

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky				
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut	
1 Č	2454	h min s	° ' "	h min s	h min	h min s	h min	°	
2 P	832.5	18 46 32.7	-23 0 31	6 43 7.140	7 59	12 3 39	16 9	54.	
3 S	833.5	18 50 57.5	-22 55 22	6 47 3.693	7 58	12 4 7	16 10	54.	
4 N	834.5	18 55 22.0	-22 49 47	6 51 0.245	7 58	12 4 34	16 11	54.	
5 P	835.5	18 59 46.0	-22 43 44	6 54 56.797	7 58	12 5 2	16 12	54.	
6 Ú	836.5	19 4 9.6	-22 37 14	6 58 53.350	7 58	12 5 29	16 13	55.	
7 S	837.5	19 8 32.8	-22 30 17	7 2 49.905	7 58	12 5 55	16 15	55.	
8 Č	838.5	19 12 55.5	-22 22 54	7 6 46.464	7 57	12 6 21	16 16	55.	
9 P	839.5	19 17 17.7	-22 15 4	7 10 43.028	7 57	12 6 46	16 17	55.	
10 S	840.5	19 21 39.3	-22 6 48	7 14 39.595	7 56	12 7 11	16 18	56.	
11 N	841.5	19 26 0.4	-21 58 6	7 18 36.164	7 56	12 7 35	16 20	56.	
12 P	842.5	19 30 21.0	-21 48 59	7 22 32.732	7 55	12 7 59	16 21	56.	
13 Ú	843.5	19 34 40.9	-21 39 26	7 26 29.296	7 55	12 8 22	16 22	56.	
14 S	844.5	19 39 0.3	-21 29 28	7 30 25.856	7 54	12 8 45	16 24	57.	
15 Č	845.5	19 43 19.0	-21 19 6	7 34 22.411	7 53	12 9 7	16 25	57.	
16 P	846.5	19 47 37.1	-21 8 18	7 38 18.963	7 53	12 9 28	16 27	57.	
17 S	847.5	19 51 54.5	-20 57 6	7 42 15.514	7 52	12 9 48	16 28	58.	
18 N	848.5	19 56 11.3	-20 45 30	7 46 12.065	7 51	12 10 8	16 30	58.	
19 P	849.5	20 0 27.3	-20 33 30	7 50 8.618	7 50	12 10 28	16 31	58.	
20 Ú	850.5	20 4 42.7	-20 21 7	7 54 5.173	7 49	12 10 46	16 33	59.	
21 S	851.5	20 8 57.4	-20 8 21	7 58 1.731	7 48	12 11 4	16 34	59.	
22 Č	852.5	20 13 11.3	-19 55 12	8 1 58.291	7 47	12 11 21	16 36	59.	
23 P	853.5	20 17 24.5	-19 41 41	8 5 54.852	7 46	12 11 37	16 38	60.	
24 S	854.5	20 21 37.0	-19 27 47	8 9 51.414	7 45	12 11 53	16 39	60.	
25 N	855.5	20 25 48.7	-19 13 32	8 13 47.976	7 44	12 12 7	16 41	61.	
26 P	856.5	20 29 59.5	-18 58 56	8 17 44.538	7 43	12 12 21	16 43	61.	
27 Ú	857.5	20 34 9.6	-18 43 58	8 21 41.097	7 42	12 12 35	16 44	61.	
28 S	858.5	20 38 18.9	-18 28 41	8 25 37.654	7 40	12 12 47	16 46	62.	
29 Č	859.5	20 42 27.4	-18 13 3	8 29 34.208	7 39	12 12 59	16 48	62.	
30 P	860.5	20 46 35.1	-17 57 5	8 33 30.760	7 38	12 13 9	16 49	63.	
31 S	861.5	20 50 41.9	-17 40 49	8 37 27.310	7 36	12 13 19	16 51	63.	
	862.5	20 54 47.9	-17 24 13	8 41 23.859	7 35	12 13 28	16 53	64.	

Slunce vstupuje do znamení Vodnáře dne 19. 1. ve 23 h 40 min SEČ.

Dne 4. 1. v 17 h SEČ je Země Slunci nejbliže: 147,1 miliónu km.

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky				
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut	
	2454	h min s	° ' "	h min s	h min	h min s	h min	°	
1 N	863.5	20 58 53.1	-17 7 19	8 45 20.409	7 34	12 13 36	16 54	64.	
2 P	864.5	21 2 57.4	-16 50 7	8 49 16.962	7 32	12 13 44	16 56	65.	
3 Ú	865.5	21 7 1.0	-16 32 38	8 53 13.517	7 31	12 13 50	16 58	65.	
4 S	866.5	21 11 3.6	-16 14 51	8 57 10.076	7 29	12 13 56	16 59	66.	
5 Č	867.5	21 15 5.5	-15 56 48	9 1 6.639	7 27	12 14 1	17 1	66.	
6 P	868.5	21 19 6.5	-15 38 28	9 5 3.205	7 26	12 14 5	17 3	67.	
7 S	869.5	21 23 6.7	-15 19 52	9 8 59.770	7 24	12 14 8	17 5	67.	
8 N	870.5	21 27 6.1	-15 1 1	9 12 56.333	7 23	12 14 11	17 6	68.	
9 P	871.5	21 31 4.7	-14 41 54	9 16 52.892	7 21	12 14 13	17 8	68.	
10 Ú	872.5	21 35 2.5	-14 22 33	9 20 49.447	7 19	12 14 13	17 10	69.	
11 S	873.5	21 38 59.6	-14 2 58	9 24 45.997	7 18	12 14 14	17 12	69.	
12 Č	874.5	21 42 55.8	-13 43 8	9 28 42.546	7 16	12 14 13	17 13	70.	
13 P	875.5	21 46 51.3	-13 23 5	9 32 39.094	7 14	12 14 12	17 15	70.	
14 S	876.5	21 50 46.1	-13 2 49	9 36 35.643	7 12	12 14 9	17 17	71.	
15 N	877.5	21 54 40.2	-12 42 20	9 40 32.195	7 11	12 14 7	17 18	71.	
16 P	878.5	21 58 33.5	-12 21 38	9 44 28.749	7 9	12 14 3	17 20	72.	
17 Ú	879.5	22 2 26.2	-12 0 44	9 48 25.306	7 7	12 13 59	17 22	73.	
18 S	880.5	22 6 18.2	-11 39 39	9 52 21.864	7 5	12 13 54	17 24	73.	
19 Č	881.5	22 10 9.5	-11 18 23	9 56 18.424	7 3	12 13 48	17 25	74.	
20 P	882.5	22 14 0.2	-10 56 56	10 0 14.983	7 1	12 13 42	17 27	74.	
21 S	883.5	22 17 50.2	-10 35 18	10 4 11.542	6 59	12 13 35	17 29	75.	
22 N	884.5	22 21 39.5	-10 13 31	10 8 8.100	6 57	12 13 28	17 30	75.	
23 P	885.5	22 25 28.3	-9 51 34	10 12 4.655	6 55	12 13 20	17 32	76.	
24 Ú	886.5	22 29 16.4	-9 29 29	10 16 1.207	6 53	12 13 11	17 34	77.	
25 S	887.5	22 33 4.0	-9 7 14	10 19 57.757	6 51	12 13 2	17 35	77.	
26 Č	888.5	22 36 51.0	-8 44 52	10 23 54.305	6 49	12 12 52	17 37	78.	
27 P	889.5	22 40 37.4	-8 22 21	10 27 50.852	6 47	12 12 42	17 39	78.	
28 S	890.5	22 44 23.2	-7 59 44	10 31 47.399	6 45	12 12 31	17 41	79.	

Slunce vstupuje do znamení Ryb dne 18. 2. ve 13 h 45 min SEČ.

den	J.D.	0 h TČ			0 h SČ			poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE		hvězdný čas	východ	pravé poledne	západ	azi- mut		
	2454	h min s	° ' "	h min s	h min	h min s	h min	°			
1 N	891.5	22 48 8.5	- 7 36 59	10 35 43.948	6 43	12 12 19	17 42	80.			
2 P	892.5	22 51 53.3	- 7 14 8	10 39 40.500	6 41	12 12 7	17 44	80.			
3 Ú	893.5	22 55 37.6	- 6 51 11	10 43 37.056	6 39	12 11 55	17 45	81.			
4 S	894.5	22 59 21.4	- 6 28 8	10 47 33.616	6 37	12 11 42	17 47	81.			
5 Č	895.5	23 3 4.8	- 6 5 0	10 51 30.177	6 35	12 11 28	17 49	82.			
6 P	896.5	23 6 47.7	- 5 41 47	10 55 26.740	6 33	12 11 14	17 50	83.			
7 S	897.5	23 10 30.1	- 5 18 30	10 59 23.301	6 31	12 11 0	17 52	83.			
8 N	898.5	23 14 12.1	- 4 55 8	11 3 19.859	6 29	12 10 45	17 54	84.			
9 P	899.5	23 17 53.8	- 4 31 43	11 7 16.413	6 27	12 10 30	17 55	84.			
10 Ú	900.5	23 21 35.1	- 4 8 15	11 11 12.963	6 24	12 10 15	17 57	85.			
11 S	901.5	23 25 16.0	- 3 44 43	11 15 9.510	6 22	12 9 59	17 59	86.			
12 Č	902.5	23 28 56.6	- 3 21 8	11 19 6.056	6 20	12 9 43	18 0	86.			
13 P	903.5	23 32 36.9	- 2 57 32	11 23 2.603	6 18	12 9 27	18 2	87.			
14 S	904.5	23 36 17.0	- 2 33 53	11 26 59.152	6 16	12 9 10	18 3	87.			
15 N	905.5	23 39 56.8	- 2 10 12	11 30 55.704	6 14	12 8 53	18 5	88.			
16 P	906.5	23 43 36.4	- 1 46 30	11 34 52.258	6 12	12 8 36	18 7	89.			
17 Ú	907.5	23 47 15.8	- 1 22 48	11 38 48.815	6 9	12 8 19	18 8	89.			
18 S	908.5	23 50 55.0	- 0 59 4	11 42 45.373	6 7	12 8 2	18 10	90.			
19 Č	909.5	23 54 34.0	- 0 35 20	11 46 41.931	6 5	12 7 44	18 11	91.			
20 P	910.5	23 58 12.9	- 0 11 37	11 50 38.489	6 3	12 7 26	18 13	91.			
21 S	911.5	0 1 51.7	+ 0 12 6	11 54 35.045	6 1	12 7 8	18 15	92.			
22 N	912.5	0 5 30.4	+ 0 35 48	11 58 31.600	5 58	12 6 51	18 16	92.			
23 P	913.5	0 9 9.0	+ 0 59 29	12 2 28.152	5 56	12 6 33	18 18	93.			
24 Ú	914.5	0 12 47.6	+ 1 23 8	12 6 24.702	5 54	12 6 15	18 19	94.			
25 S	915.5	0 16 26.1	+ 1 46 46	12 10 21.250	5 52	12 5 57	18 21	94.			
26 Č	916.5	0 20 4.6	+ 2 10 20	12 14 17.796	5 50	12 5 38	18 22	95.			
27 P	917.5	0 23 43.0	+ 2 33 52	12 18 14.342	5 48	12 5 20	18 24	95.			
28 S	918.5	0 27 21.5	+ 2 57 21	12 22 10.890	5 45	12 5 2	18 26	96.			
29 N	919.5	0 31 0.0	+ 3 20 46	12 26 7.441	5 43	12 4 44	18 27	97.			
30 P	920.5	0 34 38.6	+ 3 44 8	12 30 3.996	5 41	12 4 26	18 29	97.			
31 Ú	921.5	0 38 17.2	+ 4 7 25	12 34 0.554	5 39	12 4 8	18 30	98.			

Slunce vstupuje do znamení Berana dne 20. 3. ve 12 h 43 min SEČ.
Začátek astronomického jara. Jarní rovnodennost.

den	J.D.	0 h TČ			0 h SČ			poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE		hvězdný čas	východ	pravé poledne	západ	azi- mut		
	2454	h min s	° ' "	h min s	h min	h min s	h min	°			
1 S	922.5	0 41 55.9	+ 4 30 37	12 37 57.115	5 37	12 3 51	18 32	98.			
2 Č	923.5	0 45 34.6	+ 4 53 45	12 41 53.678	5 35	12 3 33	18 34	99.			
3 P	924.5	0 49 13.5	+ 5 16 47	12 45 50.239	5 32	12 3 15	18 35	100.			
4 S	925.5	0 52 52.5	+ 5 39 43	12 49 46.797	5 30	12 2 58	18 37	100.			
5 N	926.5	0 56 31.7	+ 6 2 33	12 53 43.352	5 28	12 2 40	18 38	101.			
6 P	927.5	1 0 11.0	+ 6 25 17	12 57 39.903	5 26	12 2 23	18 40	101.			
7 Ú	928.5	1 3 50.5	+ 6 47 54	13 1 36.451	5 24	12 2 6	18 41	102.			
8 S	929.5	1 7 30.2	+ 7 10 24	13 5 32.998	5 22	12 1 50	18 43	103.			
9 Č	930.5	1 11 10.1	+ 7 32 47	13 9 29.545	5 20	12 1 33	18 44	103.			
10 P	931.5	1 14 50.3	+ 7 55 2	13 13 26.093	5 18	12 1 17	18 46	104.			
11 S	932.5	1 18 30.7	+ 8 17 10	13 17 22.645	5 15	12 1 1	18 48	104.			
12 N	933.5	1 22 11.5	+ 8 39 9	13 21 19.199	5 13	12 0 45	18 49	105.			
13 P	934.5	1 25 52.5	+ 9 0 59	13 25 15.755	5 11	12 0 30	18 51	106.			
14 Ú	935.5	1 29 33.9	+ 9 22 40	13 29 12.314	5 9	12 0 15	18 52	106.			
15 S	936.5	1 33 15.6	+ 9 44 13	13 33 8.873	5 7	12 0 0	18 54	107.			
16 Č	937.5	1 36 57.7	+10 5 35	13 37 5.432	5 5	11 59 46	18 55	107.			
17 P	938.5	1 40 40.2	+10 26 48	13 41 1.990	5 3	11 59 32	18 57	108.			
18 S	939.5	1 44 23.1	+10 47 51	13 44 58.547	5 1	11 59 18	18 59	108.			
19 N	940.5	1 48 6.4	+11 8 43	13 48 55.101	4 59	11 59 5	19 0	109.			
20 P	941.5	1 51 50.1	+11 29 24	13 52 51.653	4 57	11 58 53	19 2	110.			
21 Ú	942.5	1 55 34.3	+11 49 53	13 56 48.203	4 55	11 58 41	19 3	110.			
22 S	943.5	1 59 18.9	+12 10 12	14 0 44.751	4 53	11 58 29	19 5	111.			
23 Č	944.5	2 3 3.9	+12 30 18	14 4 41.298	4 51	11 58 18	19 6	111.			
24 P	945.5	2 6 49.4	+12 50 11	14 8 37.847	4 49	11 58 7	19 8	112.			
25 S	946.5	2 10 35.4	+13 9 52	14 12 34.398	4 47	11 57 56	19 10	112.			
26 N	947.5	2 14 21.9	+13 29 21	14 16 30.954	4 46	11 57 47	19 11	113.			
27 P	948.5	2 18 8.9	+13 48 35	14 20 27.513	4 44	11 57 37	19 13	113.			
28 Ú	949.5	2 21 56.4	+14 7 36	14 24 24.076	4 42	11 57 28	19 14	114.			
29 S	950.5	2 25 44.4	+14 26 23	14 28 20.640	4 40	11 57 20	19 16	114.			
30 Č	951.5	2 29 32.9	+14 44 56	14 32 17.204	4 38	11 57 12	19 17	115.			

Slunce vstupuje do znamení Býka dne 19. 4. ve 23 h 44 min SEČ.

den	J.D.	0 h TČ			0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut	
	2454	h min s	° ' "	h min s	h min	h min s	h min	°	
1 P	952.5	2 33 21.9	+15 3 14	14 36 13.765	4 36	11 57 5	19 19	115.	
2 S	953.5	2 37 11.4	+15 21 16	14 40 10.323	4 35	11 56 58	19 20	116.	
3 N	954.5	2 41 1.5	+15 39 4	14 44 6.877	4 33	11 56 52	19 22	116.	
4 P	955.5	2 44 52.0	+15 56 36	14 48 3.427	4 31	11 56 46	19 23	117.	
5 Ú	956.5	2 48 43.1	+16 13 51	14 51 59.976	4 29	11 56 41	19 25	117.	
6 S	957.5	2 52 34.7	+16 30 51	14 55 56.525	4 28	11 56 36	19 26	118.	
7 Č	958.5	2 56 26.9	+16 47 34	14 59 53.075	4 26	11 56 32	19 28	118.	
8 P	959.5	3 0 19.7	+17 4 0	15 3 49.628	4 25	11 56 29	19 29	119.	
9 S	960.5	3 4 13.0	+17 20 10	15 7 46.183	4 23	11 56 26	19 31	119.	
10 N	961.5	3 8 6.9	+17 36 2	15 11 42.741	4 21	11 56 23	19 32	120.	
11 P	962.5	3 12 1.3	+17 51 36	15 15 39.301	4 20	11 56 21	19 34	120.	
12 Ú	963.5	3 15 56.4	+18 6 52	15 19 35.863	4 18	11 56 20	19 35	120.	
13 S	964.5	3 19 52.0	+18 21 51	15 23 32.424	4 17	11 56 19	19 37	121.	
14 Č	965.5	3 23 48.2	+18 36 30	15 27 28.985	4 15	11 56 19	19 38	121.	
15 P	966.5	3 27 45.0	+18 50 51	15 31 25.544	4 14	11 56 20	19 39	122.	
16 S	967.5	3 31 42.4	+19 4 53	15 35 22.102	4 13	11 56 21	19 41	122.	
17 N	968.5	3 35 40.3	+19 18 36	15 39 18.656	4 11	11 56 23	19 42	122.	
18 P	969.5	3 39 38.9	+19 31 59	15 43 15.209	4 10	11 56 25	19 44	123.	
19 Ú	970.5	3 43 38.0	+19 45 2	15 47 11.760	4 9	11 56 28	19 45	123.	
20 S	971.5	3 47 37.6	+19 57 45	15 51 8.310	4 8	11 56 31	19 46	124.	
21 Č	972.5	3 51 37.8	+20 10 7	15 55 4.860	4 6	11 56 35	19 48	124.	
22 P	973.5	3 55 38.6	+20 22 9	15 59 1.413	4 5	11 56 39	19 49	124.	
23 S	974.5	3 59 39.9	+20 33 50	16 2 57.969	4 4	11 56 44	19 50	125.	
24 N	975.5	4 3 41.8	+20 45 10	16 6 54.529	4 3	11 56 50	19 51	125.	
25 P	976.5	4 7 44.1	+20 56 8	16 10 51.093	4 2	11 56 56	19 53	125.	
26 Ú	977.5	4 11 47.0	+21 6 44	16 14 47.660	4 1	11 57 2	19 54	126.	
27 S	978.5	4 15 50.3	+21 16 59	16 18 44.227	4 0	11 57 9	19 55	126.	
28 Č	979.5	4 19 54.1	+21 26 51	16 22 40.792	3 59	11 57 17	19 56	126.	
29 P	980.5	4 23 58.3	+21 36 22	16 26 37.353	3 58	11 57 25	19 57	126.	
30 S	981.5	4 28 3.0	+21 45 29	16 30 33.910	3 57	11 57 33	19 58	127.	
31 N	982.5	4 32 8.0	+21 54 14	16 34 30.464	3 57	11 57 42	19 59	127.	

Slunce vstupuje do znamení Blíženců dne 20. 5. ve 22 h 51 min SEČ.

den	J.D.	0 h TČ			0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut	
	2454/5	h min s	° ' "	h min s	h min	h min s	h min	°	
1 P	983.5	4 36 13.5	+22 2 36	16 38 27.015	3 56	11 57 51	20 0	127.	
2 Ú	984.5	4 40 19.3	+22 10 35	16 42 23.566	3 55	11 58 0	20 1	127.	
3 S	985.5	4 44 25.5	+22 18 11	16 46 20.118	3 54	11 58 10	20 2	128.	
4 Č	986.5	4 48 32.0	+22 25 23	16 50 16.672	3 54	11 58 20	20 3	128.	
5 P	987.5	4 52 38.8	+22 32 12	16 54 13.228	3 53	11 58 30	20 4	128.	
6 S	988.5	4 56 46.0	+22 38 37	16 58 9.787	3 53	11 58 41	20 5	128.	
7 N	989.5	5 0 53.5	+22 44 38	17 2 6.349	3 52	11 58 52	20 6	128.	
8 P	990.5	5 5 1.3	+22 50 16	17 6 2.911	3 52	11 59 4	20 7	129.	
9 Ú	991.5	5 9 9.4	+22 55 29	17 9 59.475	3 51	11 59 15	20 7	129.	
10 S	992.5	5 13 17.7	+23 0 18	17 13 56.037	3 51	11 59 27	20 8	129.	
11 Č	993.5	5 17 26.2	+23 4 43	17 17 52.599	3 51	11 59 39	20 9	129.	
12 P	994.5	5 21 34.9	+23 8 44	17 21 49.158	3 51	11 59 51	20 9	129.	
13 S	995.5	5 25 43.9	+23 12 20	17 25 45.715	3 50	12 0 4	20 10	129.	
14 N	996.5	5 29 53.0	+23 15 32	17 29 42.269	3 50	12 0 17	20 10	129.	
15 P	997.5	5 34 2.3	+23 18 19	17 33 38.822	3 50	12 0 29	20 11	129.	
16 Ú	998.5	5 38 11.7	+23 20 41	17 37 35.374	3 50	12 0 42	20 11	129.	
17 S	999.5	5 42 21.2	+23 22 39	17 41 31.925	3 50	12 0 55	20 12	129.	
18 Č	000.5	5 46 30.8	+23 24 12	17 45 28.478	3 50	12 1 8	20 12	129.	
19 P	001.5	5 50 40.4	+23 25 20	17 49 25.033	3 50	12 1 21	20 12	129.	
20 S	002.5	5 54 50.2	+23 26 3	17 53 21.593	3 50	12 1 35	20 13	130.	
21 N	003.5	5 58 59.9	+23 26 21	17 57 18.156	3 51	12 1 48	20 13	130.	
22 P	004.5	6 3 9.6	+23 26 14	18 1 14.723	3 51	12 2 1	20 13	129.	
23 Ú	005.5	6 7 19.3	+23 25 43	18 5 11.292	3 51	12 2 14	20 13	129.	
24 S	006.5	6 11 28.9	+23 24 47	18 9 7.859	3 51	12 2 27	20 13	129.	
25 Č	007.5	6 15 38.4	+23 23 26	18 13 4.423	3 52	12 2 40	20 13	129.	
26 P	008.5	6 19 47.7	+23 21 40	18 17 0.983	3 52	12 2 53	20 13	129.	
27 S	009.5	6 23 56.9	+23 19 30	18 20 57.538	3 53	12 3 5	20 13	129.	
28 N	010.5	6 28 5.9	+23 16 55	18 24 54.090	3 53	12 3 18	20 13	129.	
29 P	011.5	6 32 14.7	+23 13 56	18 28 50.641	3 54	12 3 30	20 13	129.	
30 Ú	012.5	6 36 23.3	+23 10 32	18 32 47.193	3 54	12 3 42	20 13	129.	

Slunce vstupuje do znamení Raka dne 21. 6. v 6 h 45 min SEČ.
Začátek astronomického léta. Letní slunovrat.

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut
	2455	h min s	° ' "	h min s	h min	h min s	h min	°
1 S	013.5	6 40 31.6	+23 6 44	18 36 43.747	3 55	12 3 53	20 12	129.
2 Č	014.5	6 44 39.6	+23 2 32	18 40 40.303	3 56	12 4 5	20 12	129.
3 P	015.5	6 48 47.4	+22 57 55	18 44 36.862	3 56	12 4 16	20 12	129.
4 S	016.5	6 52 54.8	+22 52 55	18 48 33.423	3 57	12 4 26	20 11	128.
5 N	017.5	6 57 1.9	+22 47 31	18 52 29.985	3 58	12 4 37	20 11	128.
6 P	018.5	7 1 8.7	+22 41 43	18 56 26.548	3 59	12 4 47	20 10	128.
7 Ú	019.5	7 5 15.0	+22 35 31	19 0 23.111	4 0	12 4 56	20 10	128.
8 S	020.5	7 9 21.1	+22 28 56	19 4 19.672	4 0	12 5 6	20 9	128.
9 Č	021.5	7 13 26.7	+22 21 58	19 8 16.232	4 1	12 5 15	20 9	127.
10 P	022.5	7 17 31.9	+22 14 37	19 12 12.789	4 2	12 5 23	20 8	127.
11 S	023.5	7 21 36.7	+22 6 53	19 16 9.344	4 3	12 5 31	20 7	127.
12 N	024.5	7 25 41.1	+21 58 45	19 20 5.896	4 4	12 5 39	20 6	127.
13 P	025.5	7 29 45.0	+21 50 16	19 24 2.447	4 5	12 5 46	20 6	126.
14 Ú	026.5	7 33 48.4	+21 41 23	19 27 58.998	4 6	12 5 52	20 5	126.
15 S	027.5	7 37 51.4	+21 32 9	19 31 55.549	4 7	12 5 59	20 4	126.
16 Č	028.5	7 41 53.9	+21 22 32	19 35 52.103	4 9	12 6 4	20 3	126.
17 P	029.5	7 45 55.9	+21 12 34	19 39 48.660	4 10	12 6 10	20 2	125.
18 S	030.5	7 49 57.4	+21 2 13	19 43 45.220	4 11	12 6 14	20 1	125.
19 N	031.5	7 53 58.4	+20 51 32	19 47 41.785	4 12	12 6 19	20 0	125.
20 P	032.5	7 57 58.9	+20 40 29	19 51 38.351	4 13	12 6 22	19 59	124.
21 Ú	033.5	8 1 58.8	+20 29 5	19 55 34.918	4 15	12 6 25	19 57	124.
22 S	034.5	8 5 58.1	+20 17 21	19 59 31.483	4 16	12 6 28	19 56	124.
23 Č	035.5	8 9 56.9	+20 5 16	20 3 28.043	4 17	12 6 30	19 55	123.
24 P	036.5	8 13 55.1	+19 52 51	20 7 24.599	4 18	12 6 31	19 54	123.
25 S	037.5	8 17 52.7	+19 40 7	20 11 21.151	4 20	12 6 32	19 52	122.
26 N	038.5	8 21 49.7	+19 27 2	20 15 17.701	4 21	12 6 32	19 51	122.
27 P	039.5	8 25 46.0	+19 13 39	20 19 14.251	4 22	12 6 31	19 50	122.
28 Ú	040.5	8 29 41.8	+18 59 56	20 23 10.802	4 24	12 6 30	19 48	121.
29 S	041.5	8 33 36.9	+18 45 55	20 27 7.356	4 25	12 6 29	19 47	121.
30 Č	042.5	8 37 31.4	+18 31 36	20 31 3.913	4 27	12 6 26	19 45	120.
31 P	043.5	8 41 25.2	+18 16 58	20 35 0.472	4 28	12 6 23	19 44	120.

Slunce vstupuje do znamení Lva dne 22. 7. v 17 h 36 min SEČ.
Dne 4. 7. ve 3 h SEČ je Země od Slunce nejdále: 152,1 miliónu km.

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut
	2455	h min s	° ' "	h min s	h min	h min s	h min	°
1 S	044.5	8 45 18.5	+18 2 2	20 38 57.032	4 29	12 6 20	19 42	120.
2 N	045.5	8 49 11.1	+17 46 49	20 42 53.593	4 31	12 6 16	19 41	119.
3 P	046.5	8 53 3.2	+17 31 19	20 46 50.155	4 32	12 6 11	19 39	119.
4 Ú	047.5	8 56 54.6	+17 15 31	20 50 46.715	4 34	12 6 5	19 38	118.
5 S	048.5	9 0 45.3	+16 59 27	20 54 43.273	4 35	12 5 59	19 36	118.
6 Č	049.5	9 4 35.5	+16 43 7	20 58 39.828	4 36	12 5 53	19 34	117.
7 P	050.5	9 8 25.1	+16 26 30	21 2 36.382	4 38	12 5 45	19 33	117.
8 S	051.5	9 12 14.1	+16 9 37	21 6 32.933	4 39	12 5 38	19 31	116.
9 N	052.5	9 16 2.5	+15 52 29	21 10 29.482	4 41	12 5 29	19 29	116.
10 P	053.5	9 19 50.4	+15 35 5	21 14 26.030	4 42	12 5 20	19 27	115.
11 Ú	054.5	9 23 37.6	+15 17 27	21 18 22.579	4 44	12 5 11	19 26	115.
12 S	055.5	9 27 24.4	+14 59 33	21 22 19.130	4 45	12 5 1	19 24	114.
13 Č	056.5	9 31 10.5	+14 41 26	21 26 15.683	4 47	12 4 50	19 22	114.
14 P	057.5	9 34 56.2	+14 23 3	21 30 12.240	4 48	12 4 39	19 20	113.
15 S	058.5	9 38 41.3	+14 4 28	21 34 8.801	4 50	12 4 27	19 18	113.
16 N	059.5	9 42 26.0	+13 45 38	21 38 5.364	4 51	12 4 15	19 16	112.
17 P	060.5	9 46 10.1	+13 26 36	21 42 1.928	4 53	12 4 2	19 14	112.
18 Ú	061.5	9 49 53.7	+13 7 20	21 45 58.491	4 54	12 3 49	19 13	111.
19 S	062.5	9 53 36.8	+12 47 52	21 49 55.051	4 56	12 3 35	19 11	111.
20 Č	063.5	9 57 19.5	+12 28 12	21 53 51.606	4 57	12 3 21	19 9	110.
21 P	064.5	10 1 1.7	+12 8 20	21 57 48.158	4 59	12 3 7	19 7	110.
22 S	065.5	10 4 43.3	+11 48 16	22 1 44.706	5 0	12 2 52	19 5	109.
23 N	066.5	10 8 24.6	+11 28 2	22 5 41.253	5 2	12 2 36	19 3	109.
24 P	067.5	10 12 5.4	+11 7 36	22 9 37.801	5 3	12 2 20	19 1	108.
25 Ú	068.5	10 15 45.7	+10 47 0	22 13 34.352	5 5	12 2 4	18 59	108.
26 S	069.5	10 19 25.6	+10 26 14	22 17 30.906	5 6	12 1 47	18 57	107.
27 Č	070.5	10 23 5.1	+10 5 18	22 21 27.462	5 8	12 1 30	18 54	106.
28 P	071.5	10 26 44.3	+9 44 13	22 25 24.020	5 9	12 1 12	18 52	106.
29 S	072.5	10 30 23.0	+9 22 58	22 29 20.579	5 10	12 0 54	18 50	105.
30 N	073.5	10 34 1.4	+9 1 35	22 33 17.138	5 12	12 0 36	18 48	105.
31 P	074.5	10 37 39.4	+8 40 3	22 37 13.697	5 13	12 0 17	18 46	104.

Slunce vstupuje do znamení Panny dne 23. 8. v 0 h 38 min SEČ.

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut
1 Ú	075.5	10 41 17.1	+ 8 18 23	22 41 10.253	5 15	11 59 58	18 44	104.
2 S	076.5	10 44 54.5	+ 7 56 35	22 45 6.807	5 16	11 59 39	18 42	103.
3 Č	077.5	10 48 31.6	+ 7 34 39	22 49 3.359	5 18	11 59 19	18 40	102.
4 P	078.5	10 52 8.4	+ 7 12 36	22 52 59.909	5 19	11 58 59	18 38	102.
5 S	079.5	10 55 45.0	+ 6 50 26	22 56 56.456	5 21	11 58 39	18 35	101.
6 N	080.5	10 59 21.3	+ 6 28 10	23 0 53.003	5 22	11 58 19	18 33	101.
7 P	081.5	11 2 57.4	+ 6 5 47	23 4 49.550	5 24	11 57 59	18 31	100.
8 Ú	082.5	11 6 33.4	+ 5 43 17	23 8 46.098	5 25	11 57 38	18 29	99.
9 S	083.5	11 10 9.2	+ 5 20 42	23 12 42.649	5 27	11 57 17	18 27	99.
10 Č	084.5	11 13 44.8	+ 4 58 2	23 16 39.203	5 28	11 56 56	18 25	98.
11 P	085.5	11 17 20.3	+ 4 35 16	23 20 35.760	5 30	11 56 35	18 22	98.
12 S	086.5	11 20 55.7	+ 4 12 25	23 24 32.320	5 31	11 56 14	18 20	97.
13 N	087.5	11 24 31.1	+ 3 49 30	23 28 28.882	5 33	11 55 53	18 18	97.
14 P	088.5	11 28 6.4	+ 3 26 30	23 32 25.443	5 34	11 55 31	18 16	96.
15 Ú	089.5	11 31 41.6	+ 3 3 27	23 36 22.002	5 36	11 55 10	18 14	95.
16 S	090.5	11 35 16.8	+ 2 40 20	23 40 18.557	5 37	11 54 49	18 11	95.
17 Č	091.5	11 38 52.0	+ 2 17 10	23 44 15.109	5 39	11 54 27	18 9	94.
18 P	092.5	11 42 27.2	+ 1 53 57	23 48 11.656	5 40	11 54 6	18 7	94.
19 S	093.5	11 46 2.5	+ 1 30 42	23 52 8.202	5 42	11 53 45	18 5	93.
20 N	094.5	11 49 37.8	+ 1 7 24	23 56 4.749	5 43	11 53 23	18 3	92.
21 P	095.5	11 53 13.1	+ 0 44 5	0 0 1.297	5 45	11 53 2	18 0	92.
22 Ú	096.5	11 56 48.5	+ 0 20 45	0 3 57.849	5 46	11 52 41	17 58	91.
23 S	097.5	12 0 24.0	- 0 2 36	0 7 54.403	5 48	11 52 20	17 56	90.
24 Č	098.5	12 3 59.6	- 0 25 58	0 11 50.960	5 49	11 51 59	17 54	90.
25 P	099.5	12 7 35.3	- 0 49 21	0 15 47.518	5 51	11 51 39	17 52	89.
26 S	100.5	12 11 11.2	- 1 12 43	0 19 44.076	5 52	11 51 18	17 49	89.
27 N	101.5	12 14 47.3	- 1 36 5	0 23 40.634	5 54	11 50 57	17 47	88.
28 P	102.5	12 18 23.5	- 1 59 26	0 27 37.191	5 55	11 50 37	17 45	87.
29 Ú	103.5	12 21 60.0	- 2 22 46	0 31 33.745	5 57	11 50 17	17 43	87.
30 S	104.5	12 25 36.7	- 2 46 4	0 35 30.297	5 58	11 49 58	17 41	86.

Slunce vstupuje do znamení Vah dne 22. 9. ve 22 h 18 min SEČ.
Začátek astronomického podzimu. Podzimní rovnodennost.

den	J.D.	0 h TČ		0 h SČ	poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE	hvězdný čas	východ	pravé poledne	západ	azi- mut
1 Č	105.5	12 29 13.6	- 3 9 21	0 39 26.847	6 0	11 49 38	17 38	86.
2 P	106.5	12 32 50.8	- 3 32 36	0 43 23.394	6 2	11 49 19	17 36	85.
3 S	107.5	12 36 28.3	- 3 55 48	0 47 19.941	6 3	11 49 0	17 34	84.
4 N	108.5	12 40 6.1	- 4 18 58	0 51 16.487	6 5	11 48 41	17 32	84.
5 P	109.5	12 43 44.3	- 4 42 4	0 55 13.035	6 6	11 48 23	17 30	83.
6 Ú	110.5	12 47 22.8	- 5 5 7	0 59 9.585	6 8	11 48 5	17 28	83.
7 S	111.5	12 51 1.7	- 5 28 6	1 3 6.138	6 9	11 47 48	17 26	82.
8 Č	112.5	12 54 41.1	- 5 51 2	1 7 2.695	6 11	11 47 31	17 23	81.
9 P	113.5	12 58 20.9	- 6 13 53	1 10 59.255	6 12	11 47 14	17 21	81.
10 S	114.5	13 2 1.1	- 6 36 39	1 14 55.816	6 14	11 46 58	17 19	80.
11 N	115.5	13 5 41.9	- 6 59 20	1 18 52.378	6 16	11 46 43	17 17	80.
12 P	116.5	13 9 23.1	- 7 21 55	1 22 48.937	6 17	11 46 27	17 15	79.
13 Ú	117.5	13 13 4.8	- 7 44 24	1 26 45.494	6 19	11 46 13	17 13	79.
14 S	118.5	13 16 47.1	- 8 6 48	1 30 42.046	6 20	11 45 59	17 11	78.
15 Č	119.5	13 20 30.0	- 8 29 4	1 34 38.596	6 22	11 45 45	17 9	77.
16 P	120.5	13 24 13.4	- 8 51 13	1 38 35.143	6 23	11 45 33	17 7	77.
17 S	121.5	13 27 57.4	- 9 13 15	1 42 31.690	6 25	11 45 20	17 5	76.
18 N	122.5	13 31 42.0	- 9 35 9	1 46 28.238	6 27	11 45 9	17 3	76.
19 P	123.5	13 35 27.2	- 9 56 54	1 50 24.790	6 28	11 44 58	17 1	75.
20 Ú	124.5	13 39 13.0	-10 18 31	1 54 21.344	6 30	11 44 47	16 59	74.
21 S	125.5	13 42 59.5	-10 39 58	1 58 17.901	6 32	11 44 37	16 57	74.
22 Č	126.5	13 46 46.6	-11 1 17	2 2 14.460	6 33	11 44 28	16 55	73.
23 P	127.5	13 50 34.4	-11 22 25	2 6 11.020	6 35	11 44 20	16 53	73.
24 S	128.5	13 54 22.9	-11 43 22	2 10 7.580	6 36	11 44 12	16 51	72.
25 N	129.5	13 58 12.0	-12 4 9	2 14 4.138	6 38	11 44 5	16 49	72.
26 P	130.5	14 2 1.9	-12 24 45	2 18 0.695	6 40	11 43 58	16 47	71.
27 Ú	131.5	14 5 52.4	-12 45 9	2 21 57.249	6 41	11 43 53	16 46	71.
28 S	132.5	14 9 43.7	-13 5 21	2 25 53.801	6 43	11 43 48	16 44	70.
29 Č	133.5	14 13 35.7	-13 25 21	2 29 50.351	6 45	11 43 44	16 42	70.
30 P	134.5	14 17 28.5	-13 45 9	2 33 46.900	6 46	11 43 40	16 40	69.
31 S	135.5	14 21 22.0	-14 4 43	2 37 43.448	6 48	11 43 37	16 39	68.

Slunce vstupuje do znamení Štíra dne 23. 10. v 7 h 43 min SEČ.

den	J.D.	0 h TČ			0 h SČ		poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE		hvězdný čas	východ	pravé poledne	západ	azi- mut	
		h min s	° ' "	h min s	h min	h min s	h min	°		
1 N	136.5	14 25 16.3	-14 24 3	2 41 39.997	6 50	11 43 36	16 37	68.		
2 P	137.5	14 29 11.4	-14 43 10	2 45 36.548	6 51	11 43 34	16 35	67.		
3 Ú	138.5	14 33 7.3	-15 2 2	2 49 33.102	6 53	11 43 34	16 33	67.		
4 S	139.5	14 37 4.0	-15 20 40	2 53 29.661	6 55	11 43 35	16 32	66.		
5 Č	140.5	14 41 1.5	-15 39 3	2 57 26.222	6 56	11 43 36	16 30	66.		
6 P	141.5	14 44 59.9	-15 57 10	3 1 22.786	6 58	11 43 38	16 29	65.		
7 S	142.5	14 48 59.1	-16 15 2	3 5 19.350	7 0	11 43 41	16 27	65.		
8 N	143.5	14 52 59.2	-16 32 37	3 9 15.913	7 1	11 43 45	16 26	64.		
9 P	144.5	14 57 0.1	-16 49 56	3 13 12.473	7 3	11 43 50	16 24	64.		
10 Ú	145.5	15 1 1.9	-17 6 57	3 17 9.028	7 5	11 43 56	16 23	64.		
11 S	146.5	15 5 4.6	-17 23 41	3 21 5.581	7 6	11 44 2	16 21	63.		
12 Č	147.5	15 9 8.2	-17 40 8	3 25 2.131	7 8	11 44 9	16 20	63.		
13 P	148.5	15 13 12.6	-17 56 16	3 28 58.680	7 10	11 44 18	16 18	62.		
14 S	149.5	15 17 17.8	-18 12 5	3 32 55.230	7 11	11 44 27	16 17	62.		
15 N	150.5	15 21 24.0	-18 27 35	3 36 51.783	7 13	11 44 37	16 16	61.		
16 P	151.5	15 25 31.0	-18 42 46	3 40 48.339	7 14	11 44 48	16 15	61.		
17 Ú	152.5	15 29 38.8	-18 57 37	3 44 44.898	7 16	11 44 59	16 13	61.		
18 S	153.5	15 33 47.5	-19 12 7	3 48 41.459	7 18	11 45 12	16 12	60.		
19 Č	154.5	15 37 57.0	-19 26 17	3 52 38.021	7 19	11 45 25	16 11	60.		
20 P	155.5	15 42 7.3	-19 40 6	3 56 34.584	7 21	11 45 39	16 10	59.		
21 S	156.5	15 46 18.4	-19 53 33	4 0 31.145	7 22	11 45 54	16 9	59.		
22 N	157.5	15 50 30.3	-20 6 39	4 4 27.705	7 24	11 46 10	16 8	59.		
23 P	158.5	15 54 43.0	-20 19 22	4 8 24.263	7 25	11 46 26	16 7	58.		
24 Ú	159.5	15 58 56.4	-20 31 43	4 12 20.818	7 27	11 46 43	16 6	58.		
25 S	160.5	16 3 10.6	-20 43 41	4 16 17.372	7 28	11 47 1	16 5	58.		
26 Č	161.5	16 7 25.6	-20 55 16	4 20 13.923	7 30	11 47 20	16 4	57.		
27 P	162.5	16 11 41.2	-21 6 27	4 24 10.474	7 31	11 47 40	16 4	57.		
28 S	163.5	16 15 57.6	-21 17 15	4 28 7.025	7 33	11 48 0	16 3	57.		
29 N	164.5	16 20 14.6	-21 27 38	4 32 3.578	7 34	11 48 21	16 2	56.		
30 P	165.5	16 24 32.4	-21 37 37	4 36 0.133	7 35	11 48 42	16 2	56.		

Slunce vstupuje do znamení Střelce dne 22. 11. v 5 h 22 min SEČ.

den	J.D.	0 h TČ			0 h SČ		poledník a čas středoevropský obzor +50° rovnoběžky			
		RA	DE		hvězdný čas	východ	pravé poledne	západ	azi- mut	
		h min s	° ' "	h min s	h min	h min s	h min	°		
1 Ú	166.5	16 28 50.7	-21 47 12	4 39 56.693	7 37	11 49 4	16 1	56.		
2 S	167.5	16 33 9.8	-21 56 21	4 43 53.256	7 38	11 49 27	16 1	56.		
3 Č	168.5	16 37 29.4	-22 5 5	4 47 49.822	7 39	11 49 50	16 0	55.		
4 P	169.5	16 41 49.7	-22 13 24	4 51 46.390	7 41	11 50 14	16 0	55.		
5 S	170.5	16 46 10.6	-22 21 17	4 55 42.956	7 42	11 50 39	15 59	55.		
6 N	171.5	16 50 32.0	-22 28 44	4 59 39.519	7 43	11 51 4	15 59	55.		
7 P	172.5	16 54 53.9	-22 35 45	5 3 36.078	7 44	11 51 30	15 59	54.		
8 Ú	173.5	16 59 16.4	-22 42 19	5 7 32.634	7 45	11 51 56	15 58	54.		
9 S	174.5	17 3 39.4	-22 48 26	5 11 29.186	7 46	11 52 22	15 58	54.		
10 Č	175.5	17 8 2.9	-22 54 7	5 15 25.738	7 47	11 52 49	15 58	54.		
11 P	176.5	17 12 26.8	-22 59 20	5 19 22.290	7 48	11 53 17	15 58	54.		
12 S	177.5	17 16 51.1	-23 4 7	5 23 18.844	7 49	11 53 45	15 58	54.		
13 N	178.5	17 21 15.7	-23 8 25	5 27 15.401	7 50	11 54 13	15 58	53.		
14 P	179.5	17 25 40.8	-23 12 16	5 31 11.961	7 51	11 54 42	15 58	53.		
15 Ú	180.5	17 30 6.1	-23 15 40	5 35 8.523	7 52	11 55 11	15 58	53.		
16 S	181.5	17 34 31.7	-23 18 35	5 39 5.087	7 53	11 55 40	15 59	53.		
17 Č	182.5	17 38 57.5	-23 21 3	5 43 1.651	7 53	11 56 9	15 59	53.		
18 P	183.5	17 43 23.6	-23 23 2	5 46 58.214	7 54	11 56 39	15 59	53.		
19 S	184.5	17 47 49.8	-23 24 34	5 50 54.776	7 55	11 57 9	15 59	53.		
20 N	185.5	17 52 16.1	-23 25 37	5 54 51.336	7 55	11 57 38	16 0	53.		
21 P	186.5	17 56 42.4	-23 26 12	5 58 47.894	7 56	11 58 8	16 0	53.		
22 Ú	187.5	18 1 8.9	-23 26 18	6 2 44.449	7 56	11 58 38	16 1	53.		
23 S	188.5	18 5 35.3	-23 25 57	6 6 41.002	7 57	11 59 8	16 1	53.		
24 Č	189.5	18 10 1.7	-23 25 7	6 10 37.554	7 57	11 59 38	16 2	53.		
25 P	190.5	18 14 28.0	-23 23 49	6 14 34.106	7 58	12 0 8	16 3	53.		
26 S	191.5	18 18 54.3	-23 22 3	6 18 30.659	7 58	12 0 37	16 3	53.		
27 N	192.5	18 23 20.4	-23 19 49	6 22 27.215	7 58	12 1 7	16 4	53.		
28 P	193.5	18 27 46.4	-23 17 6	6 26 23.773	7 58	12 1 36	16 5	53.		
29 Ú	194.5	18 32 12.2	-23 13 56	6 30 20.335	7 58	12 2 5	16 6	53.		
30 S	195.5	18 36 37.7	-23 10 18	6 34 16.900	7 59	12 2 34	16 7	54.		
31 Č	196.5	18 41 3.0	-23 6 12	6 38 13.468	7 59	12 3 3	16 8	54.		

Slunce vstupuje do znamení Kozoroha dne 21. 12. v 18 h 46 min SEČ.
Začátek astronomické zimy. Zimní slunovrat.