

Analemmatic Sundial

Latitude: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 731.4 mm
 Sunrise/Sunset Markers: X = ± 427.4 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	731.4	731.4	0.0						
11:55	12:05	21.8	731.2	731.5	21.8	8:25	3:35	806.4	432.5	915.1	860.1
11:50	12:10	43.6	730.7	732.0	43.6	8:20	3:40	819.2	419.5	920.3	876.5
11:45	12:15	65.4	729.8	732.7	65.4	8:15	3:45	831.5	406.3	925.4	892.7
11:40	12:20	87.2	728.6	733.8	87.2	8:10	3:50	843.4	393.0	930.4	908.7
11:35	12:25	108.9	727.0	735.1	109.0	8:05	3:55	854.9	379.4	935.3	924.5
11:30	12:30	130.5	725.1	736.8	130.7	8:00	4:00	866.0	365.7	940.1	940.1
11:25	12:35	152.1	722.8	738.7	152.4	7:55	4:05	876.7	351.8	944.7	955.4
11:20	12:40	173.6	720.2	740.9	174.0	7:50	4:10	887.0	337.7	949.1	970.4
11:15	12:45	195.1	717.3	743.4	195.6	7:45	4:15	896.9	323.5	953.4	985.3
11:10	12:50	216.4	714.0	746.1	217.1	7:40	4:20	906.3	309.1	957.6	999.9
11:05	12:55	237.7	710.4	749.1	238.6	7:35	4:25	915.3	294.6	961.5	1014.2
11:00	1:00	258.8	706.4	752.4	260.0	7:30	4:30	923.9	279.9	965.3	1028.3
10:55	1:05	279.8	702.1	755.8	281.4	7:25	4:35	932.0	265.1	969.0	1042.1
10:50	1:10	300.7	697.5	759.6	302.6	7:20	4:40	939.7	250.1	972.4	1055.7
10:45	1:15	321.4	692.5	763.5	323.8	7:15	4:45	946.9	235.1	975.7	1069.1
10:40	1:20	342.0	687.2	767.7	344.9	7:10	4:50	953.7	219.9	978.7	1082.2
10:35	1:25	362.4	681.6	772.0	365.8	7:05	4:55	960.0	204.7	981.6	1095.0
10:30	1:30	382.7	675.7	776.5	386.7	7:00	5:00	965.9	189.3	984.3	1107.6
10:25	1:35	402.7	669.4	781.2	407.5	6:55	5:05	971.3	173.8	986.8	1120.0
10:20	1:40	422.6	662.8	786.1	428.1	6:50	5:10	976.3	158.3	989.0	1132.1
10:15	1:45	442.3	655.9	791.1	448.7	6:45	5:15	980.8	142.7	991.1	1143.9
10:10	1:50	461.7	648.7	796.3	469.1	6:40	5:20	984.8	127.0	993.0	1155.5
10:05	1:55	481.0	641.2	801.6	489.4	6:35	5:25	988.4	111.3	994.6	1166.8
10:00	2:00	500.0	633.4	806.9	509.5	6:30	5:30	991.4	95.5	996.0	1177.8
9:55	2:05	518.8	625.2	812.4	529.5	6:25	5:35	994.1	79.6	997.2	1188.7
9:50	2:10	537.3	616.8	818.0	549.4	6:20	5:40	996.2	63.7	998.2	1199.2
9:45	2:15	555.6	608.1	823.7	569.1	6:15	5:45	997.9	47.8	999.0	1209.5
9:40	2:20	573.6	599.1	829.4	588.6	6:10	5:50	999.0	31.9	999.6	1219.6
9:35	2:25	591.3	589.8	835.2	608.0	6:05	5:55	999.8	16.0	999.9	1229.4
9:30	2:30	608.8	580.2	841.0	627.2	6:00	6:00	1000.0	0.0	1000.0	1238.9
9:25	2:35	625.9	570.4	846.8	646.3	5:55	6:05	999.8	-16.0	999.9	1248.2
9:20	2:40	642.8	560.2	852.7	665.2	5:50	6:10	999.0	-31.9	999.6	1257.2
9:15	2:45	659.3	549.9	858.5	683.9	5:45	6:15	997.9	-47.8	999.0	1266.0
9:10	2:50	675.6	539.2	864.4	702.4	5:40	6:20	996.2	-63.7	998.2	1274.6
9:05	2:55	691.5	528.3	870.2	720.7	5:35	6:25	994.1	-79.6	997.2	1282.9
9:00	3:00	707.1	517.1	876.0	738.8	5:30	6:30	991.4	-95.5	996.0	1291.0
8:55	3:05	722.4	505.7	881.8	756.8	5:25	6:35	988.4	-111.3	994.6	1298.8
8:50	3:10	737.3	494.1	887.5	774.5	5:20	6:40	984.8	-127.0	993.0	1306.4
8:45	3:15	751.8	482.2	893.2	792.0	5:15	6:45	980.8	-142.7	991.1	1313.7
8:40	3:20	766.0	470.1	898.8	809.4	5:10	6:50	976.3	-158.3	989.0	1320.8
8:35	3:25	779.9	457.8	904.3	826.5	5:05	6:55	971.3	-173.8	986.8	1327.7
8:30	3:30	793.4	445.2	909.7	843.4	5:00	7:00	965.9	-189.3	984.3	1334.4

Analemmatic Sundial

Latitude: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 731.4 mm
 Sunrise/Sunset Markers: $X = \pm 427.4$ mm

Local Time		X	Y	Z	W
4:55	7:05	960.0	-204.7	981.6	1340.8
4:50	7:10	953.7	-219.9	978.7	1347.0
4:45	7:15	946.9	-235.1	975.7	1353.0
4:40	7:20	939.7	-250.1	972.4	1358.8
4:35	7:25	932.0	-265.1	969.0	1364.4
4:30	7:30	923.9	-279.9	965.3	1369.7
4:25	7:35	915.3	-294.6	961.5	1374.9
4:20	7:40	906.3	-309.1	957.6	1379.8
4:15	7:45	896.9	-323.5	953.4	1384.6
4:10	7:50	887.0	-337.7	949.1	1389.1
4:05	7:55	876.7	-351.8	944.7	1393.5
4:00	8:00	866.0	-365.7	940.1	1397.7

Analematic Sundial

Latitude: 47.0° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 731.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-289.4	-283.9	-282.2	-274.7	-272.5	-263.2	-260.6	-249.4	-246.5	-233.9	-230.6
February	-209.3	-194.0	-190.0	-173.8	-169.8	-152.8	-148.5	-131.0	-126.5	-108.5	-103.9
March	-90.2	-71.7	-67.0	-48.3	-43.6	-24.8	-20.1	-1.2	3.5	22.3	26.9
April	54.9	73.2	77.8	95.8	100.3	118.0	122.3	139.6	143.8	160.5	164.5
May	184.3	199.4	203.1	217.1	220.5	233.5	236.6	248.4	251.2	261.5	263.8
June	276.7	283.3	284.9	289.8	290.9	294.0	294.4	295.6	295.7	293.6	294.6
July	290.9	286.3	284.9	278.6	276.8	268.6	266.4	256.8	254.2	243.1	240.2
August	221.3	207.6	204.1	189.4	185.7	170.2	166.1	149.9	145.8	129.0	124.7
September	98.6	80.8	76.4	58.2	53.7	35.4	30.9	12.4	7.7	-10.8	-15.5
October	-38.6	-57.1	-61.7	-80.1	-84.6	-102.8	-107.3	-125.0	-129.5	-146.8	-151.1
November	-176.0	-192.0	-195.8	-210.9	-214.5	-228.5	-231.8	-244.5	-247.4	-258.7	-261.4
December	-273.1	-281.0	-282.6	-288.4	-289.6	-293.3	-294.0	-295.6	-295.7	-295.0	-294.6

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	289.4	283.9	282.2	274.7	272.5	263.2	260.6	249.4	246.5	233.9	230.6
February	209.3	194.0	190.0	173.8	169.8	152.8	148.5	131.0	126.5	108.5	103.9
March	90.2	71.7	67.0	48.3	43.6	24.8	20.1	1.2	-3.5	-22.3	-26.9
April	-54.9	-73.2	-77.8	-95.8	-100.3	-118.0	-122.3	-139.6	-143.8	-160.5	-164.5
May	-184.3	-199.4	-203.1	-217.1	-220.5	-233.5	-236.6	-248.4	-251.2	-261.5	-263.8
June	-276.7	-283.3	-284.9	-289.8	-290.9	-294.0	-294.4	-295.6	-295.7	-293.6	-294.6
July	-290.9	-286.3	-284.9	-278.6	-276.8	-268.6	-266.4	-256.8	-254.2	-243.1	-240.2
August	-221.3	-207.6	-204.1	-189.4	-185.7	-170.2	-166.1	-149.9	-145.8	-129.0	-124.7
September	-98.6	-80.8	-76.4	-58.2	-53.7	-35.4	-30.9	-12.4	-7.7	10.8	15.5
October	38.6	57.1	61.7	80.1	84.6	102.8	107.3	125.0	129.5	146.8	151.1
November	176.0	192.0	195.8	210.9	214.5	228.5	231.8	244.5	247.4	258.7	261.4
December	273.1	281.0	282.6	288.4	289.6	293.3	294.0	295.6	295.7	295.0	294.6

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: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1097.0 mm
 Sunrise/Sunset Markers: X = ± 641.1 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1097.0	1097.0	0.0						
11:55	12:05	32.7	1096.8	1097.3	32.7	8:25	3:35	1209.7	648.7	1372.6	1290.1
11:50	12:10	65.4	1096.0	1097.9	65.4	8:20	3:40	1228.7	629.2	1380.5	1314.8
11:45	12:15	98.1	1094.7	1099.1	98.1	8:15	3:45	1247.2	609.5	1388.2	1339.1
11:40	12:20	130.7	1092.9	1100.6	130.8	8:10	3:50	1265.1	589.4	1395.7	1363.1
11:35	12:25	163.3	1090.5	1102.7	163.4	8:05	3:55	1282.4	569.1	1403.0	1386.8
11:30	12:30	195.8	1087.6	1105.1	196.0	8:00	4:00	1299.0	548.5	1410.1	1410.1
11:25	12:35	228.2	1084.3	1108.0	228.5	7:55	4:05	1315.1	527.7	1417.0	1433.1
11:20	12:40	260.5	1080.4	1111.3	261.0	7:50	4:10	1330.5	506.6	1423.7	1455.7
11:15	12:45	292.6	1076.0	1115.0	293.4	7:45	4:15	1345.3	485.2	1430.1	1477.9
11:10	12:50	324.7	1071.0	1119.2	325.7	7:40	4:20	1359.5	463.6	1436.3	1499.8
11:05	12:55	356.5	1065.6	1123.7	357.9	7:35	4:25	1373.0	441.8	1442.3	1521.3
11:00	1:00	388.2	1059.7	1128.5	390.0	7:30	4:30	1385.8	419.8	1448.0	1542.4
10:55	1:05	419.7	1053.2	1133.8	422.0	7:25	4:35	1398.0	397.6	1453.5	1563.2
10:50	1:10	451.1	1046.3	1139.3	453.9	7:20	4:40	1409.5	375.2	1458.6	1583.6
10:45	1:15	482.2	1038.8	1145.3	485.7	7:15	4:45	1420.4	352.6	1463.5	1603.6
10:40	1:20	513.0	1030.9	1151.5	517.3	7:10	4:50	1430.6	329.9	1468.1	1623.3
10:35	1:25	543.7	1022.4	1158.0	548.8	7:05	4:55	1440.1	307.0	1472.4	1642.6
10:30	1:30	574.0	1013.5	1164.8	580.1	7:00	5:00	1448.9	283.9	1476.4	1661.4
10:25	1:35	604.1	1004.1	1171.8	611.2	6:55	5:05	1457.0	260.7	1480.2	1680.0
10:20	1:40	633.9	994.2	1179.1	642.2	6:50	5:10	1464.4	237.4	1483.6	1698.1
10:15	1:45	663.4	983.9	1186.7	673.0	6:45	5:15	1471.2	214.0	1486.7	1715.8
10:10	1:50	692.6	973.1	1194.4	703.6	6:40	5:20	1477.2	190.5	1489.4	1733.2
10:05	1:55	721.5	961.8	1202.3	734.0	6:35	5:25	1482.5	166.9	1491.9	1750.2
10:00	2:00	750.0	950.1	1210.4	764.3	6:30	5:30	1487.2	143.2	1494.0	1766.8
9:55	2:05	778.2	937.9	1218.7	794.3	6:25	5:35	1491.1	119.4	1495.9	1783.0
9:50	2:10	805.9	925.2	1227.0	824.1	6:20	5:40	1494.3	95.6	1497.3	1798.8
9:45	2:15	833.4	912.1	1235.5	853.6	6:15	5:45	1496.8	71.7	1498.5	1814.3
9:40	2:20	860.4	898.6	1244.1	882.9	6:10	5:50	1498.6	47.9	1499.3	1829.3
9:35	2:25	887.0	884.7	1252.8	912.0	6:05	5:55	1499.6	23.9	1499.8	1844.0
9:30	2:30	913.1	870.3	1261.5	940.9	6:00	6:00	1500.0	0.0	1500.0	1858.4
9:25	2:35	938.9	855.6	1270.2	969.4	5:55	6:05	1499.6	-23.9	1499.8	1872.3
9:20	2:40	964.2	840.4	1279.0	997.8	5:50	6:10	1498.6	-47.9	1499.3	1885.9
9:15	2:45	989.0	824.8	1287.8	1025.8	5:45	6:15	1496.8	-71.7	1498.5	1899.1
9:10	2:50	1013.4	808.8	1296.6	1053.6	5:40	6:20	1494.3	-95.6	1497.3	1911.9
9:05	2:55	1037.3	792.5	1305.3	1081.1	5:35	6:25	1491.1	-119.4	1495.9	1924.3
9:00	3:00	1060.7	775.7	1314.1	1108.3	5:30	6:30	1487.2	-143.2	1494.0	1936.4
8:55	3:05	1083.5	758.6	1322.7	1135.2	5:25	6:35	1482.5	-166.9	1491.9	1948.2
8:50	3:10	1105.9	741.1	1331.3	1161.8	5:20	6:40	1477.2	-190.5	1489.4	1959.6
8:45	3:15	1127.8	723.3	1339.8	1188.1	5:15	6:45	1471.2	-214.0	1486.7	1970.6
8:40	3:20	1149.1	705.2	1348.2	1214.1	5:10	6:50	1464.4	-237.4	1483.6	1981.3
8:35	3:25	1169.8	686.7	1356.5	1239.7	5:05	6:55	1457.0	-260.7	1480.2	1991.6
8:30	3:30	1190.0	667.8	1364.6	1265.1	5:00	7:00	1448.9	-283.9	1476.4	2001.6

Analemmatic Sundial**Latitude: 47.0° N/S**

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1097.0 mm
 Sunrise/Sunset Markers: X = ± 641.1 mm

Local Time		X	Y	Z	W
4:55	7:05	1440.1	-307.0	1472.4	2011.2
4:50	7:10	1430.6	-329.9	1468.1	2020.6
4:45	7:15	1420.4	-352.6	1463.5	2029.5
4:40	7:20	1409.5	-375.2	1458.6	2038.2
4:35	7:25	1398.0	-397.6	1453.5	2046.6
4:30	7:30	1385.8	-419.8	1448.0	2054.6
4:25	7:35	1373.0	-441.8	1442.3	2062.3
4:20	7:40	1359.5	-463.6	1436.3	2069.7
4:15	7:45	1345.3	-485.2	1430.1	2076.9
4:10	7:50	1330.5	-506.6	1423.7	2083.7
4:05	7:55	1315.1	-527.7	1417.0	2090.2
4:00	8:00	1299.0	-548.5	1410.1	2096.5

Analemmatic Sundial

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Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1097.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-434.0	-425.8	-423.3	-412.1	-408.8	-394.7	-390.8	-374.2	-369.7	-350.8	-345.9
February	-313.9	-291.0	-285.0	-260.8	-254.7	-229.2	-222.7	-196.4	-189.8	-162.8	-155.8
March	-135.2	-107.5	-100.5	-72.4	-65.4	-37.2	-30.2	-1.8	5.2	33.4	40.4
April	82.3	109.9	116.7	143.8	150.5	177.1	183.5	209.4	215.8	240.7	246.7
May	276.4	299.1	304.6	325.7	330.8	350.3	354.8	372.5	376.8	392.3	395.8
June	415.0	425.0	427.3	434.7	436.3	441.0	441.6	443.3	443.5	440.4	441.8
July	436.3	429.4	427.3	417.9	415.2	403.0	399.7	385.1	381.3	364.7	360.3
August	332.0	311.4	306.1	284.1	278.5	255.3	249.2	224.9	218.8	193.5	187.0
September	148.0	121.3	114.6	87.3	80.5	53.1	46.3	18.6	11.6	-16.2	-23.2
October	-57.9	-85.7	-92.6	-120.2	-126.9	-154.2	-160.9	-187.6	-194.2	-220.2	-226.6
November	-264.0	-287.9	-293.7	-316.3	-321.8	-342.7	-347.7	-366.7	-371.1	-388.0	-392.1
December	-409.6	-421.4	-423.9	-432.6	-434.4	-439.9	-441.0	-443.3	-443.5	-442.5	-441.8

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	434.0	425.8	423.3	412.1	408.8	394.7	390.8	374.2	369.7	350.8	345.9
February	313.9	291.0	285.0	260.8	254.7	229.2	222.7	196.4	189.8	162.8	155.8
March	135.2	107.5	100.5	72.4	65.4	37.2	30.2	1.8	-5.2	-33.4	-40.4
April	-82.3	-109.9	-116.7	-143.8	-150.5	-177.1	-183.5	-209.4	-215.8	-240.7	-246.7
May	-276.4	-299.1	-304.6	-325.7	-330.8	-350.3	-354.8	-372.5	-376.8	-392.3	-395.8
June	-415.0	-425.0	-427.3	-434.7	-436.3	-441.0	-441.6	-443.3	-443.5	-440.4	-441.8
July	-436.3	-429.4	-427.3	-417.9	-415.2	-403.0	-399.7	-385.1	-381.3	-364.7	-360.3
August	-332.0	-311.4	-306.1	-284.1	-278.5	-255.3	-249.2	-224.9	-218.8	-193.5	-187.0
September	-148.0	-121.3	-114.6	-87.3	-80.5	-53.1	-46.3	-18.6	-11.6	16.2	23.2
October	57.9	85.7	92.6	120.2	126.9	154.2	160.9	187.6	194.2	220.2	226.6
November	264.0	287.9	293.7	316.3	321.8	342.7	347.7	366.7	371.1	388.0	392.1
December	409.6	421.4	423.9	432.6	434.4	439.9	441.0	443.3	443.5	442.5	441.8

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 | 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: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1462.7 mm
 Sunrise/Sunset Markers: X = ± 854.8 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1462.7	1462.7	0.0						
11:55	12:05	43.6	1462.4	1463.0	43.6	8:25	3:35	1612.9	864.9	1830.2	1720.1
11:50	12:10	87.2	1461.3	1463.9	87.2	8:20	3:40	1638.3	839.0	1840.6	1753.0
11:45	12:15	130.8	1459.6	1465.4	130.8	8:15	3:45	1662.9	812.6	1850.9	1785.5
11:40	12:20	174.3	1457.1	1467.5	174.4	8:10	3:50	1686.8	785.9	1860.9	1817.5
11:35	12:25	217.7	1454.0	1470.2	217.9	8:05	3:55	1709.8	758.8	1870.6	1849.0
11:30	12:30	261.1	1450.2	1473.5	261.4	8:00	4:00	1732.1	731.4	1880.1	1880.1
11:25	12:35	304.2	1445.7	1477.4	304.7	7:55	4:05	1753.5	703.5	1889.3	1910.7
11:20	12:40	347.3	1440.5	1481.8	348.0	7:50	4:10	1774.0	675.4	1898.2	1940.9
11:15	12:45	390.2	1434.6	1486.7	391.2	7:45	4:15	1793.7	646.9	1906.8	1970.5
11:10	12:50	432.9	1428.0	1492.2	434.3	7:40	4:20	1812.6	618.2	1915.1	1999.7
11:05	12:55	475.4	1420.8	1498.2	477.2	7:35	4:25	1830.6	589.1	1923.1	2028.4
11:00	1:00	517.6	1412.9	1504.7	520.0	7:30	4:30	1847.8	559.8	1930.7	2056.6
10:55	1:05	559.7	1404.3	1511.7	562.7	7:25	4:35	1864.0	530.1	1937.9	2084.3
10:50	1:10	601.4	1395.0	1519.1	605.2	7:20	4:40	1879.4	500.3	1944.8	2111.5
10:45	1:15	642.9	1385.1	1527.0	647.5	7:15	4:45	1893.9	470.2	1951.4	2138.2
10:40	1:20	684.0	1374.5	1535.3	689.7	7:10	4:50	1907.4	439.8	1957.5	2164.4
10:35	1:25	724.9	1363.3	1544.0	731.7	7:05	4:55	1920.1	409.3	1963.2	2190.1
10:30	1:30	765.4	1351.4	1553.1	773.4	7:00	5:00	1931.9	378.6	1968.6	2215.3
10:25	1:35	805.5	1338.8	1562.5	815.0	6:55	5:05	1942.7	347.7	1973.5	2239.9
10:20	1:40	845.2	1325.7	1572.2	856.3	6:50	5:10	1952.6	316.6	1978.1	2264.1
10:15	1:45	884.6	1311.9	1582.2	897.3	6:45	5:15	1961.6	285.4	1982.2	2287.8
10:10	1:50	923.5	1297.4	1592.5	938.2	6:40	5:20	1969.6	254.0	1985.9	2310.9
10:05	1:55	962.0	1282.4	1603.1	978.7	6:35	5:25	1976.7	222.5	1989.2	2333.6
10:00	2:00	1000.0	1266.7	1613.9	1019.0	6:30	5:30	1982.9	190.9	1992.1	2355.7
9:55	2:05	1037.5	1250.5	1624.9	1059.0	6:25	5:35	1988.1	159.2	1994.5	2377.3
9:50	2:10	1074.6	1233.6	1636.0	1098.7	6:20	5:40	1992.4	127.5	1996.5	2398.4
9:45	2:15	1111.1	1216.2	1647.4	1138.2	6:15	5:45	1995.7	95.7	1998.0	2419.0
9:40	2:20	1147.2	1198.2	1658.8	1177.3	6:10	5:50	1998.1	63.8	1999.1	2439.1
9:35	2:25	1182.6	1179.6	1670.3	1216.0	6:05	5:55	1999.5	31.9	1999.8	2458.7
9:30	2:30	1217.5	1160.4	1682.0	1254.5	6:00	6:00	2000.0	0.0	2000.0	2477.8
9:25	2:35	1251.8	1140.7	1693.6	1292.6	5:55	6:05	1999.5	-31.9	1999.8	2496.4
9:20	2:40	1285.6	1120.5	1705.4	1330.3	5:50	6:10	1998.1	-63.8	1999.1	2514.5
9:15	2:45	1318.7	1099.7	1717.1	1367.7	5:45	6:15	1995.7	-95.7	1998.0	2532.1
9:10	2:50	1351.2	1078.4	1728.8	1404.8	5:40	6:20	1992.4	-127.5	1996.5	2549.2
9:05	2:55	1383.0	1056.6	1740.5	1441.4	5:35	6:25	1988.1	-159.2	1994.5	2565.8
9:00	3:00	1414.2	1034.3	1752.1	1477.7	5:30	6:30	1982.9	-190.9	1992.1	2581.9
8:55	3:05	1444.7	1011.5	1763.6	1513.6	5:25	6:35	1976.7	-222.5	1989.2	2597.6
8:50	3:10	1474.6	988.2	1775.1	1549.0	5:20	6:40	1969.6	-254.0	1985.9	2612.7
8:45	3:15	1503.7	964.4	1786.4	1584.1	5:15	6:45	1961.6	-285.4	1982.2	2627.5
8:40	3:20	1532.1	940.2	1797.6	1618.7	5:10	6:50	1952.6	-316.6	1978.1	2641.7
8:35	3:25	1559.8	915.5	1808.6	1653.0	5:05	6:55	1942.7	-347.7	1973.5	2655.5
8:30	3:30	1586.7	890.4	1819.5	1686.8	5:00	7:00	1931.9	-378.6	1968.6	2668.8

Analemmatic Sundial

Latitude: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1462.7 mm
 Sunrise/Sunset Markers: X = ± 854.8 mm

Local Time		X	Y	Z	W
4:55	7:05	1920.1	-409.3	1963.2	2681.6
4:50	7:10	1907.4	-439.8	1957.5	2694.1
4:45	7:15	1893.9	-470.2	1951.4	2706.1
4:40	7:20	1879.4	-500.3	1944.8	2717.6
4:35	7:25	1864.0	-530.1	1937.9	2728.7
4:30	7:30	1847.8	-559.8	1930.7	2739.4
4:25	7:35	1830.6	-589.1	1923.1	2749.7
4:20	7:40	1812.6	-618.2	1915.1	2759.6
4:15	7:45	1793.7	-646.9	1906.8	2769.1
4:10	7:50	1774.0	-675.4	1898.2	2778.2
4:05	7:55	1753.5	-703.5	1889.3	2787.0
4:00	8:00	1732.1	-731.4	1880.1	2795.3

Analematic Sundial

Latitude: 47.0° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1462.7 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-578.7	-567.8	-564.4	-549.4	-545.0	-526.3	-521.1	-498.9	-493.0	-467.8	-461.2
February	-418.6	-388.0	-380.1	-347.7	-339.6	-305.6	-296.9	-261.9	-253.0	-217.0	-207.7
March	-180.3	-143.4	-134.0	-96.6	-87.2	-49.5	-40.2	-2.4	6.9	44.5	53.8
April	109.7	146.5	155.6	191.7	200.7	236.1	244.7	279.2	287.7	320.9	329.0
May	368.5	398.9	406.1	434.3	441.1	467.0	473.1	496.7	502.4	523.0	527.7
June	553.3	566.7	569.7	579.5	581.8	588.0	588.8	591.1	591.4	587.1	589.1
July	581.8	572.5	569.7	557.2	553.6	537.3	532.9	513.5	508.4	486.2	480.3
August	442.7	415.2	408.2	378.8	371.4	340.3	332.3	299.9	291.7	258.0	249.4
September	197.3	161.7	152.8	116.5	107.3	70.8	61.7	24.8	15.5	-21.7	-31.0
October	-77.2	-114.3	-123.4	-160.2	-169.2	-205.6	-214.6	-250.1	-259.0	-293.7	-302.1
November	-352.0	-383.9	-391.6	-421.7	-429.0	-456.9	-463.5	-488.9	-494.8	-517.3	-522.8
December	-546.1	-561.9	-565.3	-576.7	-579.3	-586.6	-588.0	-591.1	-591.4	-590.0	-589.1

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	578.7	567.8	564.4	549.4	545.0	526.3	521.1	498.9	493.0	467.8	461.2
February	418.6	388.0	380.1	347.7	339.6	305.6	296.9	261.9	253.0	217.0	207.7
March	180.3	143.4	134.0	96.6	87.2	49.5	40.2	2.4	-6.9	-44.5	-53.8
April	-109.7	-146.5	-155.6	-191.7	-200.7	-236.1	-244.7	-279.2	-287.7	-320.9	-329.0
May	-368.5	-398.9	-406.1	-434.3	-441.1	-467.0	-473.1	-496.7	-502.4	-523.0	-527.7
June	-553.3	-566.7	-569.7	-579.5	-581.8	-588.0	-588.8	-591.1	-591.4	-587.1	-589.1
July	-581.8	-572.5	-569.7	-557.2	-553.6	-537.3	-532.9	-513.5	-508.4	-486.2	-480.3
August	-442.7	-415.2	-408.2	-378.8	-371.4	-340.3	-332.3	-299.9	-291.7	-258.0	-249.4
September	-197.3	-161.7	-152.8	-116.5	-107.3	-70.8	-61.7	-24.8	-15.5	21.7	31.0
October	77.2	114.3	123.4	160.2	169.2	205.6	214.6	250.1	259.0	293.7	302.1
November	352.0	383.9	391.6	421.7	429.0	456.9	463.5	488.9	494.8	517.3	522.8
December	546.1	561.9	565.3	576.7	579.3	586.6	588.0	591.1	591.4	590.0	589.1

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: 47.0° N/S

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1828.4 mm
 Sunrise/Sunset Markers: X = ± 1068.5 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
12:00		0.0	1828.4	1828.4	0.0						
11:55	12:05	54.5	1827.9	1828.8	54.5	8:25	3:35	2016.1	1081.1	2287.7	2150.1
11:50	12:10	109.0	1826.6	1829.9	109.1	8:20	3:40	2047.9	1048.7	2300.8	2191.3
11:45	12:15	163.5	1824.5	1831.8	163.6	8:15	3:45	2078.7	1015.8	2313.6	2231.9
11:40	12:20	217.9	1821.4	1834.4	218.0	8:10	3:50	2108.5	982.4	2326.1	2271.9
11:35	12:25	272.2	1817.5	1837.8	272.4	8:05	3:55	2137.3	948.5	2338.3	2311.3
11:30	12:30	326.3	1812.7	1841.9	326.7	8:00	4:00	2165.1	914.2	2350.2	2350.2
11:25	12:35	380.3	1807.1	1846.7	380.9	7:55	4:05	2191.8	879.4	2361.7	2388.4
11:20	12:40	434.1	1800.6	1852.2	435.0	7:50	4:10	2217.5	844.3	2372.8	2426.1
11:15	12:45	487.7	1793.3	1858.4	489.0	7:45	4:15	2242.2	808.7	2383.6	2463.2
11:10	12:50	541.1	1785.0	1865.3	542.8	7:40	4:20	2265.8	772.7	2393.9	2499.6
11:05	12:55	594.2	1776.0	1872.8	596.5	7:35	4:25	2288.3	736.4	2403.8	2535.5
11:00	1:00	647.0	1766.1	1880.9	650.0	7:30	4:30	2309.7	699.7	2413.4	2570.7
10:55	1:05	699.6	1755.3	1889.6	703.4	7:25	4:35	2330.0	662.7	2422.4	2605.4
10:50	1:10	751.8	1743.8	1898.9	756.5	7:20	4:40	2349.2	625.3	2431.0	2639.4
10:45	1:15	803.6	1731.4	1908.8	809.4	7:15	4:45	2367.3	587.7	2439.2	2672.7
10:40	1:20	855.1	1718.1	1919.1	862.1	7:10	4:50	2384.3	549.8	2446.9	2705.5
10:35	1:25	906.1	1704.1	1930.0	914.6	7:05	4:55	2400.1	511.6	2454.1	2737.6
10:30	1:30	956.7	1689.2	1941.3	966.8	7:00	5:00	2414.8	473.2	2460.7	2769.1
10:25	1:35	1006.9	1673.5	1953.1	1018.7	6:55	5:05	2428.4	434.6	2466.9	2799.9
10:20	1:40	1056.5	1657.1	1965.2	1070.3	6:50	5:10	2440.7	395.7	2472.6	2830.1
10:15	1:45	1105.7	1639.8	1977.8	1121.7	6:45	5:15	2452.0	356.7	2477.8	2859.7
10:10	1:50	1154.4	1621.8	1990.7	1172.7	6:40	5:20	2462.0	317.5	2482.4	2888.7
10:05	1:55	1202.5	1603.0	2003.9	1223.4	6:35	5:25	2470.9	278.1	2486.5	2917.0
10:00	2:00	1250.0	1583.4	2017.4	1273.8	6:30	5:30	2478.6	238.7	2490.1	2944.6
9:55	2:05	1296.9	1563.1	2031.1	1323.8	6:25	5:35	2485.1	199.1	2493.1	2971.6
9:50	2:10	1343.2	1542.0	2045.0	1373.4	6:20	5:40	2490.5	159.4	2495.6	2998.0
9:45	2:15	1388.9	1520.2	2059.2	1422.7	6:15	5:45	2494.6	119.6	2497.5	3023.8
9:40	2:20	1433.9	1497.7	2073.5	1471.6	6:10	5:50	2497.6	79.8	2498.9	3048.9
9:35	2:25	1478.3	1474.5	2087.9	1520.0	6:05	5:55	2499.4	39.9	2499.7	3073.4
9:30	2:30	1521.9	1450.6	2102.5	1568.1	6:00	6:00	2500.0	0.0	2500.0	3097.3
9:25	2:35	1564.8	1425.9	2117.0	1615.7	5:55	6:05	2499.4	-39.9	2499.7	3120.5
9:20	2:40	1607.0	1400.6	2131.7	1662.9	5:50	6:10	2497.6	-79.8	2498.9	3143.1
9:15	2:45	1648.4	1374.7	2146.3	1709.7	5:45	6:15	2494.6	-119.6	2497.5	3165.1
9:10	2:50	1689.0	1348.0	2161.0	1756.0	5:40	6:20	2490.5	-159.4	2495.6	3186.5
9:05	2:55	1728.8	1320.8	2175.6	1801.8	5:35	6:25	2485.1	-199.1	2493.1	3207.2
9:00	3:00	1767.8	1292.9	2190.1	1847.1	5:30	6:30	2478.6	-238.7	2490.1	3227.4
8:55	3:05	1805.9	1264.4	2204.5	1891.9	5:25	6:35	2470.9	-278.1	2486.5	3247.0
8:50	3:10	1843.2	1235.2	2218.8	1936.3	5:20	6:40	2462.0	-317.5	2482.4	3265.9
8:45	3:15	1879.6	1205.5	2233.0	1980.1	5:15	6:45	2452.0	-356.7	2477.8	3284.3
8:40	3:20	1915.1	1175.3	2247.0	2023.4	5:10	6:50	2440.7	-395.7	2472.6	3302.1
8:35	3:25	1949.7	1144.4	2260.8	2066.2	5:05	6:55	2428.4	-434.6	2466.9	3319.3
8:30	3:30	1983.4	1113.0	2274.4	2108.4	5:00	7:00	2414.8	-473.2	2460.7	3336.0

Analemmatic Sundial**Latitude: 47.0° N/S**

Earliest Sunrise: 4:03 a.m. Latest Sunset: 7:57 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1828.4 mm
 Sunrise/Sunset Markers: $X = \pm 1068.5$ mm

Local Time		X	Y	Z	W
4:55	7:05	2400.1	-511.6	2454.1	3352.1
4:50	7:10	2384.3	-549.8	2446.9	3367.6
4:45	7:15	2367.3	-587.7	2439.2	3382.6
4:40	7:20	2349.2	-625.3	2431.0	3397.0
4:35	7:25	2330.0	-662.7	2422.4	3410.9
4:30	7:30	2309.7	-699.7	2413.4	3424.3
4:25	7:35	2288.3	-736.4	2403.8	3437.2
4:20	7:40	2265.8	-772.7	2393.9	3449.5
4:15	7:45	2242.2	-808.7	2383.6	3461.4
4:10	7:50	2217.5	-844.3	2372.8	3472.8
4:05	7:55	2191.8	-879.4	2361.7	3483.7
4:00	8:00	2165.1	-914.2	2350.2	3494.2

Analematic Sundial

Latitude: 47.0° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1828.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-723.4	-709.7	-705.5	-686.8	-681.3	-657.9	-651.4	-623.6	-616.2	-584.7	-576.4
February	-523.2	-485.0	-475.1	-434.6	-424.5	-382.0	-371.1	-327.4	-316.3	-271.3	-259.7
March	-225.4	-179.2	-167.5	-120.7	-109.1	-61.9	-50.3	-3.0	8.6	55.7	67.3
April	137.2	183.1	194.6	239.6	250.9	295.1	305.9	349.1	359.6	401.2	411.2
May	460.7	498.6	507.6	542.8	551.4	583.8	591.4	620.9	628.0	653.8	659.6
June	691.6	708.3	712.2	724.4	727.2	735.0	736.1	738.9	739.2	733.9	736.4
July	727.2	715.7	712.2	696.5	692.0	671.6	666.1	641.9	635.4	607.8	600.4
August	553.3	519.0	510.2	473.5	464.2	425.4	415.3	374.9	364.6	322.5	311.7
September	246.6	202.1	190.9	145.6	134.2	88.5	77.1	31.0	19.3	-27.1	-38.7
October	-96.5	-142.9	-154.3	-200.3	-211.5	-256.9	-268.2	-312.6	-323.7	-367.1	-377.7
November	-440.0	-479.9	-489.5	-527.1	-536.3	-571.1	-579.4	-611.1	-618.5	-646.6	-653.5
December	-682.6	-702.4	-706.6	-720.9	-724.1	-733.2	-735.0	-738.9	-739.2	-737.5	-736.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	723.4	709.7	705.5	686.8	681.3	657.9	651.4	623.6	616.2	584.7	576.4
February	523.2	485.0	475.1	434.6	424.5	382.0	371.1	327.4	316.3	271.3	259.7
March	225.4	179.2	167.5	120.7	109.1	61.9	50.3	3.0	-8.6	-55.7	-67.3
April	-137.2	-183.1	-194.6	-239.6	-250.9	-295.1	-305.9	-349.1	-359.6	-401.2	-411.2
May	-460.7	-498.6	-507.6	-542.8	-551.4	-583.8	-591.4	-620.9	-628.0	-653.8	-659.6
June	-691.6	-708.3	-712.2	-724.4	-727.2	-735.0	-736.1	-738.9	-739.2	-733.9	-736.4
July	-727.2	-715.7	-712.2	-696.5	-692.0	-671.6	-666.1	-641.9	-635.4	-607.8	-600.4
August	-553.3	-519.0	-510.2	-473.5	-464.2	-425.4	-415.3	-374.9	-364.6	-322.5	-311.7
September	-246.6	-202.1	-190.9	-145.6	-134.2	-88.5	-77.1	-31.0	-19.3	27.1	38.7
October	96.5	142.9	154.3	200.3	211.5	256.9	268.2	312.6	323.7	367.1	377.7
November	440.0	479.9	489.5	527.1	536.3	571.1	579.4	611.1	618.5	646.6	653.5
December	682.6	702.4	706.6	720.9	724.1	733.2	735.0	738.9	739.2	737.5	736.4

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
- 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