8:00	866.0	-356.6	936.6	1376.5

Analematic Sundial

Latitude: 45.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 713.3 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-297.4	-291.8	-290.0	-282.3	-280.1	-270.5	-267.8	-256.4	-253.3	-240.4	-237.0
February	-215.1	-199.4	-195.3	-178.7	-174.5	-157.1	-152.6	-134.6	-130.0	-111.5	-106.8
March	-92.6	-73.7	-68.8	-49.6	-44.8	-25.5	-20.7	-1.2	3.5	22.9	27.7
April	56.4	75.3	80.0	98.5	103.1	121.3	125.7	143.5	147.8	164.9	169.0
May	189.4	205.0	208.7	223.1	226.7	240.0	243.1	255.2	258.2	268.8	271.2
June	284.3	291.2	292.8	297.8	299.0	302.1	302.6	303.7	303.9	301.7	302.7
July	299.0	294.2	292.8	286.3	284.5	276.1	273.8	263.9	261.2	249.9	246.8
August	227.5	213.4	209.7	194.6	190.8	174.9	170.7	154.1	149.9	132.6	128.1
September	101.4	83.1	78.5	59.8	55.2	36.4	31.7	12.7	8.0	-11.1	-15.9
October	-39.7	-58.7	-63.4	-82.3	-86.9	-105.6	-110.3	-128.5	-133.1	-150.9	-155.3
November	-180.9	-197.3	-201.2	-216.7	-220.5	-234.8	-238.2	-251.2	-254.3	-265.8	-268.6
December	-280.6	-288.8	-290.5	-296.4	-297.7	-301.4	-302.1	-303.7	-303.9	-303.2	-302.7

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	297.4	291.8	290.0	282.3	280.1	270.5	267.8	256.4	253.3	240.4	237.0
February	215.1	199.4	195.3	178.7	174.5	157.1	152.6	134.6	130.0	111.5	106.8
March	92.6	73.7	68.8	49.6	44.8	25.5	20.7	1.2	-3.5	-22.9	-27.7
April	-56.4	-75.3	-80.0	-98.5	-103.1	-121.3	-125.7	-143.5	-147.8	-164.9	-169.0
May	-189.4	-205.0	-208.7	-223.1	-226.7	-240.0	-243.1	-255.2	-258.2	-268.8	-271.2
June	-284.3	-291.2	-292.8	-297.8	-299.0	-302.1	-302.6	-303.7	-303.9	-301.7	-302.7
July	-299.0	-294.2	-292.8	-286.3	-284.5	-276.1	-273.8	-263.9	-261.2	-249.9	-246.8
August	-227.5	-213.4	-209.7	-194.6	-190.8	-174.9	-170.7	-154.1	-149.9	-132.6	-128.1
September	-101.4	-83.1	-78.5	-59.8	-55.2	-36.4	-31.7	-12.7	-8.0	11.1	15.9
October	39.7	58.7	63.4	82.3	86.9	105.6	110.3	128.5	133.1	150.9	155.3
November	180.9	197.3	201.2	216.7	220.5	234.8	238.2	251.2	254.3	265.8	268.6
December	280.6	288.8	290.5	296.4	297.7	301.4	302.1	303.7	303.9	303.2	302.7

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: 45.5° N/S

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1069.9 mm
 Sunrise/Sunset Markers: X = ± 683.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1069.9	1069.9	0.0						
11:55	12:05	32.7	1069.6	1070.1	32.7	8:25	3:35	1209.7	632.6	1365.1	1286.3
11:50	12:10	65.4	1068.9	1070.9	65.4	8:20	3:40	1228.7	613.7	1373.4	1310.7
11:45	12:15	98.1	1067.6	1072.1	98.1	8:15	3:45	1247.2	594.4	1381.6	1334.8
11:40	12:20	130.7	1065.8	1073.8	130.8	8:10	3:50	1265.1	574.8	1389.6	1358.5
11:35	12:25	163.3	1063.5	1076.0	163.4	8:05	3:55	1282.4	555.0	1397.3	1381.9
11:30	12:30	195.8	1060.7	1078.6	196.0	8:00	4:00	1299.0	534.9	1404.9	1404.9
11:25	12:35	228.2	1057.4	1081.8	228.5	7:55	4:05	1315.1	514.6	1412.2	1427.5
11:20	12:40	260.5	1053.6	1085.3	261.0	7:50	4:10	1330.5	494.0	1419.3	1449.8
11:15	12:45	292.6	1049.3	1089.4	293.4	7:45	4:15	1345.3	473.2	1426.1	1471.7
11:10	12:50	324.7	1044.5	1093.8	325.6	7:40	4:20	1359.5	452.1	1432.7	1493.2
11:05	12:55	356.5	1039.2	1098.7	357.8	7:35	4:25	1373.0	430.9	1439.0	1514.4
11:00	1:00	388.2	1033.4	1103.9	389.9	7:30	4:30	1385.8	409.4	1445.0	1535.2
10:55	1:05	419.7	1027.1	1109.6	421.9	7:25	4:35	1398.0	387.8	1450.8	1555.5
10:50	1:10	451.1	1020.4	1115.6	453.8	7:20	4:40	1409.5	365.9	1456.3	1575.5
10:45	1:15	482.2	1013.1	1122.0	485.5	7:15	4:45	1420.4	343.9	1461.4	1595.2
10:40	1:20	513.0	1005.4	1128.7	517.1	7:10	4:50	1430.6	321.7	1466.3	1614.4
10:35	1:25	543.7	997.1	1135.7	548.5	7:05	4:55	1440.1	299.4	1470.9	1633.2
10:30	1:30	574.0	988.4	1143.0	579.8	7:00	5:00	1448.9	276.9	1475.1	1651.7
10:25	1:35	604.1	979.3	1150.6	610.9	6:55	5:05	1457.0	254.3	1479.0	1669.7
10:20	1:40	633.9	969.6	1158.5	641.8	6:50	5:10	1464.4	231.6	1482.6	1687.4
10:15	1:45	663.4	959.5	1166.6	672.5	6:45	5:15	1471.2	208.7	1485.9	1704.7
10:10	1:50	692.6	949.0	1174.9	703.1	6:40	5:20	1477.2	185.8	1488.8	1721.6
10:05	1:55	721.5	938.0	1183.4	733.4	6:35	5:25	1482.5	162.8	1491.4	1738.0
10:00	2:00	750.0	926.5	1192.0	763.6	6:30	5:30	1487.2	139.6	1493.7	1754.1
9:55	2:05	778.2	914.6	1200.9	793.5	6:25	5:35	1491.1	116.5	1495.6	1769.8
9:50	2:10	805.9	902.3	1209.9	823.2	6:20	5:40	1494.3	93.2	1497.2	1785.1
9:45	2:15	833.4	889.6	1218.9	852.6	6:15	5:45	1496.8	70.0	1498.4	1800.1
9:40	2:20	860.4	876.4	1228.1	881.9	6:10	5:50	1498.6	46.7	1499.3	1814.6
9:35	2:25	887.0	862.8	1237.4	910.8	6:05	5:55	1499.6	23.3	1499.8	1828.7
9:30	2:30	913.1	848.8	1246.7	939.5	6:00	6:00	1500.0	0.0	1500.0	1842.5
9:25	2:35	938.9	834.4	1256.1	968.0	5:55	6:05	1499.6	-23.3	1499.8	1855.8
9:20	2:40	964.2	819.6	1265.4	996.1	5:50	6:10	1498.6	-46.7	1499.3	1868.8
9:15	2:45	989.0	804.4	1274.8	1024.0	5:45	6:15	1496.8	-70.0	1498.4	1881.4
9:10	2:50	1013.4	788.8	1284.2	1051.6	5:40	6:20	1494.3	-93.2	1497.2	1893.6
9:05	2:55	1037.3	772.8	1293.5	1079.0	5:35	6:25	1491.1	-116.5	1495.6	1905.5
9:00	3:00	1060.7	756.5	1302.8	1106.0	5:30	6:30	1487.2	-139.6	1493.7	1916.9
8:55	3:05	1083.5	739.8	1312.0	1132.7	5:25	6:35	1482.5	-162.8	1491.4	1928.0
8:50	3:10	1105.9	722.8	1321.2	1159.1	5:20	6:40	1477.2	-185.8	1488.8	1938.8
8:45	3:15	1127.8	705.4	1330.2	1185.2	5:15	6:45	1471.2	-208.7	1485.9	1949.1
8:40	3:20	1149.1	687.7	1339.1	1211.0	5:10	6:50	1464.4	-231.6	1482.6	1959.2
8:35	3:25	1169.8	669.7	1347.9	1236.4	5:05	6:55	1457.0	-254.3	1479.0	1968.8
8:30	3:30	1190.0	651.3	1356.6	1261.5	5:00	7:00	1448.9	-276.9	1475.1	1978.2

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Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1069.9 mm
 Sunrise/Sunset Markers: X = ± 683.3 mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-299.4	1470.9	1987.1
4:50	7:10	1430.6	-321.7	1466.3	1995.8
4:45	7:15	1420.4	-343.9	1461.4	2004.1
4:40	7:20	1409.5	-365.9	1456.3	2012.0
4:35	7:25	1398.0	-387.8	1450.8	2019.7
4:30	7:30	1385.8	-409.4	1445.0	2027.0
4:25	7:35	1373.0	-430.9	1439.0	2034.0
4:20	7:40	1359.5	-452.1	1432.7	2040.8
4:15	7:45	1345.3	-473.2	1426.1	2047.2
4:10	7:50	1330.5	-494.0	1419.3	2053.3
4:05	7:55	1315.1	-514.6	1412.2	2059.1
4:00	8:00	1299.0	-534.9	1404.9	2064.7

Analemmatic Sundial

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Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1069.9 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-446.1	-437.6	-435.1	-423.5	-420.1	-405.7	-401.7	-384.5	-380.0	-360.6	-355.5
February	-322.6	-299.1	-293.0	-268.0	-261.7	-235.6	-228.8	-201.9	-195.0	-167.3	-160.1
March	-139.0	-110.5	-103.3	-74.4	-67.3	-38.2	-31.0	-1.8	5.3	34.3	41.5
April	84.6	112.9	120.0	147.8	154.7	182.0	188.6	215.2	221.7	247.4	253.6
May	284.1	307.4	313.0	334.7	340.0	360.0	364.7	382.9	387.2	403.2	406.7
June	426.5	436.8	439.1	446.7	448.4	453.2	453.9	455.6	455.8	452.6	454.1
July	448.4	441.3	439.1	429.5	426.7	414.1	410.8	395.8	391.8	374.8	370.2
August	341.2	320.0	314.6	292.0	286.2	262.3	256.1	231.2	224.8	198.8	192.2
September	152.1	124.6	117.7	89.8	82.7	54.5	47.6	19.1	11.9	-16.7	-23.9
October	-59.5	-88.1	-95.1	-123.5	-130.4	-158.4	-165.4	-192.8	-199.6	-226.4	-232.9
November	-271.3	-295.9	-301.9	-325.0	-330.7	-352.2	-357.3	-376.9	-381.4	-398.7	-402.9
December	-420.9	-433.1	-435.7	-444.5	-446.5	-452.1	-453.2	-455.6	-455.8	-454.7	-454.1

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	446.1	437.6	435.1	423.5	420.1	405.7	401.7	384.5	380.0	360.6	355.5
February	322.6	299.1	293.0	268.0	261.7	235.6	228.8	201.9	195.0	167.3	160.1
March	139.0	110.5	103.3	74.4	67.3	38.2	31.0	1.8	-5.3	-34.3	-41.5
April	-84.6	-112.9	-120.0	-147.8	-154.7	-182.0	-188.6	-215.2	-221.7	-247.4	-253.6
May	-284.1	-307.4	-313.0	-334.7	-340.0	-360.0	-364.7	-382.9	-387.2	-403.2	-406.7
June	-426.5	-436.8	-439.1	-446.7	-448.4	-453.2	-453.9	-455.6	-455.8	-452.6	-454.1
July	-448.4	-441.3	-439.1	-429.5	-426.7	-414.1	-410.8	-395.8	-391.8	-374.8	-370.2
August	-341.2	-320.0	-314.6	-292.0	-286.2	-262.3	-256.1	-231.2	-224.8	-198.8	-192.2
September	-152.1	-124.6	-117.7	-89.8	-82.7	-54.5	-47.6	-19.1	-11.9	16.7	23.9
October	59.5	88.1	95.1	123.5	130.4	158.4	165.4	192.8	199.6	226.4	232.9
November	271.3	295.9	301.9	325.0	330.7	352.2	357.3	376.9	381.4	398.7	402.9
December	420.9	433.1	435.7	444.5	446.5	452.1	453.2	455.6	455.8	454.7	454.1

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 |

Analemmatic Sundial

Latitude: 45.5° N/S

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1426.5 mm
 Sunrise/Sunset Markers: X = ± 911.1 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1426.5	1426.5	0.0						
11:55	12:05	43.6	1426.2	1426.8	43.6	8:25	3:35	1612.9	843.5	1820.1	1715.0
11:50	12:10	87.2	1425.1	1427.8	87.2	8:20	3:40	1638.3	818.2	1831.3	1747.6
11:45	12:15	130.8	1423.4	1429.4	130.8	8:15	3:45	1662.9	792.5	1842.1	1779.7
11:40	12:20	174.3	1421.1	1431.7	174.4	8:10	3:50	1686.8	766.5	1852.8	1811.3
11:35	12:25	217.7	1418.0	1434.6	217.9	8:05	3:55	1709.8	740.0	1863.1	1842.5
11:30	12:30	261.1	1414.3	1438.2	261.3	8:00	4:00	1732.1	713.3	1873.2	1873.2
11:25	12:35	304.2	1409.9	1442.4	304.7	7:55	4:05	1753.5	686.1	1882.9	1903.4
11:20	12:40	347.3	1404.8	1447.1	348.0	7:50	4:10	1774.0	658.7	1892.4	1933.1
11:15	12:45	390.2	1399.1	1452.5	391.1	7:45	4:15	1793.7	630.9	1901.5	1962.3
11:10	12:50	432.9	1392.7	1458.4	434.2	7:40	4:20	1812.6	602.9	1910.2	1991.0
11:05	12:55	475.4	1385.6	1464.9	477.1	7:35	4:25	1830.6	574.5	1918.7	2019.2
11:00	1:00	517.6	1377.9	1471.9	519.9	7:30	4:30	1847.8	545.9	1926.7	2046.9
10:55	1:05	559.7	1369.5	1479.5	562.6	7:25	4:35	1864.0	517.0	1934.4	2074.1
10:50	1:10	601.4	1360.5	1487.5	605.0	7:20	4:40	1879.4	487.9	1941.7	2100.7
10:45	1:15	642.9	1350.8	1496.0	647.3	7:15	4:45	1893.9	458.5	1948.6	2126.9
10:40	1:20	684.0	1340.5	1504.9	689.4	7:10	4:50	1907.4	429.0	1955.1	2152.5
10:35	1:25	724.9	1329.5	1514.3	731.3	7:05	4:55	1920.1	399.2	1961.2	2177.7
10:30	1:30	765.4	1317.9	1524.0	773.0	7:00	5:00	1931.9	369.2	1966.8	2202.3
10:25	1:35	805.5	1305.7	1534.2	814.5	6:55	5:05	1942.7	339.1	1972.1	2226.3
10:20	1:40	845.2	1292.8	1544.6	855.7	6:50	5:10	1952.6	308.8	1976.9	2249.9
10:15	1:45	884.6	1279.4	1555.4	896.7	6:45	5:15	1961.6	278.3	1981.2	2272.9
10:10	1:50	923.5	1265.3	1566.5	937.5	6:40	5:20	1969.6	247.7	1985.1	2295.4
10:05	1:55	962.0	1250.7	1577.8	977.9	6:35	5:25	1976.7	217.0	1988.6	2317.4
10:00	2:00	1000.0	1235.4	1589.4	1018.1	6:30	5:30	1982.9	186.2	1991.6	2338.8
9:55	2:05	1037.5	1219.5	1601.2	1058.0	6:25	5:35	1988.1	155.3	1994.2	2359.8
9:50	2:10	1074.6	1203.1	1613.1	1097.6	6:20	5:40	1992.4	124.3	1996.3	2380.2
9:45	2:15	1111.1	1186.1	1625.3	1136.9	6:15	5:45	1995.7	93.3	1997.9	2400.1
9:40	2:20	1147.2	1168.5	1637.5	1175.8	6:10	5:50	1998.1	62.2	1999.1	2419.4
9:35	2:25	1182.6	1150.4	1649.8	1214.4	6:05	5:55	1999.5	31.1	1999.8	2438.3
9:30	2:30	1217.5	1131.7	1662.3	1252.7	6:00	6:00	2000.0	0.0	2000.0	2456.6
9:25	2:35	1251.8	1112.5	1674.8	1290.6	5:55	6:05	1999.5	-31.1	1999.8	2474.4
9:20	2:40	1285.6	1092.8	1687.3	1328.2	5:50	6:10	1998.1	-62.2	1999.1	2491.7
9:15	2:45	1318.7	1072.5	1699.8	1365.4	5:45	6:15	1995.7	-93.3	1997.9	2508.5
9:10	2:50	1351.2	1051.7	1712.3	1402.2	5:40	6:20	1992.4	-124.3	1996.3	2524.8
9:05	2:55	1383.0	1030.5	1724.7	1438.6	5:35	6:25	1988.1	-155.3	1994.2	2540.6
9:00	3:00	1414.2	1008.7	1737.1	1474.6	5:30	6:30	1982.9	-186.2	1991.6	2555.9
8:55	3:05	1444.7	986.4	1749.4	1510.3	5:25	6:35	1976.7	-217.0	1988.6	2570.7
8:50	3:10	1474.6	963.7	1761.6	1545.5	5:20	6:40	1969.6	-247.7	1985.1	2585.0
8:45	3:15	1503.7	940.6	1773.6	1580.3	5:15	6:45	1961.6	-278.3	1981.2	2598.9
8:40	3:20	1532.1	916.9	1785.5	1614.6	5:10	6:50	1952.6	-308.8	1976.9	2612.2
8:35	3:25	1559.8	892.9	1797.3	1648.5	5:05	6:55	1942.7	-339.1	1972.1	2625.1
8:30	3:30	1586.7	868.4	1808.8	1682.0	5:00	7:00	1931.9	-369.2	1966.8	2637.5

Analemmatic Sundial**Latitude: 45.5° N/S**

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1426.5 mm
 Sunrise/Sunset Markers: X = ± 911.1 mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-399.2	1961.2	2649.5
4:50	7:10	1907.4	-429.0	1955.1	2661.0
4:45	7:15	1893.9	-458.5	1948.6	2672.1
4:40	7:20	1879.4	-487.9	1941.7	2682.7
4:35	7:25	1864.0	-517.0	1934.4	2692.9
4:30	7:30	1847.8	-545.9	1926.7	2702.7
4:25	7:35	1830.6	-574.5	1918.7	2712.1
4:20	7:40	1812.6	-602.9	1910.2	2721.0
4:15	7:45	1793.7	-630.9	1901.5	2729.6
4:10	7:50	1774.0	-658.7	1892.4	2737.7
4:05	7:55	1753.5	-686.1	1882.9	2745.5
4:00	8:00	1732.1	-713.3	1873.2	2752.9

Analematic Sundial

Latitude: 45.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1426.5 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-594.7	-583.5	-580.1	-564.7	-560.1	-540.9	-535.6	-512.7	-506.6	-480.8	-473.9
February	-430.2	-398.8	-390.6	-357.3	-349.0	-314.1	-305.1	-269.2	-260.1	-223.0	-213.5
March	-185.3	-147.3	-137.7	-99.3	-89.7	-50.9	-41.4	-2.4	7.1	45.8	55.3
April	112.8	150.6	160.0	197.0	206.3	242.6	251.5	287.0	295.7	329.8	338.1
May	378.8	409.9	417.4	446.3	453.3	479.9	486.2	510.5	516.3	537.5	542.3
June	568.6	582.4	585.5	595.6	597.9	604.3	605.2	607.5	607.8	603.4	605.5
July	597.9	588.4	585.5	572.6	568.9	552.2	547.7	527.7	522.4	499.7	493.7
August	454.9	426.7	419.5	389.3	381.7	349.8	341.5	308.2	299.8	265.1	256.3
September	202.8	166.2	157.0	119.7	110.3	72.7	63.4	25.4	15.9	-22.3	-31.8
October	-79.4	-117.5	-126.8	-164.7	-173.9	-211.3	-220.5	-257.0	-266.1	-301.8	-310.5
November	-361.8	-394.6	-402.5	-433.4	-440.9	-469.6	-476.4	-502.5	-508.6	-531.7	-537.3
December	-561.3	-577.5	-580.9	-592.7	-595.3	-602.8	-604.3	-607.5	-607.8	-606.3	-605.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	594.7	583.5	580.1	564.7	560.1	540.9	535.6	512.7	506.6	480.8	473.9
February	430.2	398.8	390.6	357.3	349.0	314.1	305.1	269.2	260.1	223.0	213.5
March	185.3	147.3	137.7	99.3	89.7	50.9	41.4	2.4	-7.1	-45.8	-55.3
April	-112.8	-150.6	-160.0	-197.0	-206.3	-242.6	-251.5	-287.0	-295.7	-329.8	-338.1
May	-378.8	-409.9	-417.4	-446.3	-453.3	-479.9	-486.2	-510.5	-516.3	-537.5	-542.3
June	-568.6	-582.4	-585.5	-595.6	-597.9	-604.3	-605.2	-607.5	-607.8	-603.4	-605.5
July	-597.9	-588.4	-585.5	-572.6	-568.9	-552.2	-547.7	-527.7	-522.4	-499.7	-493.7
August	-454.9	-426.7	-419.5	-389.3	-381.7	-349.8	-341.5	-308.2	-299.8	-265.1	-256.3
September	-202.8	-166.2	-157.0	-119.7	-110.3	-72.7	-63.4	-25.4	-15.9	22.3	31.8
October	79.4	117.5	126.8	164.7	173.9	211.3	220.5	257.0	266.1	301.8	310.5
November	361.8	394.6	402.5	433.4	440.9	469.6	476.4	502.5	508.6	531.7	537.3
December	561.3	577.5	580.9	592.7	595.3	602.8	604.3	607.5	607.8	606.3	605.5

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
- 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: 45.5° N/S

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1783.1 mm
 Sunrise/Sunset Markers: X = ± 1138.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1783.1	1783.1	0.0						
11:55	12:05	54.5	1782.7	1783.5	54.5	8:25	3:35	2016.1	1054.4	2275.2	2143.8
11:50	12:10	109.0	1781.4	1784.8	109.1	8:20	3:40	2047.9	1022.8	2289.1	2184.5
11:45	12:15	163.5	1779.3	1786.8	163.6	8:15	3:45	2078.7	990.7	2302.7	2224.6
11:40	12:20	217.9	1776.3	1789.7	218.0	8:10	3:50	2108.5	958.1	2315.9	2264.2
11:35	12:25	272.2	1772.5	1793.3	272.4	8:05	3:55	2137.3	925.0	2328.9	2303.1
11:30	12:30	326.3	1767.9	1797.7	326.7	8:00	4:00	2165.1	891.6	2341.4	2341.4
11:25	12:35	380.3	1762.4	1802.9	380.9	7:55	4:05	2191.8	857.7	2353.6	2379.2
11:20	12:40	434.1	1756.0	1808.9	435.0	7:50	4:10	2217.5	823.4	2365.4	2416.3
11:15	12:45	487.7	1748.9	1815.6	488.9	7:45	4:15	2242.2	788.7	2376.8	2452.8
11:10	12:50	541.1	1740.9	1823.0	542.7	7:40	4:20	2265.8	753.6	2387.8	2488.7
11:05	12:55	594.2	1732.0	1831.1	596.4	7:35	4:25	2288.3	718.1	2398.3	2524.0
11:00	1:00	647.0	1722.4	1839.9	649.9	7:30	4:30	2309.7	682.4	2408.4	2558.6
10:55	1:05	699.6	1711.9	1849.3	703.2	7:25	4:35	2330.0	646.3	2418.0	2592.6
10:50	1:10	751.8	1700.6	1859.3	756.3	7:20	4:40	2349.2	609.9	2427.1	2625.9
10:45	1:15	803.6	1688.5	1870.0	809.2	7:15	4:45	2367.3	573.2	2435.7	2658.6
10:40	1:20	855.1	1675.6	1881.1	861.8	7:10	4:50	2384.3	536.2	2443.8	2690.7
10:35	1:25	906.1	1661.9	1892.8	914.2	7:05	4:55	2400.1	499.0	2451.4	2722.1
10:30	1:30	956.7	1647.4	1905.0	966.3	7:00	5:00	2414.8	461.5	2458.5	2752.8
10:25	1:35	1006.9	1632.1	1917.7	1018.1	6:55	5:05	2428.4	423.8	2465.1	2782.9
10:20	1:40	1056.5	1616.1	1930.8	1069.7	6:50	5:10	2440.7	385.9	2471.1	2812.4
10:15	1:45	1105.7	1599.2	1944.3	1120.9	6:45	5:15	2452.0	347.9	2476.5	2841.1
10:10	1:50	1154.4	1581.7	1958.1	1171.8	6:40	5:20	2462.0	309.6	2481.4	2869.3
10:05	1:55	1202.5	1563.3	1972.3	1222.4	6:35	5:25	2470.9	271.3	2485.7	2896.7
10:00	2:00	1250.0	1544.2	1986.7	1272.6	6:30	5:30	2478.6	232.7	2489.5	2923.6
9:55	2:05	1296.9	1524.4	2001.5	1322.5	6:25	5:35	2485.1	194.1	2492.7	2949.7
9:50	2:10	1343.2	1503.9	2016.4	1372.0	6:20	5:40	2490.5	155.4	2495.3	2975.2
9:45	2:15	1388.9	1482.6	2031.6	1421.1	6:15	5:45	2494.6	116.6	2497.4	3000.1
9:40	2:20	1433.9	1460.7	2046.9	1469.8	6:10	5:50	2497.6	77.8	2498.8	3024.3
9:35	2:25	1478.3	1438.0	2062.3	1518.0	6:05	5:55	2499.4	38.9	2499.7	3047.8
9:30	2:30	1521.9	1414.6	2077.8	1565.9	6:00	6:00	2500.0	0.0	2500.0	3070.8
9:25	2:35	1564.8	1390.6	2093.4	1613.3	5:55	6:05	2499.4	-38.9	2499.7	3093.0
9:20	2:40	1607.0	1366.0	2109.1	1660.2	5:50	6:10	2497.6	-77.8	2498.8	3114.7
9:15	2:45	1648.4	1340.6	2124.7	1706.7	5:45	6:15	2494.6	-116.6	2497.4	3135.7
9:10	2:50	1689.0	1314.7	2140.3	1752.7	5:40	6:20	2490.5	-155.4	2495.3	3156.0
9:05	2:55	1728.8	1288.1	2155.9	1798.3	5:35	6:25	2485.1	-194.1	2492.7	3175.8
9:00	3:00	1767.8	1260.9	2171.4	1843.3	5:30	6:30	2478.6	-232.7	2489.5	3194.9
8:55	3:05	1805.9	1233.1	2186.7	1887.8	5:25	6:35	2470.9	-271.3	2485.7	3213.4
8:50	3:10	1843.2	1204.7	2201.9	1931.8	5:20	6:40	2462.0	-309.6	2481.4	3231.3
8:45	3:15	1879.6	1175.7	2217.0	1975.3	5:15	6:45	2452.0	-347.9	2476.5	3248.6
8:40	3:20	1915.1	1146.2	2231.9	2018.3	5:10	6:50	2440.7	-385.9	2471.1	3265.3
8:35	3:25	1949.7	1116.1	2246.6	2060.7	5:05	6:55	2428.4	-423.8	2465.1	3281.4
8:30	3:30	1983.4	1085.5	2261.0	2102.5	5:00	7:00	2414.8	-461.5	2458.5	3296.9

Analemmatic Sundial**Latitude: 45.5° N/S**

Earliest Sunrise: 4:09 a.m. Latest Sunset: 7:51 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1783.1 mm
 Sunrise/Sunset Markers: $X = \pm 1138.9$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-499.0	2451.4	3311.9
4:50	7:10	2384.3	-536.2	2443.8	3326.3
4:45	7:15	2367.3	-573.2	2435.7	3340.1
4:40	7:20	2349.2	-609.9	2427.1	3353.4
4:35	7:25	2330.0	-646.3	2418.0	3366.2
4:30	7:30	2309.7	-682.4	2408.4	3378.4
4:25	7:35	2288.3	-718.1	2398.3	3390.1
4:20	7:40	2265.8	-753.6	2387.8	3401.3
4:15	7:45	2242.2	-788.7	2376.8	3412.0
4:10	7:50	2217.5	-823.4	2365.4	3422.2
4:05	7:55	2191.8	-857.7	2353.6	3431.9
4:00	8:00	2165.1	-891.6	2341.4	3441.1

Analematic Sundial

Latitude: 45.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1783.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-743.4	-729.4	-725.1	-705.8	-700.1	-676.1	-669.5	-640.9	-633.3	-601.0	-592.4
February	-537.7	-498.5	-488.3	-446.6	-436.2	-392.6	-381.4	-336.5	-325.1	-278.8	-266.9
March	-231.6	-184.2	-172.1	-124.1	-112.1	-63.6	-51.7	-3.1	8.9	57.2	69.2
April	141.0	188.2	200.0	246.3	257.8	303.3	314.3	358.7	369.6	412.3	422.6
May	473.5	512.4	521.7	557.9	566.6	599.9	607.8	638.1	645.4	671.9	677.9
June	710.8	728.0	731.9	744.5	747.4	755.4	756.5	759.4	759.7	754.3	756.8
July	747.4	735.5	731.9	715.8	711.2	690.2	684.6	659.7	653.1	624.6	617.1
August	568.7	533.4	524.4	486.6	477.1	437.2	426.8	385.3	374.7	331.4	320.3
September	253.4	207.7	196.2	149.6	137.9	90.9	79.3	31.8	19.9	-27.8	-39.8
October	-99.2	-146.8	-158.5	-205.8	-217.3	-264.1	-275.7	-321.3	-332.7	-377.3	-388.1
November	-452.2	-493.2	-503.1	-541.7	-551.1	-587.0	-595.5	-628.1	-635.7	-664.6	-671.6
December	-701.6	-721.9	-726.2	-740.9	-744.2	-753.6	-755.4	-759.4	-759.7	-757.9	-756.8

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	743.4	729.4	725.1	705.8	700.1	676.1	669.5	640.9	633.3	601.0	592.4
February	537.7	498.5	488.3	446.6	436.2	392.6	381.4	336.5	325.1	278.8	266.9
March	231.6	184.2	172.1	124.1	112.1	63.6	51.7	3.1	-8.9	-57.2	-69.2
April	-141.0	-188.2	-200.0	-246.3	-257.8	-303.3	-314.3	-358.7	-369.6	-412.3	-422.6
May	-473.5	-512.4	-521.7	-557.9	-566.6	-599.9	-607.8	-638.1	-645.4	-671.9	-677.9
June	-710.8	-728.0	-731.9	-744.5	-747.4	-755.4	-756.5	-759.4	-759.7	-754.3	-756.8
July	-747.4	-735.5	-731.9	-715.8	-711.2	-690.2	-684.6	-659.7	-653.1	-624.6	-617.1
August	-568.7	-533.4	-524.4	-486.6	-477.1	-437.2	-426.8	-385.3	-374.7	-331.4	-320.3
September	-253.4	-207.7	-196.2	-149.6	-137.9	-90.9	-79.3	-31.8	-19.9	27.8	39.8
October	99.2	146.8	158.5	205.8	217.3	264.1	275.7	321.3	332.7	377.3	388.1
November	452.2	493.2	503.1	541.7	551.1	587.0	595.5	628.1	635.7	664.6	671.6
December	701.6	721.9	726.2	740.9	744.2	753.6	755.4	759.4	759.7	757.9	756.8

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