ISO/IEC JTC1/SC2/WG2 N5330
LUCP L-2514

Universal Multiple-Octet Coded Character Set
International Organization for Standardization
Internationale Standardisierungs-Organisation
Organisation Internationale de Normalisation
Διεθνής Οργανισμός Τυποποίησης
Международная организация по стандартизации

Doc Type: Working Group Document

Title: Proposal to encode 17 geometric shapes

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Version: 3rd, revised version
Previous versions: L-2510, L-2444
Status: forward to Script Encoding Working Group / WG2
Action: for expert review and encoding pipeline
Date: May 7, 2025
Requester's reference: LUCP L-2514

1. Background

In this updated version of our **Geometric shapes** proposal (L-2510 / L2/25-126) some name changes are implemented, according to suggestions by SEW (from April 16).
Suggested provisional codepoints for block **1F780** are specified.
A specific glyph size issue raised by A. Freytag (which has been discussed via Zoom on April 29) is also adressed in this proposal.

2. Geometric shapes in historic sources

Geometric shapes (as encoded in the 25A0 and 1F780 blocks) are considered to potentially suit for various kinds if usage in texts. Therefore they are defined rather by their shape characteristics than by a certain ascribed semantic content. The characters proposed in this document are testified in mathematical sources in the first place, but for many of them it seems neither neccessary nor desirable to confine their scope of possible usage to this kind of sources exclusively.
We demonstrate the occurence of the characters by manuscript examples as well as in historic and modern print usage. The requester's target is the use of these characters in editions of Leibniz's extensive writings and for the encoding and composing of other historic mathematical sources. For this task it is a requirement to accurately encode the geometrical characters proposed.

3. Characters

One character is proposed as a variation sequence:

 CIRCLED PARALLEL – *variation sequence to U+29B7*

These 16 characters are proposed for addition to the **1F780** block:

1F7DB  BULLET IN DOUBLE CIRCLE

1F7F1  CIRCLE WITH DOUBLE VERTICAL AND HORIZONTAL LINE

1F7F2  DOUBLE CIRCLE WITH DOUBLE HORIZONTAL LINE

1F7F3  CIRCLED BOTTOM RIGHT OBLIQUE HALF BLACK CIRCLE
the fill doesn't touch the circle

1F7F4  LEFT HALF WHITE CIRCLE

1F7F5  RIGHT HALF WHITE CIRCLE

1F7F6  TRANSPARENT CUBE

1F7F7  WHITE CUBE

1F7F8  HORIZONTAL DOUBLE WHITE SMALL SQUARE

1F7F9  VERTICAL DOUBLE WHITE SMALL SQUARE

1F7FA  WHITE SQUARE WITH BOTTOM HALF BISECTED

1F7FB  WHITE SQUARE WITH TOP HALF BISECTED

1F7FC  WHITE SQUARE WITH HORIZONTAL AND VERTICAL BISECTING LINES
alternativ name proposal: WHITE SQUARE QUARTERED

1F7FD  LOWER RIGHT FLATTENED RIGHT TRIANGLE

1F7FE  LOWER LEFT FLATTENED RIGHT TRIANGLE

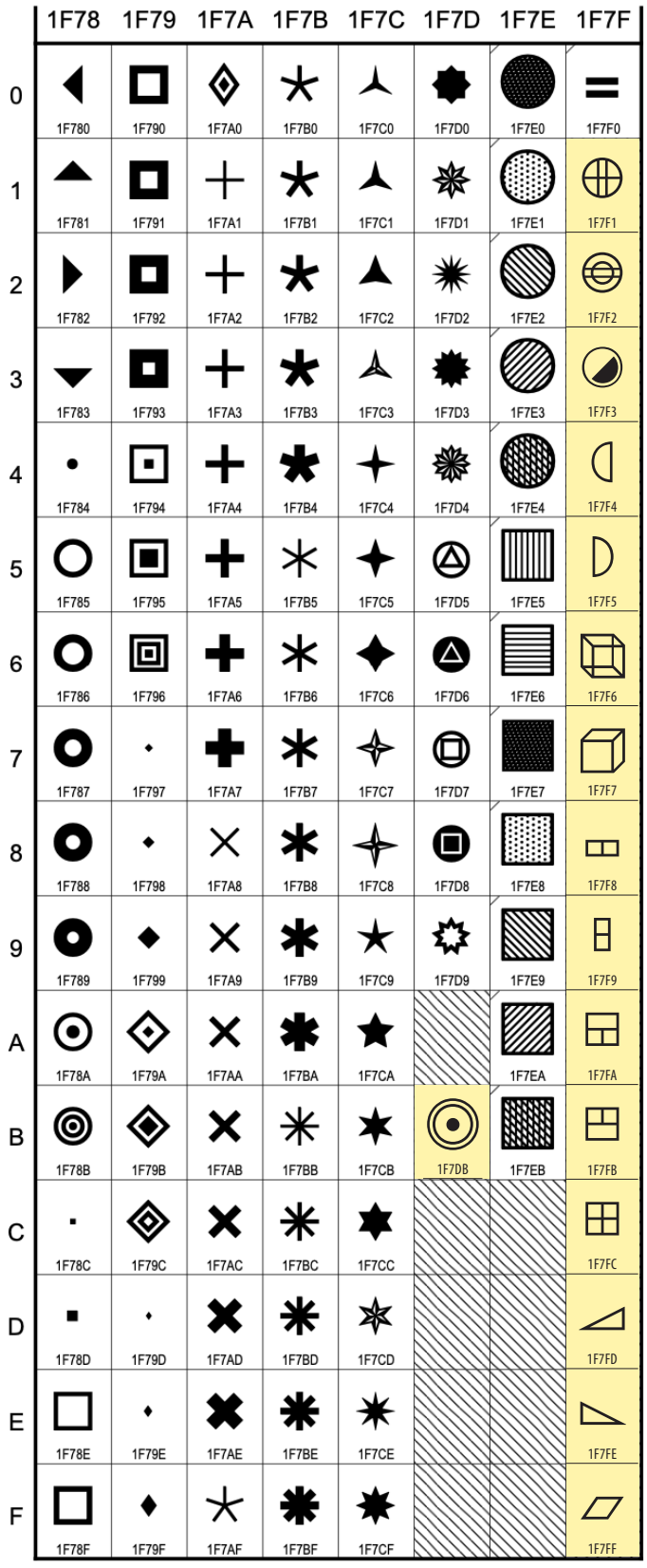
1F7FF  RHOMBUS

The BULLET IN DOUBLE CIRCLE ◎ is presented now by a larger glyph because, as A. Freytag has pointed out, the outer circle is to be seen as an addition to a one-circled bullet, like in 29BF ⦿ CIRCLED BULLET. BULLET IN DOUBLE CIRCLE ◎ should not get unified with 1F78B ROUND TARGET because it is not a structure with equal measurements in all parts; moreover it is not a "target symbol" but a geometric reference mark (in our sources).

The other circular shapes: ◍ ⊕ ⊜ ◒ and ◖ ◗ are thought to correspond in proportion and dimension to 25CB ○ WHITE CIRCLE.

The square shapes ⊞ ⊟ ⊞ and ▯ ▭ are recommended to match 25F0–25F3 in proportion and dimensions. In case the name WHITE SQUARE WITH HORIZONTAL AND VERTICAL BISECTING LINES is getting too lenghty for ⊞ we propose the name WHITE SQUARE QUARTERED.

The naming discussion about RHOMBUS ▱ is regarded to be settled, so it has been omitted from this version.


1F78 1F79 1F7A 1F7B 1F7C 1F7D 1F7E 1F7F
0 1F780 1F790 1F7A0 1F7B0 1F7C0 1F7D0 1F7E0 1F7F0
1 1F781 1F791 1F7A1 1F7B1 1F7C1 1F7D1 1F7E1 1F7F1
2 1F782 1F792 1F7A2 1F7B2 1F7C2 1F7D2 1F7E2 1F7F2
3 1F783 1F793 1F7A3 1F7B3 1F7C3 1F7D3 1F7E3 1F7F3
4 1F784 1F794 1F7A4 1F7B4 1F7C4 1F7D4 1F7E4 1F7F4
5 1F785 1F795 1F7A5 1F7B5 1F7C5 1F7D5 1F7E5 1F7F5
6 1F786 1F796 1F7A6 1F7B6 1F7C6 1F7D6 1F7E6 1F7F6
7 1F787 1F797 1F7A7 1F7B7 1F7C7 1F7D7 1F7E7 1F7F7
8 1F788 1F798 1F7A8 1F7B8 1F7C8 1F7D8 1F7E8 1F7F8
9 1F789 1F799 1F7A9 1F7B9 1F7C9 1F7D9 1F7E9 1F7F9
A 1F78A 1F79A 1F7AA 1F7BA 1F7CA 1F7EA 1F7FA
B 1F78B 1F79B 1F7AB 1F7BB 1F7CB 1F7DB 1F7EB 1F7FB
C 1F78C 1F79C 1F7AC 1F7BC 1F7CC 1F7FC
D 1F78D 1F79D 1F7AD 1F7BD 1F7CD 1F7FD
E 1F78E 1F79E 1F7AE 1F7BE 1F7CE 1F7FE
F 1F78F 1F79F 1F7AF 1F7BF 1F7CF 1F7FF

4. Unicode Character Properties

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29B7 FE00; with parallel lines touching the circle; # CIRCLED PARALLEL

u1F7DB;BULLET IN DOUBLE CIRCLE;So;0;ON;;;;;N;;;;;
u1F7F1;CIRCLE WITH DOUBLE VERTICAL AND HORIZONTAL LINE;So;0;ON;;;;;N;;;;;
u1F7F2;DOUBLE CIRCLE WITH DOUBLE HORIZONTAL LINE;So;0;ON;;;;;N;;;;;
u1F7F3;CIRCLED BOTTOM RIGHT OBLIQUE HALF BLACK CIRCLE;So;0;ON;;;;;N;;;;;
u1F7F4;LEFT HALF WHITE CIRCLE;So;0;ON;;;;;N;;;;;
u1F7F5;RIGHT HALF WHITE CIRCLE;So;0;ON;;;;;N;;;;;
u1F7F6;TRANSPARENT CUBE;So;0;ON;;;;;N;;;;;
u1F7F7;WHITE CUBE;So;0;ON;;;;;N;;;;;
u1F7F8;HORIZONTAL DOUBLE WHITE SMALL SQUARE;So;0;ON;;;;;N;;;;;
u1F7F9;VERTICAL DOUBLE WHITE SMALL SQUARE;So;0;ON;;;;;N;;;;;
u1F7FA;WHITE SQUARE WITH BOTTOM HALF BISECTED;So;0;ON;;;;;N;;;;;
u1F7FB;WHITE SQUARE WITH TOP HALF BISECTED;So;0;ON;;;;;N;;;;;
u1F7FC;WHITE SQUARE WITH HORIZONTAL AND VERTICAL BISECTING LINES;So;0;ON;;;;;N;;;;;
u1F7FD;LOWER LEFT FLATTENED RIGHT TRIANGLE;So;0;ON;;;;;N;;;;;
u1F7FE;LOWER RIGHT FLATTENED RIGHT TRIANGLE;So;0;ON;;;;;N;;;;;
u1F7FF;RHOMBUS;So;0;ON;;;;;N;;;;;
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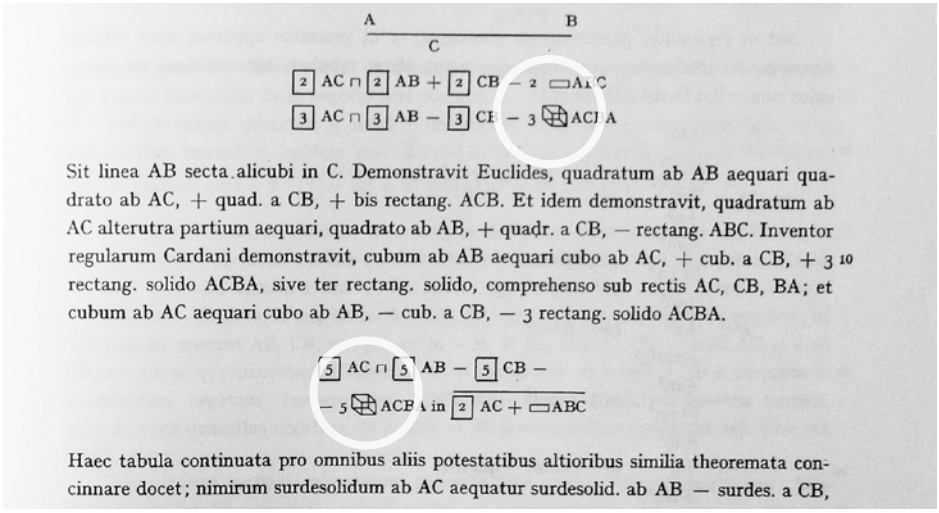
5. Bibliography

LAA – refers to: Leibniz, Gottfried Wilhelm: Sämtliche Schriften und Briefe. (‘Leibniz-Akademie-Ausgabe’, many volumes)
LH – refers to: Leibniz’s original manuscripts, GWLB Hanover

Cajori, Florian: A history of mathematical notations. Chicago 1928
Foucher de Careil, Louis-Alexandre: Œuvres inédites de Descartes, précédées d’une introduction sur la méthode, Paris, 1859-1860
Ghaligai, Francesco: Pratica d’Arithmetica, Florence 1552
Rinner, Elisabeth: List of glyphs in Leib.mf. PDF, Hanover 2022

6. Figures and explanations

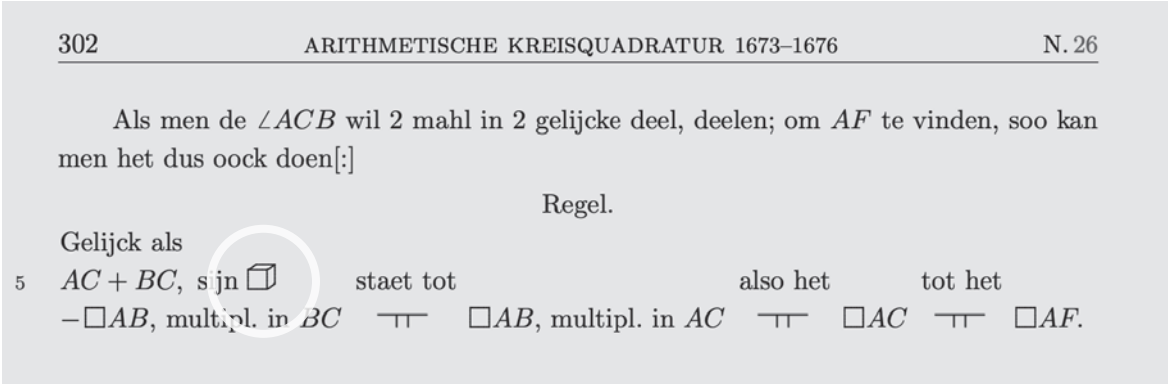


A B C

Sit linea AB secta alicubi in C. Demonstravit Euclides, quadratum ab AB aequari quadrato ab AC, + quad. a CB, + bis rectang. ACB. Et idem demonstravit, quadratum ab AC alterutra partium aequari, quadrato ab AB, + quadr. a CB, — rectang. ABC. Inventor regularum Cardani demonstravit, cubum ab AB aequari cubo ab AC, + cub. a CB, + 3 rectang. solido ACBA, sive ter rectang. solido, comprehenso sub rectis AC, CB, BA; et cubum ab AC aequari cubo ab AB, — cub. a CB, — 3 rectang. solido ACBA.

Haec tabula continuata pro omnibus aliis potestatibus altioribus similia theoremata concinnare docet; nimirum surdesolidum ab AC aequatur surdesolid. ab AB — surdes. a CB,

TRANSPARENT CUBE – LAA III-1 p. 643



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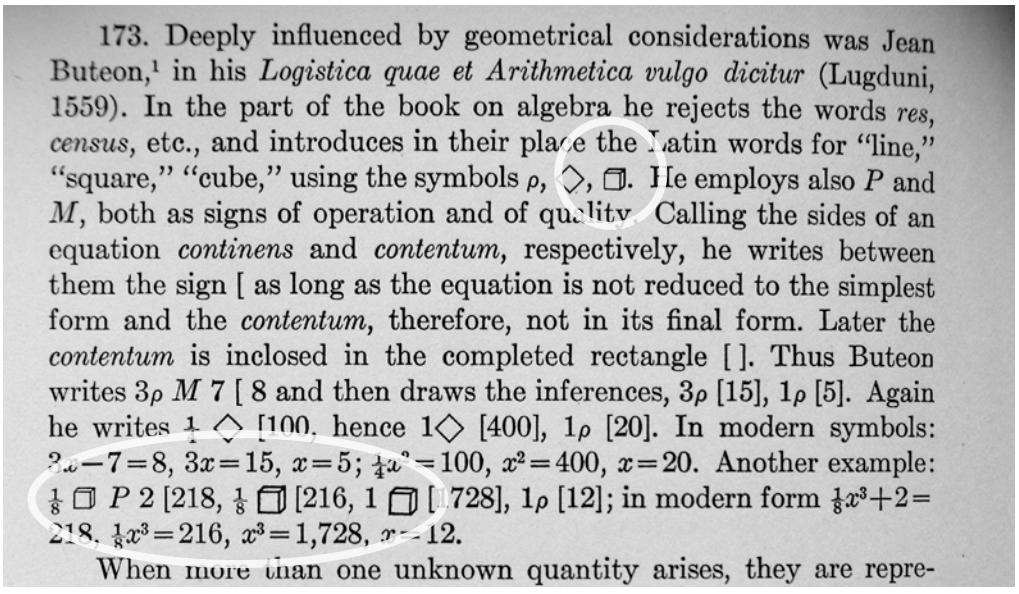
Als men de $\angle ACB$ wil 2 mahl in 2 gelijcke deel, deelen; om AF te vinden, soo kan men het dus oock doen[:]

Regel.

Gelijck als $AC + BC$, sijn ▱ staet tot also het tot het $-\square AB$, multipl. in BC ⊓ $\square AB$, multipl. in AC ⊓ $\square AC$ ⊓ $\square AF$.

WHITE CUBE – LAA VII-6 p. 302



173. Deeply influenced by geometrical considerations was Jean Buteon,[1] in his *Logistica quae et Arithmetica vulgo dicitur* (Lugduni, 1559). In the part of the book on algebra he rejects the words *res*, *census*, etc., and introduces in their place the Latin words for "line," "square," "cube," using the symbols ρ, ◇, ▱. He employs also P and M, both as signs of operation and of quality. Calling the sides of an equation *continens* and *contentum*, respectively, he writes between them the sign [as long as the equation is not reduced to the simplest form and the *contentum*, therefore, not in its final form. Later the *contentum* is inclosed in the completed rectangle [ ]. Thus Buteon writes $3\rho\ M\ 7$ [8 and then draws the inferences, 3ρ [15], 1ρ [5]. Again he writes $\frac{1}{1}$ ◇ [100, hence $1◇$ [400], 1ρ [20]. In modern symbols: $3x-7=8$, $3x=15$, $x=5$; $\frac{1}{4}x^2=100$, $x^2=400$, $x=20$. Another example: $\frac{1}{8}$ ▱ $P\ 2$ [218, $\frac{1}{8}$ ▱ [216, 1 ▱ [1728], 1ρ [12]; in modern form $\frac{1}{8}x^3+2=218$, $\frac{1}{8}x^3=216$, $x^3=1{,}728$, $x=12$.

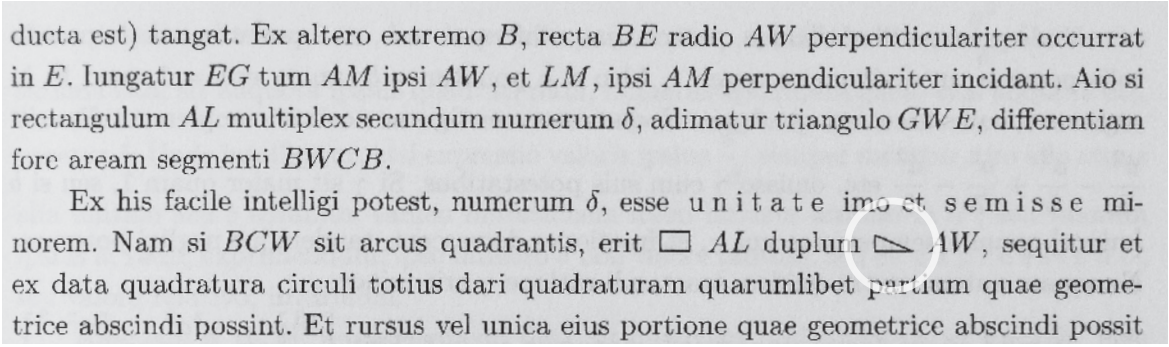
When more than one unknown quantity arises, they are repre-

WHITE CUBE – Cajori vol. 1, p. 176

In either case of FLATTENED RIGHT TRIANGLE and HALF WHITE CIRCLE we can show *one* directional form only from the sources at hand, but we propose *pairs* of characters with both directional forms, this would be consistent with comparable character pairings already encoded, such as 25FA/25FF or 25D6/25D7. Therefore we propose to encode:

◿ LOWER RIGHT FLATTENED RIGHT TRIANGLE ◗ RIGHT HALF WHITE CIRCLE

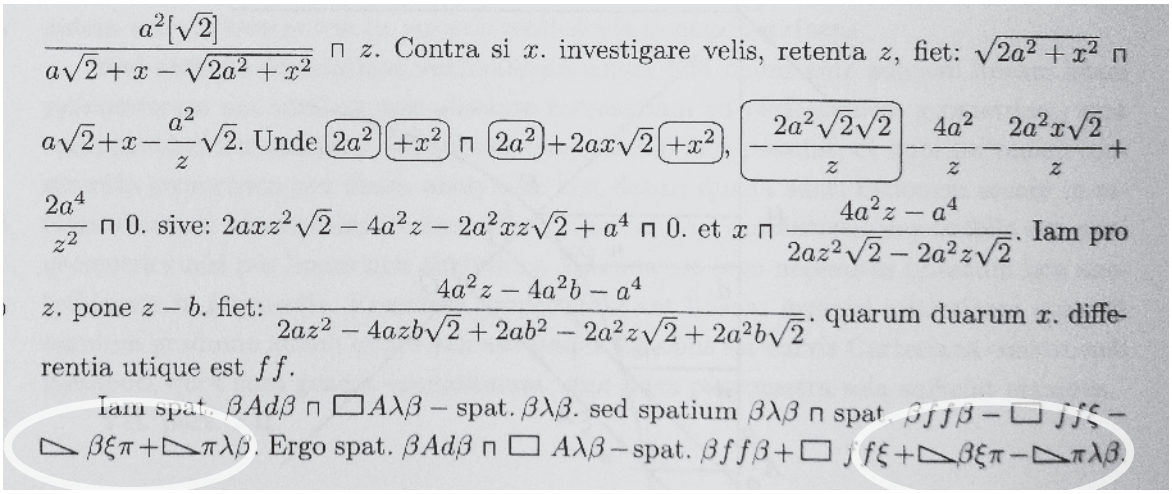
◺ LOWER LEFT FLATTENED RIGHT TRIANGLE ◖ LEFT HALF WHITE CIRCLE



ducta est) tangat. Ex altero extremo B, recta BE radio AW perpendiculariter occurrat in E. Iungatur EG tum AM ipsi AW, et LM, ipsi AM perpendiculariter incidant. Aio si rectangulum AL multiplex secundum numerum δ, adimatur triangulo GWE, differentiam fore aream segmenti $BWCB$.

Ex his facile intelligi potest, numerum δ, esse unitate imo et semisse minorem. Nam si BCW sit arcus quadrantis, erit □ AL duplum ◺ AW, sequitur et ex data quadratura circuli totius dari quadraturam quarumlibet partium quae geometrice abscindi possint. Et rursus vel unica eius portione quae geometrice abscindi possit

◺ LOWER LEFT FLATTENED RIGHT TRIANGLE – LAA VII-3 p. 275

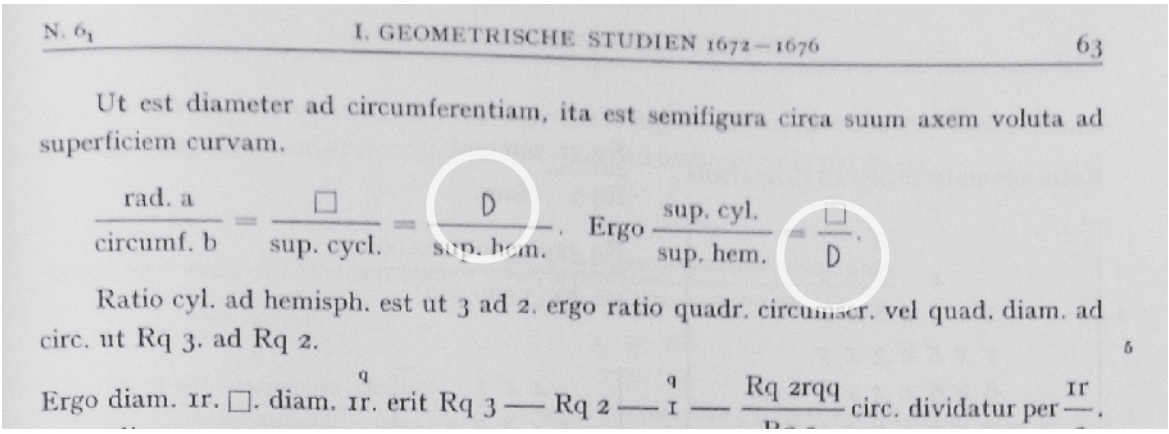


$\frac{a^2[\sqrt{2}]}{a\sqrt{2}+x-\sqrt{2a^2+x^2}} \sqcap z$. Contra si x. investigare velis, retenta z, fiet: $\sqrt{2a^2+x^2} \sqcap a\sqrt{2}+x-\frac{a^2}{z}\sqrt{2}$. Unde $\boxed{2a^2}\boxed{+x^2} \sqcap \boxed{2a^2}+2ax\sqrt{2}\boxed{+x^2}$, $\boxed{-\frac{2a^2\sqrt{2}\sqrt{2}}{z}}-\frac{4a^2}{z}-\frac{2a^2x\sqrt{2}}{z}+\frac{2a^4}{z^2} \sqcap 0$. sive: $2axz^2\sqrt{2}-4a^2z-2a^2xz\sqrt{2}+a^4 \sqcap 0$. et $x \sqcap \frac{4a^2z-a^4}{2az^2\sqrt{2}-2a^2z\sqrt{2}}$. Iam pro z. pone $z-b$. fiet: $\frac{4a^2z-4a^2b-a^4}{2az^2-4azb\sqrt{2}+2ab^2-2a^2z\sqrt{2}+2a^2b\sqrt{2}}$. quarum duarum x. differentia utique est ff.

Iam spat. $\beta Ad\beta \sqcap$ □$A\lambda\beta$ – spat. $\beta\lambda\beta$. sed spatium $\beta\lambda\beta \sqcap$ spat. $\beta f f\beta -$ □ $f f\xi -$ ◺ $\beta\xi\pi+$◺$\pi\lambda\beta$. Ergo spat. $\beta Ad\beta \sqcap$ □ $A\lambda\beta-$spat. $\beta f f\beta+$□ $f f\xi+$◺$\beta\xi\pi-$◺$\pi\lambda\beta$.

◺ LOWER LEFT FLATTENED RIGHT TRIANGLE – LAA VII-3 p. 506

The rectangle in these samples would be represented by 25AD. *Ms. of this sample: see next page*



N. 6₁ I. GEOMETRISCHE STUDIEN 1672–1676 63

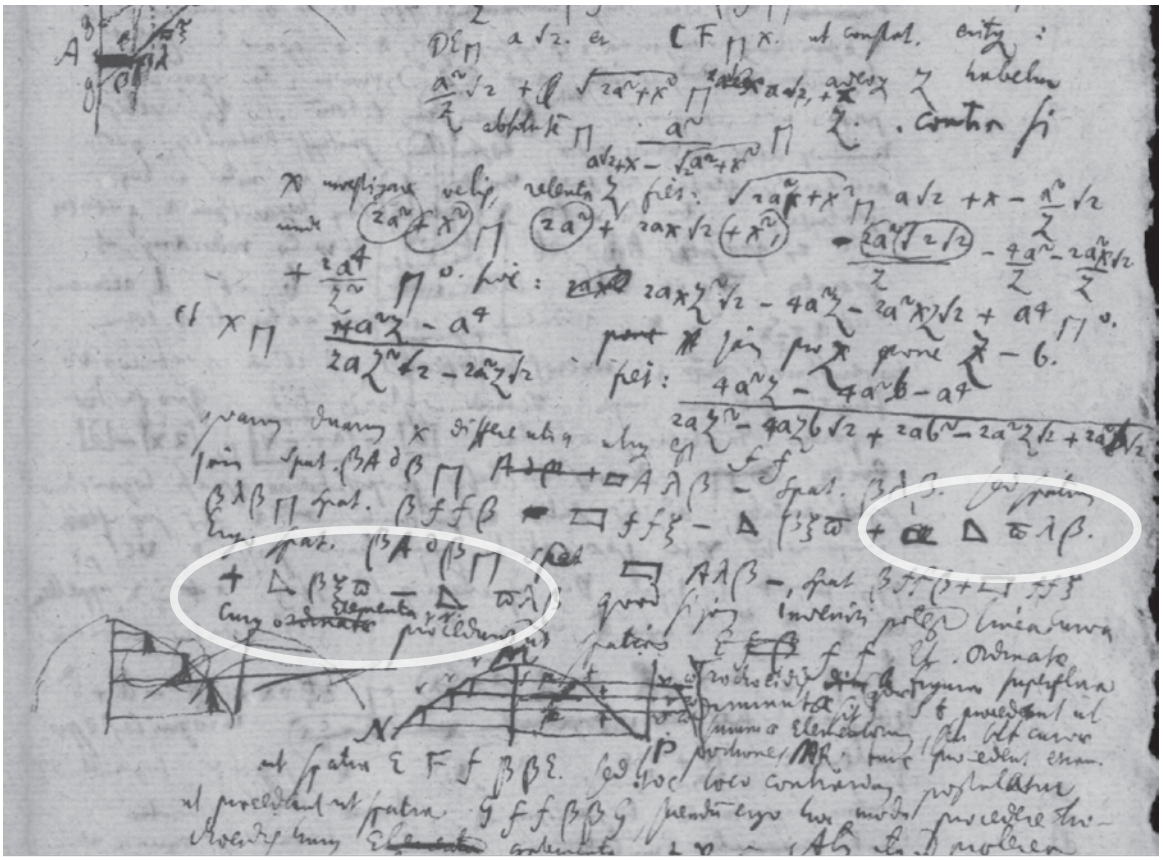
Ut est diameter ad circumferentiam, ita est semifigura circa suum axem voluta ad superficiem curvam.

rad. a / circumf. b = □ / sup. cycl. = D / sup. hem. Ergo sup. cyl. / sup. hem. = □ / D.

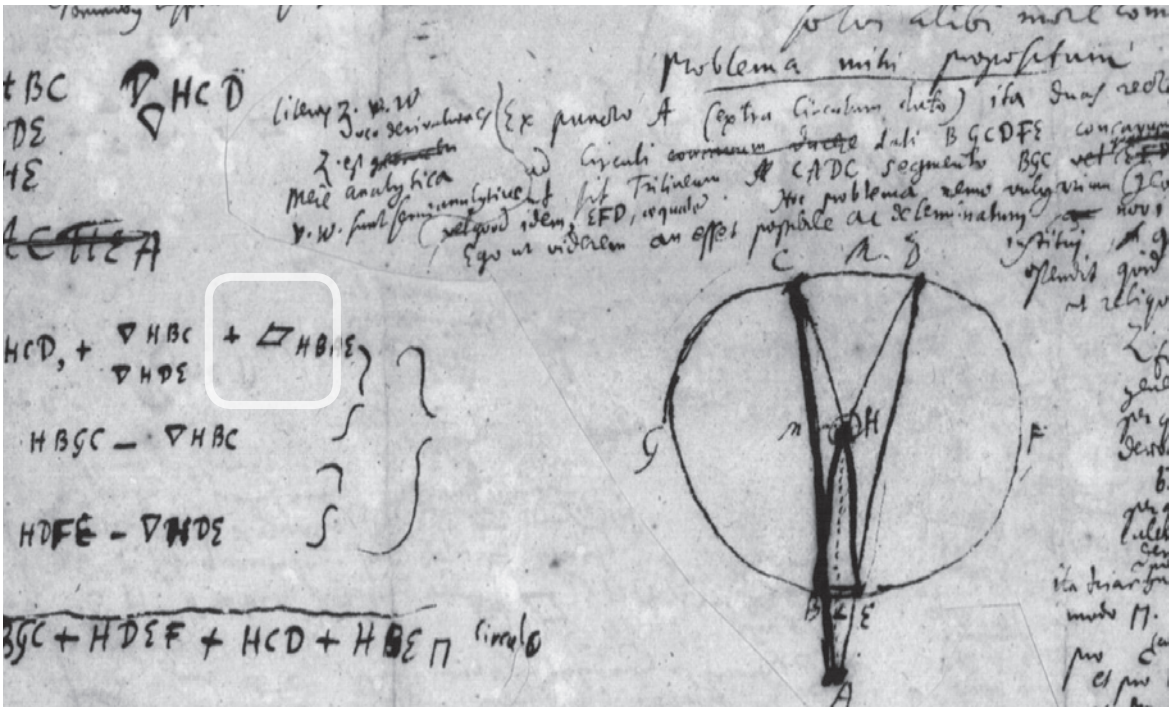
Ratio cyl. ad hemisph. est ut 3 ad 2. ergo ratio quadr. circumscr. vel quad. diam. ad circ. ut Rq 3. ad Rq 2.

Ergo diam. 1r. □. diam. 1r. erit Rq 3 — Rq 2 — $\frac{q}{1}$ — Rq 2rqq circ. dividatur per $\frac{1r}{4}$.

◗ RIGHT HALF WHITE CIRCLE – LAA VII-1 p. 63



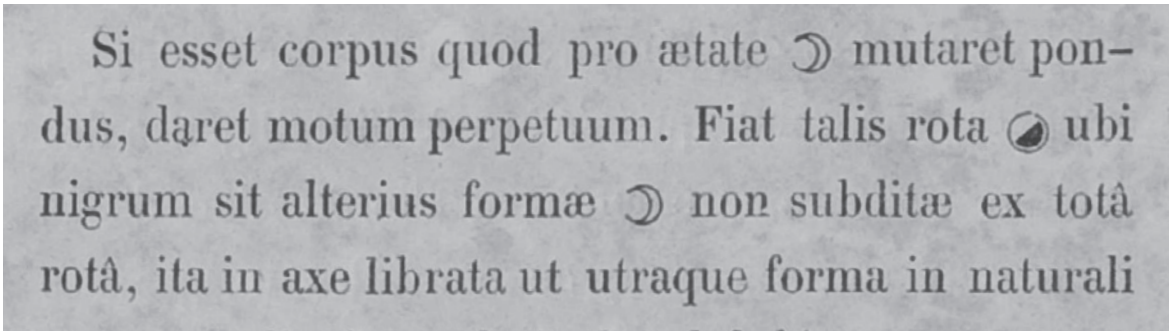
◺ LOWER LEFT FLATTENED RIGHT TRIANGLE
Ms. LH 35 IV 5, fol. 26r



▱ RHOMBUS is different from 25B1 WHITE PARALLELOGRAM by its four *equal* sides.
LH 35 I 14 fol. 88v. *The edition of this manuscript is currently in progress*.

Si esset corpus quod pro aetate ☽ mutaret pondus, daret motum perpetuum. Fiat talis rota ◕ ubi nigrum sit alterius formae ☽ non subditae et tota rota, ita in axe librata ut utraque forma in naturali statu aequalis sit ponderis, haud dubie perpetuo movebitur juxta motum ☽.

◕ CIRCLED BOTTOM RIGHT OBLIQUE HALF BLACK CIRCLE
LAA VII-8


Si esset corpus quod pro ætate ☽ mutaret pon-
dus, daret motum perpetuum. Fiat talis rota ◕ ubi
nigrum sit alterius formæ ☽ non subditæ ex totâ
rotâ, ita in axe librata ut utraque forma in naturali

◕ CIRCLED BOTTOM RIGHT OBLIQUE HALF BLACK CIRCLE
The same part of text as above, from Foucher de Careil (ed.): Œuvres inédites de Descartes, vol. I p. 34; 1859. This sample counts as the actual original, since no Ms. of this text survived.

et ponendo $w^3 - v^3 \sqcap \pi^3$. et $-\mu^9 + \omega^9\hat{}[w^3] \sqcap \upsilon^{12}$.
et $-3\omega^3w^3 + 3\mu^3v^3 \sqcap \beta^6$. et $3\omega^6w^3 - 3\mu^6v^3 \sqcap \gamma^9$. et fiet:

$$\text{◍} \quad \pi^3x^9 + \beta^6x^6 + \gamma^9x^3 \sqcap \upsilon^{12}.$$

Atque ita sublatae sunt irrationales duae, nempe v. et w. iam ipsarum r. et s. tollenda est alterutra. Iam conferendo aequationes ◍ et ⊙ tolletur x, nec restabit incognita aut

$a^4h^4x + a^5h^3l$

Unde ex aeq. ◍ fiet aeq.

$$\oplus \left\{ \begin{array}{llll} -3\pi^3a^4n^2lx^2 & + \pi^3a^4h^4x & - \pi^3a^6l^3 \\ & - 3\pi^3a^5hl^2. & + \pi^3a^5h^3l \\ + \beta^6a^2h^2.. & + 2\beta^6a^3hl. & + \beta^6a^4l^2 \\ & - \gamma^9ah. & - \gamma^9a^2l \\ & & - \upsilon^{12} \end{array} \right\} \sqcap 0.$$

Ubi notandum $w^3 - v^3$ seu π^3, valere $-2a^2\sqrt{\frac{1}{4}l^2 + \frac{1}{27}\frac{h^3}{a}}$ et ω^3 seu $v^3 + w^3$ valere $-a^2l$.

et $\lambda^3 \sqcap 6a^2\sqrt{\frac{1}{4}l^2 + \frac{1}{27a}\frac{h^3}{a}}$. et $\mu^3 \sqcap a^2l - 6a^2\sqrt{\frac{1}{4}l^2 + \frac{1}{27a}h^3}$. et

$$\beta^6 \sqcap \boxed{+ 3a^2lw^3 + 3a^2lv^3} \boxed{- 6a^2\sqrt{\frac{1}{4}l^2 + \frac{1}{27a}h^3v^3}}$$
$$- 3a^4l^2 \qquad + 3a^4\sqrt{\frac{1}{4}l^2 + \frac{1}{27a}h^3} - \frac{6a^4}{4}l^2 - \frac{6a^3}{27}h^3.$$

Unde terminus x^2 aequationis ⊕ fiet

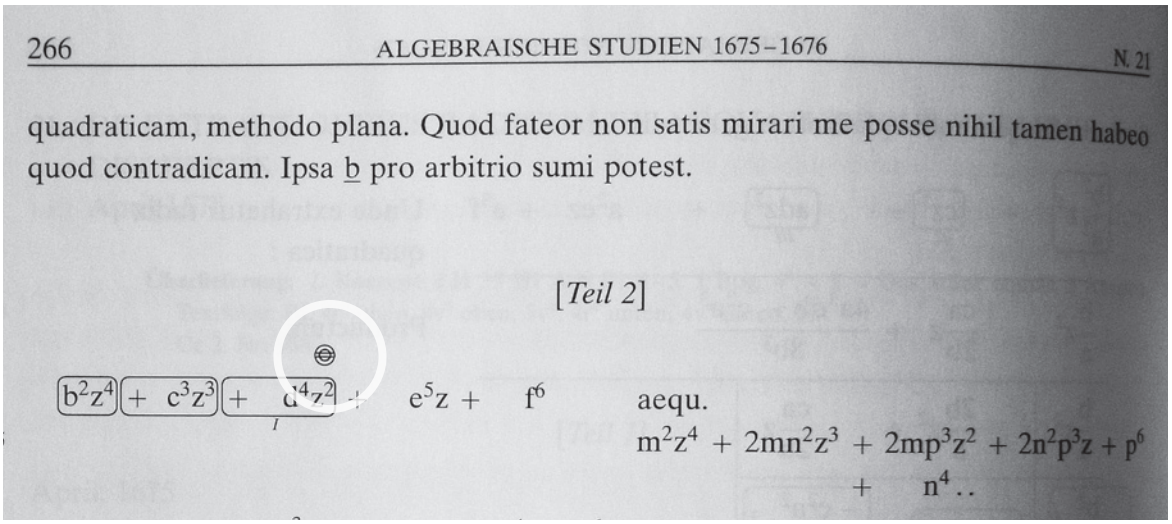
$$+ 6a^6h^2l\sqrt{\frac{1}{4}l^2 + \frac{1}{27a}h^3} - 3a^6h^2l^2 - \frac{6a^3}{27}h^3.$$

qui utique non est ut metuebam nihilo aequalis. Nisi sit in calculo error, nam metuo ne omnes termini aequationis ⊕ sint nihilo aequales, quod ultimum est effugium quo se tuetur natura rerum proteiformis.

Imo iam iudico necessariam esse hanc destructionem, erroremque haud dubie in calculo admissum, quia calculus aequationis ◍ et ⊕ oritur ex sola aequatione $x \sqcap v + w$. quae eadem est cum aequatione $x^3 * + ahx + a^2l \sqcap 0$. et omissa a nobis mentio ipsius m, dum ⊕ aequationem per $x + m$. divisimus. Itaque nihil hinc nisi identicum duci potuit. Ergo non aequatio ⨯. sed ⊕ adhibenda fuit. Et praeterea resumendus est calculus certo erroneus.

Compendii causa potuisset methodo qua initio huius paginae usi sumus aequatio $x \sqcap v + r$. resolvi donec ipsarum v. et r. tollatur asymmetria, inde orta aequatio ◍ poterit multiplicari per $x + m$. sed nonne sufficit in aequatione ◍ pro x substituisse ius valorem ex aeq. ⊕, ita arbitror fieri compendiosissime. Optimum ergo credi resumi methodum paginae praecedentis, ut ope aequationis $x \sqcap v + r$. tollatur primum asymmetria ex v. et w, et corrigatur calculus paginae praecedentis, qui fuit erroneus; deinde ut in aequatione producta ab hac asymmetria libera, tollatur x. ope aequationis ⊕, restabit aequatio in qua nullae erunt incognitae, et duae tantum asymmetriae, r. et s.

◍ CIRCLED PARALLEL, ⊕ CIRCLE WITH DOUBLE VERTICAL AND HORIZONTAL LINE; used as reference marks. – LAA VII-2 p. 256–259



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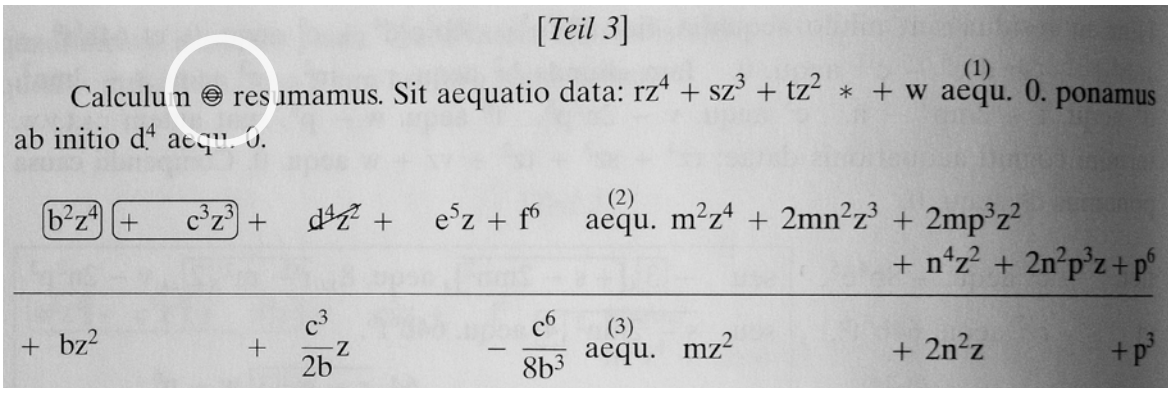
quadraticam, methodo plana. Quod fateor non satis mirari me posse nihil tamen habeo quod contradicam. Ipsa b pro arbitrio sumi potest.

[*Teil 2*]

$b^2z^4 + c^3z^3 + d^4z^2 + e^5z + f^6$ aequ.
$m^2z^4 + 2mn^2z^3 + 2mp^3z^2 + 2n^2p^3z + p^6$
$+ n^4 ..$

⊜ DOUBLE CIRCLE WITH DOUBLE HORIZONTAL LINE; used as a reference mark.
LAA VII-2 p. 266



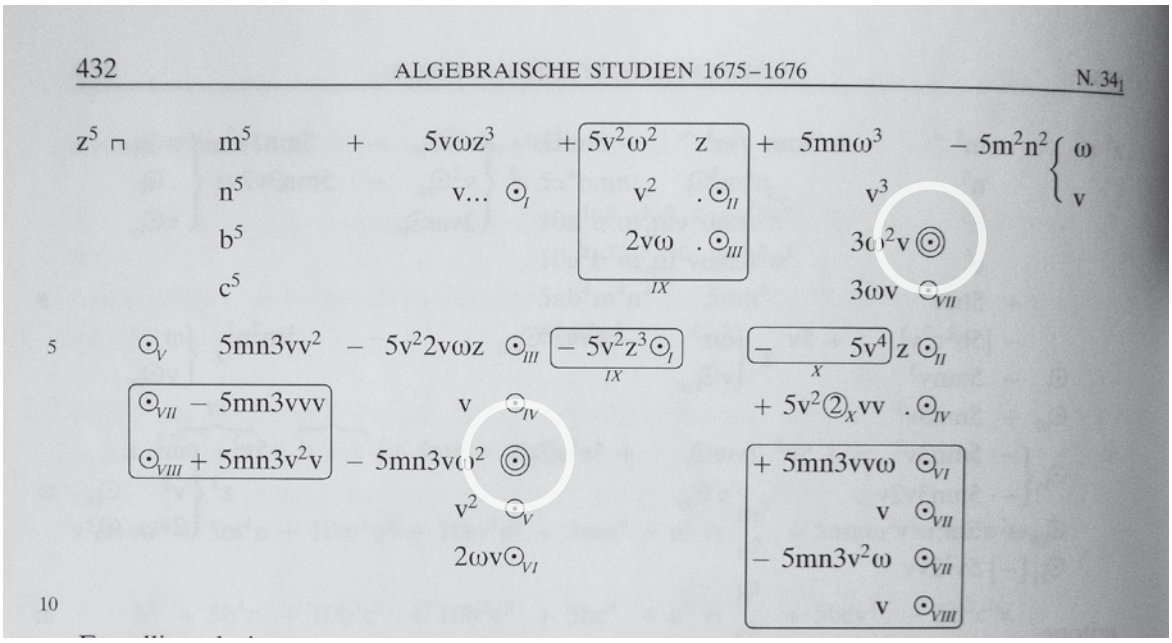
[*Teil 3*]

Calculum ⊜ resumamus. Sit aequatio data: $rz^4 + sz^3 + tz^2 * + w$ aequ.(1) 0. ponamus ab initio d^4 aequ. 0.

$b^2z^4 + c^3z^3 + d^4z^2 + e^5z + f^6$ aequ.(2) $m^2z^4 + 2mn^2z^3 + 2mp^3z^2 + n^4z^2 + 2n^2p^3z + p^6$

$+ bz^2 + \frac{c^3}{2b}z - \frac{c^6}{8b^3}$ aequ.(3) $mz^2 + 2n^2z + p^3$

⊜ DOUBLE CIRCLE WITH DOUBLE HORIZONTAL LINE
LAA VII-2 p. 268



432 ALGEBRAISCHE STUDIEN 1675–1676 N. 34

$z^5 \sqcap$ $m^5 + 5v\omega z^3 + 5v^2\omega^2 z + 5mn\omega^3 - 5m^2n^2 \{ \omega, v$
n^5 $v... \odot_I$ $v^2 . \odot_{II}$ v^3
b^5 $2v\omega . \odot_{III}$ $3\omega^2 v \circledcirc$
c^5 $3\omega v \odot_{VII}$

5 $\odot_V$ $5mn3vv^2 - 5v^2 2v\omega z \odot_{III} - 5v^2z^3\odot_I$ $- 5v^4 z \odot_{II}$

$\odot_{VII} - 5mn3vvv$ $v \odot_{IV}$ $+ 5v^2 ②_X vv . \odot_{IV}$

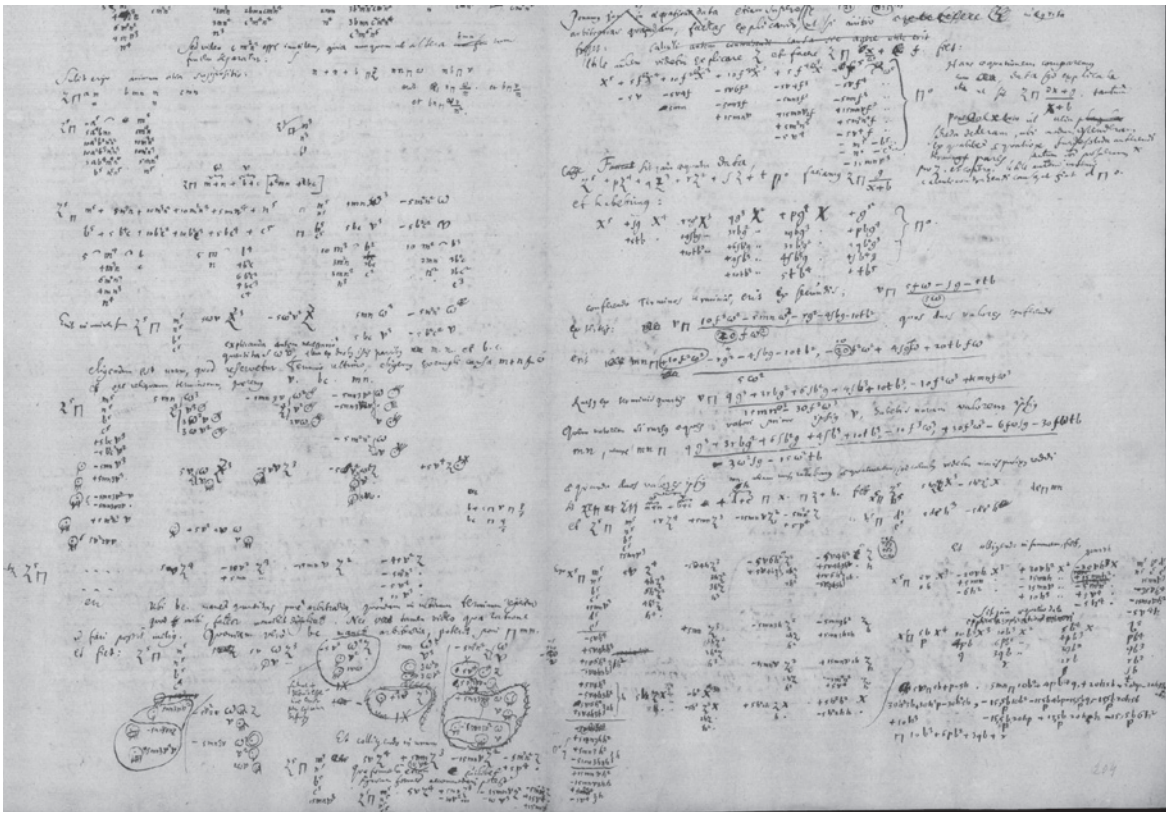
$\odot_{VIII} + 5mn3v^2v$ $- 5mn3v\omega^2 \circledcirc$ $+ 5mn3vv\omega \odot_{VI}$

$v^2 \odot_V$ $v \odot_{VII}$

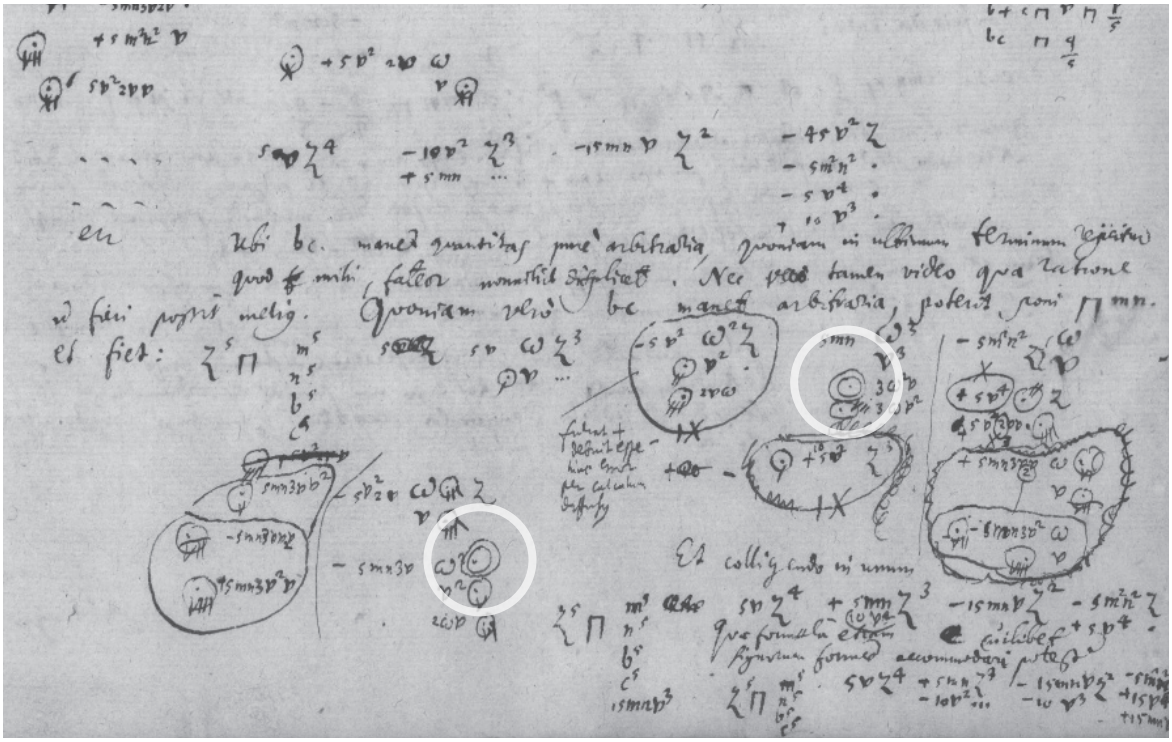
$2\omega v \odot_{VI}$ $- 5mn3v^2\omega \odot_{VII}$

10 $v \odot_{VIII}$

◎ BULLET IN DOUBLE CIRCLE
LAA VII-2 p. 432.



◎ BULLET IN DOUBLE CIRCLE
LH 35 IV 1, f. 203v.



ITALIAN: F. GHALIGAI

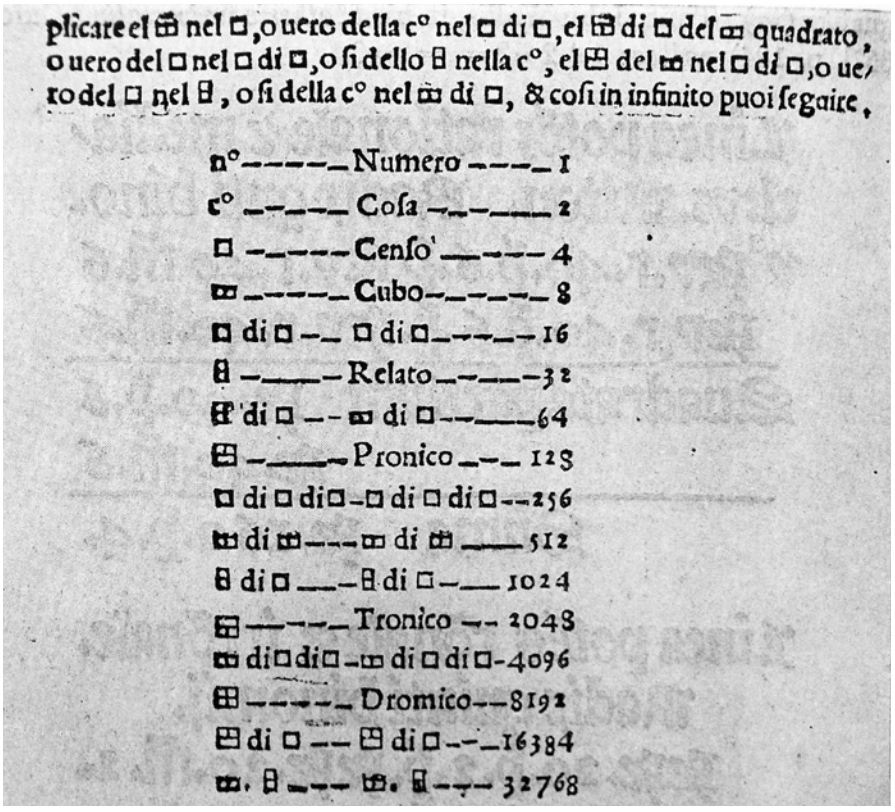
(1521, 1548, 1552)

139. Ghaligai's *Pratica d'arithmetica*[1] appeared in earlier editions, which we have not seen, in 1521 and 1548. The three editions do not differ from one another according to Riccardi's *Biblioteca matematica italiana* (I, 500–502). Ghaligai writes (fol. 71*B*): $x = cosa = c^{o}$, $x^2 = censo = \square$, $x^3 = cubo = \square\square$, $x^5 = relato = \boxminus$, $x^7 = pronico = \boxplus$, $x^{11} = tronico = \boxplus\square$, $x^{13} = dromico = \boxplus\boxminus$. He uses the m^{o} for "minus" and the $\tilde{p}$ and *e* for "plus," but frequently writes in full *piu* and *meno*.

[1] *Pratica d'arithmetica di Francesco Ghaligai Fiorentino* (Nuouamente Riuista, & con somma Diligenza Ristampata. In Firenze. M.D.LII).

▭ HORIZONTAL DOUBLE WHITE SMALL SQUARE, ▯ VERTICAL DOUBLE WHITE SMALL SQUARE, ⊞ WHITE SQUARE WITH BOTTOM HALF BISECTED, ⊟ WHITE SQUARE WITH TOP HALF BISECTED, ⊞ WHITE SQUARE WITH HORIZONTAL AND VERTICAL BISECTING LINES.

Cajori I. p. 112. – For the simple square one would use the character 25FB or 25A1. The shapes of ▭ ▯ ⊞ ⊟ ⊞ can be seen in relation to the characters 25F0–25F3, 25AD and 25AF.


plicare el ⊟ nel □, o uero della c° nel □ di □, el ⊟ di □ del ▭ quadrato, o uero del □ nel □ di □, o ſi dello ▯ nella c°, el ⊟ del ▭ nel □ di □, o uero del □ nel ▯, o ſi della c° nel ▭ di □, & coſi in infinito puoi ſegaire,

n°——— Numero ——— 1
c° ——— Coſa ——— 2
□ ——— Cenſo ——— 4
▭ ——— Cubo ——— 8
□ di □ — □ di □ ——— 16
▯ ——— Relato ——— 32
⊞ di □ — ▭ di □ ——— 64
⊟ ——— Pronico ——— 128
□ di □ di □ — □ di □ di □ — 256
▭ di ▭ — ▭ di ▭ ——— 512
▯ di □ — ▯ di □ ——— 1024
⊞ ——— Tronico ——— 2048
▭ di □ di □ — ▭ di □ di □ - 4096
⊞ ——— Dromico — 8192
⊟ di □ — ⊟ di □ — 16384
▭ · ▯ — ▭ · ▯ — 32768

▭ HORIZONTAL DOUBLE WHITE SMALL SQUARE, ▯ VERTICAL DOUBLE WHITE SMALL SQUARE, ⊞ WHITE SQUARE WITH BOTTOM HALF BISECTED, ⊟ WHITE SQUARE WITH TOP HALF BISECTED, ⊞ WHITE SQUARE WITH HORIZONTAL AND VERTICAL BISECTING LINES. – Francesco Ghaligai, Pratica d'Arithmetica, 1552 (after Cajori)

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html **for guidelines and details before filling this form.**
Please ensure you are using the latest Form from http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html**.**
See also http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html **for latest *Roadmaps*.**

A. Administrative

1. **Title:** **Proposal to encode 17 geometric shapes**
2. Requester's name: Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner, Andreas Stötzner, Achim Trunk, Charlotte Wahl
3. Requester type (Member body/Liaison/Individual contribution): Individual (work group)
4. Submission date: 2025-05.07.
5. Requester's reference (if applicable): LUCP L-2514
6. Choose one of the following:
   This is a complete proposal: Yes
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): No
      Proposed name of script:
   b. The proposal is for addition of character(s) to an existing block: Yes
      Name of the existing block: *1F780, Geometric Shapes Extended*
2. Number of characters in proposal: 17
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary [ ] B.1-Specialized (small collection) [Yes] B.2-Specialized (large collection) [ ]
   C-Major extinct [ ] D-Attested extinct [ ] E-Minor extinct [ ]
   F-Archaic Hieroglyphic or Ideographic [ ] G-Obscure or questionable usage symbols [ ]
4. Is a repertoire including character names provided? Yes
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? Yes
   b. Are the character shapes attached in a legible form suitable for review? Yes
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
   Andreas Stötzner
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
   Andreas Stötzner Gestaltung, Klauflügelweg 21, 88400 Biberach/R., Germany, as@signographie.de
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? Yes
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? Yes
7. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? No

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also see Unicode Character Database (http://www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? Yes
   If YES explain *L2/25-126, was in discussion with SEW and UTC members*
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? Yes
   If YES, with whom? Leibniz-Archiv, Forschungsstelle der Leibniz-Edition, Niedersächsische Landesbibliothek (GWLB), Hanover, Göttingen Academy of Science and Humanities in Lower Saxony (DE), Philiumm research group of CNRS (UMR 7219, laboratoire SPHERE) / Université de Paris VII; general: scholars, researchers, authors and editors working in the field of science history and upon editions of historic text corpora (e.g. of G. W. Leibniz, but also many others)
   If YES, available relevant documents: L-2409, L-2410
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Yes
   Reference:
4. The context of use for the proposed characters (type of use; common or rare) Common
   Reference: mainly specialist usage, scholarly, worldwide
5. Are the proposed characters in current use by the user community? Yes
   If YES, where? Reference: mainly Europe, Americas; other countries
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? No
   If YES, is a rationale provided?
   If YES, reference:
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? Yes
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? No
   If YES, is a rationale for its inclusion provided?
   If YES, reference:
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? Yes
   If YES, is a rationale for its inclusion provided? *Yes*
   If YES, reference: *one standard variation sequence char. (29B7)*
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? No
    If YES, is a rationale for its inclusion provided?
    If YES, reference:
11. Does the proposal include use of combining characters and/or use of composite sequences? No
    If YES, is a rationale for such use provided?
    If YES, reference:
    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? No
    If YES, reference:
12. Does the proposal contain characters with any special properties such as control function or similar semantics? No
    If YES, describe in detail (include attachment if necessary)
13. Does the proposal contain any Ideographic compatibility characters? No
    If YES, are the equivalent corresponding unified ideographic characters identified?
    If YES, reference: