

Drawing Standard

Drawing Sheet

EGD-ME101-18

Swarn Singh

Drawing Sheet : Standard size

■ Trimmed paper of a size A0 ~ A4.

■ Standard sheet size (JIS)

A4 210 x 297

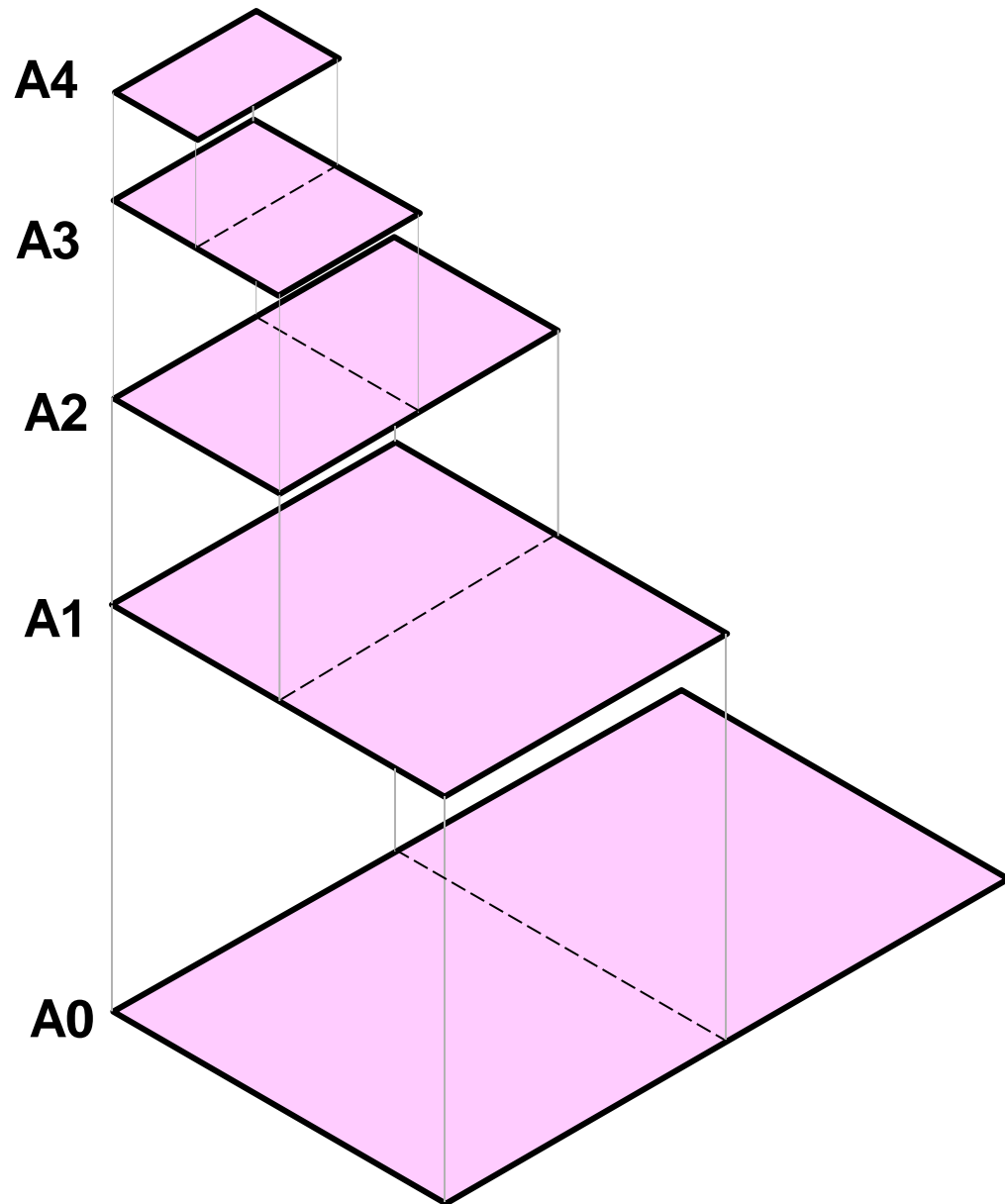
A3 297 x 420

A2 420 x 594

A1 594 x 841

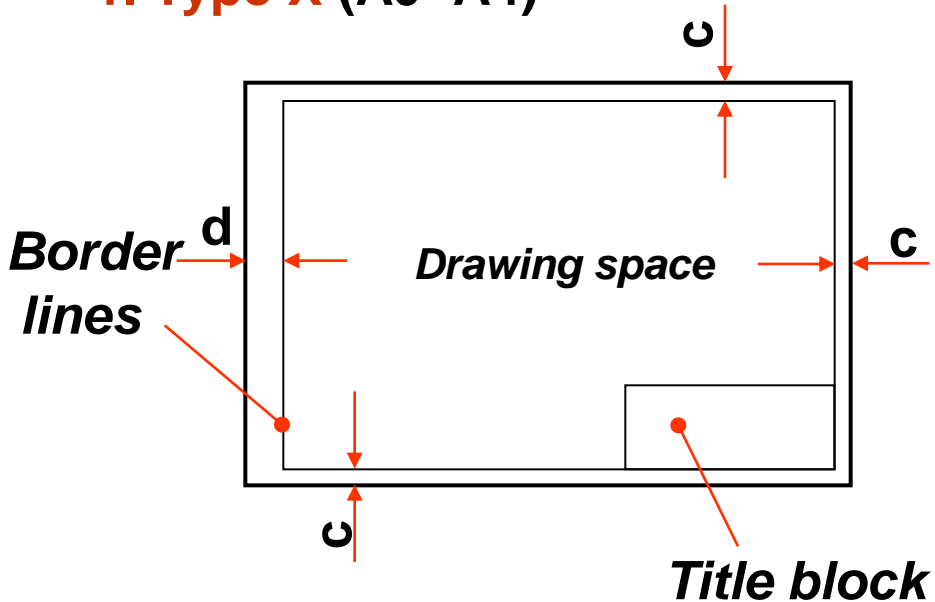
A0 841 x 1189

(Dimensions in millimeters)



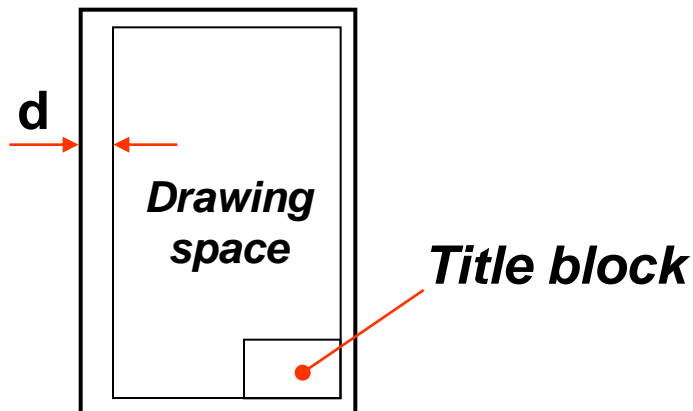
Drawing Sheet : Orientation & Margin

1. Type X (A0~A4)




Sheet size	c (min)	d (min)
A4	10	25
A3	10	25
A2	10	25
A1	20	25
A0	20	25

2. Type Y (A4 only)

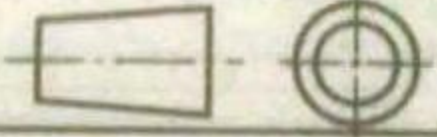


TITLE BLOCK FOR STUDENTS


NAME:		ROLL NO :	
CLASS :		COLLEGE:	
PLATE NO. :		DATE :	
TITLE :			
SCALE 1:1 ALL DIM. ARE IN mm			

Dimensions: Overall width 150, overall height 50. Margins: 5 (top), 5 (left), 10 (bottom). Internal divisions: 37.5 (left), 37.5 (right), 75 (right).

TITLE BLOCK FOR STUDENTS

50	Name :-	G.N. ENGG. COLLEGE LUDH.		20	
	Class :-				
	Roll no :-				
	Time Hrs. :-	15			
	Scale :-				Grade:-
	SHT. No. :-				
TITLE OF DRAWING		15			
(50)		50	50	30	
		150			

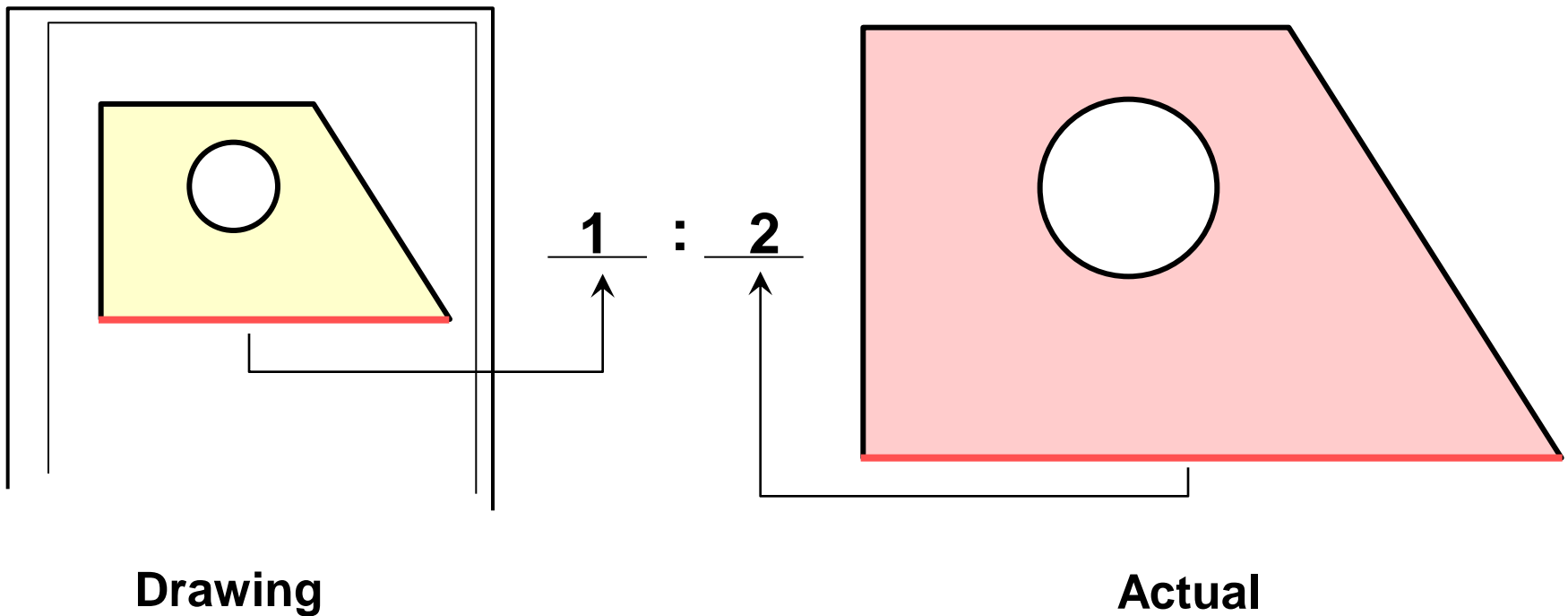
TITLE BLOCK FOR FIRM

NAME OF THE FIRM		20		25		15		
			NAME	DATE		10		
		DESIGNED			7			
		DRAWN			7			
		CHECKED			7			
		STANDARD			7			
SCALE 		APPROVED				7		
		DRAWING NO.		20				
TITLE						SHEET 1 OF 1		
25		10						
190								

Drawing Scales : Definition

Length, size

- **Scale** is a ratio between the linear dimension of a drawn representation of an object and the actual object.



Drawing Scales : Designation

- Designation of a scale consists of the word “**SCALE**” followed by the **indication of its ratio**, as follows

SCALE 1:1 for full size

SCALE X:1 ($X > 1$) for an **enlargement** scales

SCALE 1:X ($X > 1$) for a **reduction** scales

- Drawing scale is commonly found in a title block.

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE		INTERBRIDGE		
FRACTIONS	DECIMALS	ANGLES	APPROVALS	DATE	PROGRESSIVE DIE FOR P/N		
± 1/32"	X.XX ± 0.02" X.XXX ± 0.005" X.XXXX ± 0.0005"	± 30'	DRAWN				
			CHECKED				
			RESP ENG				
MATERIAL					ASSY DRAWINGS		
FINISH			REVISION		SIZE	DWG. NO.	REV.
DO NOT SCALE DRAWING			QUAL ENG		D		
					SCALE	CAD FILE	SHEET
					1:1	Sheet_02_03_04	1 OF 3

Drawing Scales : Notes

- *Dimension numbers* shown in the drawing represent the “true size” of an object and they are independent of the drawing scale used.

Drawing Scales : Standard scale

- Standard **reducing** scales are
1:2, 1:5, 1:10, 1:20, 1:50, 1:100
- Standard **enlarging** scales are
2:1, 5:1, 10:1, 20:1, 50:1, 100:1

LETTERING

Writing text on a drawing (e.g. titles, dimensions, scales) using letters which can be alphabets, numerals, symbols or punctuation marks to convey detailed information.

Features of Lettering

1. Legibility, uniformity, ease, rapidity of execution and reproducibility
2. No ornamental or artistic and cursive style of letter
3. Letters should be distinguishable from each other in order to avoid any confusion even in case of slight mutilations

Standard followed

IS 9609 (Part 0): 2001 & SP46: 2003 (lettering for technical drawings). This BIS standard is based on ISO 3098-0: 1997

Types of Lettering

- **Single stroke** - Thickness of the line of the letter should be such as is obtained in one stroke of the pencil.
Does not mean that the letter should be made in one
- **Double stroke**- When more thickness is given to single stroke letters, it is known as double stroke or gothic letters.

Both types can be Vertical or Inclined at 75° to the horizontal

- **BIS (SP46:2003)** - Gives dimensions for lettering & types
 - **Type A** - Height of capital letter is divided into 14 parts
 - **Type B** – Height of capital letter is divided into 10 parts

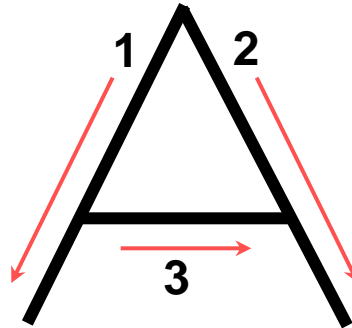
Line Width of Type A < Type B

Examples

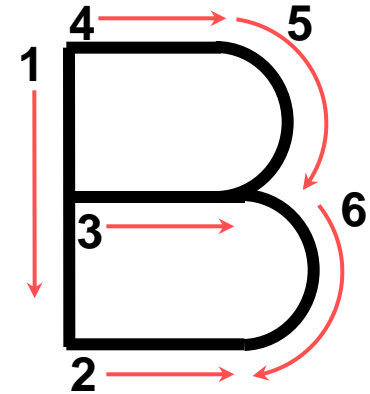
“I” letter



“A” letter

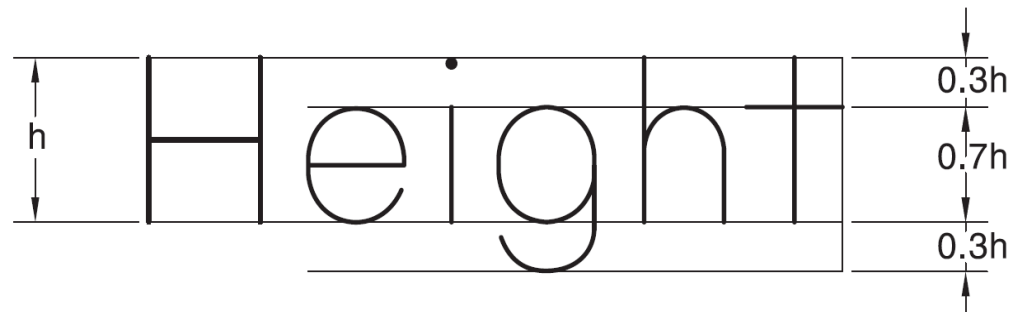


“B” letter



BIS (SP 46: 2003) has recommended the heights of letters as: 1.8, 2.5, 3.5, 5, 7, 10, 14 & 20 mm

Total height of lowercase letters equals that of capital letters.



The height-to-width ratio for letters varies between 7 : 4 or 7 : 6

Height and width of letters

Sr. no	Items on a drawing	Size (mm)
1	Name of the company	10, 14, 20
2	Drawing numbers, letters denoting section planes	10,14
3	Title of the drawing	7, 10
4	Sub- titles & Headings	5, 7
5	Dimensioning, notes, schedules & material lists	3.5, 7
6	Alteration entries and tolerances	3.5

Recommendation

- Text's style on the drawing must have the following 2 properties

Legibility

- Shape
- Space between letters
- Space between words

Uniformity

- Size (or text height)
- line thickness

Examples

ESTIMATE **GOOD**

ESTiMaTE **Not uniform in style.**

ESTIMATE
ESTIMATE **Not uniform in height.**

EST/MATE
ESTIMATE **Not uniformly vertical.**

ESTIMATE
ESTIMATE **Not uniform in thickness of stroke.**

ESTIMATE **Inappropriate space between letters**

Style

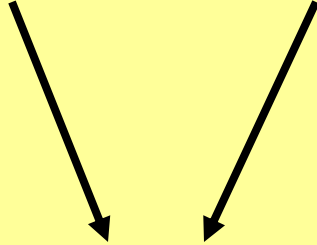
- Gothic *vertical* style.
- Begin the sentence, phrase or word with a capital letter.
- Text height 2~3mm.
- Space between lines of text is about of text height.
- Height of the lower-case letter is about $\frac{2}{3}$ of that of a capital letter.

Basic Strokes

Straight



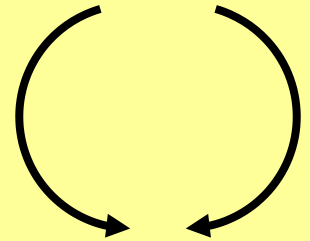
Slanted



Horizontal



Curved

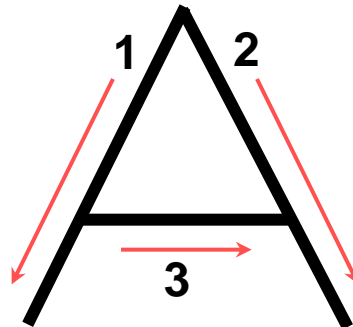


Examples

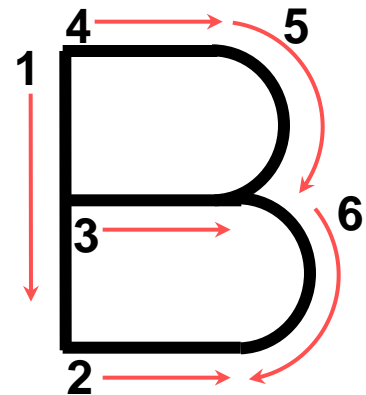
“I” letter



“A” letter

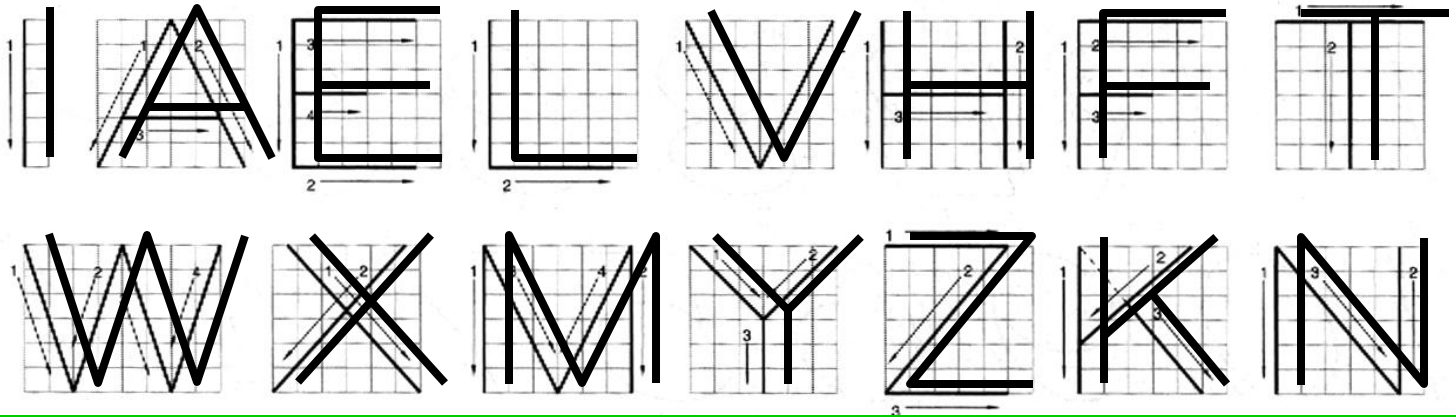


“B” letter

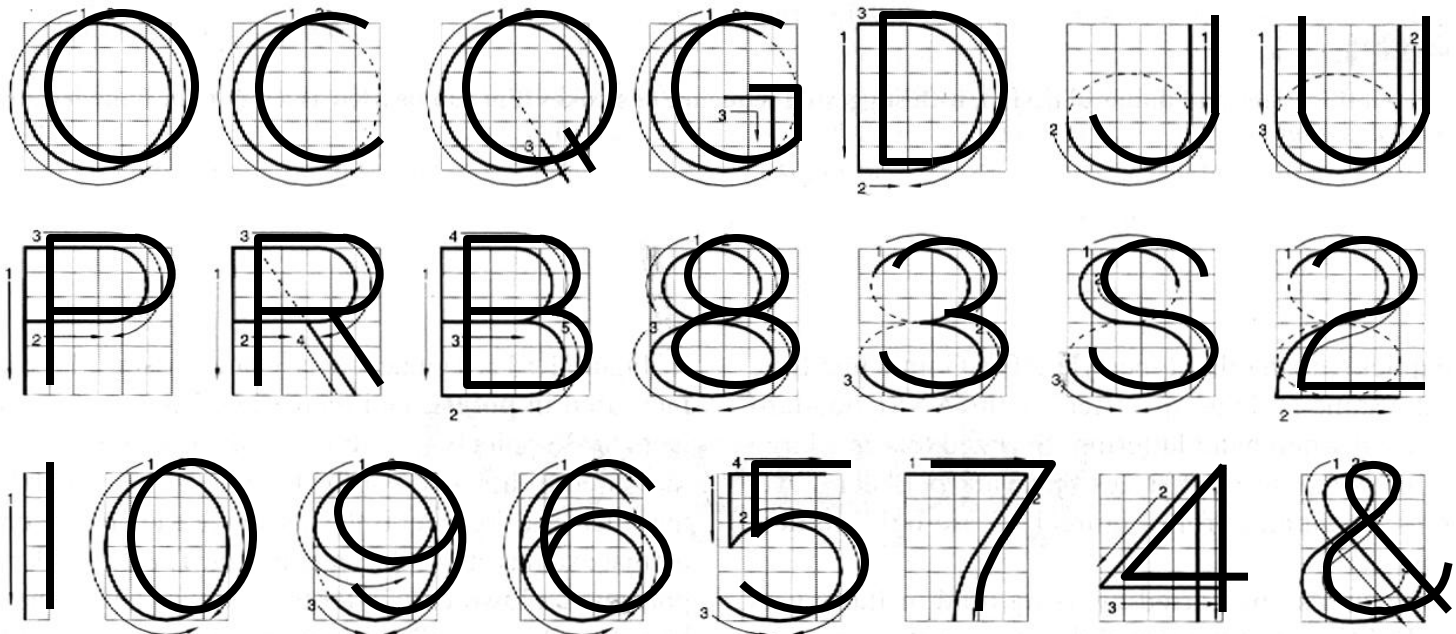


Upper-case Letters & Numerals

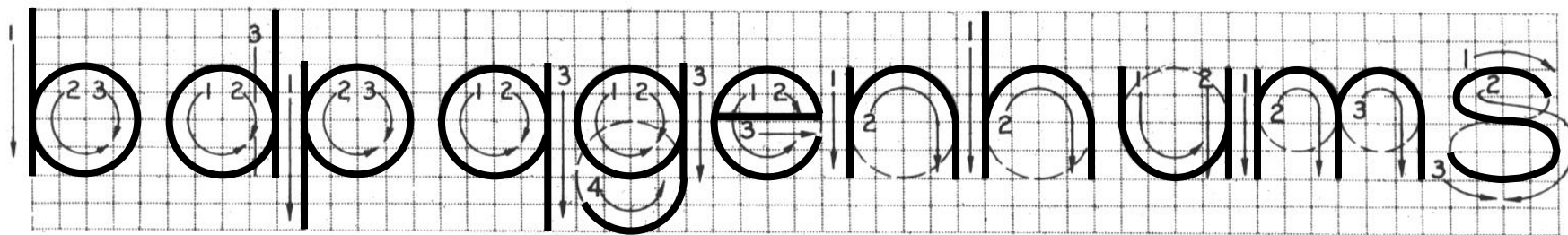
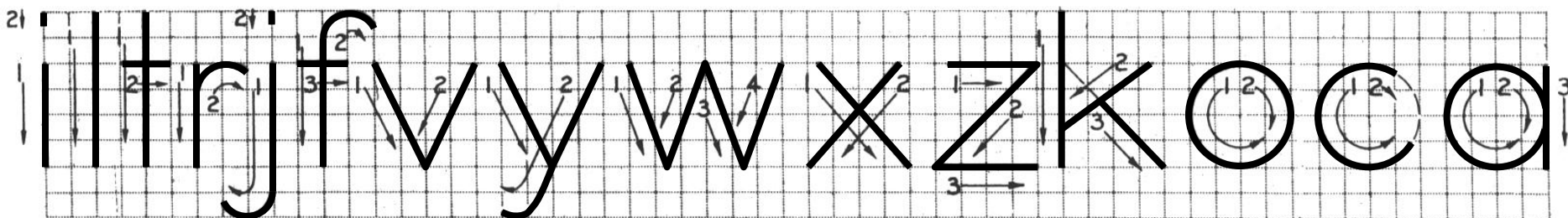
**Straight line
letters**



**Curved line
letters
&
Numerals**

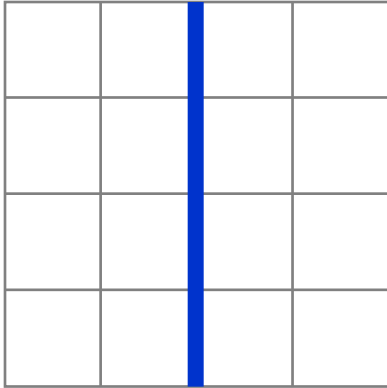


Lower-case Letters

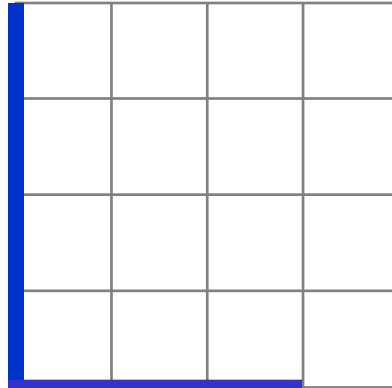


Stroke Sequence : Upper-case

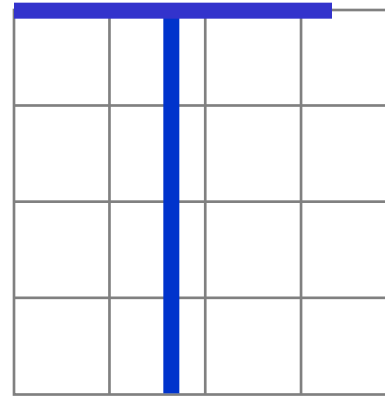
I



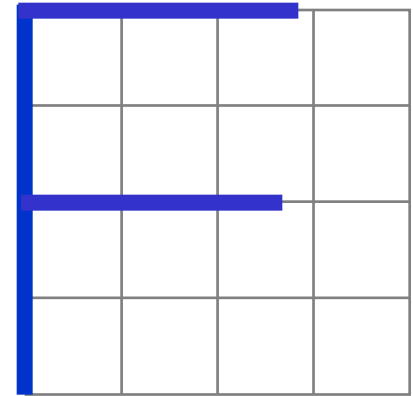
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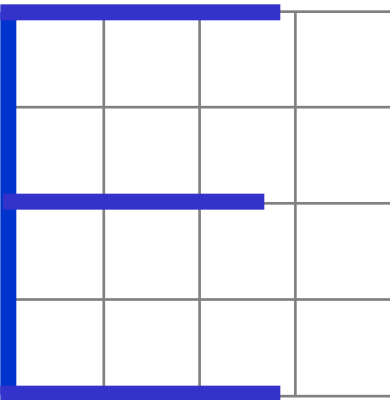
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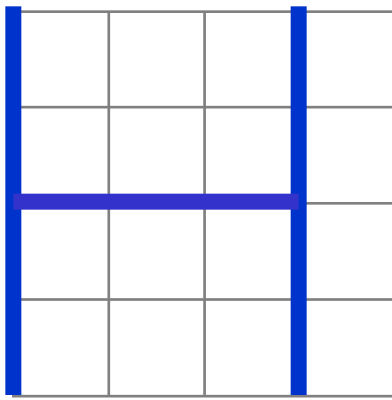
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E



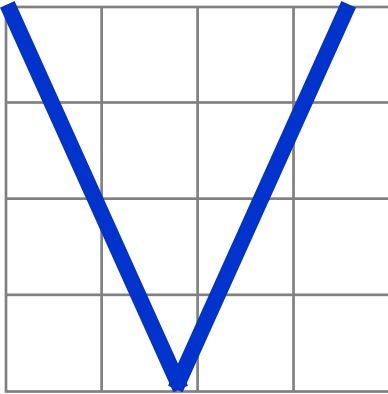
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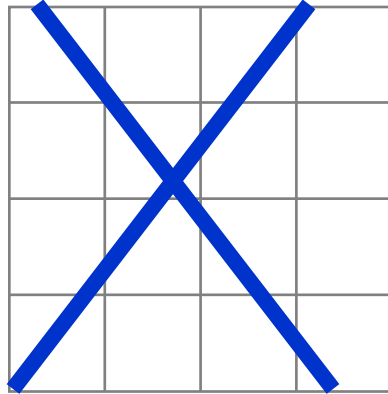
Skip section

Stroke Sequence : Upper-case

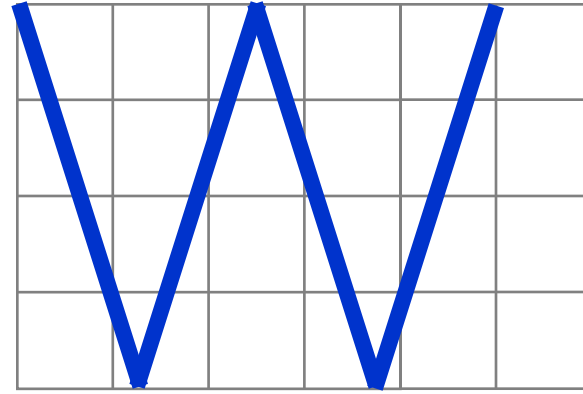
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X



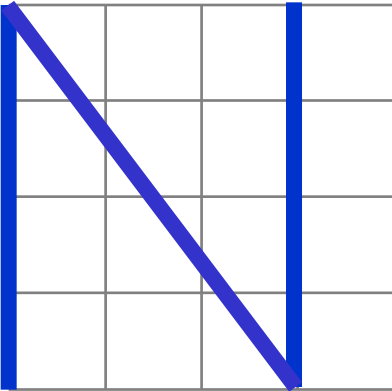
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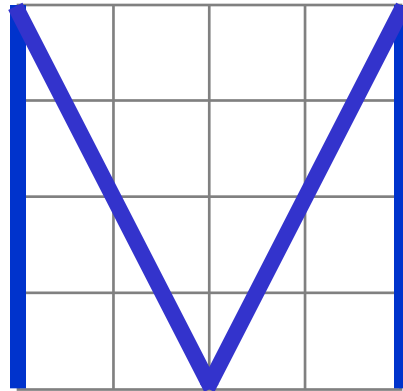
Skip section

Stroke Sequence : Upper-case

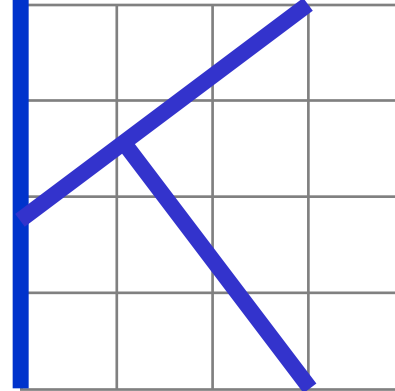
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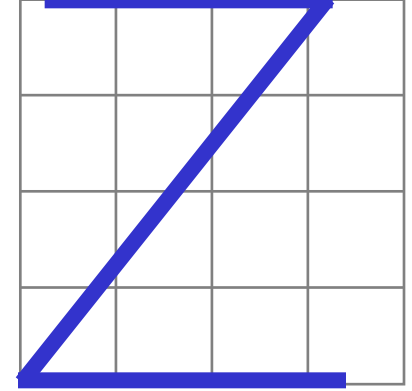
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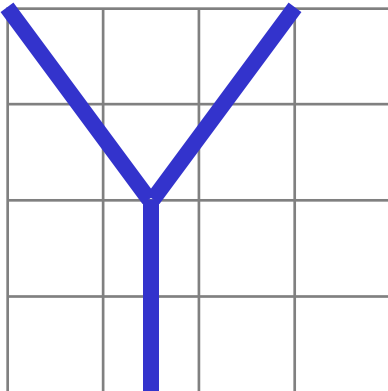
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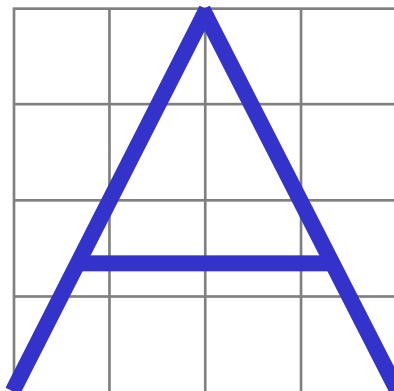
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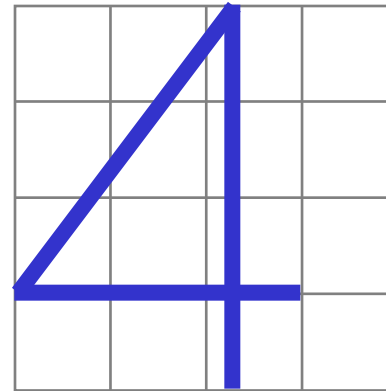
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A



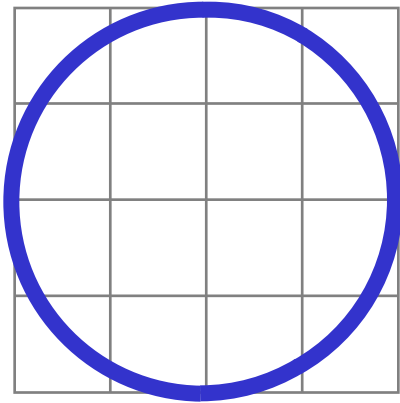
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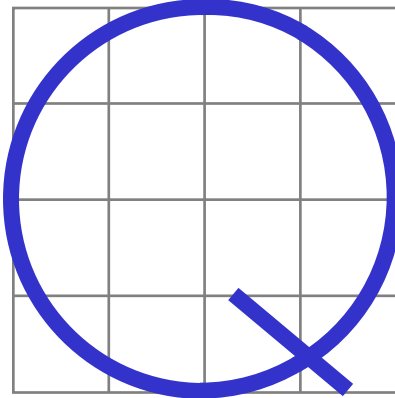
Skip section

Stroke Sequence : Upper-case

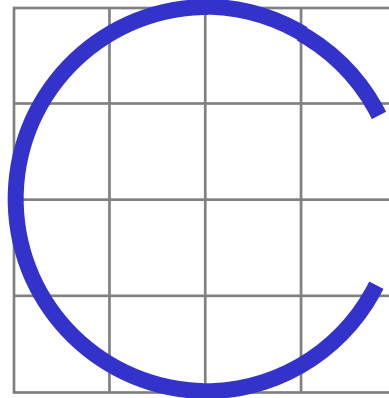
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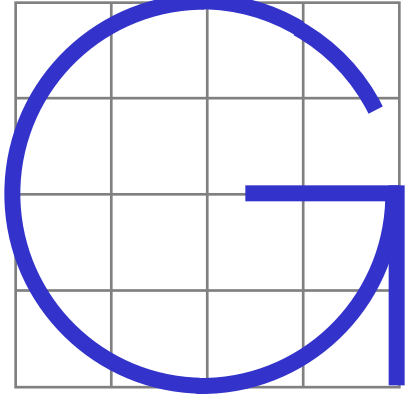
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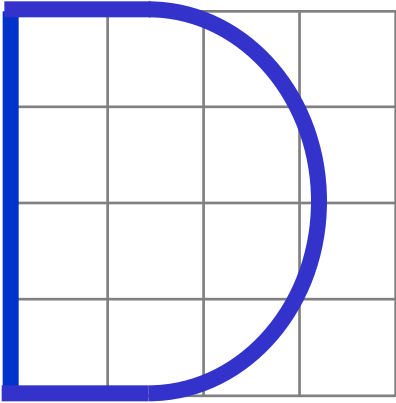
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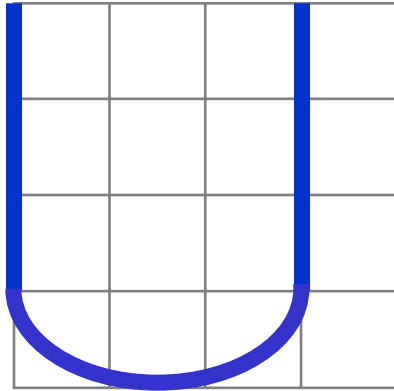
Skip section

Stroke Sequence : Upper-case

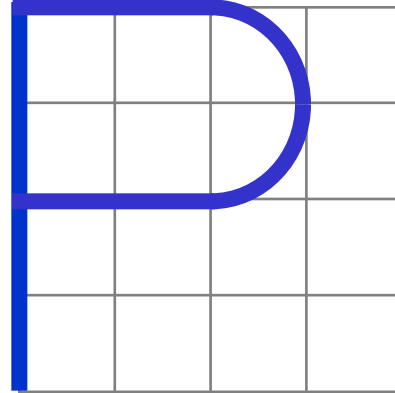
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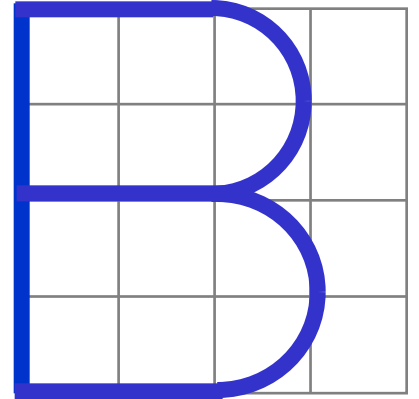
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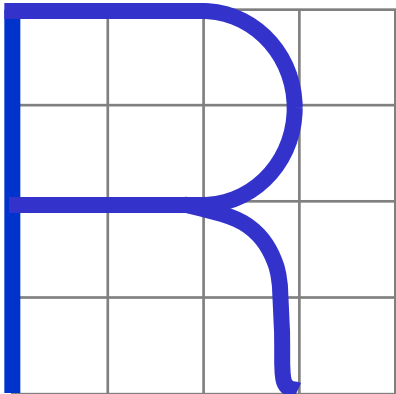
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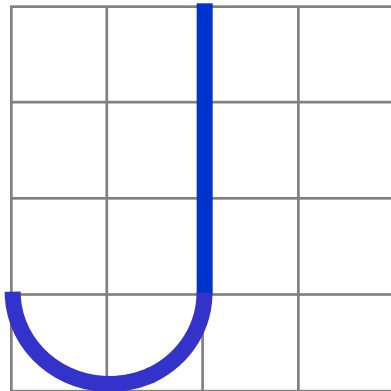
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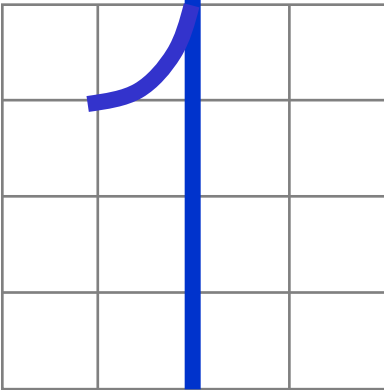
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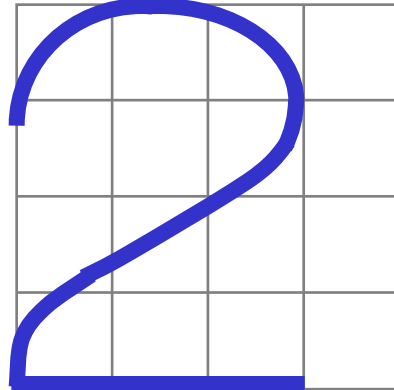
Skip section

Stroke Sequence : Upper-case

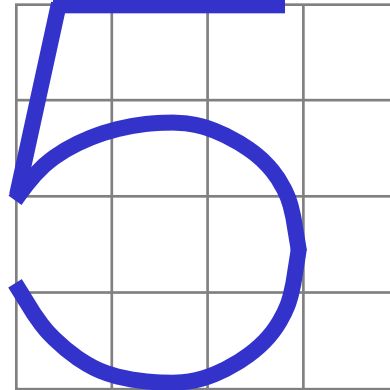
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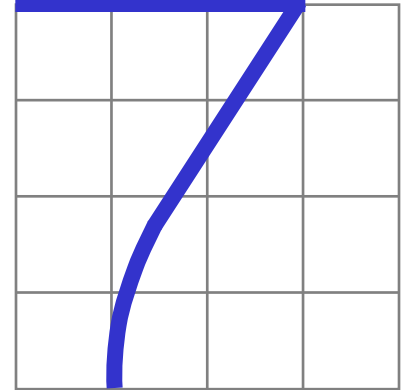
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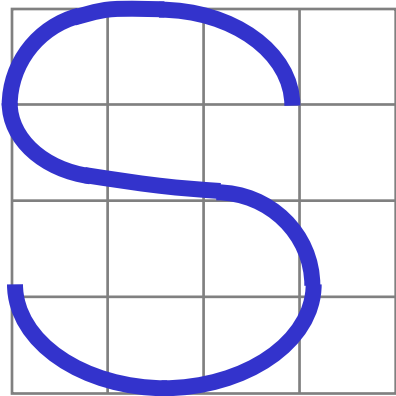
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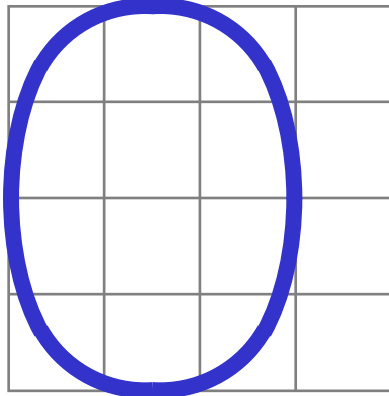
Skip section

Stroke Sequence : Upper-case

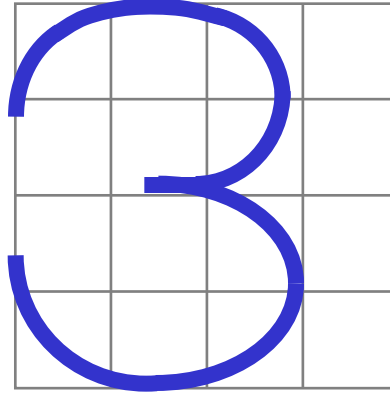
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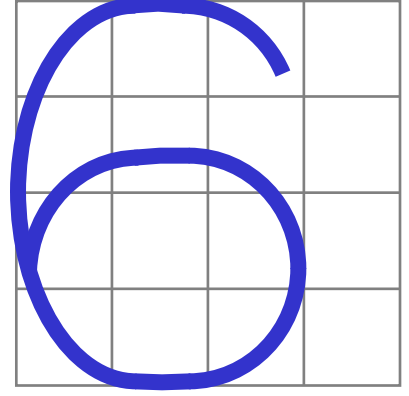
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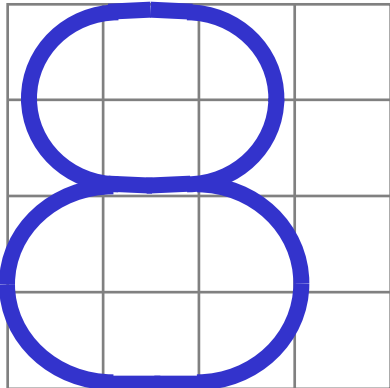
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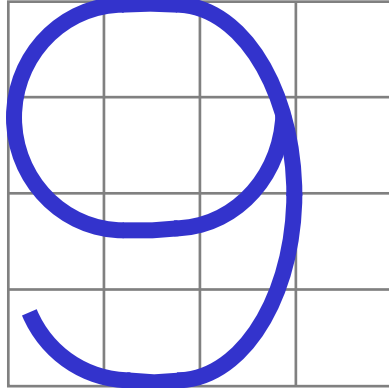
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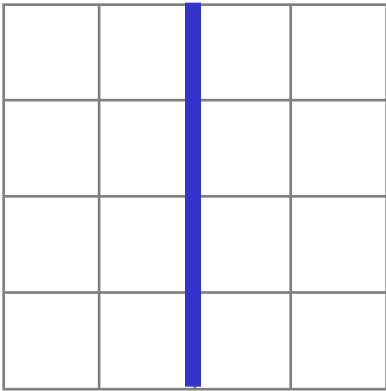
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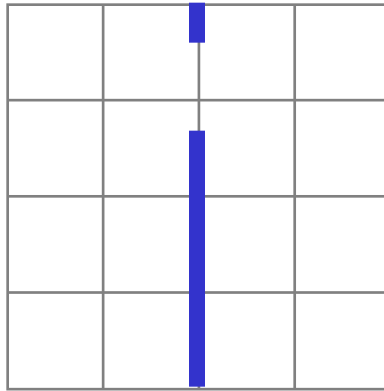
Skip section

Stroke Sequence : Lower-case

l



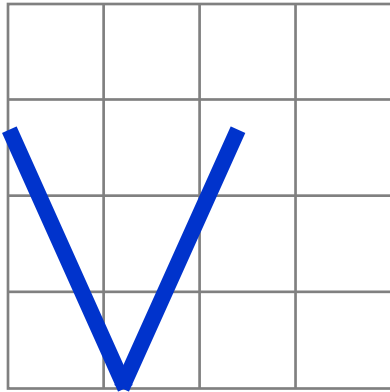
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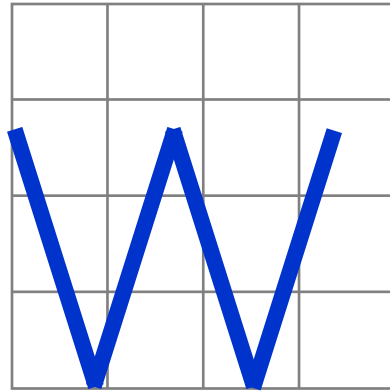
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Stroke Sequence : Lower-case

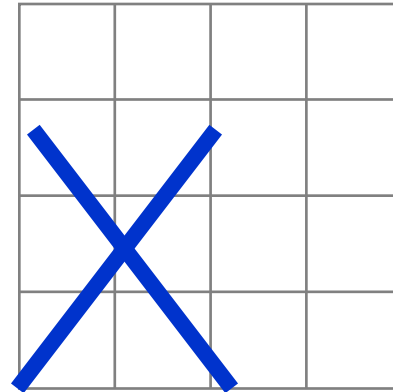
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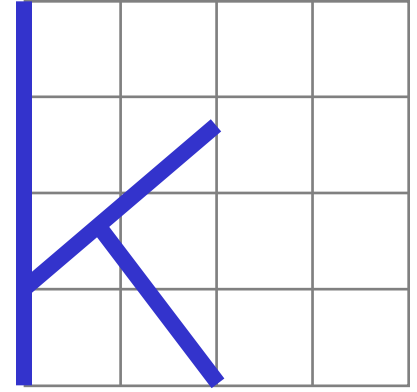
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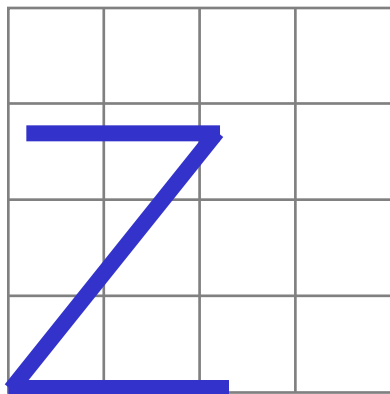
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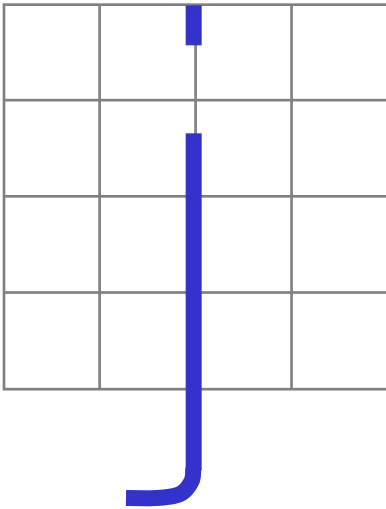
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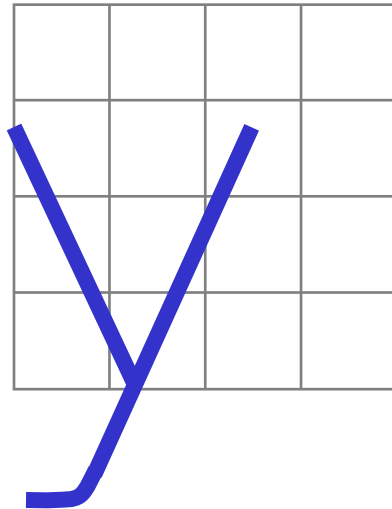
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Stroke Sequence : Lower-case

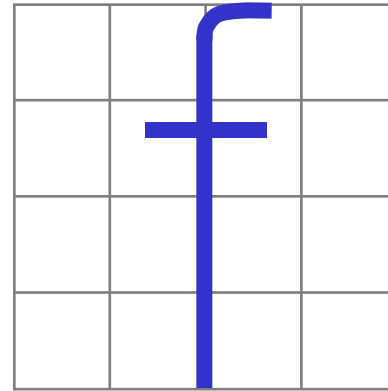
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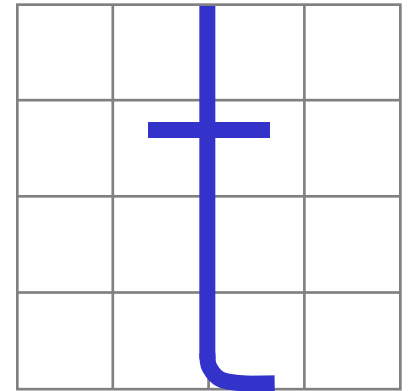
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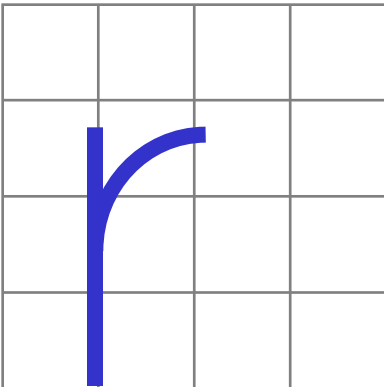
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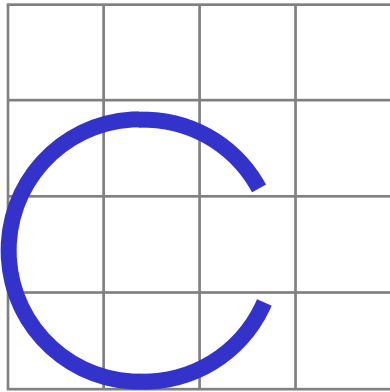
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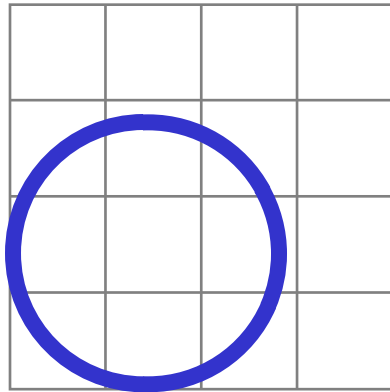
Skip section

Stroke Sequence : Lower-case

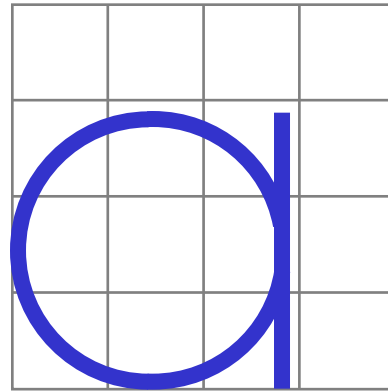
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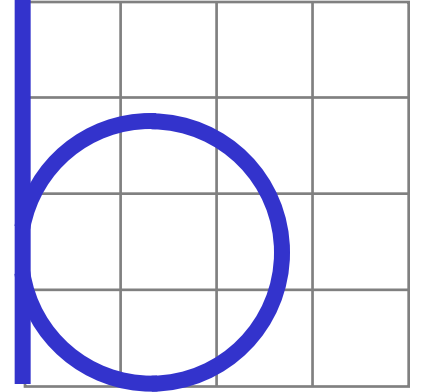
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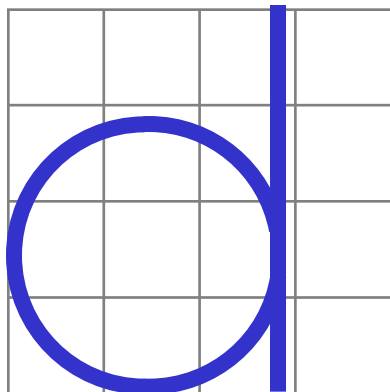
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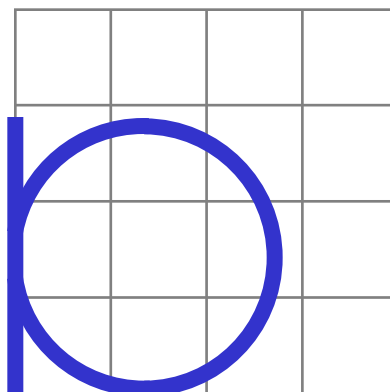
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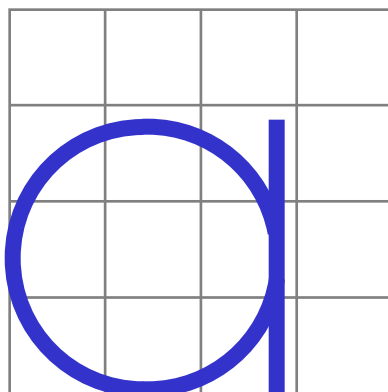
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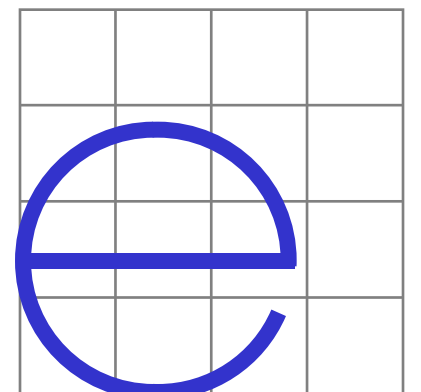
p



q



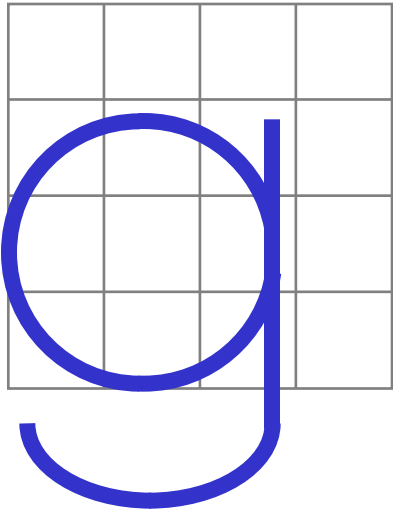
e



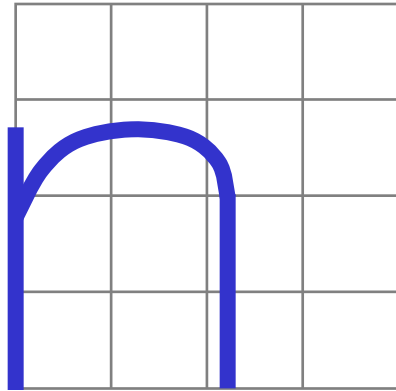
Skip section

Stroke Sequence : Lower-case

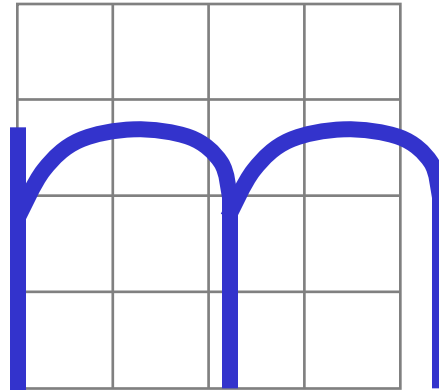
g



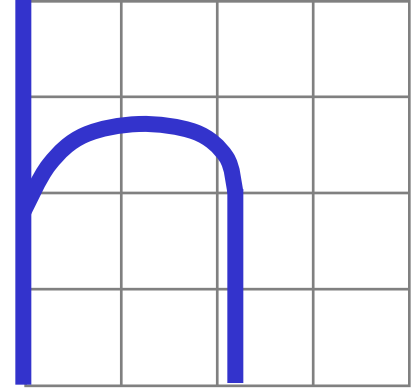
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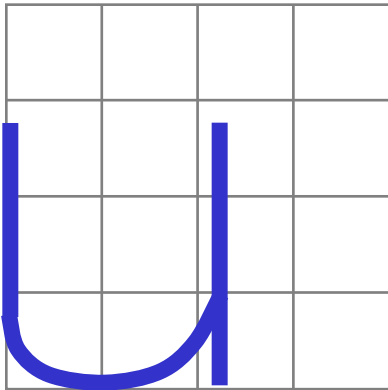
m



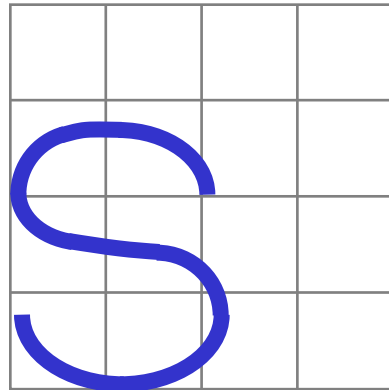
h



u



s



Skip section

VERTICAL GOTHIC LETTERS

A B C D E F G H I J K

L M N O P Q R S

T U V W X Y Z

1 2 3 4 5 6 7 8 9 0

Fig. 4.8. Single stroke vertical Gothic (thick) letters and Numerals Ratio 7 : 4 (SP : 46-1988)

INCLINED GOTHIC LETTERS

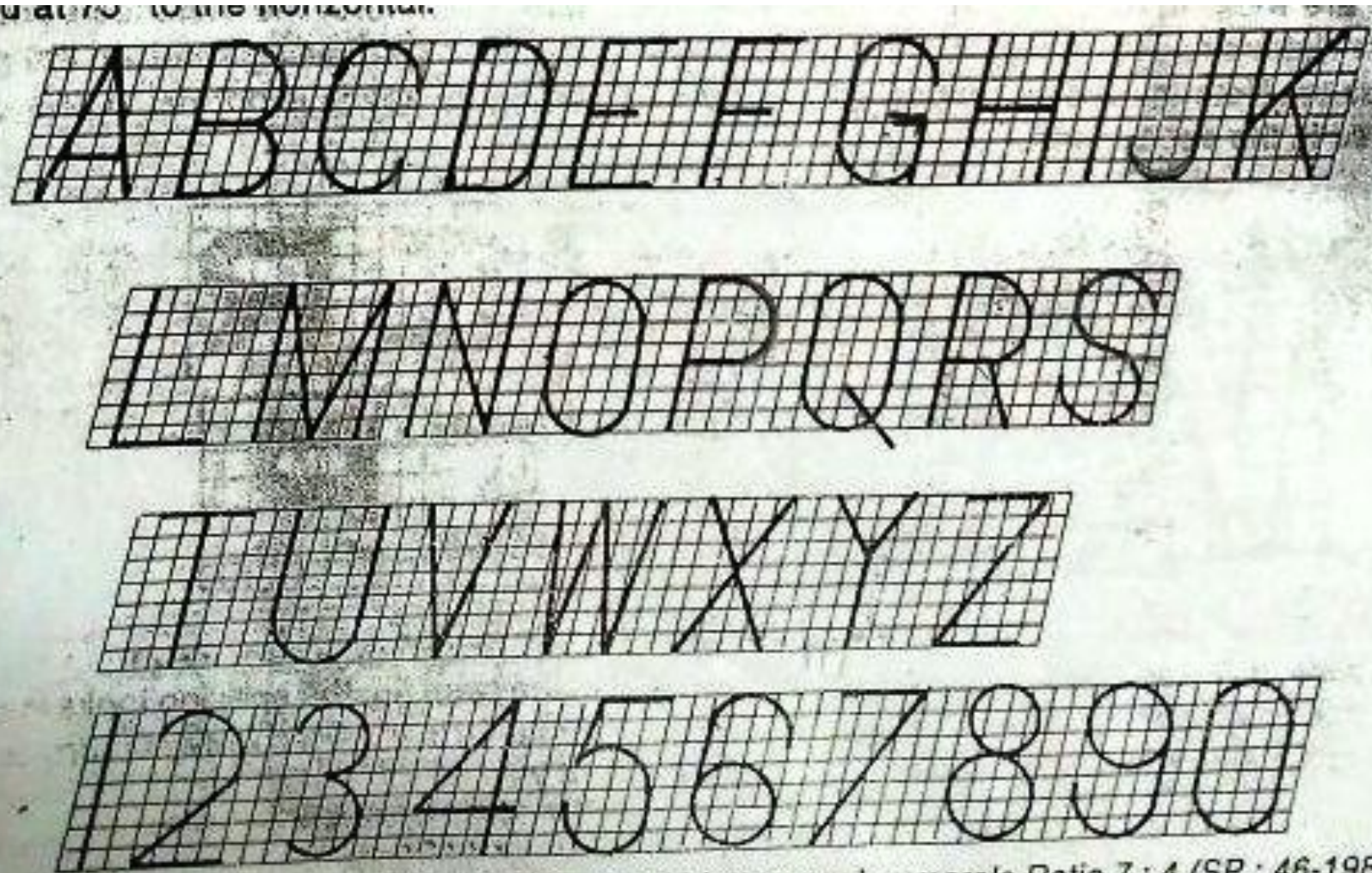


Fig. 4.9. Single stroke inclined Gothic (thick) letters and numerals Ratio 7 : 4 (SP : 46-1988)

DOUBLE STROKE LETTERS

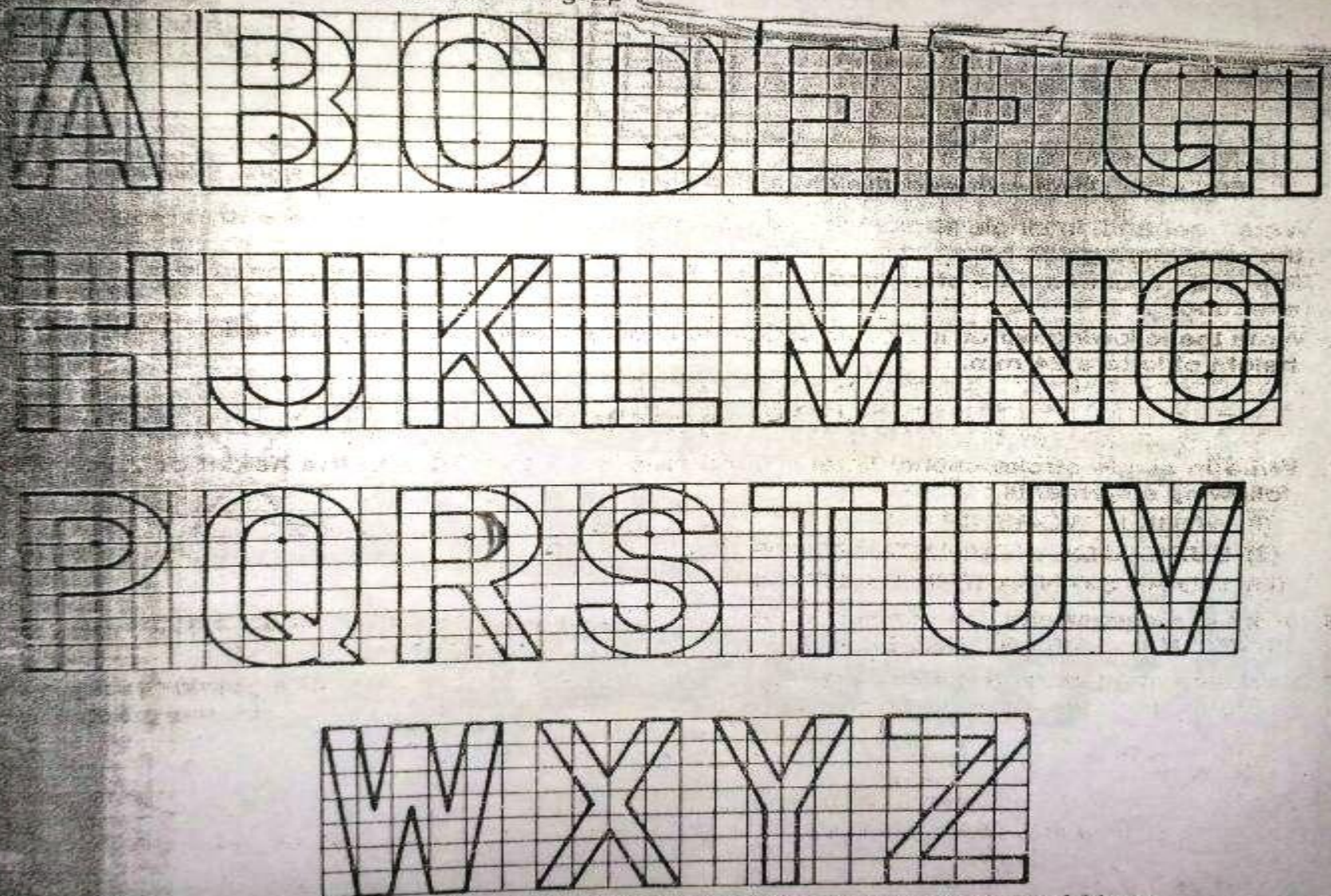
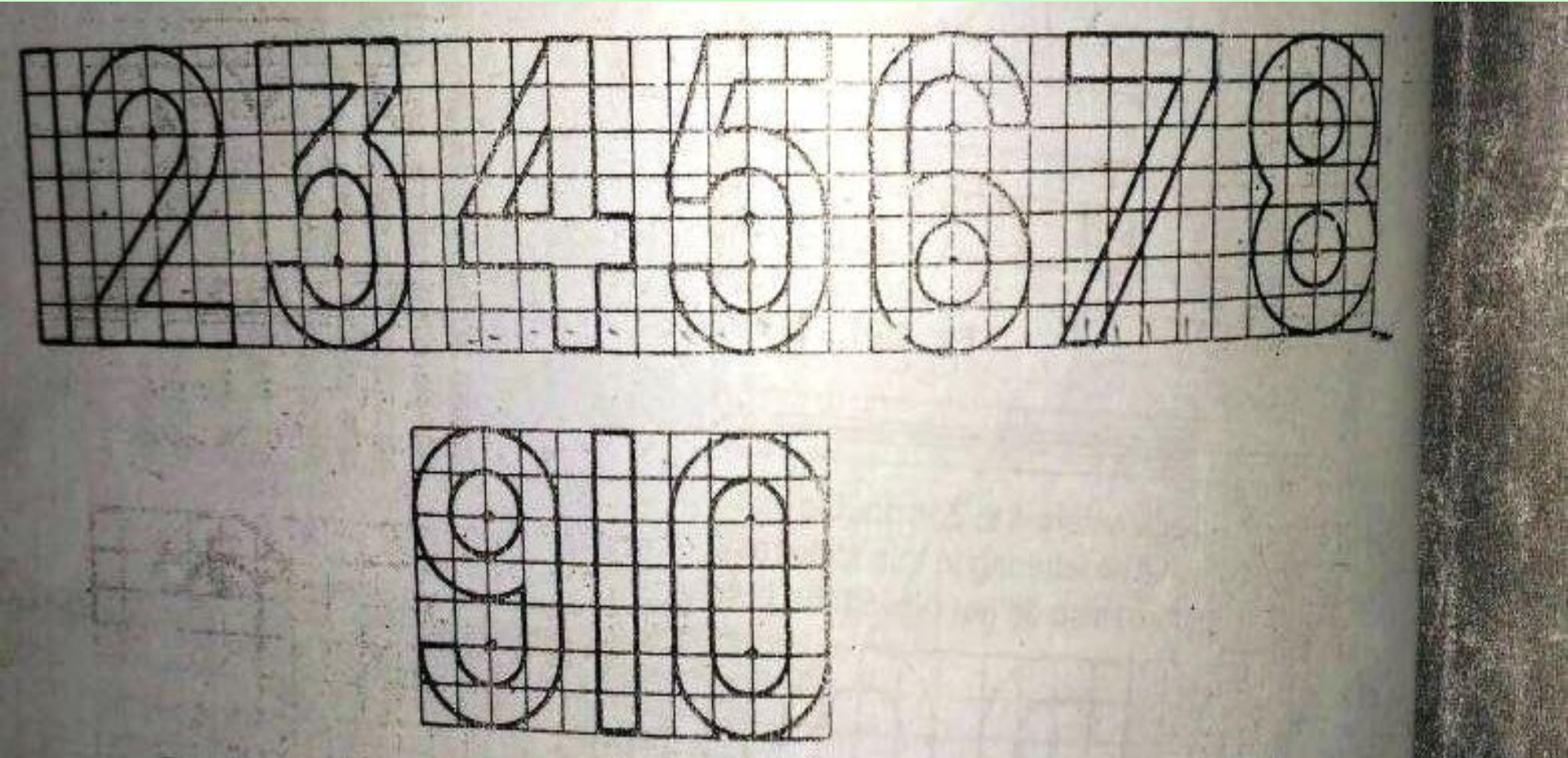


Fig. 4.22. Double stroke gothic lettering in the ratio 7 : 4 in the height of 30 mm

DOUBLE STROKE NUMERICS



Word Composition

- Space between the letters depends on the adjacent contour of the letters.


Non-uniform
spacing

DRAWING

The word 'DRAWING' is shown in a large, bold, black sans-serif font. Below the word, red L-shaped brackets are placed at the bottom of each letter to indicate the spacing between them. The spacing is non-uniform: there is a small gap between D and R, a medium gap between R and A, a small gap between A and W, a medium gap between W and I, a small gap between I and N, and a medium gap between N and G.

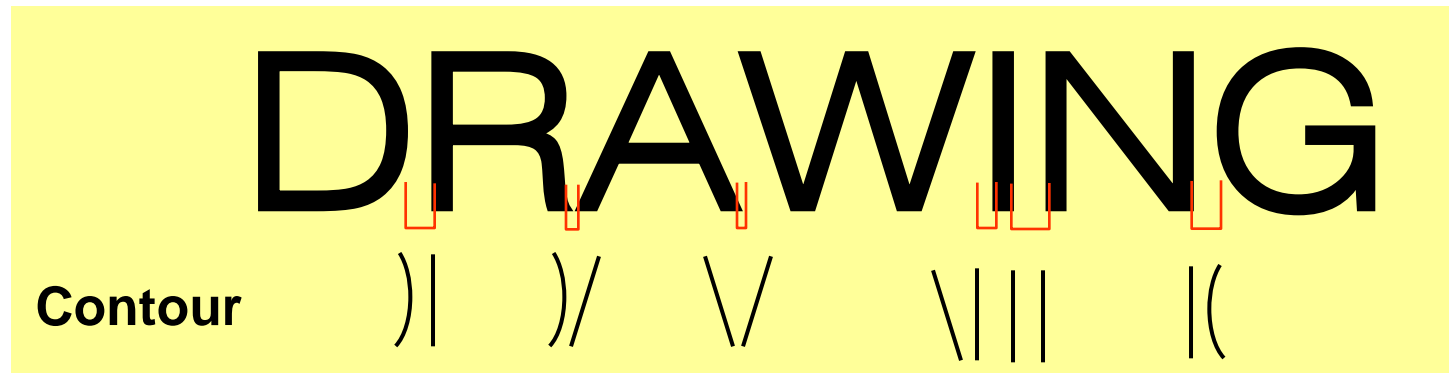
Uniform
spacing

DRAWING

The word 'DRAWING' is shown in a large, bold, black sans-serif font. Below the word, red L-shaped brackets are placed at the bottom of each letter to indicate the spacing between them. The spacing is uniform: the gaps between D and R, R and A, A and W, W and I, I and N, and N and G are all of approximately the same width.

- Word having non-uniform spacing is more readable.

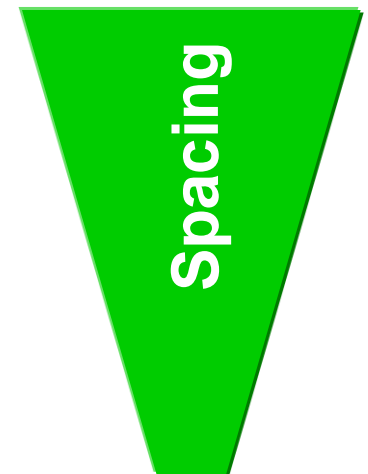
Word Composition



■ Contour can be denoted as “**straight**”, “**slant**” and “**curve**”.

■ Adjacent contour can be

1. straight-straight : II, IN, IM, IP etc.
2. straight-curve (or curve-straight) : IO, QR etc.
3. straight-slant (or slant-straight) : IV, IW etc.
4. curve-curve : OO, OG etc.
5. slant-curve (or curve-slant) : VO, WG, VC etc.
6. slant-slant : VW, VX etc.



Sentence Composition

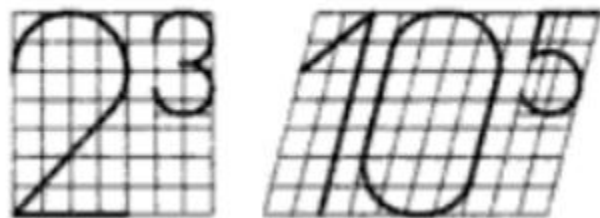
- Leave the space between words equal to the space requires for writing a letter “O”.

Example

ALL O DIMENSIONS O ARE O IN
MILLIMETERS O UNLESS
OTHERWISE O SPECIFIED.

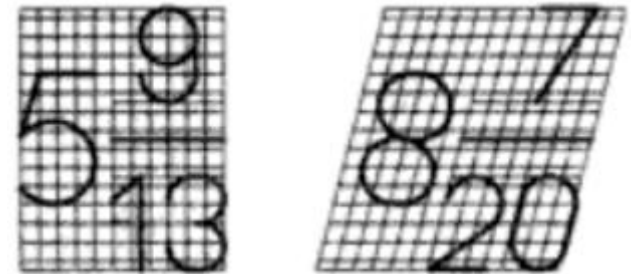


Inclined Capital Letters At 75°



The height of index is half of height of a base letter

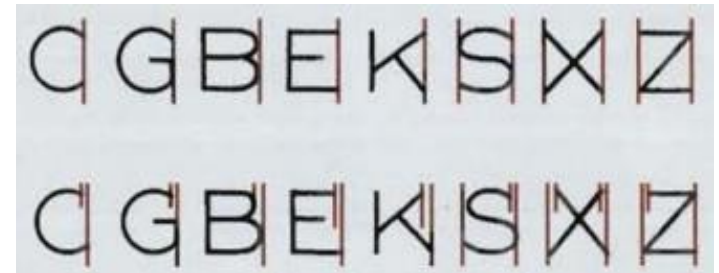
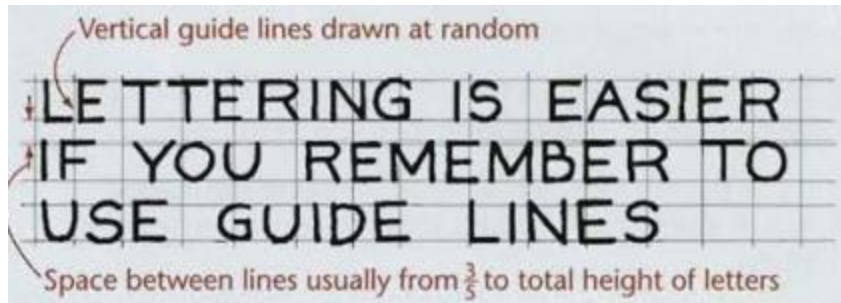
Fraction & Indices lettering



1. Height of numerator and denominator = $\frac{3}{4}$ th of height of non-fractioned number
2. Spacing between division bar and numerator or denominator should be such that the total height of fraction will be twice of that of non-fractioned number

Few Tips

If you put the central horizontal strokes of the letters B, E, F, and H at mid-height, they will appear to be below center. To overcome this optical illusion, draw the strokes B, E, F, and H slightly above the center as you letter, keeping letters uniform, as in the second example of fig(right below).



Use extremely light horizontal guidelines to keep letter height uniform as shown in Figure (left above). Do not use vertical guidelines to space the distance from one letter to the next within a word or sentence . This should be done by eye while lettering.

Some combinations, such as LT and VA, may have to be slightly closer than other letters to look correctly spaced. In some cases the width of a letter may be decreased slightly. In typesetting, pairs of letters that need to be spaced more closely to appear correctly are called kerned pairs.