

## Analemmatic Sundial

Latitude: 60.0° N/S

Earliest Sunrise: 2:33 a.m.    Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 866.0 mm  
 Sunrise/Sunset Markers: X = ± 192.7 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	866.0	866.0	0.0						
11:55	12:05	21.8	865.8	866.1	21.8	8:25	3:35	806.4	512.1	955.3	880.7
11:50	12:10	43.6	865.2	866.3	43.6	8:20	3:40	819.2	496.7	958.0	898.5
11:45	12:15	65.4	864.2	866.6	65.4	8:15	3:45	831.5	481.1	960.6	916.2
11:40	12:20	87.2	862.7	867.1	87.2	8:10	3:50	843.4	465.3	963.2	933.7
11:35	12:25	108.9	860.9	867.7	109.0	8:05	3:55	854.9	449.3	965.8	951.1
11:30	12:30	130.5	858.6	868.5	130.7	8:00	4:00	866.0	433.0	968.2	968.2
11:25	12:35	152.1	855.9	869.4	152.5	7:55	4:05	876.7	416.5	970.7	985.2
11:20	12:40	173.6	852.9	870.4	174.1	7:50	4:10	887.0	399.9	973.0	1002.0
11:15	12:45	195.1	849.4	871.5	195.8	7:45	4:15	896.9	383.0	975.2	1018.7
11:10	12:50	216.4	845.5	872.8	217.4	7:40	4:20	906.3	366.0	977.4	1035.1
11:05	12:55	237.7	841.2	874.1	239.0	7:35	4:25	915.3	348.8	979.5	1051.3
11:00	1:00	258.8	836.5	875.6	260.5	7:30	4:30	923.9	331.4	981.5	1067.4
10:55	1:05	279.8	831.4	877.3	282.0	7:25	4:35	932.0	313.9	983.4	1083.3
10:50	1:10	300.7	825.9	879.0	303.4	7:20	4:40	939.7	296.2	985.3	1099.0
10:45	1:15	321.4	820.1	880.8	324.7	7:15	4:45	946.9	278.4	987.0	1114.5
10:40	1:20	342.0	813.8	882.7	346.0	7:10	4:50	953.7	260.4	988.6	1129.8
10:35	1:25	362.4	807.1	884.8	367.2	7:05	4:55	960.0	242.3	990.2	1144.8
10:30	1:30	382.7	800.1	886.9	388.3	7:00	5:00	965.9	224.1	991.6	1159.8
10:25	1:35	402.7	792.7	889.1	409.4	6:55	5:05	971.3	205.8	992.9	1174.5
10:20	1:40	422.6	784.9	891.4	430.3	6:50	5:10	976.3	187.4	994.1	1189.0
10:15	1:45	442.3	776.7	893.8	451.2	6:45	5:15	980.8	169.0	995.2	1203.3
10:10	1:50	461.7	768.2	896.3	472.0	6:40	5:20	984.8	150.4	996.2	1217.4
10:05	1:55	481.0	759.3	898.8	492.7	6:35	5:25	988.4	131.7	997.1	1231.3
10:00	2:00	500.0	750.0	901.4	513.3	6:30	5:30	991.4	113.0	997.9	1245.0
9:55	2:05	518.8	740.4	904.0	533.8	6:25	5:35	994.1	94.3	998.5	1258.5
9:50	2:10	537.3	730.4	906.7	554.2	6:20	5:40	996.2	75.5	999.1	1271.8
9:45	2:15	555.6	720.1	909.5	574.4	6:15	5:45	997.9	56.6	999.5	1284.8
9:40	2:20	573.6	709.4	912.3	594.6	6:10	5:50	999.0	37.8	999.8	1297.7
9:35	2:25	591.3	698.4	915.1	614.6	6:05	5:55	999.8	18.9	999.9	1310.4
9:30	2:30	608.8	687.1	918.0	634.5	6:00	6:00	1000.0	0.0	1000.0	1322.9
9:25	2:35	625.9	675.4	920.8	654.3	5:55	6:05	999.8	-18.9	999.9	1335.1
9:20	2:40	642.8	663.4	923.7	674.0	5:50	6:10	999.0	-37.8	999.8	1347.2
9:15	2:45	659.3	651.1	926.7	693.5	5:45	6:15	997.9	-56.6	999.5	1359.1
9:10	2:50	675.6	638.5	929.6	712.9	5:40	6:20	996.2	-75.5	999.1	1370.7
9:05	2:55	691.5	625.6	932.5	732.1	5:35	6:25	994.1	-94.3	998.5	1382.1
9:00	3:00	707.1	612.4	935.4	751.2	5:30	6:30	991.4	-113.0	997.9	1393.4
8:55	3:05	722.4	598.9	938.3	770.2	5:25	6:35	988.4	-131.7	997.1	1404.4
8:50	3:10	737.3	585.1	941.2	789.0	5:20	6:40	984.8	-150.4	996.2	1415.3
8:45	3:15	751.8	571.0	944.1	807.6	5:15	6:45	980.8	-169.0	995.2	1425.9
8:40	3:20	766.0	556.7	946.9	826.2	5:10	6:50	976.3	-187.4	994.1	1436.3
8:35	3:25	779.9	542.1	949.8	844.5	5:05	6:55	971.3	-205.8	992.9	1446.5
8:30	3:30	793.4	527.2	952.6	862.7	5:00	7:00	965.9	-224.1	991.6	1456.5

## Analemmatic Sundial

Latitude: 60.0° N/S

Earliest Sunrise: 2:33 a.m.    Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 866.0 mm  
 Sunrise/Sunset Markers: X = ± 192.7 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	960.0	-242.3	990.2	1466.3	2:55	9:05	691.5	-625.6	932.5	1644.1
4:50	7:10	953.7	-260.4	988.6	1476.0	2:50	9:10	675.6	-638.5	929.6	1649.2
4:45	7:15	946.9	-278.4	987.0	1485.4	2:45	9:15	659.3	-651.1	926.7	1654.2
4:40	7:20	939.7	-296.2	985.3	1494.6	2:40	9:20	642.8	-663.4	923.7	1659.0
4:35	7:25	932.0	-313.9	983.4	1503.6	2:35	9:25	625.9	-675.4	920.8	1663.7
4:30	7:30	923.9	-331.4	981.5	1512.4	2:30	9:30	608.8	-687.1	918.0	1668.1
4:25	7:35	915.3	-348.8	979.5	1521.0						
4:20	7:40	906.3	-366.0	977.4	1529.5						
4:15	7:45	896.9	-383.0	975.2	1537.7						
4:10	7:50	887.0	-399.9	973.0	1545.7						
4:05	7:55	876.7	-416.5	970.7	1553.6						
4:00	8:00	866.0	-433.0	968.2	1561.2						
3:55	8:05	854.9	-449.3	965.8	1568.7						
3:50	8:10	843.4	-465.3	963.2	1576.0						
3:45	8:15	831.5	-481.1	960.6	1583.1						
3:40	8:20	819.2	-496.7	958.0	1590.0						
3:35	8:25	806.4	-512.1	955.3	1596.7						
3:30	8:30	793.4	-527.2	952.6	1603.3						
3:25	8:35	779.9	-542.1	949.8	1609.6						
3:20	8:40	766.0	-556.7	946.9	1615.8						
3:15	8:45	751.8	-571.0	944.1	1621.8						
3:10	8:50	737.3	-585.1	941.2	1627.7						
3:05	8:55	722.4	-598.9	938.3	1633.3						
3:00	9:00	707.1	-612.4	935.4	1638.8						

## Analemmatic Sundial

Latitude: 60.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1000 mm    Semi-Minor Axis (N-S): 866.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-212.1	-208.1	-206.9	-201.4	-199.8	-192.9	-191.0	-182.9	-180.7	-171.5	-169.0
February	-153.4	-142.2	-139.3	-127.4	-124.5	-112.0	-108.8	-96.0	-92.8	-79.6	-76.2
March	-66.1	-52.6	-49.1	-35.4	-32.0	-18.2	-14.8	-0.9	2.5	16.3	19.7
April	40.2	53.7	57.1	70.3	73.6	86.5	89.7	102.4	105.5	117.6	120.6
May	135.1	146.2	148.9	159.2	161.7	171.2	173.4	182.1	184.2	191.7	193.4
June	202.8	207.7	208.8	212.4	213.3	215.5	215.9	216.7	216.8	215.2	216.0
July	213.3	209.9	208.8	204.2	202.9	197.0	195.3	188.2	186.3	178.2	176.1
August	162.3	152.2	149.6	138.9	136.1	124.8	121.8	109.9	106.9	94.6	91.4
September	72.3	59.3	56.0	42.7	39.4	25.9	22.6	9.1	5.7	-7.9	-11.3
October	-28.3	-41.9	-45.2	-58.7	-62.0	-75.4	-78.7	-91.7	-94.9	-107.6	-110.8
November	-129.0	-140.7	-143.6	-154.6	-157.3	-167.5	-169.9	-179.2	-181.4	-189.6	-191.6
December	-200.2	-206.0	-207.2	-211.4	-212.3	-215.0	-215.5	-216.7	-216.8	-216.3	-216.0

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	212.1	208.1	206.9	201.4	199.8	192.9	191.0	182.9	180.7	171.5	169.0
February	153.4	142.2	139.3	127.4	124.5	112.0	108.8	96.0	92.8	79.6	76.2
March	66.1	52.6	49.1	35.4	32.0	18.2	14.8	0.9	-2.5	-16.3	-19.7
April	-40.2	-53.7	-57.1	-70.3	-73.6	-86.5	-89.7	-102.4	-105.5	-117.6	-120.6
May	-135.1	-146.2	-148.9	-159.2	-161.7	-171.2	-173.4	-182.1	-184.2	-191.7	-193.4
June	-202.8	-207.7	-208.8	-212.4	-213.3	-215.5	-215.9	-216.7	-216.8	-215.2	-216.0
July	-213.3	-209.9	-208.8	-204.2	-202.9	-197.0	-195.3	-188.2	-186.3	-178.2	-176.1
August	-162.3	-152.2	-149.6	-138.9	-136.1	-124.8	-121.8	-109.9	-106.9	-94.6	-91.4
September	-72.3	-59.3	-56.0	-42.7	-39.4	-25.9	-22.6	-9.1	-5.7	7.9	11.3
October	28.3	41.9	45.2	58.7	62.0	75.4	78.7	91.7	94.9	107.6	110.8
November	129.0	140.7	143.6	154.6	157.3	167.5	169.9	179.2	181.4	189.6	191.6
December	200.2	206.0	207.2	211.4	212.3	215.0	215.5	216.7	216.8	216.3	216.0

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: 60.0° N/S

Earliest Sunrise: 2:33 a.m.    Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 1299.0 mm  
 Sunrise/Sunset Markers: X = ± 289.0 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1299.0	1299.0	0.0						
11:55	12:05	32.7	1298.7	1299.1	32.7	8:25	3:35	1209.7	768.1	1432.9	1321.0
11:50	12:10	65.4	1297.8	1299.4	65.4	8:20	3:40	1228.7	745.1	1437.0	1347.8
11:45	12:15	98.1	1296.3	1300.0	98.1	8:15	3:45	1247.2	721.7	1441.0	1374.3
11:40	12:20	130.7	1294.1	1300.7	130.8	8:10	3:50	1265.1	698.0	1444.9	1400.6
11:35	12:25	163.3	1291.3	1301.6	163.5	8:05	3:55	1282.4	673.9	1448.7	1426.6
11:30	12:30	195.8	1287.9	1302.7	196.1	8:00	4:00	1299.0	649.5	1452.4	1452.4
11:25	12:35	228.2	1283.9	1304.0	228.7	7:55	4:05	1315.1	624.8	1456.0	1477.8
11:20	12:40	260.5	1279.3	1305.6	261.2	7:50	4:10	1330.5	599.8	1459.5	1503.1
11:15	12:45	292.6	1274.1	1307.3	293.7	7:45	4:15	1345.3	574.5	1462.9	1528.0
11:10	12:50	324.7	1268.2	1309.1	326.1	7:40	4:20	1359.5	549.0	1466.1	1552.6
11:05	12:55	356.5	1261.8	1311.2	358.5	7:35	4:25	1373.0	523.2	1469.3	1577.0
11:00	1:00	388.2	1254.8	1313.5	390.7	7:30	4:30	1385.8	497.1	1472.3	1601.1
10:55	1:05	419.7	1247.1	1315.9	422.9	7:25	4:35	1398.0	470.8	1475.2	1624.9
10:50	1:10	451.1	1238.9	1318.5	455.0	7:20	4:40	1409.5	444.3	1477.9	1648.4
10:45	1:15	482.2	1230.1	1321.2	487.1	7:15	4:45	1420.4	417.6	1480.5	1671.7
10:40	1:20	513.0	1220.7	1324.1	519.0	7:10	4:50	1430.6	390.6	1482.9	1694.6
10:35	1:25	543.7	1210.7	1327.2	550.8	7:05	4:55	1440.1	363.5	1485.2	1717.3
10:30	1:30	574.0	1200.2	1330.4	582.5	7:00	5:00	1448.9	336.2	1487.4	1739.6
10:25	1:35	604.1	1189.0	1333.7	614.1	6:55	5:05	1457.0	308.8	1489.4	1761.7
10:20	1:40	633.9	1177.3	1337.1	645.5	6:50	5:10	1464.4	281.2	1491.2	1783.4
10:15	1:45	663.4	1165.1	1340.7	676.8	6:45	5:15	1471.2	253.4	1492.8	1804.9
10:10	1:50	692.6	1152.3	1344.4	708.0	6:40	5:20	1477.2	225.6	1494.3	1826.1
10:05	1:55	721.5	1138.9	1348.2	739.0	6:35	5:25	1482.5	197.6	1495.7	1846.9
10:00	2:00	750.0	1125.0	1352.1	769.9	6:30	5:30	1487.2	169.6	1496.8	1867.5
9:55	2:05	778.2	1110.6	1356.1	800.7	6:25	5:35	1491.1	141.4	1497.8	1887.7
9:50	2:10	805.9	1095.6	1360.1	831.2	6:20	5:40	1494.3	113.2	1498.6	1907.6
9:45	2:15	833.4	1080.1	1364.2	861.6	6:15	5:45	1496.8	85.0	1499.2	1927.3
9:40	2:20	860.4	1064.1	1368.4	891.9	6:10	5:50	1498.6	56.7	1499.6	1946.6
9:35	2:25	887.0	1047.6	1372.7	921.9	6:05	5:55	1499.6	28.3	1499.9	1965.6
9:30	2:30	913.1	1030.6	1376.9	951.8	6:00	6:00	1500.0	0.0	1500.0	1984.3
9:25	2:35	938.9	1013.1	1381.3	981.5	5:55	6:05	1499.6	-28.3	1499.9	2002.7
9:20	2:40	964.2	995.1	1385.6	1010.9	5:50	6:10	1498.6	-56.7	1499.6	2020.8
9:15	2:45	989.0	976.7	1390.0	1040.2	5:45	6:15	1496.8	-85.0	1499.2	2038.6
9:10	2:50	1013.4	957.8	1394.4	1069.3	5:40	6:20	1494.3	-113.2	1498.6	2056.1
9:05	2:55	1037.3	938.4	1398.7	1098.2	5:35	6:25	1491.1	-141.4	1497.8	2073.2
9:00	3:00	1060.7	918.6	1403.1	1126.8	5:30	6:30	1487.2	-169.6	1496.8	2090.1
8:55	3:05	1083.5	898.3	1407.5	1155.3	5:25	6:35	1482.5	-197.6	1495.7	2106.6
8:50	3:10	1105.9	877.6	1411.8	1183.5	5:20	6:40	1477.2	-225.6	1494.3	2122.9
8:45	3:15	1127.8	856.5	1416.1	1211.5	5:15	6:45	1471.2	-253.4	1492.8	2138.8
8:40	3:20	1149.1	835.0	1420.4	1239.2	5:10	6:50	1464.4	-281.2	1491.2	2154.4
8:35	3:25	1169.8	813.1	1424.6	1266.7	5:05	6:55	1457.0	-308.8	1489.4	2169.8
8:30	3:30	1190.0	790.8	1428.8	1294.0	5:00	7:00	1448.9	-336.2	1487.4	2184.8

Analemmatic Sundial

Latitude: 60.0° N/S

Earliest Sunrise: 2:33 a.m. Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1299.0 mm  
 Sunrise/Sunset Markers: X = ± 289.0 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	1440.1	-363.5	1485.2	2199.5	2:55	9:05	1037.3	-938.4	1398.7	2466.2
4:50	7:10	1430.6	-390.6	1482.9	2213.9	2:50	9:10	1013.4	-957.8	1394.4	2473.9
4:45	7:15	1420.4	-417.6	1480.5	2228.1	2:45	9:15	989.0	-976.7	1390.0	2481.3
4:40	7:20	1409.5	-444.3	1477.9	2241.9	2:40	9:20	964.2	-995.1	1385.6	2488.5
4:35	7:25	1398.0	-470.8	1475.2	2255.4	2:35	9:25	938.9	-1013.1	1381.3	2495.5
4:30	7:30	1385.8	-497.1	1472.3	2268.6	2:30	9:30	913.1	-1030.6	1376.9	2502.2
4:25	7:35	1373.0	-523.2	1469.3	2281.6						
4:20	7:40	1359.5	-549.0	1466.1	2294.2						
4:15	7:45	1345.3	-574.5	1462.9	2306.6						
4:10	7:50	1330.5	-599.8	1459.5	2318.6						
4:05	7:55	1315.1	-624.8	1456.0	2330.4						
4:00	8:00	1299.0	-649.5	1452.4	2341.9						
3:55	8:05	1282.4	-673.9	1448.7	2353.1						
3:50	8:10	1265.1	-698.0	1444.9	2364.0						
3:45	8:15	1247.2	-721.7	1441.0	2374.6						
3:40	8:20	1228.7	-745.1	1437.0	2385.0						
3:35	8:25	1209.7	-768.1	1432.9	2395.1						
3:30	8:30	1190.0	-790.8	1428.8	2404.9						
3:25	8:35	1169.8	-813.1	1424.6	2414.5						
3:20	8:40	1149.1	-835.0	1420.4	2423.7						
3:15	8:45	1127.8	-856.5	1416.1	2432.7						
3:10	8:50	1105.9	-877.6	1411.8	2441.5						
3:05	8:55	1083.5	-898.3	1407.5	2450.0						
3:00	9:00	1060.7	-918.6	1403.1	2458.2						

## Analematic Sundial

Latitude: 60.0° N/S

## Date Scale

Semi-Major Axis (E-W): 1500 mm    Semi-Minor Axis (N-S): 1299.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-318.2	-312.2	-310.4	-302.1	-299.7	-289.4	-286.5	-274.3	-271.1	-257.2	-253.6
February	-230.2	-213.4	-209.0	-191.2	-186.7	-168.1	-163.3	-144.0	-139.1	-119.3	-114.2
March	-99.1	-78.8	-73.7	-53.1	-48.0	-27.2	-22.1	-1.3	3.8	24.5	29.6
April	60.3	80.5	85.6	105.4	110.3	129.8	134.5	153.5	158.2	176.5	180.9
May	202.6	219.3	223.3	238.8	242.5	256.8	260.2	273.1	276.2	287.6	290.2
June	304.2	311.6	313.3	318.7	319.9	323.3	323.8	325.0	325.2	322.8	323.9
July	319.9	314.8	313.3	306.4	304.4	295.4	293.0	282.4	279.5	267.4	264.1
August	243.4	228.3	224.4	208.3	204.2	187.1	182.7	164.9	160.4	141.8	137.1
September	108.5	88.9	84.0	64.0	59.0	38.9	33.9	13.6	8.5	-11.9	-17.0
October	-42.5	-62.8	-67.9	-88.1	-93.0	-113.0	-118.0	-137.5	-142.4	-161.5	-166.1
November	-193.5	-211.1	-215.3	-231.9	-235.9	-251.2	-254.9	-268.8	-272.1	-284.4	-287.4
December	-300.3	-309.0	-310.8	-317.1	-318.5	-322.5	-323.3	-325.0	-325.2	-324.4	-323.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	318.2	312.2	310.4	302.1	299.7	289.4	286.5	274.3	271.1	257.2	253.6
February	230.2	213.4	209.0	191.2	186.7	168.1	163.3	144.0	139.1	119.3	114.2
March	99.1	78.8	73.7	53.1	48.0	27.2	22.1	1.3	-3.8	-24.5	-29.6
April	-60.3	-80.5	-85.6	-105.4	-110.3	-129.8	-134.5	-153.5	-158.2	-176.5	-180.9
May	-202.6	-219.3	-223.3	-238.8	-242.5	-256.8	-260.2	-273.1	-276.2	-287.6	-290.2
June	-304.2	-311.6	-313.3	-318.7	-319.9	-323.3	-323.8	-325.0	-325.2	-322.8	-323.9
July	-319.9	-314.8	-313.3	-306.4	-304.4	-295.4	-293.0	-282.4	-279.5	-267.4	-264.1
August	-243.4	-228.3	-224.4	-208.3	-204.2	-187.1	-182.7	-164.9	-160.4	-141.8	-137.1
September	-108.5	-88.9	-84.0	-64.0	-59.0	-38.9	-33.9	-13.6	-8.5	11.9	17.0
October	42.5	62.8	67.9	88.1	93.0	113.0	118.0	137.5	142.4	161.5	166.1
November	193.5	211.1	215.3	231.9	235.9	251.2	254.9	268.8	272.1	284.4	287.4
December	300.3	309.0	310.8	317.1	318.5	322.5	323.3	325.0	325.2	324.4	323.9

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: 60.0° N/S

Earliest Sunrise: 2:33 a.m.    Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1732.1 mm  
 Sunrise/Sunset Markers: X = ± 385.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1732.1	1732.1	0.0						
11:55	12:05	43.6	1731.6	1732.2	43.6	8:25	3:35	1612.9	1024.2	1910.6	1761.4
11:50	12:10	87.2	1730.4	1732.6	87.3	8:20	3:40	1638.3	993.5	1916.0	1797.1
11:45	12:15	130.8	1728.3	1733.3	130.9	8:15	3:45	1662.9	962.3	1921.3	1832.5
11:40	12:20	174.3	1725.5	1734.2	174.4	8:10	3:50	1686.8	930.6	1926.5	1867.5
11:35	12:25	217.7	1721.8	1735.5	218.0	8:05	3:55	1709.8	898.5	1931.5	1902.2
11:30	12:30	261.1	1717.2	1737.0	261.5	8:00	4:00	1732.1	866.0	1936.5	1936.5
11:25	12:35	304.2	1711.9	1738.7	304.9	7:55	4:05	1753.5	833.1	1941.3	1970.5
11:20	12:40	347.3	1705.7	1740.7	348.3	7:50	4:10	1774.0	799.8	1946.0	2004.1
11:15	12:45	390.2	1698.8	1743.0	391.6	7:45	4:15	1793.7	766.1	1950.5	2037.3
11:10	12:50	432.9	1691.0	1745.5	434.8	7:40	4:20	1812.6	732.0	1954.8	2070.2
11:05	12:55	475.4	1682.4	1748.3	478.0	7:35	4:25	1830.6	697.6	1959.0	2102.7
11:00	1:00	517.6	1673.0	1751.3	521.0	7:30	4:30	1847.8	662.8	1963.0	2134.8
10:55	1:05	559.7	1662.9	1754.5	563.9	7:25	4:35	1864.0	627.8	1966.9	2166.6
10:50	1:10	601.4	1651.9	1758.0	606.7	7:20	4:40	1879.4	592.4	1970.5	2197.9
10:45	1:15	642.9	1640.1	1761.6	649.4	7:15	4:45	1893.9	556.7	1974.0	2228.9
10:40	1:20	684.0	1627.6	1765.5	692.0	7:10	4:50	1907.4	520.8	1977.3	2259.5
10:35	1:25	724.9	1614.3	1769.6	734.4	7:05	4:55	1920.1	484.7	1980.3	2289.7
10:30	1:30	765.4	1600.2	1773.8	776.6	7:00	5:00	1931.9	448.3	1983.2	2319.5
10:25	1:35	805.5	1585.4	1778.3	818.7	6:55	5:05	1942.7	411.7	1985.8	2348.9
10:20	1:40	845.2	1569.8	1782.9	860.7	6:50	5:10	1952.6	374.9	1988.3	2377.9
10:15	1:45	884.6	1553.4	1787.6	902.4	6:45	5:15	1961.6	337.9	1990.5	2406.5
10:10	1:50	923.5	1536.3	1792.5	944.0	6:40	5:20	1969.6	300.8	1992.4	2434.7
10:05	1:55	962.0	1518.5	1797.6	985.4	6:35	5:25	1976.7	263.5	1994.2	2462.5
10:00	2:00	1000.0	1500.0	1802.8	1026.6	6:30	5:30	1982.9	226.1	1995.7	2489.9
9:55	2:05	1037.5	1480.8	1808.1	1067.5	6:25	5:35	1988.1	188.6	1997.0	2516.9
9:50	2:10	1074.6	1460.8	1813.5	1108.3	6:20	5:40	1992.4	151.0	1998.1	2543.5
9:45	2:15	1111.1	1440.1	1819.0	1148.8	6:15	5:45	1995.7	113.3	1998.9	2569.7
9:40	2:20	1147.2	1418.8	1824.6	1189.1	6:10	5:50	1998.1	75.6	1999.5	2595.5
9:35	2:25	1182.6	1396.8	1830.2	1229.2	6:05	5:55	1999.5	37.8	1999.9	2620.8
9:30	2:30	1217.5	1374.1	1835.9	1269.0	6:00	6:00	2000.0	0.0	2000.0	2645.8
9:25	2:35	1251.8	1350.8	1841.7	1308.6	5:55	6:05	1999.5	-37.8	1999.9	2670.3
9:20	2:40	1285.6	1326.8	1847.5	1347.9	5:50	6:10	1998.1	-75.6	1999.5	2694.4
9:15	2:45	1318.7	1302.2	1853.3	1387.0	5:45	6:15	1995.7	-113.3	1998.9	2718.1
9:10	2:50	1351.2	1277.0	1859.1	1425.7	5:40	6:20	1992.4	-151.0	1998.1	2741.4
9:05	2:55	1383.0	1251.2	1865.0	1464.2	5:35	6:25	1988.1	-188.6	1997.0	2764.3
9:00	3:00	1414.2	1224.7	1870.8	1502.5	5:30	6:30	1982.9	-226.1	1995.7	2786.8
8:55	3:05	1444.7	1197.7	1876.6	1540.4	5:25	6:35	1976.7	-263.5	1994.2	2808.8
8:50	3:10	1474.6	1170.2	1882.4	1578.0	5:20	6:40	1969.6	-300.8	1992.4	2830.5
8:45	3:15	1503.7	1142.0	1888.2	1615.3	5:15	6:45	1961.6	-337.9	1990.5	2851.8
8:40	3:20	1532.1	1113.3	1893.9	1652.3	5:10	6:50	1952.6	-374.9	1988.3	2872.6
8:35	3:25	1559.8	1084.1	1899.5	1689.0	5:05	6:55	1942.7	-411.7	1985.8	2893.0
8:30	3:30	1586.7	1054.4	1905.1	1725.4	5:00	7:00	1931.9	-448.3	1983.2	2913.1

Analemmatic Sundial

Latitude: 60.0° N/S

Earliest Sunrise: 2:33 a.m. Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1732.1 mm  
 Sunrise/Sunset Markers: X = ± 385.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	1920.1	-484.7	1980.3	2932.7	2:55	9:05	1383.0	-1251.2	1865.0	3288.2
4:50	7:10	1907.4	-520.8	1977.3	2951.9	2:50	9:10	1351.2	-1277.0	1859.1	3298.5
4:45	7:15	1893.9	-556.7	1974.0	2970.7	2:45	9:15	1318.7	-1302.2	1853.3	3308.4
4:40	7:20	1879.4	-592.4	1970.5	2989.2	2:40	9:20	1285.6	-1326.8	1847.5	3318.0
4:35	7:25	1864.0	-627.8	1966.9	3007.2	2:35	9:25	1251.8	-1350.8	1841.7	3327.3
4:30	7:30	1847.8	-662.8	1963.0	3024.8	2:30	9:30	1217.5	-1374.1	1835.9	3336.3
4:25	7:35	1830.6	-697.6	1959.0	3042.1						
4:20	7:40	1812.6	-732.0	1954.8	3058.9						
4:15	7:45	1793.7	-766.1	1950.5	3075.4						
4:10	7:50	1774.0	-799.8	1946.0	3091.5						
4:05	7:55	1753.5	-833.1	1941.3	3107.2						
4:00	8:00	1732.1	-866.0	1936.5	3122.5						
3:55	8:05	1709.8	-898.5	1931.5	3137.4						
3:50	8:10	1686.8	-930.6	1926.5	3152.0						
3:45	8:15	1662.9	-962.3	1921.3	3166.2						
3:40	8:20	1638.3	-993.5	1916.0	3180.0						
3:35	8:25	1612.9	-1024.2	1910.6	3193.5						
3:30	8:30	1586.7	-1054.4	1905.1	3206.6						
3:25	8:35	1559.8	-1084.1	1899.5	3219.3						
3:20	8:40	1532.1	-1113.3	1893.9	3231.6						
3:15	8:45	1503.7	-1142.0	1888.2	3243.7						
3:10	8:50	1474.6	-1170.2	1882.4	3255.3						
3:05	8:55	1444.7	-1197.7	1876.6	3266.6						
3:00	9:00	1414.2	-1224.7	1870.8	3277.6						

## Analemmatic Sundial

Latitude: 60.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2000 mm    Semi-Minor Axis (N-S): 1732.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-424.3	-416.3	-413.8	-402.8	-399.6	-385.9	-382.1	-365.8	-361.4	-343.0	-338.1
February	-306.9	-284.5	-278.6	-254.9	-249.0	-224.1	-217.7	-192.0	-185.5	-159.1	-152.3
March	-132.2	-105.1	-98.2	-70.8	-64.0	-36.3	-29.5	-1.7	5.1	32.6	39.5
April	80.5	107.4	114.1	140.5	147.1	173.1	179.4	204.7	210.9	235.3	241.2
May	270.2	292.4	297.7	318.4	323.4	342.4	346.9	364.2	368.3	383.5	386.9
June	405.7	415.4	417.7	424.9	426.5	431.1	431.7	433.4	433.6	430.5	431.9
July	426.5	419.7	417.7	408.5	405.9	393.9	390.7	376.5	372.7	356.5	352.2
August	324.5	304.4	299.3	277.7	272.3	249.5	243.6	219.9	213.8	189.1	182.8
September	144.6	118.5	112.0	85.4	78.7	51.9	45.2	18.2	11.3	-15.9	-22.7
October	-56.6	-83.8	-90.5	-117.5	-124.0	-150.7	-157.3	-183.4	-189.9	-215.3	-221.5
November	-258.1	-281.5	-287.1	-309.2	-314.5	-335.0	-339.8	-358.4	-362.8	-379.3	-383.3
December	-400.4	-412.0	-414.4	-422.8	-424.7	-430.0	-431.1	-433.4	-433.6	-432.5	-431.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	424.3	416.3	413.8	402.8	399.6	385.9	382.1	365.8	361.4	343.0	338.1
February	306.9	284.5	278.6	254.9	249.0	224.1	217.7	192.0	185.5	159.1	152.3
March	132.2	105.1	98.2	70.8	64.0	36.3	29.5	1.7	-5.1	-32.6	-39.5
April	-80.5	-107.4	-114.1	-140.5	-147.1	-173.1	-179.4	-204.7	-210.9	-235.3	-241.2
May	-270.2	-292.4	-297.7	-318.4	-323.4	-342.4	-346.9	-364.2	-368.3	-383.5	-386.9
June	-405.7	-415.4	-417.7	-424.9	-426.5	-431.1	-431.7	-433.4	-433.6	-430.5	-431.9
July	-426.5	-419.7	-417.7	-408.5	-405.9	-393.9	-390.7	-376.5	-372.7	-356.5	-352.2
August	-324.5	-304.4	-299.3	-277.7	-272.3	-249.5	-243.6	-219.9	-213.8	-189.1	-182.8
September	-144.6	-118.5	-112.0	-85.4	-78.7	-51.9	-45.2	-18.2	-11.3	15.9	22.7
October	56.6	83.8	90.5	117.5	124.0	150.7	157.3	183.4	189.9	215.3	221.5
November	258.1	281.5	287.1	309.2	314.5	335.0	339.8	358.4	362.8	379.3	383.3
December	400.4	412.0	414.4	422.8	424.7	430.0	431.1	433.4	433.6	432.5	431.9

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: 60.0° N/S

Earliest Sunrise: 2:33 a.m. Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 2165.1 mm  
 Sunrise/Sunset Markers: X = ± 481.7 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	2165.1	2165.1	0.0						
11:55	12:05	54.5	2164.5	2165.2	54.5	8:25	3:35	2016.1	1280.2	2388.2	2201.7
11:50	12:10	109.0	2163.0	2165.7	109.1	8:20	3:40	2047.9	1241.8	2395.0	2246.4
11:45	12:15	163.5	2160.4	2166.6	163.6	8:15	3:45	2078.7	1202.8	2401.6	2290.6
11:40	12:20	217.9	2156.8	2167.8	218.0	8:10	3:50	2108.5	1163.3	2408.1	2334.4
11:35	12:25	272.2	2152.2	2169.3	272.5	8:05	3:55	2137.3	1123.2	2414.4	2377.7
11:30	12:30	326.3	2146.5	2171.2	326.8	8:00	4:00	2165.1	1082.5	2420.6	2420.6
11:25	12:35	380.3	2139.9	2173.4	381.1	7:55	4:05	2191.8	1041.4	2426.6	2463.1
11:20	12:40	434.1	2132.2	2175.9	435.4	7:50	4:10	2217.5	999.7	2432.5	2505.1
11:15	12:45	487.7	2123.5	2178.8	489.5	7:45	4:15	2242.2	957.6	2438.1	2546.6
11:10	12:50	541.1	2113.7	2181.9	543.5	7:40	4:20	2265.8	915.0	2443.5	2587.7
11:05	12:55	594.2	2103.0	2185.4	597.4	7:35	4:25	2288.3	872.0	2448.8	2628.4
11:00	1:00	647.0	2091.3	2189.1	651.2	7:30	4:30	2309.7	828.5	2453.8	2668.5
10:55	1:05	699.6	2078.6	2193.1	704.9	7:25	4:35	2330.0	784.7	2458.6	2708.2
10:50	1:10	751.8	2064.9	2197.5	758.4	7:20	4:40	2349.2	740.5	2463.2	2747.4
10:45	1:15	803.6	2050.2	2202.0	811.8	7:15	4:45	2367.3	695.9	2467.5	2786.1
10:40	1:20	855.1	2034.5	2206.9	865.0	7:10	4:50	2384.3	651.0	2471.6	2824.4
10:35	1:25	906.1	2017.9	2212.0	918.0	7:05	4:55	2400.1	605.8	2475.4	2862.1
10:30	1:30	956.7	2000.3	2217.3	970.8	7:00	5:00	2414.8	560.4	2479.0	2899.4
10:25	1:35	1006.9	1981.7	2222.8	1023.4	6:55	5:05	2428.4	514.6	2482.3	2936.1
10:20	1:40	1056.5	1962.2	2228.6	1075.8	6:50	5:10	2440.7	468.6	2485.3	2972.4
10:15	1:45	1105.7	1941.8	2234.5	1128.0	6:45	5:15	2452.0	422.4	2488.1	3008.2
10:10	1:50	1154.4	1920.4	2240.7	1180.0	6:40	5:20	2462.0	376.0	2490.6	3043.4
10:05	1:55	1202.5	1898.2	2247.0	1231.7	6:35	5:25	2470.9	329.4	2492.8	3078.2
10:00	2:00	1250.0	1875.0	2253.5	1283.2	6:30	5:30	2478.6	282.6	2494.7	3112.4
9:55	2:05	1296.9	1850.9	2260.1	1334.4	6:25	5:35	2485.1	235.7	2496.3	3146.2
9:50	2:10	1343.2	1826.0	2266.8	1385.4	6:20	5:40	2490.5	188.7	2497.6	3179.4
9:45	2:15	1388.9	1800.2	2273.7	1436.1	6:15	5:45	2494.6	141.6	2498.7	3212.1
9:40	2:20	1433.9	1773.5	2280.7	1486.4	6:10	5:50	2497.6	94.4	2499.4	3244.3
9:35	2:25	1478.3	1746.0	2287.8	1536.5	6:05	5:55	2499.4	47.2	2499.9	3276.0
9:30	2:30	1521.9	1717.7	2294.9	1586.3	6:00	6:00	2500.0	0.0	2500.0	3307.2
9:25	2:35	1564.8	1688.5	2302.1	1635.8	5:55	6:05	2499.4	-47.2	2499.9	3337.9
9:20	2:40	1607.0	1658.5	2309.3	1684.9	5:50	6:10	2497.6	-94.4	2499.4	3368.0
9:15	2:45	1648.4	1627.8	2316.6	1733.7	5:45	6:15	2494.6	-141.6	2498.7	3397.6
9:10	2:50	1689.0	1596.3	2323.9	1782.2	5:40	6:20	2490.5	-188.7	2497.6	3426.8
9:05	2:55	1728.8	1564.0	2331.2	1830.3	5:35	6:25	2485.1	-235.7	2496.3	3455.4
9:00	3:00	1767.8	1530.9	2338.5	1878.1	5:30	6:30	2478.6	-282.6	2494.7	3483.5
8:55	3:05	1805.9	1497.2	2345.8	1925.5	5:25	6:35	2470.9	-329.4	2492.8	3511.1
8:50	3:10	1843.2	1462.7	2353.0	1972.5	5:20	6:40	2462.0	-376.0	2490.6	3538.1
8:45	3:15	1879.6	1427.5	2360.2	2019.1	5:15	6:45	2452.0	-422.4	2488.1	3564.7
8:40	3:20	1915.1	1391.7	2367.4	2065.4	5:10	6:50	2440.7	-468.6	2485.3	3590.7
8:35	3:25	1949.7	1355.2	2374.4	2111.2	5:05	6:55	2428.4	-514.6	2482.3	3616.3
8:30	3:30	1983.4	1318.0	2381.4	2156.7	5:00	7:00	2414.8	-560.4	2479.0	3641.3

Analemmatic Sundial

Latitude: 60.0° N/S

Earliest Sunrise: 2:33 a.m. Latest Sunset: 9:27 p.m.  
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 2165.1 mm  
 Sunrise/Sunset Markers: X = ± 481.7 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	2400.1	-605.8	2475.4	3665.9	2:55	9:05	1728.8	-1564.0	2331.2	4110.3
4:50	7:10	2384.3	-651.0	2471.6	3689.9	2:50	9:10	1689.0	-1596.3	2323.9	4123.1
4:45	7:15	2367.3	-695.9	2467.5	3713.4	2:45	9:15	1648.4	-1627.8	2316.6	4135.6
4:40	7:20	2349.2	-740.5	2463.2	3736.5	2:40	9:20	1607.0	-1658.5	2309.3	4147.6
4:35	7:25	2330.0	-784.7	2458.6	3759.0	2:35	9:25	1564.8	-1688.5	2302.1	4159.2
4:30	7:30	2309.7	-828.5	2453.8	3781.0	2:30	9:30	1521.9	-1717.7	2294.9	4170.3
4:25	7:35	2288.3	-872.0	2448.8	3802.6						
4:20	7:40	2265.8	-915.0	2443.5	3823.7						
4:15	7:45	2242.2	-957.6	2438.1	3844.3						
4:10	7:50	2217.5	-999.7	2432.5	3864.4						
4:05	7:55	2191.8	-1041.4	2426.6	3884.0						
4:00	8:00	2165.1	-1082.5	2420.6	3903.1						
3:55	8:05	2137.3	-1123.2	2414.4	3921.8						
3:50	8:10	2108.5	-1163.3	2408.1	3940.0						
3:45	8:15	2078.7	-1202.8	2401.6	3957.7						
3:40	8:20	2047.9	-1241.8	2395.0	3975.0						
3:35	8:25	2016.1	-1280.2	2388.2	3991.8						
3:30	8:30	1983.4	-1318.0	2381.4	4008.2						
3:25	8:35	1949.7	-1355.2	2374.4	4024.1						
3:20	8:40	1915.1	-1391.7	2367.4	4039.6						
3:15	8:45	1879.6	-1427.5	2360.2	4054.6						
3:10	8:50	1843.2	-1462.7	2353.0	4069.2						
3:05	8:55	1805.9	-1497.2	2345.8	4083.3						
3:00	9:00	1767.8	-1530.9	2338.5	4097.0						

## Analematic Sundial

Latitude: 60.0° N/S

## Date Scale

Semi-Major Axis (E-W): 2500 mm    Semi-Minor Axis (N-S): 2165.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-530.3	-520.3	-517.3	-503.5	-499.5	-482.3	-477.6	-457.2	-451.8	-428.7	-422.6
February	-383.6	-355.6	-348.3	-318.6	-311.2	-280.1	-272.1	-240.0	-231.9	-198.9	-190.4
March	-165.2	-131.4	-122.8	-88.5	-80.0	-45.4	-36.9	-2.2	6.3	40.8	49.3
April	100.6	134.2	142.6	175.7	183.9	216.4	224.2	255.9	263.6	294.1	301.5
May	337.7	365.5	372.2	398.0	404.2	428.0	433.6	455.2	460.4	479.3	483.6
June	507.1	519.3	522.1	531.1	533.2	538.9	539.6	541.7	542.0	538.1	539.9
July	533.2	524.7	522.1	510.6	507.3	492.4	488.4	470.6	465.9	445.6	440.2
August	405.7	380.5	374.1	347.1	340.3	311.9	304.5	274.8	267.3	236.4	228.5
September	180.8	148.2	140.0	106.7	98.4	64.9	56.5	22.7	14.2	-19.9	-28.4
October	-70.8	-104.7	-113.1	-146.8	-155.0	-188.4	-196.6	-229.2	-237.3	-269.1	-276.9
November	-322.6	-351.8	-358.9	-386.5	-393.2	-418.7	-424.8	-448.1	-453.5	-474.1	-479.1
December	-500.5	-515.0	-518.0	-528.5	-530.9	-537.6	-538.9	-541.7	-542.0	-540.7	-539.9

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	530.3	520.3	517.3	503.5	499.5	482.3	477.6	457.2	451.8	428.7	422.6
February	383.6	355.6	348.3	318.6	311.2	280.1	272.1	240.0	231.9	198.9	190.4
March	165.2	131.4	122.8	88.5	80.0	45.4	36.9	2.2	-6.3	-40.8	-49.3
April	-100.6	-134.2	-142.6	-175.7	-183.9	-216.4	-224.2	-255.9	-263.6	-294.1	-301.5
May	-337.7	-365.5	-372.2	-398.0	-404.2	-428.0	-433.6	-455.2	-460.4	-479.3	-483.6
June	-507.1	-519.3	-522.1	-531.1	-533.2	-538.9	-539.6	-541.7	-542.0	-538.1	-539.9
July	-533.2	-524.7	-522.1	-510.6	-507.3	-492.4	-488.4	-470.6	-465.9	-445.6	-440.2
August	-405.7	-380.5	-374.1	-347.1	-340.3	-311.9	-304.5	-274.8	-267.3	-236.4	-228.5
September	-180.8	-148.2	-140.0	-106.7	-98.4	-64.9	-56.5	-22.7	-14.2	19.9	28.4
October	70.8	104.7	113.1	146.8	155.0	188.4	196.6	229.2	237.3	269.1	276.9
November	322.6	351.8	358.9	386.5	393.2	418.7	424.8	448.1	453.5	474.1	479.1
December	500.5	515.0	518.0	528.5	530.9	537.6	538.9	541.7	542.0	540.7	539.9

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 |