



Research Paper

Study of Time

Suresh Kumar Pareek

Following aspects of the Time on the Earth are Studied:

1. Length of Lunar Synodic Month-

Mid Times of Solar eclipses of same saros cycle, with a gap of 595 years (33 cycles of 18.03 years) are noted down & analysed, as below-

Sl.	Eclipse Date	Time in Decimal	Difference (No. of Days)	Average Synodic Month (Days)
1	19-04-1670	0.758230324	217316.1739	29.53066638
	16-04-2265	0.932134259		
2	31-03-1699	0.366986111	217315.298	29.53054736
	27-03-2294	0.664987269		
3	21-05-1659	0.151572917	217315.4595	29.5305693
	17-05-2254	0.611045139		
4	28-04-1576	0.835114583	217315.3044	29.53054823
	05-05-2171	0.139553241		
5	07-07-1442	0.911751157	217316.1989	29.53066978
	13-07-2037	0.110686343		
6	14-12-1629	0.679265046	217315.7893	29.53061412
	11-12-2224	0.468560185		
7	29-06-1554	0.797087963	217315.5346	29.5305795
	05-07-2149	0.331650463		
8	19-05-1547	0.198523148	217316.1978	29.53066962
	25-05-2142	0.396292824		
9	27-05-1435	0.945071759	217315.3244	29.53055095
	01-06-2030	0.269482639		
10	01-11-1510	0.79816088	217315.0084	29.53050801
	06-11-2105	0.806591435		
Mean Lunar Synodic Month (Days)				29.53059233

It is found that Length of mean Lunar synodic Month is 29.53059233 days. Length of a Divine day is 1872328 Days & it's beginning & end are marked by No Moon Days. There are 63403 Synodic Months in it. Hence, a Synodic Month is made up of 29.53059 days.

2. Synchronisation of Lunar Synodic Month with Sidereal Months-

Length of Mean Lunar Synodic Month is compared with that of Sidereal Month (of 30 degrees each), as below;

Base Lunar Months of 29.53059 days	Additional Lunar Month	Nett Lunar Months	Sidereal Months of 30.43803 Days
33	1	34	33
2414	1	2415	2343

Insertion of additional Lunar Month (Extra Month) at the end of every 33rd & 2414th Lunar months, will synchronise Lunar months with Sidereal Months.

3. Precession of Equinoxes & Current Ayanamsa-

Position of the Sun, as per below three modes, for below two dates at 00 UTC are noted & analysed, as below-

Date	Sun sidereal Degree (Lahiri)	Sun sidereal Degree (Fagan/Bradley)	Sun Tropical Degree
24-10-285 (JC)	210.91	210.0266666	210.91
24-10-2025	186.6177777	185.7347222	210.8363888
Current Ayanamsa (Degree)	24.2186111	24.2183332	
Current Precession of Equinoxes (Years)	25864.42968	25864.72647	

It is found that current Ayanamsa is 24.218 Degree & current rate of Precession of equinoxes is 71.8444 Years/ Degree.

4. Previous Divine Day-

It is Noted that Previous Divine Day began on 17th April 3102 BC (3101 BC, by considering 0 year also). Previous Divine Day predated 1872328 days from the beginning of Current Divine day (25th June 2025 AD) & at that time Sun, Moon & all the 7 Planets & Ketu were aligned within 5 Zodiacs.

Note1: on 25th June 2025 AD, Galactic centre was not present at opposite point of the Ascendant.

Note2: On coming 19th March 2026 also Sun, Moon & all the 7 Planets are getting aligned between Nodes of the Moon.

5. Advancing of Perihelion-

Mid Points of 'Aphelion & Perihelion', Mid Points of 'Perihelion & Aphelion' are recorded with interval of 5400 Years.

Mid Points of 'Aphelion & Perihelion'

Date	Date; Current Equivalent	Sun Opening Degree	Sun Daily Degree	Forward Shift of MidPoint from Previous
10-06-8676 (75) BC	08-Apr	13.52494897	0.986162132	(Degrees)
03-08-3276 (75) BC	10-Jul	103.47	0.986196145	89.94505103
09-10-2125 AD	09-Oct	195.7460799	0.986490927	92.2760799

Mid Points of 'Perihelion & Aphelion'

Date	Date Equivalent	Sun Opening Degree	Sun Daily Degree	Forward Shift of Mid Point from Previous
05-12-8676 (75) BC	03-Oct	193.4418991	0.986179138	(Degrees)
27-01-3276 (75) BC	03-Jan	282.41	0.986672336	88.9681009
04-04-2125 AD	04-Apr	14.25591554	0.986468254	91.84591554

Above data are analysed, as below;

Period	Degree advancement of Mid Points	Years for 360-degree Circle of Perihelion
8675 BC to 3275 BC	89.456576	21731.21404
3275 BC to 2125 AD	92.060998	21116.43419
8675 BC to 2125 AD	181.51757	21419.41367

Average period required for 360-degree Advance of Perihelion is **21419 Years**.

Since, Milankovitch cycles as well as above data clearly indicate that Advance of Perihelion is not static & it varies over the time. **The value is hereby considered as 21600 Years.**

This means that Perihelion advances 1 degree/ 60 Years.

6. Proposals for restructuring of Solar Calendar-

Synchronisation of 30 Degree/ Month movement of the Sun, in Solar Tropical Calendar can be a better solution for Time keeping.

It is recommended to reduce 01 day (from 365 days to 364 days) from every such year which is completely divisible by 2500 (Ex. 2500th, 5000th, 25000th Years), except from those years which are also completely divisible by 400 (Ex. 10000th, 20000th years etc; such years are Leap years with 366 days). This will sync tropical year to actual 365.2422 Days.

For eligible years, this 01 Day can be reduced (from 29 days to 28 days) from proposed 10th Month, ending on 18th January.

This Same month (proposed 10th month, beginning from 21st December) becomes a Leap month in every 4th year (divisible by 4) with 30 Days (instead of 29), except in such year which are completely divisible by 100 but are not completely divisible by 400 (Ex. such non-Leap century years are 100th, 200th, 300th, 1000th, 1700th, 1800th, 2100th etc.; such years are made up of 365 days). Year 0 remains a Leap Year. All other years will be made up of 365 Days.

It is again proposed that beginning of Tropical calendar be from 06:06 AM as at Mogadishu (Somalia), (Latitude 2.04 North, Longitude 45.34 East), which also corresponds to 00:06 AM near Amazon delta, Atlantic Ocean, (Latitude 0, Longitude 49.25 West), from 20th March of every year. This will sync tropical year with Spring of Equinox. This proposal can be implemented from 20th March 2026, parallelly with the existing Calendar.

It is recommended that after every 1800 years Length of existing month is advanced to its next month (Ex. 10th Month of proposed new Calendar is made up of 29 days. After next 1800 years 11th month should be made up of 29-day, Next 12th, next 1st month & so on).

Since currently Perihelion is on 14th day of 10th month, so; to start with, for first instance only this forward shifting can just take place after next 900 years only (Eg. From 2026 AD to 2925 AD; 10th month can be made up of 29 days & From 2926 AD to 4725 AD; 11th month can be made of 29 days).

Date wise proposed Calendar is as the following;

Proposed Date	Proposed Month	Current Date	Sun Degree/ Day	Degrees/ Month	Days/ Month
1	1	20-Mar	0.993690474		
2	1	21-Mar	0.993134919		
3	1	22-Mar	0.992581253		
4	1	23-Mar	0.992025698		
5	1	24-Mar	0.991472032		
6	1	25-Mar	0.990914587		
7	1	26-Mar	0.990357142		
8	1	27-Mar	0.989799698		
9	1	28-Mar	0.989240363		
10	1	29-Mar	0.988677249		
11	1	30-Mar	0.988116024		
12	1	31-Mar	0.987549131		
13	1	01-Apr	0.986986017		
14	1	02-Apr	0.986422903		
15	1	03-Apr	0.98585412		
16	1	04-Apr	0.985287226		
17	1	05-Apr	0.984722222		
18	1	06-Apr	0.984153439		
19	1	07-Apr	0.983588435		
20	1	08-Apr	0.983021542		
21	1	09-Apr	0.982452759		
22	1	10-Apr	0.981893424		
23	1	11-Apr	0.98133031		
24	1	12-Apr	0.980767196		
25	1	13-Apr	0.98021164		
26	1	14-Apr	0.979656085		

27	1	15-Apr	0.979106198		
28	1	16-Apr	0.97856387		
29	1	17-Apr	0.978017763		
30	1	18-Apr	0.977482993	29.56707671	30
1	2	19-Apr	0.976952003		
2	2	20-Apr	0.976421013		
3	2	21-Apr	0.975899471		
4	2	22-Apr	0.975379819		
5	2	23-Apr	0.974858277		
6	2	24-Apr	0.974346183		
7	2	25-Apr	0.973834089		
8	2	26-Apr	0.973327665		
9	2	27-Apr	0.972825019		
10	2	28-Apr	0.972322373		
11	2	29-Apr	0.971823507		
12	2	30-Apr	0.9713322		
13	2	01-May	0.970842782		
14	2	02-May	0.970357143		
15	2	03-May	0.969875283		
16	2	04-May	0.969399093		
17	2	05-May	0.968922902		
18	2	06-May	0.968452381		
19	2	07-May	0.967985639		
20	2	08-May	0.967524565		
21	2	09-May	0.967067271		
22	2	10-May	0.966613756		
23	2	11-May	0.966165911		
24	2	12-May	0.965733182		
25	2	13-May	0.965304233		
26	2	14-May	0.964884732		
27	2	15-May	0.96446901		
28	2	16-May	0.964064626		
29	2	17-May	0.96366969		
30	2	18-May	0.963280423		
31	2	19-May	0.962893046	30.05682729	31
1	3	20-May	0.962518897		
2	3	21-May	0.962146637		
3	3	22-May	0.961787604		
4	3	23-May	0.96143424		
5	3	24-May	0.961082766		
6	3	25-May	0.96074452		
7	3	26-May	0.960411942		
8	3	27-May	0.960083144		
9	3	28-May	0.959765684		
10	3	29-May	0.959448224		
11	3	30-May	0.959136432		

12	3	31-May	0.958839758		
13	3	01-Jun	0.958543084		
14	3	02-Jun	0.958257748		
15	3	03-Jun	0.95797619		
16	3	04-Jun	0.957702192		
17	3	05-Jun	0.957439531		
18	3	06-Jun	0.957184429		
19	3	07-Jun	0.956929328		
20	3	08-Jun	0.956689343		
21	3	09-Jun	0.956455026		
22	3	10-Jun	0.956232048		
23	3	11-Jun	0.956014739		
24	3	12-Jun	0.955804989		
25	3	13-Jun	0.955606576		
26	3	14-Jun	0.955423281		
27	3	15-Jun	0.955239985		
28	3	16-Jun	0.955068027		
29	3	17-Jun	0.954905518		
30	3	18-Jun	0.954752457		
31	3	19-Jun	0.954614512	29.69823885	31
1	4	20-Jun	0.954482237		
2	4	21-Jun	0.954357521		
3	4	22-Jun	0.954246032		
4	4	23-Jun	0.954142101		
5	4	24-Jun	0.954047619		
6	4	25-Jun	0.953964474		
7	4	26-Jun	0.95388322		
8	4	27-Jun	0.953811413		
9	4	28-Jun	0.953747166		
10	4	29-Jun	0.953694256		
11	4	30-Jun	0.953647015		
12	4	01-Jul	0.953607332		
13	4	02-Jul	0.953575209		
14	4	03-Jul	0.953546864		
15	4	04-Jul	0.953529857		
16	4	05-Jul	0.953522297		
17	4	06-Jul	0.953520409		
18	4	07-Jul	0.953529856		
19	4	08-Jul	0.953546863		
20	4	09-Jul	0.953571428		
21	4	10-Jul	0.95361489		
22	4	11-Jul	0.953664021		
23	4	12-Jul	0.953718821		
24	4	13-Jul	0.953783068		
25	4	14-Jul	0.953858654		
26	4	15-Jul	0.953945578		

27	4	16-Jul	0.95404195		
28	4	17-Jul	0.954142101		
29	4	18-Jul	0.95425548		
30	4	19-Jul	0.954382086		
31	4	20-Jul	0.954518141	29.56989796	31
1	5	21-Jul	0.954659864		
2	5	22-Jul	0.954811035		
3	5	23-Jul	0.954971655		
4	5	24-Jul	0.955145502		
5	5	25-Jul	0.955323128		
6	5	26-Jul	0.955508314		
7	5	27-Jul	0.955701058		
8	5	28-Jul	0.95590325		
9	5	29-Jul	0.956111111		
10	5	30-Jul	0.956324641		
11	5	31-Jul	0.95654195		
12	5	01-Aug	0.956770596		
13	5	02-Aug	0.957006801		
14	5	03-Aug	0.957250564		
15	5	04-Aug	0.957501886		
16	5	05-Aug	0.957760768		
17	5	06-Aug	0.958029097		
18	5	07-Aug	0.958304985		
19	5	08-Aug	0.958584653		
20	5	09-Aug	0.95886999		
21	5	10-Aug	0.959166665		
22	5	11-Aug	0.959469009		
23	5	12-Aug	0.95978269		
24	5	13-Aug	0.96010582		
25	5	14-Aug	0.960440287		
26	5	15-Aug	0.960787982		
27	5	16-Aug	0.961145125		
28	5	17-Aug	0.961506047		
29	5	18-Aug	0.961880196		
30	5	19-Aug	0.962256236		
31	5	20-Aug	0.962637943	29.70025885	31
1	6	21-Aug	0.963025321		
2	6	22-Aug	0.963416478		
3	6	23-Aug	0.963813303		
4	6	24-Aug	0.964217687		
5	6	25-Aug	0.964623961		
6	6	26-Aug	0.965039683		
7	6	27-Aug	0.965462964		
8	6	28-Aug	0.965890023		
9	6	29-Aug	0.966320862		
10	6	30-Aug	0.966759259		

11	6	31-Aug	0.967201436		
12	6	01-Sep	0.967649282		
13	6	02-Sep	0.968102796		
14	6	03-Sep	0.96855631		
15	6	04-Sep	0.969015494		
16	6	05-Sep	0.969482236		
17	6	06-Sep	0.969952759		
18	6	07-Sep	0.970428949		
19	6	08-Sep	0.97090892		
20	6	09-Sep	0.971394559		
21	6	10-Sep	0.971891536		
22	6	11-Sep	0.972392292		
23	6	12-Sep	0.972896827		
24	6	13-Sep	0.97340892		
25	6	14-Sep	0.973926682		
26	6	15-Sep	0.974452003		
27	6	16-Sep	0.974977324		
28	6	17-Sep	0.975502644		
29	6	18-Sep	0.976039304		
30	6	19-Sep	0.976575963		
31	6	20-Sep	0.977112623	30.0604384	31
1	7	21-Sep	0.977653061		
2	7	22-Sep	0.9781935		
3	7	23-Sep	0.978739607		
4	7	24-Sep	0.979291384		
5	7	25-Sep	0.979835601		
6	7	26-Sep	0.980391157		
7	7	27-Sep	0.980946712		
8	7	28-Sep	0.981502267		
9	7	29-Sep	0.982061601		
10	7	30-Sep	0.982619047		
11	7	01-Oct	0.983172712		
12	7	02-Oct	0.983732048		
13	7	03-Oct	0.984283824		
14	7	04-Oct	0.984837491		
15	7	05-Oct	0.985393047		
16	7	06-Oct	0.985944823		
17	7	07-Oct	0.986504157		
18	7	08-Oct	0.987067271		
19	7	09-Oct	0.987628496		
20	7	10-Oct	0.988195389		
21	7	11-Oct	0.988764172		
22	7	12-Oct	0.989331064		
23	7	13-Oct	0.989901738		
24	7	14-Oct	0.990468632		
25	7	15-Oct	0.991035525		

26	7	16-Oct	0.991602419		
27	7	17-Oct	0.992165533		
28	7	18-Oct	0.992726757		
29	7	19-Oct	0.993287983		
30	7	20-Oct	0.993851096		
31	7	21-Oct	0.994408541	30.56553666	31
1	8	22-Oct	0.994964097		
2	8	23-Oct	0.995519652		
3	8	24-Oct	0.996073318		
4	8	25-Oct	0.996625094		
5	8	26-Oct	0.997174981		
6	8	27-Oct	0.99771353		
7	8	28-Oct	0.998252078		
8	8	29-Oct	0.998784958		
9	8	30-Oct	0.999310279		
10	8	31-Oct	0.999829932		
11	8	01-Nov	1.000345805		
12	8	02-Nov	1.000854119		
13	8	03-Nov	1.001360544		
14	8	04-Nov	1.00186319		
15	8	05-Nov	1.002360166		
16	8	06-Nov	1.002855253		
17	8	07-Nov	1.00334845		
18	8	08-Nov	1.003835979		
19	8	09-Nov	1.004321618		
20	8	10-Nov	1.004807257		
21	8	11-Nov	1.005285337		
22	8	12-Nov	1.005763417		
23	8	13-Nov	1.006233939		
24	8	14-Nov	1.006698792		
25	8	15-Nov	1.007157975		
26	8	16-Nov	1.007611489		
27	8	17-Nov	1.008053665		
28	8	18-Nov	1.008493953		
29	8	19-Nov	1.008921013		
30	8	20-Nov	1.009348072	30.07376795	30
1	9	21-Nov	1.009765683		
2	9	22-Nov	1.010175736		
3	9	23-Nov	1.010576341		
4	9	24-Nov	1.010971277		
5	9	25-Nov	1.011354876		
6	9	26-Nov	1.011732805		
7	9	27-Nov	1.012093728		
8	9	28-Nov	1.012448981		
9	9	29-Nov	1.012794785		
10	9	30-Nov	1.013131142		

11	9	01-Dec	1.01345805		
12	9	02-Dec	1.01377551		
13	9	03-Dec	1.014085411		
14	9	04-Dec	1.014393422		
15	9	05-Dec	1.014686318		
16	9	06-Dec	1.014973544		
17	9	07-Dec	1.015255102		
18	9	08-Dec	1.0155291		
19	9	09-Dec	1.015791761		
20	9	10-Dec	1.016048753		
21	9	11-Dec	1.016292518		
22	9	12-Dec	1.016534393		
23	9	13-Dec	1.01676304		
24	9	14-Dec	1.016982238		
25	9	15-Dec	1.017191988		
26	9	16-Dec	1.017399849		
27	9	17-Dec	1.017592592		
28	9	18-Dec	1.017777777		
29	9	19-Dec	1.017951624		
30	9	20-Dec	1.018117913	30.43564626	30
1	10	21-Dec	1.018272864		
2	10	22-Dec	1.018414588		
3	10	23-Dec	1.018539305		
4	10	24-Dec	1.018656463		
5	10	25-Dec	1.018760393		
6	10	26-Dec	1.018854875		
7	10	27-Dec	1.018938019		
8	10	28-Dec	1.019011714		
9	10	29-Dec	1.019075962		
10	10	30-Dec	1.019132651		
11	10	31-Dec	1.019179893		
12	10	01-Jan	1.019213907		
13	10	02-Jan	1.019232804		
14	10	03-Jan	1.019240362		
15	10	04-Jan	1.019232804		
16	10	05-Jan	1.019215797		
17	10	06-Jan	1.019187453		
18	10	07-Jan	1.01914399		
19	10	08-Jan	1.01909486		
20	10	09-Jan	1.019036281		
21	10	10-Jan	1.018968254		
22	10	11-Jan	1.018890779		
23	10	12-Jan	1.018803855		
24	10	13-Jan	1.018703704		
25	10	14-Jan	1.018594104		
26	10	15-Jan	1.018471277		

27	10	16-Jan	1.018339001	29.54643989	29
28	10	17-Jan	1.018193498		
29	10	18-Jan	1.018040437		
1	11	19-Jan	1.017876038		
2	11	20-Jan	1.017704081		
3	11	21-Jan	1.017524565		
4	11	22-Jan	1.017339379		
5	11	23-Jan	1.017144747		
6	11	24-Jan	1.016944445		
7	11	25-Jan	1.016736584		
8	11	26-Jan	1.016517385		
9	11	27-Jan	1.016290627		
10	11	28-Jan	1.016050643		
11	11	29-Jan	1.015797431		
12	11	30-Jan	1.015534771		
13	11	31-Jan	1.015260772		
14	11	01-Feb	1.014973546		
15	11	02-Feb	1.014674982		
16	11	03-Feb	1.014365081		
17	11	04-Feb	1.01404951		
18	11	05-Feb	1.01372638		
19	11	06-Feb	1.013391912		
20	11	07-Feb	1.013047997		
21	11	08-Feb	1.012696522		
22	11	09-Feb	1.012341268		
23	11	10-Feb	1.011978456		
24	11	11-Feb	1.011604307		
25	11	12-Feb	1.011220709		
26	11	13-Feb	1.010835222		
27	11	14-Feb	1.010442176		
28	11	15-Feb	1.010039682		
29	11	16-Feb	1.00963152		
30	11	17-Feb	1.009213907	30.42495465	30
1	12	18-Feb	1.008792517		
2	12	19-Feb	1.008369236		
3	12	20-Feb	1.007934618		
4	12	21-Feb	1.007496221		
5	12	22-Feb	1.007055934		
6	12	23-Feb	1.006606199		
7	12	24-Feb	1.006154573		
8	12	25-Feb	1.005699169		
9	12	26-Feb	1.005228647		
10	12	27-Feb	1.004756236		
11	12	28-Feb	1.004278155		
12	12	01-Mar	1.003788738		
13	12	02-Mar	1.00329554		

14	12	03-Mar	1.002796674		
15	12	04-Mar	1.00228836		
16	12	05-Mar	1.001785714		
17	12	06-Mar	1.001269841		
18	12	07-Mar	1.000748299		
19	12	08-Mar	1.000226758		
20	12	09-Mar	0.999701437		
21	12	10-Mar	0.999166668		
22	12	11-Mar	0.998631898		
23	12	12-Mar	0.998085791		
24	12	13-Mar	0.997545354		
25	12	14-Mar	0.997001136		
26	12	15-Mar	0.996453138		
27	12	16-Mar	0.995901361		
28	12	17-Mar	0.995351473		
29	12	18-Mar	0.994797807		
30	12	19-Mar	0.99424603	30.05545352	30

Data Sources:

www.astro.com, Hindu Calendar, Latlong.net