

Analemmatic Sundial

Latitude: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 782.6 mm
 Sunrise/Sunset Markers: X = ± 343.6 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	782.6	782.6	0.0						
11:55	12:05	21.8	782.4	782.7	21.8	8:25	3:35	806.4	462.8	929.8	867.6
11:50	12:10	43.6	781.9	783.1	43.6	8:20	3:40	819.2	448.9	934.1	884.5
11:45	12:15	65.4	780.9	783.7	65.4	8:15	3:45	831.5	434.8	938.3	901.3
11:40	12:20	87.2	779.6	784.5	87.2	8:10	3:50	843.4	420.5	942.4	917.8
11:35	12:25	108.9	778.0	785.5	109.0	8:05	3:55	854.9	406.0	946.4	934.2
11:30	12:30	130.5	775.9	786.8	130.7	8:00	4:00	866.0	391.3	950.3	950.3
11:25	12:35	152.1	773.5	788.3	152.4	7:55	4:05	876.7	376.4	954.1	966.2
11:20	12:40	173.6	770.7	790.0	174.1	7:50	4:10	887.0	361.4	957.8	982.0
11:15	12:45	195.1	767.6	792.0	195.7	7:45	4:15	896.9	346.1	961.3	997.4
11:10	12:50	216.4	764.1	794.1	217.2	7:40	4:20	906.3	330.7	964.8	1012.7
11:05	12:55	237.7	760.2	796.5	238.7	7:35	4:25	915.3	315.2	968.1	1027.8
11:00	1:00	258.8	755.9	799.0	260.2	7:30	4:30	923.9	299.5	971.2	1042.6
10:55	1:05	279.8	751.3	801.8	281.6	7:25	4:35	932.0	283.6	974.2	1057.2
10:50	1:10	300.7	746.4	804.7	302.9	7:20	4:40	939.7	267.7	977.1	1071.5
10:45	1:15	321.4	741.1	807.8	324.1	7:15	4:45	946.9	251.6	979.8	1085.7
10:40	1:20	342.0	735.4	811.1	345.3	7:10	4:50	953.7	235.3	982.3	1099.6
10:35	1:25	362.4	729.4	814.5	366.3	7:05	4:55	960.0	219.0	984.7	1113.3
10:30	1:30	382.7	723.0	818.1	387.3	7:00	5:00	965.9	202.6	986.9	1126.7
10:25	1:35	402.7	716.3	821.8	408.2	6:55	5:05	971.3	186.0	989.0	1139.9
10:20	1:40	422.6	709.3	825.6	428.9	6:50	5:10	976.3	169.4	990.9	1152.9
10:15	1:45	442.3	701.9	829.6	449.6	6:45	5:15	980.8	152.7	992.6	1165.7
10:10	1:50	461.7	694.2	833.7	470.1	6:40	5:20	984.8	135.9	994.1	1178.2
10:05	1:55	481.0	686.1	837.9	490.6	6:35	5:25	988.4	119.1	995.5	1190.4
10:00	2:00	500.0	677.8	842.2	510.9	6:30	5:30	991.4	102.2	996.7	1202.5
9:55	2:05	518.8	669.1	846.6	531.1	6:25	5:35	994.1	85.2	997.7	1214.3
9:50	2:10	537.3	660.0	851.1	551.1	6:20	5:40	996.2	68.2	998.5	1225.9
9:45	2:15	555.6	650.7	855.6	571.0	6:15	5:45	997.9	51.2	999.2	1237.2
9:40	2:20	573.6	641.1	860.2	590.8	6:10	5:50	999.0	34.1	999.6	1248.3
9:35	2:25	591.3	631.1	864.9	610.4	6:05	5:55	999.8	17.1	999.9	1259.2
9:30	2:30	608.8	620.9	869.5	629.9	6:00	6:00	1000.0	0.0	1000.0	1269.8
9:25	2:35	625.9	610.3	874.2	649.2	5:55	6:05	999.8	-17.1	999.9	1280.2
9:20	2:40	642.8	599.5	879.0	668.4	5:50	6:10	999.0	-34.1	999.6	1290.4
9:15	2:45	659.3	588.4	883.7	687.4	5:45	6:15	997.9	-51.2	999.2	1300.4
9:10	2:50	675.6	577.0	888.5	706.2	5:40	6:20	996.2	-68.2	998.5	1310.1
9:05	2:55	691.5	565.3	893.2	724.8	5:35	6:25	994.1	-85.2	997.7	1319.6
9:00	3:00	707.1	553.4	897.9	743.3	5:30	6:30	991.4	-102.2	996.7	1328.8
8:55	3:05	722.4	541.2	902.6	761.6	5:25	6:35	988.4	-119.1	995.5	1337.9
8:50	3:10	737.3	528.7	907.3	779.8	5:20	6:40	984.8	-135.9	994.1	1346.7
8:45	3:15	751.8	516.0	911.9	797.7	5:15	6:45	980.8	-152.7	992.6	1355.2
8:40	3:20	766.0	503.1	916.5	815.5	5:10	6:50	976.3	-169.4	990.9	1363.6
8:35	3:25	779.9	489.9	921.0	833.0	5:05	6:55	971.3	-186.0	989.0	1371.8
8:30	3:30	793.4	476.4	925.4	850.4	5:00	7:00	965.9	-202.6	986.9	1379.7

Analemmatic Sundial

Latitude: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 782.6 mm
 Sunrise/Sunset Markers: $X = \pm 343.6$ mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-219.0	984.7	1387.4
4:50	7:10	953.7	-235.3	982.3	1394.9
4:45	7:15	946.9	-251.6	979.8	1402.2
4:40	7:20	939.7	-267.7	977.1	1409.3
4:35	7:25	932.0	-283.6	974.2	1416.2
4:30	7:30	923.9	-299.5	971.2	1422.8
4:25	7:35	915.3	-315.2	968.1	1429.3
4:20	7:40	906.3	-330.7	964.8	1435.6
4:15	7:45	896.9	-346.1	961.3	1441.7
4:10	7:50	887.0	-361.4	957.8	1447.6
4:05	7:55	876.7	-376.4	954.1	1453.3
4:00	8:00	866.0	-391.3	950.3	1458.8
3:55	8:05	854.9	-406.0	946.4	1464.1
3:50	8:10	843.4	-420.5	942.4	1469.3
3:45	8:15	831.5	-434.8	938.3	1474.2
3:40	8:20	819.2	-448.9	934.1	1479.0
3:35	8:25	806.4	-462.8	929.8	1483.7
3:30	8:30	793.4	-476.4	925.4	1488.1

Analemmatic Sundial

Latitude: 51.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 782.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-264.1	-259.1	-257.6	-250.8	-248.7	-240.2	-237.8	-227.7	-225.0	-213.5	-210.5
February	-191.0	-177.1	-173.5	-158.7	-155.0	-139.5	-135.5	-119.5	-115.5	-99.0	-94.8
March	-82.3	-65.4	-61.1	-44.1	-39.8	-22.6	-18.4	-1.1	3.2	20.3	24.6
April	50.1	66.9	71.0	87.5	91.6	107.8	111.7	127.4	131.3	146.5	150.1
May	168.2	182.0	185.3	198.2	201.3	213.1	215.9	226.7	229.3	238.7	240.8
June	252.5	258.6	260.0	264.5	265.5	268.4	268.7	269.8	269.9	268.0	268.9
July	265.5	261.3	260.0	254.3	252.7	245.2	243.2	234.4	232.0	221.9	219.2
August	202.0	189.5	186.3	172.9	169.5	155.3	151.6	136.9	133.1	117.7	113.8
September	90.0	73.8	69.7	53.1	49.0	32.3	28.2	11.3	7.1	-9.9	-14.1
October	-35.2	-52.2	-56.3	-73.1	-77.2	-93.8	-97.9	-114.1	-118.2	-134.0	-137.9
November	-160.6	-175.2	-178.7	-192.5	-195.8	-208.5	-211.6	-223.1	-225.8	-236.1	-238.6
December	-249.2	-256.5	-258.0	-263.2	-264.4	-267.7	-268.4	-269.8	-269.9	-269.3	-268.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	264.1	259.1	257.6	250.8	248.7	240.2	237.8	227.7	225.0	213.5	210.5
February	191.0	177.1	173.5	158.7	155.0	139.5	135.5	119.5	115.5	99.0	94.8
March	82.3	65.4	61.1	44.1	39.8	22.6	18.4	1.1	-3.2	-20.3	-24.6
April	-50.1	-66.9	-71.0	-87.5	-91.6	-107.8	-111.7	-127.4	-131.3	-146.5	-150.1
May	-168.2	-182.0	-185.3	-198.2	-201.3	-213.1	-215.9	-226.7	-229.3	-238.7	-240.8
June	-252.5	-258.6	-260.0	-264.5	-265.5	-268.4	-268.7	-269.8	-269.9	-268.0	-268.9
July	-265.5	-261.3	-260.0	-254.3	-252.7	-245.2	-243.2	-234.4	-232.0	-221.9	-219.2
August	-202.0	-189.5	-186.3	-172.9	-169.5	-155.3	-151.6	-136.9	-133.1	-117.7	-113.8
September	-90.0	-73.8	-69.7	-53.1	-49.0	-32.3	-28.2	-11.3	-7.1	9.9	14.1
October	35.2	52.2	56.3	73.1	77.2	93.8	97.9	114.1	118.2	134.0	137.9
November	160.6	175.2	178.7	192.5	195.8	208.5	211.6	223.1	225.8	236.1	238.6
December	249.2	256.5	258.0	263.2	264.4	267.7	268.4	269.8	269.9	269.3	268.9

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

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: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1173.9 mm
 Sunrise/Sunset Markers: X = ± 515.4 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1173.9	1173.9	0.0						
11:55	12:05	32.7	1173.6	1174.1	32.7	8:25	3:35	1209.7	694.1	1394.7	1301.3
11:50	12:10	65.4	1172.8	1174.6	65.4	8:20	3:40	1228.7	673.3	1401.1	1326.8
11:45	12:15	98.1	1171.4	1175.5	98.1	8:15	3:45	1247.2	652.2	1407.4	1351.9
11:40	12:20	130.7	1169.4	1176.7	130.8	8:10	3:50	1265.1	630.7	1413.6	1376.8
11:35	12:25	163.3	1166.9	1178.3	163.4	8:05	3:55	1282.4	609.0	1419.6	1401.3
11:30	12:30	195.8	1163.9	1180.2	196.0	8:00	4:00	1299.0	587.0	1425.5	1425.5
11:25	12:35	228.2	1160.2	1182.5	228.6	7:55	4:05	1315.1	564.6	1431.2	1449.4
11:20	12:40	260.5	1156.1	1185.1	261.1	7:50	4:10	1330.5	542.1	1436.7	1472.9
11:15	12:45	292.6	1151.4	1188.0	293.5	7:45	4:15	1345.3	519.2	1442.0	1496.2
11:10	12:50	324.7	1146.1	1191.2	325.8	7:40	4:20	1359.5	496.1	1447.2	1519.1
11:05	12:55	356.5	1140.3	1194.7	358.1	7:35	4:25	1373.0	472.8	1452.1	1541.6
11:00	1:00	388.2	1133.9	1198.5	390.3	7:30	4:30	1385.8	449.2	1456.8	1563.9
10:55	1:05	419.7	1127.0	1202.6	422.4	7:25	4:35	1398.0	425.5	1461.3	1585.7
10:50	1:10	451.1	1119.6	1207.0	454.3	7:20	4:40	1409.5	401.5	1465.6	1607.3
10:45	1:15	482.2	1111.6	1211.7	486.2	7:15	4:45	1420.4	377.3	1469.7	1628.5
10:40	1:20	513.0	1103.1	1216.6	517.9	7:10	4:50	1430.6	353.0	1473.5	1649.4
10:35	1:25	543.7	1094.1	1221.7	549.5	7:05	4:55	1440.1	328.5	1477.1	1669.9
10:30	1:30	574.0	1084.6	1227.1	580.9	7:00	5:00	1448.9	303.8	1480.4	1690.1
10:25	1:35	604.1	1074.5	1232.7	612.2	6:55	5:05	1457.0	279.0	1483.5	1709.9
10:20	1:40	633.9	1063.9	1238.5	643.4	6:50	5:10	1464.4	254.1	1486.3	1729.4
10:15	1:45	663.4	1052.8	1244.4	674.4	6:45	5:15	1471.2	229.0	1488.9	1748.5
10:10	1:50	692.6	1041.3	1250.6	705.2	6:40	5:20	1477.2	203.8	1491.2	1767.3
10:05	1:55	721.5	1029.2	1256.9	735.9	6:35	5:25	1482.5	178.6	1493.3	1785.7
10:00	2:00	750.0	1016.6	1263.3	766.3	6:30	5:30	1487.2	153.2	1495.0	1803.7
9:55	2:05	778.2	1003.6	1269.9	796.6	6:25	5:35	1491.1	127.8	1496.6	1821.5
9:50	2:10	805.9	990.1	1276.6	826.7	6:20	5:40	1494.3	102.3	1497.8	1838.8
9:45	2:15	833.4	976.1	1283.4	856.5	6:15	5:45	1496.8	76.8	1498.8	1855.8
9:40	2:20	860.4	961.6	1290.3	886.2	6:10	5:50	1498.6	51.2	1499.4	1872.5
9:35	2:25	887.0	946.7	1297.3	915.6	6:05	5:55	1499.6	25.6	1499.9	1888.8
9:30	2:30	913.1	931.3	1304.3	944.8	6:00	6:00	1500.0	0.0	1500.0	1904.7
9:25	2:35	938.9	915.5	1311.4	973.8	5:55	6:05	1499.6	-25.6	1499.9	1920.4
9:20	2:40	964.2	899.3	1318.5	1002.5	5:50	6:10	1498.6	-51.2	1499.4	1935.6
9:15	2:45	989.0	882.6	1325.6	1031.0	5:45	6:15	1496.8	-76.8	1498.8	1950.5
9:10	2:50	1013.4	865.5	1332.7	1059.3	5:40	6:20	1494.3	-102.3	1497.8	1965.1
9:05	2:55	1037.3	848.0	1339.8	1087.3	5:35	6:25	1491.1	-127.8	1496.6	1979.3
9:00	3:00	1060.7	830.1	1346.9	1115.0	5:30	6:30	1487.2	-153.2	1495.0	1993.2
8:55	3:05	1083.5	811.8	1353.9	1142.5	5:25	6:35	1482.5	-178.6	1493.3	2006.8
8:50	3:10	1105.9	793.1	1360.9	1169.6	5:20	6:40	1477.2	-203.8	1491.2	2020.0
8:45	3:15	1127.8	774.0	1367.8	1196.6	5:15	6:45	1471.2	-229.0	1488.9	2032.9
8:40	3:20	1149.1	754.6	1374.7	1223.2	5:10	6:50	1464.4	-254.1	1486.3	2045.4
8:35	3:25	1169.8	734.8	1381.4	1249.5	5:05	6:55	1457.0	-279.0	1483.5	2057.6
8:30	3:30	1190.0	714.6	1388.1	1275.6	5:00	7:00	1448.9	-303.8	1480.4	2069.5

Analemmatic Sundial

Latitude: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1173.9 mm
 Sunrise/Sunset Markers: $X = \pm 515.4$ mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-328.5	1477.1	2081.1
4:50	7:10	1430.6	-353.0	1473.5	2092.4
4:45	7:15	1420.4	-377.3	1469.7	2103.3
4:40	7:20	1409.5	-401.5	1465.6	2113.9
4:35	7:25	1398.0	-425.5	1461.3	2124.3
4:30	7:30	1385.8	-449.2	1456.8	2134.3
4:25	7:35	1373.0	-472.8	1452.1	2144.0
4:20	7:40	1359.5	-496.1	1447.2	2153.4
4:15	7:45	1345.3	-519.2	1442.0	2162.5
4:10	7:50	1330.5	-542.1	1436.7	2171.4
4:05	7:55	1315.1	-564.6	1431.2	2179.9
4:00	8:00	1299.0	-587.0	1425.5	2188.2
3:55	8:05	1282.4	-609.0	1419.6	2196.2
3:50	8:10	1265.1	-630.7	1413.6	2203.9
3:45	8:15	1247.2	-652.2	1407.4	2211.4
3:40	8:20	1228.7	-673.3	1401.1	2218.6
3:35	8:25	1209.7	-694.1	1394.7	2225.5
3:30	8:30	1190.0	-714.6	1388.1	2232.2

Analemmatic Sundial

Latitude: 51.5° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1173.9 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-396.2	-388.7	-386.4	-376.1	-373.1	-360.3	-356.8	-341.5	-337.5	-320.2	-315.7
February	-286.6	-265.6	-260.2	-238.0	-232.5	-209.2	-203.3	-179.3	-173.2	-148.6	-142.2
March	-123.4	-98.1	-91.7	-66.1	-59.7	-33.9	-27.6	-1.6	4.7	30.5	36.9
April	75.1	100.3	106.6	131.2	137.4	161.6	167.5	191.2	196.9	219.7	225.2
May	252.3	273.1	278.0	297.3	302.0	319.7	323.9	340.0	343.9	358.1	361.2
June	378.8	387.9	390.0	396.7	398.3	402.5	403.1	404.7	404.9	402.0	403.3
July	398.3	391.9	390.0	381.4	379.0	367.8	364.8	351.5	348.0	332.9	328.8
August	303.0	284.2	279.4	259.3	254.2	233.0	227.5	205.3	199.7	176.6	170.7
September	135.1	110.7	104.6	79.7	73.5	48.4	42.2	17.0	10.6	-14.8	-21.2
October	-52.9	-78.2	-84.5	-109.7	-115.8	-140.7	-146.9	-171.2	-177.3	-201.0	-206.8
November	-241.0	-262.8	-268.1	-288.7	-293.7	-312.8	-317.3	-334.7	-338.8	-354.1	-357.9
December	-373.9	-384.7	-387.0	-394.8	-396.6	-401.6	-402.5	-404.7	-404.9	-403.9	-403.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	396.2	388.7	386.4	376.1	373.1	360.3	356.8	341.5	337.5	320.2	315.7
February	286.6	265.6	260.2	238.0	232.5	209.2	203.3	179.3	173.2	148.6	142.2
March	123.4	98.1	91.7	66.1	59.7	33.9	27.6	1.6	-4.7	-30.5	-36.9
April	-75.1	-100.3	-106.6	-131.2	-137.4	-161.6	-167.5	-191.2	-196.9	-219.7	-225.2
May	-252.3	-273.1	-278.0	-297.3	-302.0	-319.7	-323.9	-340.0	-343.9	-358.1	-361.2
June	-378.8	-387.9	-390.0	-396.7	-398.3	-402.5	-403.1	-404.7	-404.9	-402.0	-403.3
July	-398.3	-391.9	-390.0	-381.4	-379.0	-367.8	-364.8	-351.5	-348.0	-332.9	-328.8
August	-303.0	-284.2	-279.4	-259.3	-254.2	-233.0	-227.5	-205.3	-199.7	-176.6	-170.7
September	-135.1	-110.7	-104.6	-79.7	-73.5	-48.4	-42.2	-17.0	-10.6	14.8	21.2
October	52.9	78.2	84.5	109.7	115.8	140.7	146.9	171.2	177.3	201.0	206.8
November	241.0	262.8	268.1	288.7	293.7	312.8	317.3	334.7	338.8	354.1	357.9
December	373.9	384.7	387.0	394.8	396.6	401.6	402.5	404.7	404.9	403.9	403.3

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: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1565.2 mm
 Sunrise/Sunset Markers: X = ± 687.2 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1565.2	1565.2	0.0						
11:55	12:05	43.6	1564.8	1565.5	43.6	8:25	3:35	1612.9	925.5	1859.6	1735.1
11:50	12:10	87.2	1563.7	1566.2	87.3	8:20	3:40	1638.3	897.8	1868.2	1769.0
11:45	12:15	130.8	1561.9	1567.3	130.8	8:15	3:45	1662.9	869.6	1876.6	1802.6
11:40	12:20	174.3	1559.3	1569.0	174.4	8:10	3:50	1686.8	841.0	1884.8	1835.7
11:35	12:25	217.7	1555.9	1571.1	217.9	8:05	3:55	1709.8	812.0	1892.8	1868.4
11:30	12:30	261.1	1551.8	1573.6	261.4	8:00	4:00	1732.1	782.6	1900.7	1900.7
11:25	12:35	304.2	1547.0	1576.6	304.8	7:55	4:05	1753.5	752.9	1908.2	1932.5
11:20	12:40	347.3	1541.4	1580.1	348.1	7:50	4:10	1774.0	722.7	1915.6	1963.9
11:15	12:45	390.2	1535.1	1584.0	391.3	7:45	4:15	1793.7	692.3	1922.7	1994.9
11:10	12:50	432.9	1528.1	1588.2	434.5	7:40	4:20	1812.6	661.5	1929.5	2025.4
11:05	12:55	475.4	1520.4	1592.9	477.5	7:35	4:25	1830.6	630.4	1936.1	2055.5
11:00	1:00	517.6	1511.9	1598.0	520.4	7:30	4:30	1847.8	599.0	1942.4	2085.1
10:55	1:05	559.7	1502.7	1603.5	563.1	7:25	4:35	1864.0	567.3	1948.4	2114.3
10:50	1:10	601.4	1492.8	1609.4	605.8	7:20	4:40	1879.4	535.3	1954.1	2143.1
10:45	1:15	642.9	1482.2	1615.6	648.2	7:15	4:45	1893.9	503.1	1959.6	2171.3
10:40	1:20	684.0	1470.8	1622.1	690.5	7:10	4:50	1907.4	470.7	1964.6	2199.2
10:35	1:25	724.9	1458.8	1629.0	732.6	7:05	4:55	1920.1	438.0	1969.4	2226.5
10:30	1:30	765.4	1446.1	1636.1	774.6	7:00	5:00	1931.9	405.1	1973.9	2253.4
10:25	1:35	805.5	1432.7	1643.6	816.3	6:55	5:05	1942.7	372.0	1978.0	2279.8
10:20	1:40	845.2	1418.6	1651.3	857.9	6:50	5:10	1952.6	338.8	1981.8	2305.8
10:15	1:45	884.6	1403.8	1659.3	899.2	6:45	5:15	1961.6	305.4	1985.2	2331.3
10:10	1:50	923.5	1388.4	1667.5	940.3	6:40	5:20	1969.6	271.8	1988.3	2356.3
10:05	1:55	962.0	1372.3	1675.9	981.1	6:35	5:25	1976.7	238.1	1991.0	2380.9
10:00	2:00	1000.0	1355.5	1684.5	1021.8	6:30	5:30	1982.9	204.3	1993.4	2405.0
9:55	2:05	1037.5	1338.1	1693.2	1062.1	6:25	5:35	1988.1	170.4	1995.4	2428.6
9:50	2:10	1074.6	1320.1	1702.2	1102.2	6:20	5:40	1992.4	136.4	1997.1	2451.8
9:45	2:15	1111.1	1301.4	1711.2	1142.0	6:15	5:45	1995.7	102.4	1998.3	2474.4
9:40	2:20	1147.2	1282.2	1720.4	1181.6	6:10	5:50	1998.1	68.3	1999.3	2496.6
9:35	2:25	1182.6	1262.3	1729.7	1220.8	6:05	5:55	1999.5	34.1	1999.8	2518.4
9:30	2:30	1217.5	1241.8	1739.1	1259.8	6:00	6:00	2000.0	0.0	2000.0	2539.7
9:25	2:35	1251.8	1220.7	1748.5	1298.4	5:55	6:05	1999.5	-34.1	1999.8	2560.5
9:20	2:40	1285.6	1199.0	1757.9	1336.7	5:50	6:10	1998.1	-68.3	1999.3	2580.8
9:15	2:45	1318.7	1176.8	1767.4	1374.7	5:45	6:15	1995.7	-102.4	1998.3	2600.7
9:10	2:50	1351.2	1154.0	1776.9	1412.4	5:40	6:20	1992.4	-136.4	1997.1	2620.1
9:05	2:55	1383.0	1130.7	1786.4	1449.7	5:35	6:25	1988.1	-170.4	1995.4	2639.1
9:00	3:00	1414.2	1106.8	1795.8	1486.7	5:30	6:30	1982.9	-204.3	1993.4	2657.6
8:55	3:05	1444.7	1082.4	1805.2	1523.3	5:25	6:35	1976.7	-238.1	1991.0	2675.7
8:50	3:10	1474.6	1057.4	1814.5	1559.5	5:20	6:40	1969.6	-271.8	1988.3	2693.3
8:45	3:15	1503.7	1032.0	1823.8	1595.4	5:15	6:45	1961.6	-305.4	1985.2	2710.5
8:40	3:20	1532.1	1006.1	1832.9	1630.9	5:10	6:50	1952.6	-338.8	1981.8	2727.2
8:35	3:25	1559.8	979.7	1841.9	1666.0	5:05	6:55	1942.7	-372.0	1978.0	2743.5
8:30	3:30	1586.7	952.8	1850.8	1700.8	5:00	7:00	1931.9	-405.1	1973.9	2759.4

Analemmatic Sundial

Latitude: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1565.2 mm
 Sunrise/Sunset Markers: X = ± 687.2 mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-438.0	1969.4	2774.8
4:50	7:10	1907.4	-470.7	1964.6	2789.8
4:45	7:15	1893.9	-503.1	1959.6	2804.4
4:40	7:20	1879.4	-535.3	1954.1	2818.6
4:35	7:25	1864.0	-567.3	1948.4	2832.3
4:30	7:30	1847.8	-599.0	1942.4	2845.7
4:25	7:35	1830.6	-630.4	1936.1	2858.6
4:20	7:40	1812.6	-661.5	1929.5	2871.2
4:15	7:45	1793.7	-692.3	1922.7	2883.4
4:10	7:50	1774.0	-722.7	1915.6	2895.1
4:05	7:55	1753.5	-752.9	1908.2	2906.6
4:00	8:00	1732.1	-782.6	1900.7	2917.6
3:55	8:05	1709.8	-812.0	1892.8	2928.2
3:50	8:10	1686.8	-841.0	1884.8	2938.5
3:45	8:15	1662.9	-869.6	1876.6	2948.5
3:40	8:20	1638.3	-897.8	1868.2	2958.1
3:35	8:25	1612.9	-925.5	1859.6	2967.4
3:30	8:30	1586.7	-952.8	1850.8	2976.3

Analemmatic Sundial

Latitude: 51.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1565.2 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-528.2	-518.3	-515.2	-501.5	-497.5	-480.4	-475.7	-455.4	-450.0	-427.0	-420.9
February	-382.1	-354.2	-346.9	-317.4	-310.0	-279.0	-271.0	-239.1	-231.0	-198.1	-189.6
March	-164.6	-130.9	-122.3	-88.2	-79.6	-45.2	-36.7	-2.2	6.3	40.6	49.1
April	100.2	133.7	142.1	175.0	183.2	215.5	223.3	254.9	262.6	292.9	300.3
May	336.4	364.1	370.7	396.4	402.6	426.3	431.9	453.4	458.6	477.4	481.7
June	505.0	517.2	520.0	529.0	531.0	536.7	537.5	539.5	539.8	535.9	537.7
July	531.0	522.6	520.0	508.6	505.3	490.4	486.4	468.7	464.0	443.8	438.4
August	404.1	379.0	372.6	345.7	339.0	310.7	303.3	273.7	266.2	235.5	227.6
September	180.1	147.6	139.4	106.3	98.0	64.6	56.3	22.6	14.1	-19.8	-28.3
October	-70.5	-104.3	-112.6	-146.3	-154.4	-187.6	-195.9	-228.3	-236.4	-268.0	-275.8
November	-321.3	-350.4	-357.5	-384.9	-391.6	-417.1	-423.1	-446.3	-451.7	-472.2	-477.2
December	-498.5	-512.9	-516.0	-526.4	-528.7	-535.4	-536.7	-539.5	-539.8	-538.5	-537.7

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	528.2	518.3	515.2	501.5	497.5	480.4	475.7	455.4	450.0	427.0	420.9
February	382.1	354.2	346.9	317.4	310.0	279.0	271.0	239.1	231.0	198.1	189.6
March	164.6	130.9	122.3	88.2	79.6	45.2	36.7	2.2	-6.3	-40.6	-49.1
April	-100.2	-133.7	-142.1	-175.0	-183.2	-215.5	-223.3	-254.9	-262.6	-292.9	-300.3
May	-336.4	-364.1	-370.7	-396.4	-402.6	-426.3	-431.9	-453.4	-458.6	-477.4	-481.7
June	-505.0	-517.2	-520.0	-529.0	-531.0	-536.7	-537.5	-539.5	-539.8	-535.9	-537.7
July	-531.0	-522.6	-520.0	-508.6	-505.3	-490.4	-486.4	-468.7	-464.0	-443.8	-438.4
August	-404.1	-379.0	-372.6	-345.7	-339.0	-310.7	-303.3	-273.7	-266.2	-235.5	-227.6
September	-180.1	-147.6	-139.4	-106.3	-98.0	-64.6	-56.3	-22.6	-14.1	19.8	28.3
October	70.5	104.3	112.6	146.3	154.4	187.6	195.9	228.3	236.4	268.0	275.8
November	321.3	350.4	357.5	384.9	391.6	417.1	423.1	446.3	451.7	472.2	477.2
December	498.5	512.9	516.0	526.4	528.7	535.4	536.7	539.5	539.8	538.5	537.7

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: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1956.5 mm
 Sunrise/Sunset Markers: X = ± 858.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1956.5	1956.5	0.0						
11:55	12:05	54.5	1956.1	1956.8	54.5	8:25	3:35	2016.1	1156.9	2324.5	2168.9
11:50	12:10	109.0	1954.7	1957.7	109.1	8:20	3:40	2047.9	1122.2	2335.2	2211.3
11:45	12:15	163.5	1952.3	1959.2	163.6	8:15	3:45	2078.7	1087.0	2345.7	2253.2
11:40	12:20	217.9	1949.1	1961.2	218.0	8:10	3:50	2108.5	1051.2	2356.0	2294.6
11:35	12:25	272.2	1944.9	1963.8	272.4	8:05	3:55	2137.3	1015.0	2366.0	2335.5
11:30	12:30	326.3	1939.8	1967.0	326.7	8:00	4:00	2165.1	978.3	2375.8	2375.8
11:25	12:35	380.3	1933.7	1970.8	381.0	7:55	4:05	2191.8	941.1	2385.3	2415.6
11:20	12:40	434.1	1926.8	1975.1	435.1	7:50	4:10	2217.5	903.4	2394.5	2454.9
11:15	12:45	487.7	1918.9	1979.9	489.2	7:45	4:15	2242.2	865.3	2403.4	2493.6
11:10	12:50	541.1	1910.1	1985.3	543.1	7:40	4:20	2265.8	826.9	2411.9	2531.8
11:05	12:55	594.2	1900.5	1991.2	596.9	7:35	4:25	2288.3	788.0	2420.2	2569.4
11:00	1:00	647.0	1889.9	1997.6	650.5	7:30	4:30	2309.7	748.7	2428.0	2606.4
10:55	1:05	699.6	1878.4	2004.4	703.9	7:25	4:35	2330.0	709.1	2435.5	2642.9
10:50	1:10	751.8	1866.0	2011.7	757.2	7:20	4:40	2349.2	669.2	2442.7	2678.8
10:45	1:15	803.6	1852.7	2019.5	810.3	7:15	4:45	2367.3	628.9	2449.4	2714.2
10:40	1:20	855.1	1838.5	2027.6	863.2	7:10	4:50	2384.3	588.3	2455.8	2749.0
10:35	1:25	906.1	1823.5	2036.2	915.8	7:05	4:55	2400.1	547.5	2461.8	2783.2
10:30	1:30	956.7	1807.6	2045.2	968.2	7:00	5:00	2414.8	506.4	2467.3	2816.8
10:25	1:35	1006.9	1790.8	2054.5	1020.4	6:55	5:05	2428.4	465.0	2472.5	2849.8
10:20	1:40	1056.5	1773.2	2064.1	1072.3	6:50	5:10	2440.7	423.5	2477.2	2882.3
10:15	1:45	1105.7	1754.7	2074.1	1124.0	6:45	5:15	2452.0	381.7	2481.5	2914.1
10:10	1:50	1154.4	1735.5	2084.3	1175.3	6:40	5:20	2462.0	339.7	2485.4	2945.4
10:05	1:55	1202.5	1715.3	2094.8	1226.4	6:35	5:25	2470.9	297.6	2488.8	2976.1
10:00	2:00	1250.0	1694.4	2105.6	1277.2	6:30	5:30	2478.6	255.4	2491.7	3006.2
9:55	2:05	1296.9	1672.7	2116.6	1327.6	6:25	5:35	2485.1	213.0	2494.3	3035.8
9:50	2:10	1343.2	1650.1	2127.7	1377.8	6:20	5:40	2490.5	170.5	2496.3	3064.7
9:45	2:15	1388.9	1626.8	2139.1	1427.5	6:15	5:45	2494.6	128.0	2497.9	3093.0
9:40	2:20	1433.9	1602.7	2150.5	1477.0	6:10	5:50	2497.6	85.3	2499.1	3120.8
9:35	2:25	1478.3	1577.8	2162.1	1526.0	6:05	5:55	2499.4	42.7	2499.8	3148.0
9:30	2:30	1521.9	1552.2	2173.8	1574.7	6:00	6:00	2500.0	0.0	2500.0	3174.6
9:25	2:35	1564.8	1525.9	2185.6	1623.0	5:55	6:05	2499.4	-42.7	2499.8	3200.6
9:20	2:40	1607.0	1498.8	2197.4	1670.9	5:50	6:10	2497.6	-85.3	2499.1	3226.0
9:15	2:45	1648.4	1471.0	2209.3	1718.4	5:45	6:15	2494.6	-128.0	2497.9	3250.9
9:10	2:50	1689.0	1442.5	2221.1	1765.5	5:40	6:20	2490.5	-170.5	2496.3	3275.2
9:05	2:55	1728.8	1413.3	2233.0	1812.1	5:35	6:25	2485.1	-213.0	2494.3	3298.9
9:00	3:00	1767.8	1383.5	2244.8	1858.3	5:30	6:30	2478.6	-255.4	2491.7	3322.0
8:55	3:05	1805.9	1353.0	2256.5	1904.1	5:25	6:35	2470.9	-297.6	2488.8	3344.6
8:50	3:10	1843.2	1321.8	2268.2	1949.4	5:20	6:40	2462.0	-339.7	2485.4	3366.7
8:45	3:15	1879.6	1290.0	2279.7	1994.3	5:15	6:45	2452.0	-381.7	2481.5	3388.1
8:40	3:20	1915.1	1257.6	2291.1	2038.7	5:10	6:50	2440.7	-423.5	2477.2	3409.0
8:35	3:25	1949.7	1224.6	2302.4	2082.6	5:05	6:55	2428.4	-465.0	2472.5	3429.4
8:30	3:30	1983.4	1191.1	2313.5	2126.0	5:00	7:00	2414.8	-506.4	2467.3	3449.2

Analemmatic Sundial

Latitude: 51.5° N/S

Earliest Sunrise: 3:41 a.m. Latest Sunset: 8:19 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1956.5 mm
 Sunrise/Sunset Markers: $X = \pm 858.9$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-547.5	2461.8	3468.5
4:50	7:10	2384.3	-588.3	2455.8	3487.3
4:45	7:15	2367.3	-628.9	2449.4	3505.5
4:40	7:20	2349.2	-669.2	2442.7	3523.2
4:35	7:25	2330.0	-709.1	2435.5	3540.4
4:30	7:30	2309.7	-748.7	2428.0	3557.1
4:25	7:35	2288.3	-788.0	2420.2	3573.3
4:20	7:40	2265.8	-826.9	2411.9	3589.0
4:15	7:45	2242.2	-865.3	2403.4	3604.2
4:10	7:50	2217.5	-903.4	2394.5	3618.9
4:05	7:55	2191.8	-941.1	2385.3	3633.2
4:00	8:00	2165.1	-978.3	2375.8	3647.0
3:55	8:05	2137.3	-1015.0	2366.0	3660.3
3:50	8:10	2108.5	-1051.2	2356.0	3673.2
3:45	8:15	2078.7	-1087.0	2345.7	3685.6
3:40	8:20	2047.9	-1122.2	2335.2	3697.6
3:35	8:25	2016.1	-1156.9	2324.5	3709.2
3:30	8:30	1983.4	-1191.1	2313.5	3720.4

Analematic Sundial

Latitude: 51.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1956.5 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-660.3	-647.8	-644.0	-626.9	-621.8	-600.5	-594.6	-569.2	-562.4	-533.7	-526.2
February	-477.6	-442.7	-433.6	-396.7	-387.4	-348.7	-338.8	-298.8	-288.7	-247.6	-237.0
March	-205.7	-163.6	-152.9	-110.2	-99.5	-56.5	-45.9	-2.7	7.9	50.8	61.4
April	125.2	167.1	177.6	218.7	229.0	269.4	279.2	318.6	328.2	366.2	375.4
May	420.5	455.1	463.4	495.5	503.3	532.8	539.8	566.7	573.2	596.8	602.1
June	631.3	646.5	650.1	661.2	663.8	670.9	671.9	674.4	674.8	669.9	672.2
July	663.8	653.2	650.1	635.7	631.6	613.0	608.0	585.9	580.0	554.8	548.1
August	505.1	473.7	465.7	432.2	423.7	388.3	379.1	342.2	332.8	294.3	284.5
September	225.1	184.5	174.3	132.9	122.5	80.7	70.4	28.3	17.7	-24.7	-35.3
October	-88.1	-130.4	-140.8	-182.8	-193.0	-234.5	-244.8	-285.4	-295.5	-335.1	-344.7
November	-401.6	-438.0	-446.8	-481.2	-489.5	-521.3	-528.9	-557.8	-564.6	-590.2	-596.5
December	-623.1	-641.1	-645.0	-658.0	-660.9	-669.3	-670.9	-674.4	-674.8	-673.1	-672.2

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	660.3	647.8	644.0	626.9	621.8	600.5	594.6	569.2	562.4	533.7	526.2
February	477.6	442.7	433.6	396.7	387.4	348.7	338.8	298.8	288.7	247.6	237.0
March	205.7	163.6	152.9	110.2	99.5	56.5	45.9	2.7	-7.9	-50.8	-61.4
April	-125.2	-167.1	-177.6	-218.7	-229.0	-269.4	-279.2	-318.6	-328.2	-366.2	-375.4
May	-420.5	-455.1	-463.4	-495.5	-503.3	-532.8	-539.8	-566.7	-573.2	-596.8	-602.1
June	-631.3	-646.5	-650.1	-661.2	-663.8	-670.9	-671.9	-674.4	-674.8	-669.9	-672.2
July	-663.8	-653.2	-650.1	-635.7	-631.6	-613.0	-608.0	-585.9	-580.0	-554.8	-548.1
August	-505.1	-473.7	-465.7	-432.2	-423.7	-388.3	-379.1	-342.2	-332.8	-294.3	-284.5
September	-225.1	-184.5	-174.3	-132.9	-122.5	-80.7	-70.4	-28.3	-17.7	24.7	35.3
October	88.1	130.4	140.8	182.8	193.0	234.5	244.8	285.4	295.5	335.1	344.7
November	401.6	438.0	446.8	481.2	489.5	521.3	528.9	557.8	564.6	590.2	596.5
December	623.1	641.1	645.0	658.0	660.9	669.3	670.9	674.4	674.8	673.1	672.2

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
- 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