

Analemmatic Sundial

Latitude: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 749.0 mm
 Sunrise/Sunset Markers: X = ± 399.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	749.0	749.0	0.0						
11:55	12:05	21.8	748.8	749.1	21.8	8:25	3:35	806.4	442.9	920.0	862.6
11:50	12:10	43.6	748.2	749.5	43.6	8:20	3:40	819.2	429.6	925.0	879.2
11:45	12:15	65.4	747.4	750.2	65.4	8:15	3:45	831.5	416.1	929.8	895.6
11:40	12:20	87.2	746.1	751.2	87.2	8:10	3:50	843.4	402.4	934.5	911.8
11:35	12:25	108.9	744.5	752.4	109.0	8:05	3:55	854.9	388.5	939.1	927.8
11:30	12:30	130.5	742.5	753.9	130.7	8:00	4:00	866.0	374.5	943.5	943.5
11:25	12:35	152.1	740.2	755.7	152.4	7:55	4:05	876.7	360.2	947.9	959.0
11:20	12:40	173.6	737.6	757.7	174.0	7:50	4:10	887.0	345.8	952.0	974.3
11:15	12:45	195.1	734.6	760.0	195.6	7:45	4:15	896.9	331.3	956.1	989.4
11:10	12:50	216.4	731.2	762.6	217.2	7:40	4:20	906.3	316.5	960.0	1004.2
11:05	12:55	237.7	727.5	765.3	238.7	7:35	4:25	915.3	301.6	963.7	1018.8
11:00	1:00	258.8	723.4	768.3	260.1	7:30	4:30	923.9	286.6	967.3	1033.1
10:55	1:05	279.8	719.0	771.6	281.4	7:25	4:35	932.0	271.5	970.7	1047.2
10:50	1:10	300.7	714.3	775.0	302.7	7:20	4:40	939.7	256.2	974.0	1061.1
10:45	1:15	321.4	709.2	778.7	323.9	7:15	4:45	946.9	240.7	977.1	1074.7
10:40	1:20	342.0	703.8	782.5	345.0	7:10	4:50	953.7	225.2	979.9	1088.1
10:35	1:25	362.4	698.0	786.5	366.0	7:05	4:55	960.0	209.6	982.7	1101.2
10:30	1:30	382.7	691.9	790.7	386.9	7:00	5:00	965.9	193.8	985.2	1114.1
10:25	1:35	402.7	685.5	795.1	407.7	6:55	5:05	971.3	178.0	987.5	1126.7
10:20	1:40	422.6	678.8	799.6	428.4	6:50	5:10	976.3	162.1	989.7	1139.1
10:15	1:45	442.3	671.7	804.3	449.0	6:45	5:15	980.8	146.1	991.6	1151.2
10:10	1:50	461.7	664.3	809.0	469.4	6:40	5:20	984.8	130.1	993.4	1163.1
10:05	1:55	481.0	656.6	813.9	489.8	6:35	5:25	988.4	113.9	994.9	1174.8
10:00	2:00	500.0	648.6	819.0	510.0	6:30	5:30	991.4	97.8	996.3	1186.2
9:55	2:05	518.8	640.3	824.1	530.0	6:25	5:35	994.1	81.5	997.4	1197.3
9:50	2:10	537.3	631.7	829.3	550.0	6:20	5:40	996.2	65.3	998.3	1208.2
9:45	2:15	555.6	622.7	834.5	569.7	6:15	5:45	997.9	49.0	999.1	1218.9
9:40	2:20	573.6	613.5	839.9	589.4	6:10	5:50	999.0	32.7	999.6	1229.3
9:35	2:25	591.3	604.0	845.3	608.8	6:05	5:55	999.8	16.3	999.9	1239.5
9:30	2:30	608.8	594.2	850.7	628.1	6:00	6:00	1000.0	0.0	1000.0	1249.4
9:25	2:35	625.9	584.1	856.1	647.3	5:55	6:05	999.8	-16.3	999.9	1259.0
9:20	2:40	642.8	573.7	861.6	666.2	5:50	6:10	999.0	-32.7	999.6	1268.5
9:15	2:45	659.3	563.1	867.1	685.0	5:45	6:15	997.9	-49.0	999.1	1277.7
9:10	2:50	675.6	552.2	872.5	703.7	5:40	6:20	996.2	-65.3	998.3	1286.6
9:05	2:55	691.5	541.0	878.0	722.1	5:35	6:25	994.1	-81.5	997.4	1295.3
9:00	3:00	707.1	529.6	883.4	740.4	5:30	6:30	991.4	-97.8	996.3	1303.8
8:55	3:05	722.4	517.9	888.8	758.4	5:25	6:35	988.4	-113.9	994.9	1312.0
8:50	3:10	737.3	506.0	894.2	776.3	5:20	6:40	984.8	-130.1	993.4	1320.0
8:45	3:15	751.8	493.8	899.5	794.0	5:15	6:45	980.8	-146.1	991.6	1327.8
8:40	3:20	766.0	481.4	904.8	811.4	5:10	6:50	976.3	-162.1	989.7	1335.4
8:35	3:25	779.9	468.8	909.9	828.7	5:05	6:55	971.3	-178.0	987.5	1342.7
8:30	3:30	793.4	455.9	915.0	845.7	5:00	7:00	965.9	-193.8	985.2	1349.8

Analemmatic Sundial

Latitude: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 749.0 mm
 Sunrise/Sunset Markers: $X = \pm 399.3$ mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-209.6	982.7	1356.6
4:50	7:10	953.7	-225.2	979.9	1363.3
4:45	7:15	946.9	-240.7	977.1	1369.7
4:40	7:20	939.7	-256.2	974.0	1376.0
4:35	7:25	932.0	-271.5	970.7	1382.0
4:30	7:30	923.9	-286.6	967.3	1387.8
4:25	7:35	915.3	-301.6	963.7	1393.4
4:20	7:40	906.3	-316.5	960.0	1398.8
4:15	7:45	896.9	-331.3	956.1	1404.0
4:10	7:50	887.0	-345.8	952.0	1409.0
4:05	7:55	876.7	-360.2	947.9	1413.8
4:00	8:00	866.0	-374.5	943.5	1418.5
3:55	8:05	854.9	-388.5	939.1	1422.9
3:50	8:10	843.4	-402.4	934.5	1427.2
3:45	8:15	831.5	-416.1	929.8	1431.3

Analematic Sundial

Latitude: 48.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 749.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-281.1	-275.8	-274.2	-266.9	-264.8	-255.7	-253.2	-242.4	-239.5	-227.3	-224.0
February	-203.3	-188.5	-184.6	-168.9	-165.0	-148.5	-144.2	-127.2	-122.9	-105.4	-100.9
March	-87.6	-69.6	-65.1	-46.9	-42.4	-24.1	-19.6	-1.2	3.4	21.6	26.2
April	53.3	71.2	75.6	93.1	97.5	114.7	118.9	135.7	139.8	155.9	159.8
May	179.0	193.8	197.3	211.0	214.3	226.9	229.8	241.3	244.1	254.1	256.3
June	268.8	275.3	276.8	281.5	282.6	285.6	286.1	287.2	287.3	285.2	286.2
July	282.6	278.1	276.8	270.7	268.9	261.0	258.9	249.5	247.0	236.2	233.3
August	215.0	201.7	198.3	184.0	180.4	165.3	161.4	145.7	141.7	125.3	121.1
September	95.8	78.5	74.2	56.6	52.1	34.4	30.0	12.0	7.5	-10.5	-15.0
October	-37.5	-55.5	-60.0	-77.8	-82.2	-99.9	-104.2	-121.5	-125.8	-142.7	-146.8
November	-171.0	-186.5	-190.3	-204.9	-208.4	-222.0	-225.2	-237.5	-240.4	-251.3	-254.0
December	-265.3	-273.0	-274.6	-280.2	-281.4	-285.0	-285.6	-287.2	-287.3	-286.6	-286.2

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	281.1	275.8	274.2	266.9	264.8	255.7	253.2	242.4	239.5	227.3	224.0
February	203.3	188.5	184.6	168.9	165.0	148.5	144.2	127.2	122.9	105.4	100.9
March	87.6	69.6	65.1	46.9	42.4	24.1	19.6	1.2	-3.4	-21.6	-26.2
April	-53.3	-71.2	-75.6	-93.1	-97.5	-114.7	-118.9	-135.7	-139.8	-155.9	-159.8
May	-179.0	-193.8	-197.3	-211.0	-214.3	-226.9	-229.8	-241.3	-244.1	-254.1	-256.3
June	-268.8	-275.3	-276.8	-281.5	-282.6	-285.6	-286.1	-287.2	-287.3	-285.2	-286.2
July	-282.6	-278.1	-276.8	-270.7	-268.9	-261.0	-258.9	-249.5	-247.0	-236.2	-233.3
August	-215.0	-201.7	-198.3	-184.0	-180.4	-165.3	-161.4	-145.7	-141.7	-125.3	-121.1
September	-95.8	-78.5	-74.2	-56.6	-52.1	-34.4	-30.0	-12.0	-7.5	10.5	15.0
October	37.5	55.5	60.0	77.8	82.2	99.9	104.2	121.5	125.8	142.7	146.8
November	171.0	186.5	190.3	204.9	208.4	222.0	225.2	237.5	240.4	251.3	254.0
December	265.3	273.0	274.6	280.2	281.4	285.0	285.6	287.2	287.3	286.6	286.2

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: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1123.4 mm
 Sunrise/Sunset Markers: X = ± 598.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1123.4	1123.4	0.0						
11:55	12:05	32.7	1123.2	1123.6	32.7	8:25	3:35	1209.7	664.3	1380.1	1293.9
11:50	12:10	65.4	1122.4	1124.3	65.4	8:20	3:40	1228.7	644.4	1387.4	1318.8
11:45	12:15	98.1	1121.0	1125.3	98.1	8:15	3:45	1247.2	624.1	1394.7	1343.4
11:40	12:20	130.7	1119.2	1126.8	130.8	8:10	3:50	1265.1	603.6	1401.7	1367.7
11:35	12:25	163.3	1116.8	1128.6	163.4	8:05	3:55	1282.4	582.8	1408.6	1391.7
11:30	12:30	195.8	1113.8	1130.9	196.0	8:00	4:00	1299.0	561.7	1415.3	1415.3
11:25	12:35	228.2	1110.4	1133.6	228.6	7:55	4:05	1315.1	540.4	1421.8	1438.6
11:20	12:40	260.5	1106.4	1136.6	261.0	7:50	4:10	1330.5	518.7	1428.1	1461.5
11:15	12:45	292.6	1101.8	1140.0	293.4	7:45	4:15	1345.3	496.9	1434.1	1484.1
11:10	12:50	324.7	1096.8	1143.8	325.7	7:40	4:20	1359.5	474.8	1440.0	1506.3
11:05	12:55	356.5	1091.2	1148.0	358.0	7:35	4:25	1373.0	452.5	1445.6	1528.2
11:00	1:00	388.2	1085.2	1152.5	390.1	7:30	4:30	1385.8	429.9	1451.0	1549.7
10:55	1:05	419.7	1078.6	1157.4	422.1	7:25	4:35	1398.0	407.2	1456.1	1570.8
10:50	1:10	451.1	1071.4	1162.5	454.0	7:20	4:40	1409.5	384.2	1461.0	1591.6
10:45	1:15	482.2	1063.8	1168.0	485.8	7:15	4:45	1420.4	361.1	1465.6	1612.0
10:40	1:20	513.0	1055.7	1173.7	517.5	7:10	4:50	1430.6	337.8	1469.9	1632.1
10:35	1:25	543.7	1047.0	1179.8	549.0	7:05	4:55	1440.1	314.4	1474.0	1651.8
10:30	1:30	574.0	1037.9	1186.1	580.4	7:00	5:00	1448.9	290.8	1477.8	1671.1
10:25	1:35	604.1	1028.3	1192.6	611.6	6:55	5:05	1457.0	267.0	1481.3	1690.1
10:20	1:40	633.9	1018.2	1199.4	642.6	6:50	5:10	1464.4	243.2	1484.5	1708.7
10:15	1:45	663.4	1007.6	1206.4	673.5	6:45	5:15	1471.2	219.2	1487.4	1726.9
10:10	1:50	692.6	996.5	1213.6	704.2	6:40	5:20	1477.2	195.1	1490.0	1744.7
10:05	1:55	721.5	984.9	1220.9	734.7	6:35	5:25	1482.5	170.9	1492.4	1762.2
10:00	2:00	750.0	972.9	1228.4	765.0	6:30	5:30	1487.2	146.6	1494.4	1779.3
9:55	2:05	778.2	960.4	1236.1	795.0	6:25	5:35	1491.1	122.3	1496.1	1796.0
9:50	2:10	805.9	947.5	1243.9	824.9	6:20	5:40	1494.3	97.9	1497.5	1812.3
9:45	2:15	833.4	934.1	1251.8	854.6	6:15	5:45	1496.8	73.5	1498.6	1828.3
9:40	2:20	860.4	920.3	1259.8	884.0	6:10	5:50	1498.6	49.0	1499.4	1843.9
9:35	2:25	887.0	906.0	1267.9	913.2	6:05	5:55	1499.6	24.5	1499.8	1859.2
9:30	2:30	913.1	891.3	1276.0	942.2	6:00	6:00	1500.0	0.0	1500.0	1874.1
9:25	2:35	938.9	876.1	1284.2	970.9	5:55	6:05	1499.6	-24.5	1499.8	1888.6
9:20	2:40	964.2	860.6	1292.4	999.4	5:50	6:10	1498.6	-49.0	1499.4	1902.7
9:15	2:45	989.0	844.6	1300.6	1027.6	5:45	6:15	1496.8	-73.5	1498.6	1916.5
9:10	2:50	1013.4	828.3	1308.8	1055.5	5:40	6:20	1494.3	-97.9	1497.5	1929.9
9:05	2:55	1037.3	811.5	1317.0	1083.1	5:35	6:25	1491.1	-122.3	1496.1	1943.0
9:00	3:00	1060.7	794.4	1325.2	1110.5	5:30	6:30	1487.2	-146.6	1494.4	1955.7
8:55	3:05	1083.5	776.9	1333.3	1137.6	5:25	6:35	1482.5	-170.9	1492.4	1968.1
8:50	3:10	1105.9	759.0	1341.3	1164.4	5:20	6:40	1477.2	-195.1	1490.0	1980.1
8:45	3:15	1127.8	740.7	1349.3	1190.9	5:15	6:45	1471.2	-219.2	1487.4	1991.7
8:40	3:20	1149.1	722.1	1357.1	1217.1	5:10	6:50	1464.4	-243.2	1484.5	2003.0
8:35	3:25	1169.8	703.2	1364.9	1243.0	5:05	6:55	1457.0	-267.0	1481.3	2014.0
8:30	3:30	1190.0	683.9	1372.6	1268.6	5:00	7:00	1448.9	-290.8	1477.8	2024.7

Analemmatic Sundial

Latitude: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1123.4 mm
 Sunrise/Sunset Markers: X = ± 598.9 mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-314.4	1474.0	2035.0
4:50	7:10	1430.6	-337.8	1469.9	2044.9
4:45	7:15	1420.4	-361.1	1465.6	2054.6
4:40	7:20	1409.5	-384.2	1461.0	2063.9
4:35	7:25	1398.0	-407.2	1456.1	2073.0
4:30	7:30	1385.8	-429.9	1451.0	2081.7
4:25	7:35	1373.0	-452.5	1445.6	2090.1
4:20	7:40	1359.5	-474.8	1440.0	2098.2
4:15	7:45	1345.3	-496.9	1434.1	2106.0
4:10	7:50	1330.5	-518.7	1428.1	2113.5
4:05	7:55	1315.1	-540.4	1421.8	2120.8
4:00	8:00	1299.0	-561.7	1415.3	2127.7
3:55	8:05	1282.4	-582.8	1408.6	2134.4
3:50	8:10	1265.1	-603.6	1401.7	2140.8
3:45	8:15	1247.2	-624.1	1394.7	2147.0

Analematic Sundial

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Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1123.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-421.7	-413.7	-411.3	-400.4	-397.1	-383.5	-379.7	-363.5	-359.2	-340.9	-336.0
February	-305.0	-282.8	-276.9	-253.3	-247.4	-222.7	-216.3	-190.9	-184.4	-158.1	-151.4
March	-131.4	-104.5	-97.6	-70.4	-63.6	-36.1	-29.3	-1.7	5.0	32.5	39.2
April	80.0	106.7	113.4	139.7	146.2	172.0	178.3	203.5	209.6	233.9	239.7
May	268.6	290.6	295.9	316.4	321.4	340.3	344.8	362.0	366.1	381.1	384.5
June	403.2	412.9	415.2	422.3	423.9	428.5	429.1	430.7	430.9	427.8	429.3
July	423.9	417.2	415.2	406.0	403.4	391.5	388.3	374.2	370.4	354.3	350.0
August	322.6	302.5	297.4	276.0	270.6	248.0	242.1	218.5	212.5	188.0	181.7
September	143.8	117.8	111.3	84.9	78.2	51.6	45.0	18.0	11.3	-15.8	-22.6
October	-56.3	-83.3	-89.9	-116.8	-123.3	-149.8	-156.4	-182.2	-188.7	-214.0	-220.2
November	-256.5	-279.8	-285.4	-307.3	-312.6	-333.0	-337.8	-356.3	-360.6	-377.0	-380.9
December	-397.9	-409.5	-411.9	-420.3	-422.1	-427.4	-428.5	-430.7	-430.9	-429.9	-429.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	421.7	413.7	411.3	400.4	397.1	383.5	379.7	363.5	359.2	340.9	336.0
February	305.0	282.8	276.9	253.3	247.4	222.7	216.3	190.9	184.4	158.1	151.4
March	131.4	104.5	97.6	70.4	63.6	36.1	29.3	1.7	-5.0	-32.5	-39.2
April	-80.0	-106.7	-113.4	-139.7	-146.2	-172.0	-178.3	-203.5	-209.6	-233.9	-239.7
May	-268.6	-290.6	-295.9	-316.4	-321.4	-340.3	-344.8	-362.0	-366.1	-381.1	-384.5
June	-403.2	-412.9	-415.2	-422.3	-423.9	-428.5	-429.1	-430.7	-430.9	-427.8	-429.3
July	-423.9	-417.2	-415.2	-406.0	-403.4	-391.5	-388.3	-374.2	-370.4	-354.3	-350.0
August	-322.6	-302.5	-297.4	-276.0	-270.6	-248.0	-242.1	-218.5	-212.5	-188.0	-181.7
September	-143.8	-117.8	-111.3	-84.9	-78.2	-51.6	-45.0	-18.0	-11.3	15.8	22.6
October	56.3	83.3	89.9	116.8	123.3	149.8	156.4	182.2	188.7	214.0	220.2
November	256.5	279.8	285.4	307.3	312.6	333.0	337.8	356.3	360.6	377.0	380.9
December	397.9	409.5	411.9	420.3	422.1	427.4	428.5	430.7	430.9	429.9	429.3

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: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1497.9 mm
 Sunrise/Sunset Markers: X = ± 798.6 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1497.9	1497.9	0.0						
11:55	12:05	43.6	1497.6	1498.2	43.6	8:25	3:35	1612.9	885.7	1840.1	1725.2
11:50	12:10	87.2	1496.5	1499.0	87.3	8:20	3:40	1638.3	859.2	1849.9	1758.4
11:45	12:15	130.8	1494.7	1500.4	130.8	8:15	3:45	1662.9	832.2	1859.5	1791.2
11:40	12:20	174.3	1492.2	1502.4	174.4	8:10	3:50	1686.8	804.8	1869.0	1823.6
11:35	12:25	217.7	1489.0	1504.8	217.9	8:05	3:55	1709.8	777.1	1878.1	1855.6
11:30	12:30	261.1	1485.1	1507.9	261.4	8:00	4:00	1732.1	749.0	1887.0	1887.0
11:25	12:35	304.2	1480.5	1511.4	304.7	7:55	4:05	1753.5	720.5	1895.7	1918.1
11:20	12:40	347.3	1475.2	1515.5	348.0	7:50	4:10	1774.0	691.7	1904.1	1948.6
11:15	12:45	390.2	1469.1	1520.1	391.2	7:45	4:15	1793.7	662.5	1912.2	1978.7
11:10	12:50	432.9	1462.4	1525.1	434.3	7:40	4:20	1812.6	633.0	1920.0	2008.4
11:05	12:55	475.4	1455.0	1530.7	477.3	7:35	4:25	1830.6	603.3	1927.5	2037.5
11:00	1:00	517.6	1446.9	1536.7	520.1	7:30	4:30	1847.8	573.2	1934.6	2066.2
10:55	1:05	559.7	1438.1	1543.1	562.8	7:25	4:35	1864.0	542.9	1941.5	2094.4
10:50	1:10	601.4	1428.6	1550.0	605.4	7:20	4:40	1879.4	512.3	1948.0	2122.1
10:45	1:15	642.9	1418.4	1557.3	647.8	7:15	4:45	1893.9	481.5	1954.1	2149.4
10:40	1:20	684.0	1407.6	1565.0	690.0	7:10	4:50	1907.4	450.4	1959.9	2176.1
10:35	1:25	724.9	1396.1	1573.0	732.0	7:05	4:55	1920.1	419.2	1965.3	2202.4
10:30	1:30	765.4	1383.9	1581.4	773.8	7:00	5:00	1931.9	387.7	1970.4	2228.1
10:25	1:35	805.5	1371.1	1590.2	815.4	6:55	5:05	1942.7	356.0	1975.0	2253.4
10:20	1:40	845.2	1357.6	1599.2	856.8	6:50	5:10	1952.6	324.2	1979.3	2278.2
10:15	1:45	884.6	1343.4	1608.5	898.0	6:45	5:15	1961.6	292.2	1983.2	2302.5
10:10	1:50	923.5	1328.7	1618.1	938.9	6:40	5:20	1969.6	260.1	1986.7	2326.3
10:05	1:55	962.0	1313.3	1627.9	979.5	6:35	5:25	1976.7	227.9	1989.8	2349.6
10:00	2:00	1000.0	1297.2	1637.9	1019.9	6:30	5:30	1982.9	195.5	1992.5	2372.4
9:55	2:05	1037.5	1280.6	1648.1	1060.1	6:25	5:35	1988.1	163.1	1994.8	2394.7
9:50	2:10	1074.6	1263.3	1658.5	1099.9	6:20	5:40	1992.4	130.6	1996.7	2416.5
9:45	2:15	1111.1	1245.5	1669.1	1139.5	6:15	5:45	1995.7	98.0	1998.1	2437.8
9:40	2:20	1147.2	1227.0	1679.7	1178.7	6:10	5:50	1998.1	65.3	1999.2	2458.6
9:35	2:25	1182.6	1208.0	1690.5	1217.6	6:05	5:55	1999.5	32.7	1999.8	2478.9
9:30	2:30	1217.5	1188.4	1701.4	1256.3	6:00	6:00	2000.0	0.0	2000.0	2498.7
9:25	2:35	1251.8	1168.2	1712.3	1294.5	5:55	6:05	1999.5	-32.7	1999.8	2518.1
9:20	2:40	1285.6	1147.5	1723.2	1332.5	5:50	6:10	1998.1	-65.3	1999.2	2537.0
9:15	2:45	1318.7	1126.2	1734.1	1370.1	5:45	6:15	1995.7	-98.0	1998.1	2555.3
9:10	2:50	1351.2	1104.4	1745.1	1407.3	5:40	6:20	1992.4	-130.6	1996.7	2573.2
9:05	2:55	1383.0	1082.0	1756.0	1444.2	5:35	6:25	1988.1	-163.1	1994.8	2590.6
9:00	3:00	1414.2	1059.2	1766.9	1480.7	5:30	6:30	1982.9	-195.5	1992.5	2607.6
8:55	3:05	1444.7	1035.8	1777.7	1516.8	5:25	6:35	1976.7	-227.9	1989.8	2624.1
8:50	3:10	1474.6	1012.0	1788.4	1552.6	5:20	6:40	1969.6	-260.1	1986.7	2640.1
8:45	3:15	1503.7	987.6	1799.0	1587.9	5:15	6:45	1961.6	-292.2	1983.2	2655.6
8:40	3:20	1532.1	962.8	1809.5	1622.8	5:10	6:50	1952.6	-324.2	1979.3	2670.7
8:35	3:25	1559.8	937.6	1819.9	1657.4	5:05	6:55	1942.7	-356.0	1975.0	2685.4
8:30	3:30	1586.7	911.9	1830.1	1691.5	5:00	7:00	1931.9	-387.7	1970.4	2699.5

Analemmatic Sundial

Latitude: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1497.9 mm
 Sunrise/Sunset Markers: X = ± 798.6 mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-419.2	1965.3	2713.3
4:50	7:10	1907.4	-450.4	1959.9	2726.6
4:45	7:15	1893.9	-481.5	1954.1	2739.5
4:40	7:20	1879.4	-512.3	1948.0	2751.9
4:35	7:25	1864.0	-542.9	1941.5	2764.0
4:30	7:30	1847.8	-573.2	1934.6	2775.6
4:25	7:35	1830.6	-603.3	1927.5	2786.8
4:20	7:40	1812.6	-633.0	1920.0	2797.6
4:15	7:45	1793.7	-662.5	1912.2	2808.0
4:10	7:50	1774.0	-691.7	1904.1	2818.0
4:05	7:55	1753.5	-720.5	1895.7	2827.7
4:00	8:00	1732.1	-749.0	1887.0	2837.0
3:55	8:05	1709.8	-777.1	1878.1	2845.9
3:50	8:10	1686.8	-804.8	1869.0	2854.4
3:45	8:15	1662.9	-832.2	1859.5	2862.6

Analemmatic Sundial

Latitude: 48.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1497.9 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-562.3	-551.6	-548.4	-533.8	-529.5	-511.4	-506.3	-484.7	-478.9	-454.5	-448.1
February	-406.7	-377.0	-369.3	-337.8	-329.9	-297.0	-288.5	-254.5	-245.9	-210.8	-201.8
March	-175.2	-139.3	-130.2	-93.8	-84.8	-48.1	-39.1	-2.3	6.7	43.3	52.3
April	106.6	142.3	151.2	186.3	195.0	229.4	237.7	271.3	279.5	311.8	319.6
May	358.1	387.5	394.6	421.9	428.6	453.7	459.7	482.6	488.1	508.2	512.7
June	537.6	550.6	553.5	563.1	565.3	571.3	572.1	574.3	574.6	570.5	572.4
July	565.3	556.3	553.5	541.4	537.9	522.0	517.8	498.9	493.9	472.4	466.7
August	430.1	403.4	396.6	368.0	360.8	330.7	322.8	291.4	283.4	250.6	242.3
September	191.7	157.1	148.4	113.1	104.3	68.8	59.9	24.1	15.0	-21.0	-30.1
October	-75.0	-111.1	-119.9	-155.7	-164.4	-199.7	-208.5	-243.0	-251.6	-285.3	-293.6
November	-342.0	-373.0	-380.5	-409.7	-416.8	-443.9	-450.4	-475.0	-480.8	-502.6	-507.9
December	-530.6	-546.0	-549.2	-560.3	-562.8	-569.9	-571.3	-574.3	-574.6	-573.2	-572.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	562.3	551.6	548.4	533.8	529.5	511.4	506.3	484.7	478.9	454.5	448.1
February	406.7	377.0	369.3	337.8	329.9	297.0	288.5	254.5	245.9	210.8	201.8
March	175.2	139.3	130.2	93.8	84.8	48.1	39.1	2.3	-6.7	-43.3	-52.3
April	-106.6	-142.3	-151.2	-186.3	-195.0	-229.4	-237.7	-271.3	-279.5	-311.8	-319.6
May	-358.1	-387.5	-394.6	-421.9	-428.6	-453.7	-459.7	-482.6	-488.1	-508.2	-512.7
June	-537.6	-550.6	-553.5	-563.1	-565.3	-571.3	-572.1	-574.3	-574.6	-570.5	-572.4
July	-565.3	-556.3	-553.5	-541.4	-537.9	-522.0	-517.8	-498.9	-493.9	-472.4	-466.7
August	-430.1	-403.4	-396.6	-368.0	-360.8	-330.7	-322.8	-291.4	-283.4	-250.6	-242.3
September	-191.7	-157.1	-148.4	-113.1	-104.3	-68.8	-59.9	-24.1	-15.0	21.0	30.1
October	75.0	111.1	119.9	155.7	164.4	199.7	208.5	243.0	251.6	285.3	293.6
November	342.0	373.0	380.5	409.7	416.8	443.9	450.4	475.0	480.8	502.6	507.9
December	530.6	546.0	549.2	560.3	562.8	569.9	571.3	574.3	574.6	573.2	572.4

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: 48.5° N/S

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1872.4 mm
 Sunrise/Sunset Markers: X = ± 998.2 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1872.4	1872.4	0.0						
11:55	12:05	54.5	1871.9	1872.7	54.5	8:25	3:35	2016.1	1107.2	2300.1	2156.5
11:50	12:10	109.0	1870.6	1873.8	109.1	8:20	3:40	2047.9	1074.0	2312.4	2198.0
11:45	12:15	163.5	1868.4	1875.5	163.6	8:15	3:45	2078.7	1040.2	2324.4	2239.1
11:40	12:20	217.9	1865.3	1877.9	218.0	8:10	3:50	2108.5	1006.0	2336.2	2279.5
11:35	12:25	272.2	1861.3	1881.1	272.4	8:05	3:55	2137.3	971.3	2347.7	2319.4
11:30	12:30	326.3	1856.4	1884.8	326.7	8:00	4:00	2165.1	936.2	2358.8	2358.8
11:25	12:35	380.3	1850.6	1889.3	380.9	7:55	4:05	2191.8	900.6	2369.6	2397.6
11:20	12:40	434.1	1843.9	1894.4	435.1	7:50	4:10	2217.5	864.6	2380.1	2435.8
11:15	12:45	487.7	1836.4	1900.1	489.1	7:45	4:15	2242.2	828.1	2390.2	2473.4
11:10	12:50	541.1	1828.0	1906.4	542.9	7:40	4:20	2265.8	791.3	2400.0	2510.5
11:05	12:55	594.2	1818.7	1913.3	596.6	7:35	4:25	2288.3	754.1	2409.3	2546.9
11:00	1:00	647.0	1808.6	1920.9	650.2	7:30	4:30	2309.7	716.5	2418.3	2582.8
10:55	1:05	699.6	1797.6	1928.9	703.6	7:25	4:35	2330.0	678.6	2426.8	2618.0
10:50	1:10	751.8	1785.7	1937.5	756.7	7:20	4:40	2349.2	640.4	2435.0	2652.7
10:45	1:15	803.6	1773.0	1946.6	809.7	7:15	4:45	2367.3	601.9	2442.6	2686.7
10:40	1:20	855.1	1759.5	1956.2	862.5	7:10	4:50	2384.3	563.0	2449.9	2720.2
10:35	1:25	906.1	1745.1	1966.3	915.0	7:05	4:55	2400.1	523.9	2456.6	2753.0
10:30	1:30	956.7	1729.9	1976.8	967.3	7:00	5:00	2414.8	484.6	2463.0	2785.2
10:25	1:35	1006.9	1713.8	1987.7	1019.3	6:55	5:05	2428.4	445.0	2468.8	2816.8
10:20	1:40	1056.5	1697.0	1999.0	1071.0	6:50	5:10	2440.7	405.3	2474.2	2847.8
10:15	1:45	1105.7	1679.3	2010.6	1122.5	6:45	5:15	2452.0	365.3	2479.0	2878.1
10:10	1:50	1154.4	1660.8	2022.6	1173.6	6:40	5:20	2462.0	325.1	2483.4	2907.8
10:05	1:55	1202.5	1641.6	2034.9	1224.4	6:35	5:25	2470.9	284.8	2487.3	2937.0
10:00	2:00	1250.0	1621.5	2047.4	1274.9	6:30	5:30	2478.6	244.4	2490.6	2965.4
9:55	2:05	1296.9	1600.7	2060.2	1325.1	6:25	5:35	2485.1	203.8	2493.5	2993.3
9:50	2:10	1343.2	1579.2	2073.2	1374.9	6:20	5:40	2490.5	163.2	2495.8	3020.6
9:45	2:15	1388.9	1556.8	2086.3	1424.3	6:15	5:45	2494.6	122.5	2497.7	3047.2
9:40	2:20	1433.9	1533.8	2099.7	1473.4	6:10	5:50	2497.6	81.7	2499.0	3073.2
9:35	2:25	1478.3	1510.0	2113.1	1522.0	6:05	5:55	2499.4	40.8	2499.7	3098.6
9:30	2:30	1521.9	1485.5	2126.7	1570.3	6:00	6:00	2500.0	0.0	2500.0	3123.4
9:25	2:35	1564.8	1460.2	2140.3	1618.2	5:55	6:05	2499.4	-40.8	2499.7	3147.6
9:20	2:40	1607.0	1434.3	2154.0	1665.6	5:50	6:10	2497.6	-81.7	2499.0	3171.2
9:15	2:45	1648.4	1407.7	2167.7	1712.6	5:45	6:15	2494.6	-122.5	2497.7	3194.2
9:10	2:50	1689.0	1380.5	2181.4	1759.2	5:40	6:20	2490.5	-163.2	2495.8	3216.5
9:05	2:55	1728.8	1352.5	2195.0	1805.2	5:35	6:25	2485.1	-203.8	2493.5	3238.3
9:00	3:00	1767.8	1324.0	2208.6	1850.9	5:30	6:30	2478.6	-244.4	2490.6	3259.5
8:55	3:05	1805.9	1294.8	2222.1	1896.0	5:25	6:35	2470.9	-284.8	2487.3	3280.1
8:50	3:10	1843.2	1265.0	2235.5	1940.7	5:20	6:40	2462.0	-325.1	2483.4	3300.1
8:45	3:15	1879.6	1234.6	2248.8	1984.9	5:15	6:45	2452.0	-365.3	2479.0	3319.5
8:40	3:20	1915.1	1203.5	2261.9	2028.5	5:10	6:50	2440.7	-405.3	2474.2	3338.4
8:35	3:25	1949.7	1172.0	2274.8	2071.7	5:05	6:55	2428.4	-445.0	2468.8	3356.7
8:30	3:30	1983.4	1139.8	2287.6	2114.3	5:00	7:00	2414.8	-484.6	2463.0	3374.4

Analemmatic Sundial**Latitude: 48.5° N/S**

Earliest Sunrise: 3:56 a.m. Latest Sunset: 8:04 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1872.4 mm
 Sunrise/Sunset Markers: $X = \pm 998.2$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-523.9	2456.6	3391.6
4:50	7:10	2384.3	-563.0	2449.9	3408.2
4:45	7:15	2367.3	-601.9	2442.6	3424.3
4:40	7:20	2349.2	-640.4	2435.0	3439.9
4:35	7:25	2330.0	-678.6	2426.8	3454.9
4:30	7:30	2309.7	-716.5	2418.3	3469.5
4:25	7:35	2288.3	-754.1	2409.3	3483.5
4:20	7:40	2265.8	-791.3	2400.0	3497.0
4:15	7:45	2242.2	-828.1	2390.2	3510.0
4:10	7:50	2217.5	-864.6	2380.1	3522.6
4:05	7:55	2191.8	-900.6	2369.6	3534.6
4:00	8:00	2165.1	-936.2	2358.8	3546.2
3:55	8:05	2137.3	-971.3	2347.7	3557.4
3:50	8:10	2108.5	-1006.0	2336.2	3568.1
3:45	8:15	2078.7	-1040.2	2324.4	3578.3

Analematic Sundial

Latitude: 48.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1872.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-702.8	-689.6	-685.5	-667.3	-661.9	-639.2	-632.9	-605.9	-598.7	-568.1	-560.1
February	-508.4	-471.3	-461.6	-422.2	-412.4	-371.2	-360.6	-318.1	-307.3	-263.6	-252.3
March	-219.0	-174.1	-162.7	-117.3	-106.0	-60.2	-48.9	-2.9	8.4	54.1	65.4
April	133.3	177.9	189.0	232.8	243.7	286.7	297.2	339.1	349.4	389.8	399.5
May	447.6	484.4	493.2	527.4	535.7	567.2	574.6	603.3	610.1	635.2	640.9
June	672.0	688.2	691.9	703.8	706.6	714.1	715.1	717.9	718.2	713.1	715.5
July	706.6	695.3	691.9	676.7	672.3	652.5	647.2	623.6	617.4	590.5	583.4
August	537.6	504.2	495.7	460.0	451.0	413.3	403.5	364.2	354.2	313.3	302.8
September	239.6	196.4	185.5	141.4	130.4	85.9	74.9	30.1	18.8	-26.3	-37.6
October	-93.8	-138.8	-149.9	-194.6	-205.5	-249.6	-260.6	-303.7	-314.5	-356.6	-366.9
November	-427.5	-466.3	-475.6	-512.2	-521.0	-554.9	-563.0	-593.8	-601.0	-628.3	-634.9
December	-663.2	-682.4	-686.5	-700.4	-703.5	-712.4	-714.1	-717.9	-718.2	-716.5	-715.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	702.8	689.6	685.5	667.3	661.9	639.2	632.9	605.9	598.7	568.1	560.1
February	508.4	471.3	461.6	422.2	412.4	371.2	360.6	318.1	307.3	263.6	252.3
March	219.0	174.1	162.7	117.3	106.0	60.2	48.9	2.9	-8.4	-54.1	-65.4
April	-133.3	-177.9	-189.0	-232.8	-243.7	-286.7	-297.2	-339.1	-349.4	-389.8	-399.5
May	-447.6	-484.4	-493.2	-527.4	-535.7	-567.2	-574.6	-603.3	-610.1	-635.2	-640.9
June	-672.0	-688.2	-691.9	-703.8	-706.6	-714.1	-715.1	-717.9	-718.2	-713.1	-715.5
July	-706.6	-695.3	-691.9	-676.7	-672.3	-652.5	-647.2	-623.6	-617.4	-590.5	-583.4
August	-537.6	-504.2	-495.7	-460.0	-451.0	-413.3	-403.5	-364.2	-354.2	-313.3	-302.8
September	-239.6	-196.4	-185.5	-141.4	-130.4	-85.9	-74.9	-30.1	-18.8	26.3	37.6
October	93.8	138.8	149.9	194.6	205.5	249.6	260.6	303.7	314.5	356.6	366.9
November	427.5	466.3	475.6	512.2	521.0	554.9	563.0	593.8	601.0	628.3	634.9
December	663.2	682.4	686.5	700.4	703.5	712.4	714.1	717.9	718.2	716.5	715.5

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