

**Relevance of Ancient Knowledge to the present century:**

**De-coding Aryabhatiya Cryptic Numerals, and its application to Telugu Script**

**(1) To find the number of revolutions of Geo-centric planets in a Mahayuga (4320000 yrs), comparison of their sidereal periods with their present day values, and**

**(2) Reason for naming weekdays from Aryabhatiya of Aryabhata-I.**

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[Note: - This article is prepared using 'Baraha Unicode' software.]

**ABOUT THIS ARTICLE:** - As a faculty of 'International Academy for Creative Teaching (under Jain Group of Institutions, Bengaluru)' conducting workshops for Teachers of a few schools in Coimbatore during 2003 – 2009, I faced difficulty in sharing the contributions of Indian mathematicians, specially of Aryabhata-I (5<sup>th</sup> c. AD) with those teachers (who are not familiar with Devnagari Script). Scripts of any language are *cryptic symbols* for the sounds needed in writing them to communicate with the public.

My paper, an attempt to adapt modified Tamizh script to Devnagari script explaining Cryptic numeral of Aryabhata-I (5<sup>th</sup> c. AD), expressing the number of revolutions in a Mahayuga (43,20,000 years) stated Aryabhatiya, was blessed by Prof. P V Arunachalam, [vice-chancellor, Dravidian University, Kuppam (AP)] with his kind advice/ suggestion ; 'I am delighted to have gone through the 11-page scholarly article . It merits reading again and again. Congrats. I request you to do the same in Telugu script also. You have done a splendid job'.

This paper is in response to the blessings of Venerable Prof. P V Arunachalam

**Introduction:** - Base ten place-value system having ten digits from 1 to 9 and 0 for number reckoning is the universally acclaimed invention by the visionaries of ancient India. Since then, numerals of numbers were written using the rule

“अङ्कानाम् वामतो गतिः”

Purport: - **The digits** (in the numeral of a number) **move** '(increase) **towards left** (in multiples of the base)'.

*Cryptic numerals* using words and alphabets were popular in Sanskrit texts to denote numbers in rhythmic *slokas* for easy memorization.

*Aryabhata-I* (5<sup>th</sup> c. AD) has named the names of nine place values, thus;

एकं च दशं च शतं च सहस्रमयुतानियुते तथा प्रयुतं ।  
कोट्यर्बुदं च वृन्दम् स्थानात् स्थानं दशगुणं भवेत् ॥

Purport: - The ten names in the multiples of 10 are; एकं(10<sup>0</sup>), दशं(10<sup>1</sup>), शतं(10<sup>2</sup>), सहस्रं(10<sup>3</sup>) अयुतं(10<sup>4</sup>), नियुतं(10<sup>5</sup>), प्रयुतं(10<sup>6</sup>), कोटि(10<sup>7</sup>), अर्बुदं(10<sup>8</sup>), वृन्दं(10<sup>9</sup>).

And *Aryabhata-I* invented a unique *cryptic numerical system* adapting *Devnagari alphabets* to denote the astronomical numbers for the *number of revolutions of Geo-centric planets in a Mahayuga* (43,20,000 yrs).

**I. Rule for Aryabhatiya Devnagari Cryptic Numerals :-**

वर्गाक्षराणि वर्गेऽवर्गेऽवर्गाक्षराणी कात् इमौ यः ।  
 खद्विनवके स्वरा नव वर्गेऽवर्गे नवान्त्यवर्गे वा ॥  
 వర్గాక్షరాణి వర్గేఃవర్గేఃవర్గాక్షరాణి కాత్ ఇమౌ యః ।  
 ఖద్విన్వకే స్వరా నవవర్గేఃఅవర్గే నవాన్త్యవర్గే వా ॥

**Purport: -**

(1) Consonant, व्यञ्जन (a) वर्गाक्षर (వర్గాక్షర) from क् (क) [(to म् (म्))] has numerical value from 1 (to 25) and (b) अवर्गाक्षर, (అవర్గాక్షర) from య్ [(to (వో))] has numerical value from 3 (to 10) to denote numbers.

(2) Vowels, स्वरा (స్వరా) (अ, इ, उ, ऋ, लृ, ए, ओ, ऐ, औ; అ, ఇ, ఉ, ఋ, లృ, ఏ, ఓ, ఔ) specify two sets of nine zeros (in multiples of 10), (i) One set of nine even number of ten-zeros to follow वर्गाक्षर (వర్గాక్షర) and (ii) Another set of nine odd number of ten-zeros to follow अवर्गाक्षर (అవర్గాక్షర).

**II. The above rules could be explained and presented with relevant Tables: -**

वर्गाक्षराणि वर्गेऽवर्गेऽवर्गाक्षराणी कात् इमौ यः ।  
 वर्गाक्षराणि वर्गे कात् ।

कात् (కాత్) means the numerical value of गुणितवर्गाक्षर, क (గుణిత వర్గాక్షర, క)  
 క = (క్ . అ) = 1; [అ = 1] [క = (క . అ) = (1 . అ) = 1 ; [అ = 1]

Therefore वर्गाक्षर क् = 1 and स्वर अ = 1.

It gives reason for the numerical values of वर्गाक्षर क् to म् are from 1 to 25.

II. (1)(a). वर्गाक्षर (వర్గాక్షర) from क् (क) to म् (म) denote numbers from 1 to 25 sequentially.

II. 1(a) (i). वर्गाक्षर (వర్గాక్షర) from क् (क) to ज् (ज) denote numbers from 1 to 10 sequentially.

**Table II. 1(a) (i)**

Aryabhatiya Cryptic Numerals in Devnagari & Telugu from १ = 1 to १० = 10										
<b>Time New Roman Numerals</b>	1	2	3	4	5	6	7	8	9	10
<b>Time New Roman Cryptic Numerals</b>	k	K	g	G	~g	c	C	j	J	~j
<b>वर्गाक्षर (Mangal)</b>	क्	ख्	ग्	घ्	ङ्	च्	छ्	ज्	झ्	ञ्
<b>వర్గాక్షర (Nirmala UI)</b>	క	ఖ	గ	ఘ	ఙ	చ	ఛ	జ	ఝ	ఞ

II .1(a) (ii). वर्गाक्षर (వర్గాక్షర) from ट् (ट) to म् (म) denote numbers from 11 to 25 sequentially.

**Table II. 1(a) (ii)**

Aryabhatiya Cryptic Numerals in Devnagari & Telugu from 11=11 to 25=25															
<b>Times New Roman Numbers</b>	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
<b>Time New Roman Cryptic Numerals</b>	T	Th	D	Dh	N	t	th	d	dh	n	p	P	b	B	m
<b>वर्गाक्षर (Mangal)</b>	ट	ठ	ड	ढ	ण	त्	थ	द	ध	न्	प्	फ	ब्	भ्	म्
<b>పర్గాక్షర (Nirmala UI)</b>	ఠ్	ఠ్	ఢ్	ఢ్	ణ్	త్	థ్	ద్	ధ్	న్	ప్	ఫ్	బ్	భ్	మ్

అవర్గాక్షరాణి ఇమౌ యః అవర్గే ।

ఇమౌ యః (ఠ్ యః) means ఇమ = య

ఠ్ = [(ఠ్ + మ) x అ] = [(5+25) x 1] = [30] = (3x10) = య = (య x అ) = (3 x 10) = 30 ;  
Therefore అవర్గాక్షర య = 3 and స్వర అ = 10.

It gives reason for the numerical values of అవర్గాక్షర య to ఠ్ from 3 to 10.

II.1(b). అవర్గాక్షర (అపర్గాక్షర) from య (య) to ఠ్ (ఠ) denote numbers from 3 to 10 sequentially.

**Table II. 1 (b)**

Aryabhatiya Cryptic Numerals in Devnagari & Telugu from 3=3 to 10=10									
<b>Times New Roman Numbers</b>	3	4	5	6	7	8	9	10	
<b>Time New Roman Cryptic Numerals</b>	y	r	l	v	S	Sh	s	h	
<b>वर्गाक्षर (Mangal)</b>	य	र	ल	व	श	ष	स	ह	
<b>పర్గాక్షర (Nirmala UI)</b>	య	ఠ	ల్	వ	శ	ష	స్	హ	

Therefore, for అవర్గాక్షర క్ to మ్ (పర్గాక్షర 11 నుండి 25 వరకు) value of స్వర అ = 1.

For అవర్గాక్షర య to ఠ్ (అపర్గాక్షర 3 నుండి 10 వరకు) value of స్వర అ = 10.

II. (2) Vowels, స్వర (స్వర) (అ, ఇ, ఉ, ఋ, లృ, ఌ, ఒ, ఐ, ఔ; అ, ఇ, ఉ, ఋ, లృ, ఌ, ఒ, ఐ) specify two sets of nine zeros (in multiples of 10),

खद्विनवके स्वरा नव वर्गोवर्गे नवान्त्यवर्गे वा ॥

(i) Number of zeros to follow the అవర్గాక్షర from క్ to మ్ (పర్గాక్షర,

11 నుండి 25), numerals with vowels స్వర (స్వర) అ nil, and with svara (ఇ, ఉ, ఋ, లృ, ఌ, ఒ, ఐ, ఔ; ఇ, ఉ, ఋ, లృ, ఌ, ఒ, ఐ) are one group of nine sets of even number of multiples of ten zeros (from 2 zeros to 16 zeros)..

(ii) Number of zeros to follow the अवर्गाक्षर from य् to ह् (అవర్గాక్షర య్ నింద హ్ వరగె) numerals with vowels, स्वर (స్వర) (अ, इ, उ, ऋ, लृ, ए, ओ, ऐ, औ; అ, ఇ, ఉ, ఋ, లృ, ఏ, ఐ, ఔ, ఔ) another group of nine sets of *odd number of multiples of ten zeros* (from 1 zero to 17 zero).

**Modified Rule of Rule II. (2) (i) & (ii): -**

- (i) Place-values in powers of ten for the numerals of वर्गाक्षर from क् to म् (వర్గాక్షర క్ నింద మ్ వరగె) with vowels, स्वर (స్వర) (अ, इ, उ, ऋ, लृ, ए, ओ, ऐ, औ; అ, ఇ, ఉ, ఋ, లృ, ఏ, ఐ, ఔ, ఔ) are denoted with one group of nine *even powers of 10* (starting from  $10^0$  to  $10^{16}$ ).
- (ii) Place-values in powers of ten of the numerals of अवर्गाक्षर from य् to ह् (అవర్గాక్షర య్ నింద హ్ వరగె) with vowels, स्वर (స్వర) (अ, इ, उ, ऋ, लृ, ए, ओ, ऐ, औ; అ, ఇ, ఉ, ఋ, లృ, ఏ, ఐ, ఔ, ఔ) are denoted with another nine *odd powers of ten* (starting from  $10^1$  to  $10^{17}$ ).

**Table for Modified Rule of Rule II. (2) (i) & (ii)**

Place-values in powers of ten to each మూల-వర్గాక్షరము / మూల-అవర్గాక్షరము									
Vowels of Dev, Telugu. (Times New Roman)	a	i	u	Ru	lRu	E	O	ai	au
स्वराक्षर	अ	इ	उ	ऋ	लृ	ए	ओ	ऐ	औ
స్వరాక్షరము	అ	ఇ	ఉ	ఋ	లృ	ఏ	ఔ	ఐ	ఔ
Place-values in powers of ten to each of మూల-వర్గాక్షరము	$10^0$	$10^2$	$10^4$	$10^6$	$10^8$	$10^{10}$	$10^{12}$	$10^{14}$	$10^{16}$
Place-values in powers of ten to each of మూల-అవర్గాక్షరము	$10^1$	$10^3$	$10^5$	$10^7$	$10^9$	$10^{11}$	$10^{13}$	$10^{15}$	$10^{17}$

लृ is मूल-स्वराक्षर (మూల-స్వరాక్షర) in Devnagari.

But, it is also a गुणिताक्षर ; [लृ = (लृ x ऋ) = (१ . ఋ) =  $(5 \times 10^7) = 5, 00,00,000$ ].

See शशि- चयगियिडुशुछल (శశి- చయుగియిజుశుచ్చల) (Ref. page 8 in this paper)

**III. The two important Rules illustrated by above reasons;**

**Rule 1:** When a व्यञ्जन (వ్యంజన) is connected with a स्वर (స్వర), it forms a गुणिताक्षर, (గుణితాక్షర) and their numerical values are to be multiplied.

[Note: गुणित = గుణిత = multiply]

Example: वि = (व् x इ) = (६ x १०००)  
 =  $(6 \times 1000) = (6 \times 10^3)$   
 = 6000.

**Rule 2:** When a व्यञ्जन (వ్యంజన) is connected with any व्यञ्जन (వ్యంజన), it forms a సంయుక్తాక్షర (సంయుక్తాక్షర), and their numerical values are to be added.

[Note: సంయుక్త = సంయుక్త = add]

Example: सूक्त = [(स् x ऊ) + (क् x अ) + (त् x अ)]  
 సూక్త = [(స్ . ఊ) + (క్ . అ) + (త్ . అ)]  
 = [(9 x 10<sup>5</sup>) + (1 x 1) + (16 x 1)]  
 = (900000 + 1 + 16)  
 = (900017)

*Number of revolutions made by (Geo-centric) Planets in a Yuga (= 43,20,000 years) mentioned in Aryabhata through the Devnagari script are only Cryptic.*

The same Cryptic words may be adapted to other language scripts to describe the values of *number of revolutions of Geo-centric planets in a Mahayana* stated statrd in *Aryabhata* of Aryabhata-I (499 AD).

#### IV. Cryptic Devnagari Numerals denoting the Number of revolutions of Geo-centric planets in *Aryabhata* of Aryabhata-I (5<sup>th</sup> c. AD).

युगरविभगणाः ख्युघृ, शशि चयगियिडुशुछृल, शनि दुड्विघ्व, गुरु ख्रिच्युभ,  
 कुज भद्लिङ्गनुखृ, बुध सुगुशिथृन, भृगु जषबिखुछृ ॥ [2] p.18]

*Number of revolutions made by (Geo-centric) Planets in a Yuga (= 43,20,000 years) stated above are in the Devnagari script. They are only cryptic words having no meaning in reality. They could be written in any language script.*

#### IV (1). Above statement in Devnagari script in Telugu Script: -

యుగరవిభగణాః ఖ్యుఘృ, శశి చయగియిఙ్గుశుఛృలృ, శని డుడవ్విఘ్వ, గురు ఖ్రిఛ్యుభ,  
 కుజ భద్లిఙ్గునుఖృ, బుధ్ సుగుశిథృన, భృగు జషబ్విఖుఛృ ॥

**Purport: -**

*Sun, रवि ; ख्युघृ, ఖ్యుఘృ ; 43,20,000,*

*Moon, सोम ; चयगियिडुशुछृल, చయగియిఙ్గుశుఛృలృ = 5,77,53,336,*

*Saturn, शनि ; दुड्विघ्व, డుడవ్విఘ్వ = 1, 46,564,*

*Jupiter, गुरु ; ख्रिच्युभ, ఖ్రిఛ్యుభ = 3,64,224,*

*Mars, कुज (मङ्गल) ; भद्लिङ्गनुखृ = 22, 96,824,*

*Mercury, बुध ; सुगुशिथृन ; సుగుశిథృన = 1,79,37,020,*

*Venus, भृगु ; जषबिखुछृ , జషబ్విఖుఛృ = 70,22,388.*

**IV (2) Aryabhataiya Devnagari Cryptic Numerals adapted to Telugu Scripts;**

*Sun*, రవి ; ख्युघृ, ఖ్యుఘృ ; 43,20,000;

$$\begin{aligned} \text{ఖ్యుఘృ} &= (\text{ఖ} \times 3) + (\text{య} \times 3) + (\text{ఘ} \times 3) \\ \text{ఖ్యుఘృ} &= (\text{ఖ్} . \text{ఉ}) + (\text{య్} . \text{ఉ}) + (\text{ఘ్} . \text{ఋ}) \\ &= (2 \times 10^4) + (3 \times 10^5) + (4 \times 10^6) \\ &= 4320000 \end{aligned}$$

*Moon*, సోమ ; चयगियिडुशुछृल, చయగియిడుశుఛృల = 57753336;

चयगियिडुशुछृल

$$\begin{aligned} &= (\text{చ} \times \text{అ}) + (\text{య} \times \text{అ}) + (\text{గ} \times \text{ఇ}) + (\text{య} \times \text{ఇ}) + (\text{ఙ} \times \text{ఊ}) + (\text{శ} \times \text{ఊ}) + (\text{ఛ} \times \text{ఋ}) + (\text{ల్} \times \text{ఋ}) \\ &\text{చయగియిడుశుఛృల} \\ &= (\text{చ} . \text{అ}) + (\text{య} . \text{అ}) + (\text{గ్} . \text{ఇ}) + (\text{య్} . \text{ఇ}) + (\text{ఙ్} . \text{ఉ}) + (\text{శ్} . \text{ఉ}) + (\text{ఛ్} . \text{ఋ}) + (\text{ల్} . \text{ఋ}) \\ &= (6 \times 10^0) + (3 \times 10^1) + (3 \times 10^2) + (3 \times 10^3) + (5 \times 10^4) + (7 \times 10^5) + (7 \times 10^6) + (5 \times 10^7) \\ &= 57753336 \end{aligned}$$

*Saturn*, शनि ; ढुड्विघ्व, ఢుడవిఘ్వ = 1, 46,564,

$$\begin{aligned} \text{ఢుడవిఘ్వ} &= (\text{ఢ} . \text{ఊ}) + (\text{డ} . \text{ఇ}) + (\text{వ} . \text{ఇ}) + (\text{ఘ} . \text{అ}) + (\text{వ} . \text{అ}) \\ \text{ఢుడవిఘ్వ} &= (\text{ఢ్} . \text{ఉ}) + (\text{డ్} . \text{ఇ}) + (\text{వ్} . \text{ఇ}) + (\text{ఘ్} . \text{అ}) + (\text{వ్} . \text{అ}) \\ &= (14 \times 10^4) + (5 \times 10^2) + (6 \times 10^3) + (4 \times 1) + (6 \times 10) \\ &= 1,46,564. \end{aligned}$$

*Jupiter* ; गुरु ; खिच्युभ, ఖిఛ్యుభ = 3,64,224 ;

$$\begin{aligned} \text{ఖిఛ్యుభ} &= (\text{ఖ} . \text{ఇ}) + (\text{ర్} . \text{ఇ}) + (\text{చ} . \text{ఊ}) + (\text{య} . \text{ఊ}) + (\text{భ} . \text{అ}) \\ \text{ఖిఛ్యుభ} &= (\text{ఖ్} . \text{ఇ}) + (\text{ర్} . \text{ఇ}) + (\text{చ్} . \text{ఉ}) + (\text{య్} . \text{ఉ}) + (\text{భ్} . \text{అ}) \\ &= (2 \times 10^2) + (4 \times 10^3) + (6 \times 10^4) + (3 \times 10^5) + (24 \times 1) \\ &= 3,64,224. \end{aligned}$$

*Mars*, कुज (मङ्गल) ; భద్దిఝునుఖృ = 22, 96,824

$$\begin{aligned} \text{భద్దిఝునుఖృ} &= (\text{భ} . \text{అ}) + (\text{ద్} . \text{ఇ}) + (\text{ల్} . \text{ఇ}) + (\text{ఙ} . \text{ఊ}) + (\text{న్} . \text{ఊ}) + (\text{ఖ} . \text{ఋ}) \\ \text{భద్దిఝునుఖృ} &= (\text{భ్} . \text{అ}) + (\text{ద్} . \text{ఇ}) + (\text{ల్} . \text{ఉ}) + (\text{ఙ్} . \text{ఉ}) + (\text{న్} . \text{ఉ}) + (\text{ఖ్} . \text{ఋ}) \\ &= (24 \times 1) + (18 \times 10^2) + (5 \times 10^3) + (9 \times 10^4) + (20 \times 10^4) + (2 \times 10^6) \\ &= 22,96,824. \end{aligned}$$

*Mercury*, बुध ; सुगुशित्थन ; సుగుశిథన = 1,79,37,020;

$$\begin{aligned} \text{సుగుశిథన} &= (\text{స్} . \text{ఊ}) + (\text{గ్} . \text{ఊ}) + (\text{శ} . \text{ఇ}) + (\text{త్} . \text{ఋ}) + (\text{న్} . \text{అ}) \\ \text{సుగుశిథన} &= (\text{స్} . \text{ఉ}) + (\text{గ్} . \text{ఉ}) + (\text{శ్} . \text{ఇ}) + (\text{త్} . \text{ఋ}) + (\text{న్} . \text{అ}) \\ &= (9 \times 10^5) + (3 \times 10^4) + (7 \times 10^3) + (17 \times 10^6) + (20 \times 1) \\ &= 1,79,37,020 \end{aligned}$$

Venus, భృగు ; జపబిఖుఱ్ఱ , జపబీఖుఱ్ఱ = 70,22,388;

$$\begin{aligned} \text{జపబిఖుఱ్ఱ} &= (\text{జ} . \text{అ}) + (\text{ఘ} . \text{అ}) + (\text{బ} . \text{ఇ}) + (\text{ఖ} . \text{ఊ}) + (\text{ఞ} . \text{ఋ}) \\ \text{జపబీఖుఱ్ఱ} &= (\text{జ్} . \text{అ}) + (\text{ఘ్} . \text{అ}) + (\text{బీ} . \text{ఇ}) + (\text{ఖ్} . \text{ఊ}) + (\text{ఞ్} . \text{ఋ}) \\ &= (8 \times 1) + (8 \times 10) + (23 \times 10^2) + (2 \times 10^4) + (7 \times 10^6) = 70,22,388 \end{aligned}$$

V (1). Table showing the number of Revolutions (velocity) of (*Geo-centric*) Planets in a *Mahayuga* (43,20,000 yrs.) in the increasing order.

**Table V (1)**

<b>Names of <i>Geo-centric</i> Planets &amp; Their Numerals for the number revolutions in a <i>Mahayuga</i> (43,20,000 years) – A Chart</b>					
Names of <i>Geo-centric</i> Planets			Numerals for their number of revolutions in a <i>Mahayuga</i> (43,20,000 years)		
English	Devnagari	Telugu	Devnagari	Telugu	International numeral
Saturn	शनि	శని	ढुङ्खिविघ्व	ఢుజ్జీఘ్వ	1,46,564
Jupiter	गुरु	గురు	खिच्युभ	ఖీఱ్యభ	3,64,224
Mars	कुज, मङ्गल	కుజ, మంగళ	भद्लिङ्गिनिखृ	భద్దిఱునుఖు	22,96,24
Sun (Earth)	रवि, (भुवि)	రవి, (భువి)	ख्युघृ	ఖ్యుఘు	43,20,000
Venus	शुक्र	శుక్ర	जपबिखुऱ्ठ	జపబీఖుఱ్ఱ	70,22,388
Mercury	बुध	బుధ	सुगुशिथुन	సుగుశిథున	1,79,37,020
Moon	सोम	సోమ	चयगियिङ्गुशुऱ्ठलृ	ఱయగిఱిఱ్ఱుశుఱ్ఱలృ	5,77,53,336

V (2). Comparison of *Sidereal periods based on Aryabhatiya values of number of revolutions of Geo-centric planets in a Mahayuga (43,20,000 yrs) (5<sup>th</sup> c AD), with their Present-day Recorded Sidereal periods: -*

**Table V (2)**

<b>Names of Geo-centric planets &amp; their number of revolutions in a Mahayuga (43,20,000 yrs.) and their Aryabhatiya &amp; present-day Sidereal periods (time taken for one revolution in their orbits)</b>					
<b>Names of Geo-centric planets</b>		<b>Number of revolutions in a Mahayuga (43,20,000 yrs.)</b>		<b>Sidereal periods (time taken for one revolution in their orbits)</b>	
<b>English</b>	<b>Devnagari</b>	<b>Aryabhatiya Cryptic Numeral</b>	<b>International Numeral</b>	<b>Aryabhatiya Sidereal Period</b>	<b>Present-day Sidereal Period</b>
Saturn	शनि	द्वुंइविघ्व	1,46,564	29.48 yrs	29.46 yrs
Jupiter	गुरु	खिच्युभ	3,64,224	11.86 yrs	11.86 yrs
Mars	कुज, मङ्गळ	भदलिङ्गुनुखु	22,96,24	687 days	687 days
Sun (Earth)	रवि, (भुवि)	ख्युघु	43,20,000	365.26 days	365.26 days
Venus	शुक्र	जषबिखुछु	70,22,388	224.69 days	224.69 days
Mercury	बुध	सुगुशिथुन	1,79,37,020	87.97 days	87.97 days
Moon	सोम	चयगियिङ्गुशुछुनु	5,77,53,336	27.32 days	27.32 days

Formulae to convert *Aryabhatiya cryptic numerals of the number of revolutions of Geo-centric planets to their sidereal periods are;*

$$\text{Sidereal period} = \frac{43,20,000}{\text{number of revolutions of the planet}} \text{ years}$$

$$\text{Sidereal period} = \frac{43,20,000}{\text{number of revolutions of the planet}} \times 365.26 \text{ days}$$

Comparison of *Sidereal periods based on Aryabhatiya values of number of revolutions of Geo-centric planets in a Mahayuga (43,20,000 yrs) (5<sup>th</sup> c AD) with the Present-day Sidereal periods recorded, is really an astonishing eye-opener about our rich heritage.*





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