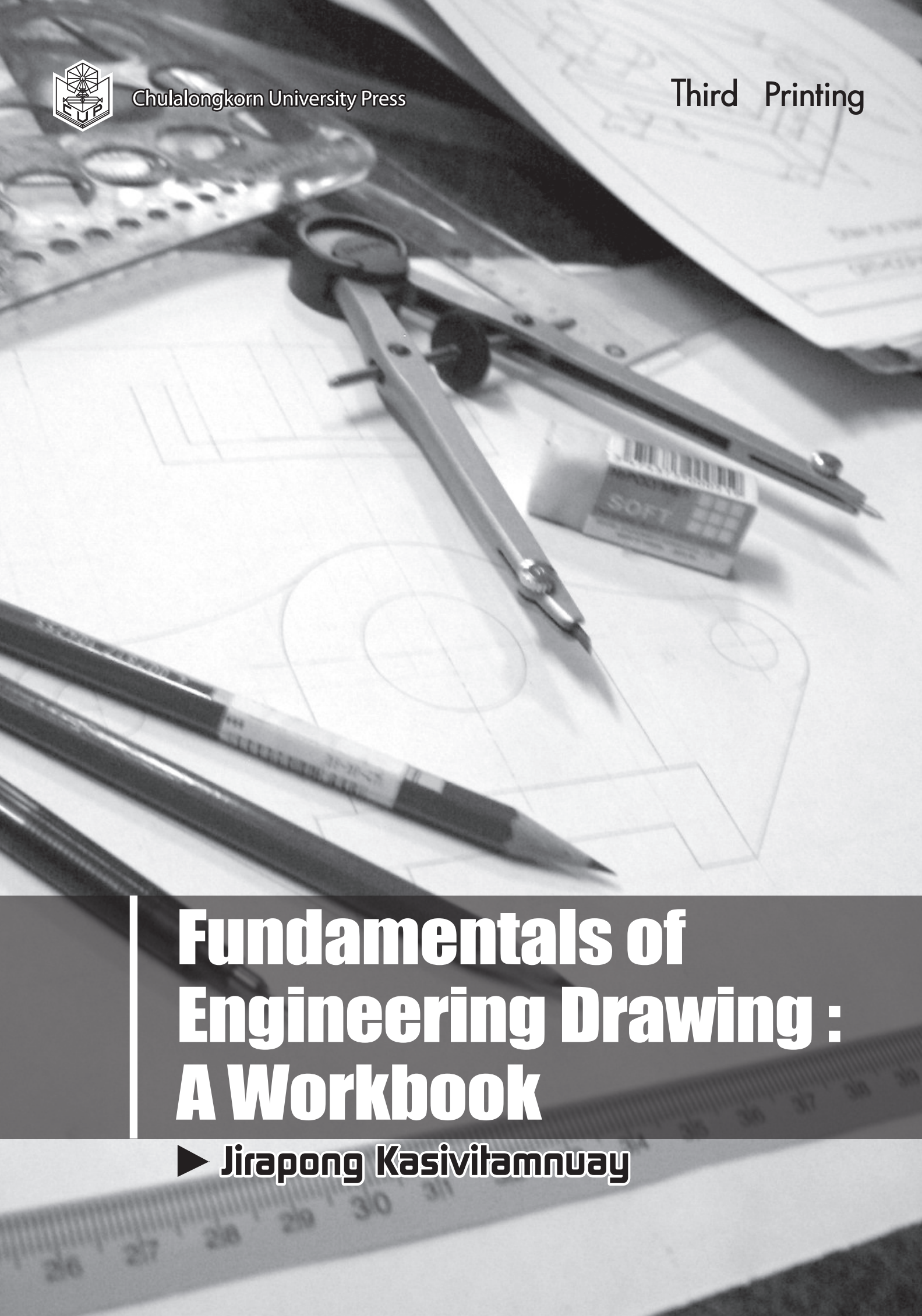

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Fundamentals of Engineering Drawing : A Workbook

► Jirapong Kasivitamnuay

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Preface

A workbook on engineering drawing was prepared to accompany “The Fundamentals of Engineering Drawing” textbook by Assoc. Prof. Staporn Suprichakorn. The aim of the book is to fulfill students’ skill in writing a working drawing, pictorial sketching and interpreting a drawing. Most of the problems are taken from several textbooks on engineering drawing; however, they are redrawn using format suggested in the textbook. This workbook contains 10 chapters:- *lettering*, *using traditional drawing instruments*, *applied geometry*, *orthographic writing*, *dimensioning*, *section view*, *threaded fasteners*, *assembly drawing*, *pictorial sketching* and *interpreting engineering drawing*.

Practicing can be done by using traditional drawing tools or freehand sketch. For the latter case, a sheet with rectangular grid is provided to help student to draw lines or curves. The problems are arranged on a page sequence that will facilitate the students who prefer to make a drawing on this workbook. However, students can work on a separated paper or on any commercially available CAD software.

The author has put a technical note on some problems. These notes aim to help students understand the difference between engineering drawing and artist picture. The engineering drawing has a purpose of transferring information from designer via graphic and word languages to the manufacturer clearly and concisely. Therefore, it should be drawn by following the common rules that can be understood worldwide.

The author would like to acknowledge Assoc. Prof. Dr. Chairote Kunpanitchakit, Assoc. Prof. Staporn Suprichakorn and Assist. Prof. Dr. Pairod Singhatanadgid for their kindly helps in correcting the manuscript, as well as giving many useful suggestions. The author would like to thank Mr. Nopparat Katkhaw for preparing and correcting several problems in the chapters on orthographic writing, section, and assembly drawing. Lastly, the author would like to acknowledge the mechanical engineering department for a financial support in publishing this book.

Jirapong Kasivitamnuay

October 2013

Contents

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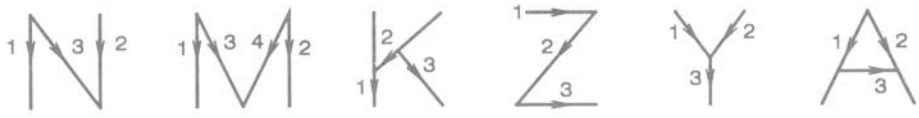
Lettering

Stroke sequences for vertical capital letters [9]

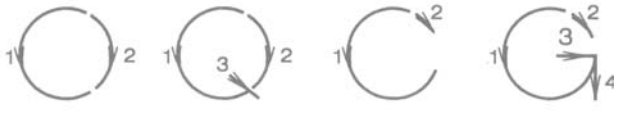
Group 1 : ILTFEH

Group 2 : VXW

Group 3 : NMKZYA



Group 4 : OQCG



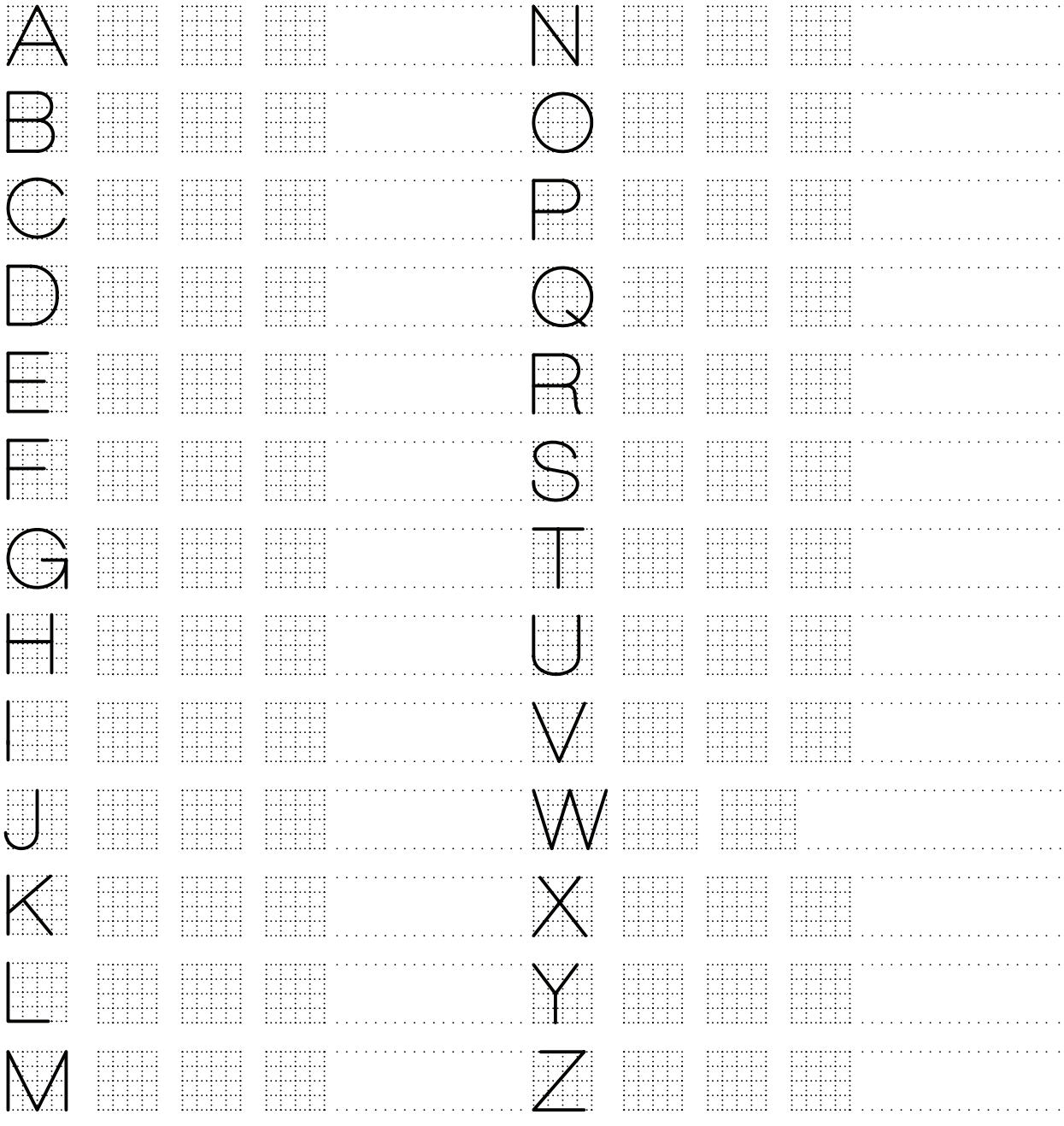
Group 5 : RJDUPB

Group 6 : S

Make a freehand lettering.

NOTES :

1. Write each letter at least 5 times.
2. Follow the stroke sequences as those suggested on the previous page.
3. Use a 2H or HB wooden pencil or mechanical pencil (lead size 0.5 mm).



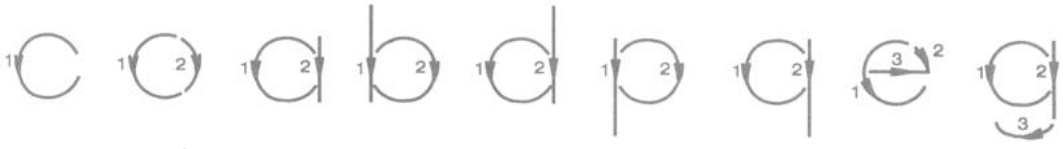
Stroke sequences for vertical lower-case letters [9]

Group 1 : li

Group 2 : vwxkz

Group 3 : jyfrt

Group 4 : coabdpqeg



Group 5 : nmhu

Group 6 : s

Make a freehand lettering.

NOTES :

1. Write each letter at least 5 times.
2. Follow the stroke sequences as those suggested on the previous page.
3. Use a 2H or HB wooden pencil or mechanical pencil (lead size 0.5 mm).

a n

b o

c p

d q

e r

f s

g t

h u

i v

j w

k x

l y

m z

Stroke sequences for vertical numeral and frequently-used symbols [9]

Group 1 : 4

Group 2 : 1, 7, 2, 5

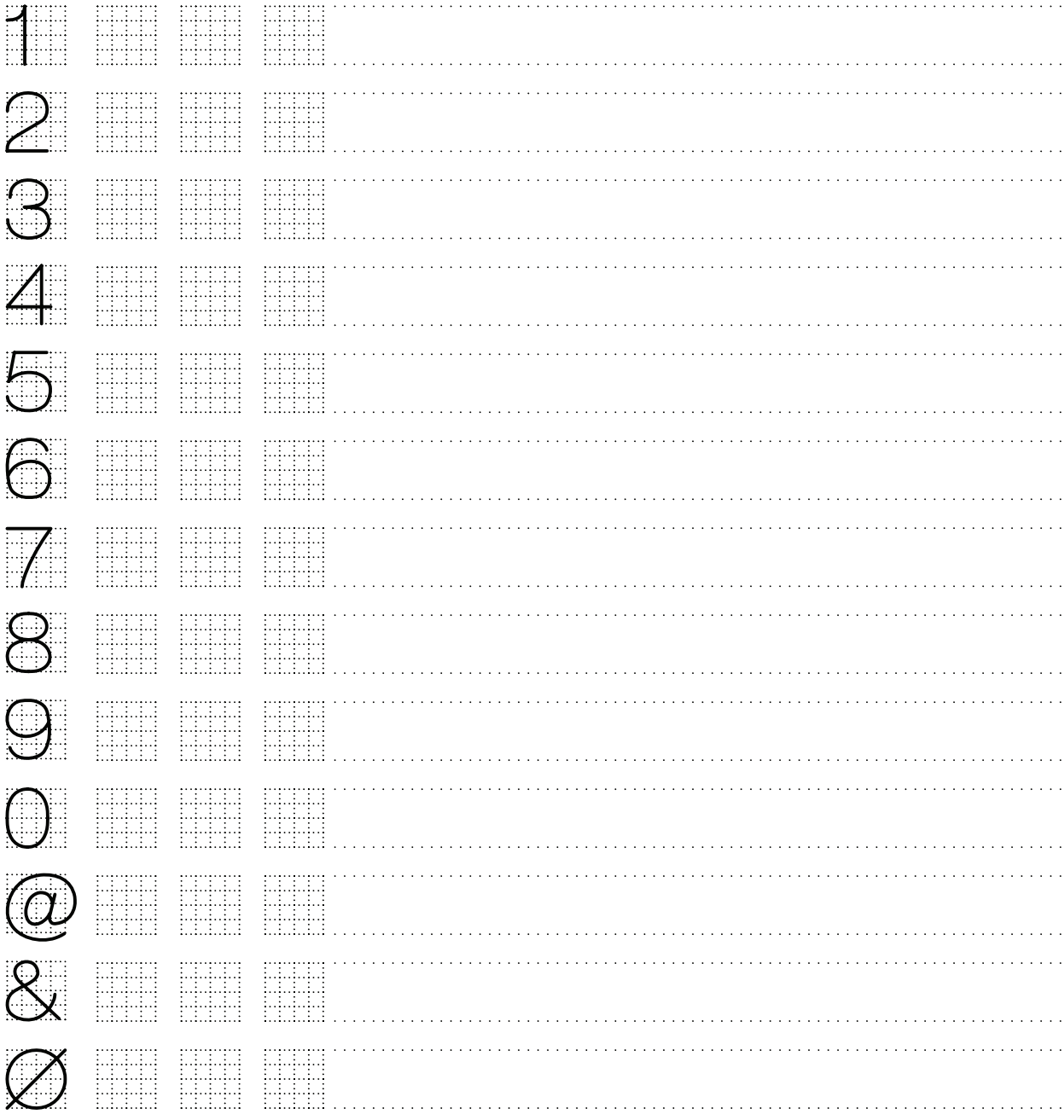
Group 3 : 0, 6, 9, 3, 8

Group 4 : &, @

Make a freehand lettering.

NOTES :

1. Write each letter at least 10 times.
2. Follow the stroke sequences as those suggested on the previous page.
3. Use a 2H or HB wooden pencil or mechanical pencil (lead size 0.5 mm).



Composition [9]

1. Words composition

Letters in words are written in uniformly spaced by keeping the area of backgrounds between letters approximately equal.

Example

2. Sentences composition

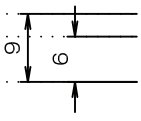
A phrase or a sentence is a composition of words spaced apart equally. Reference [9] recommends leaving a space equal to that for writing the letter “O”.

Example

Make a freehand lettering.

NOTES :
1. Use a 4H pencil for drawing the guide lines.
2. Use a 2H or HB pencil (lead size 0.5 mm) for writing the letters.

Design is the process of creating a product or system to satisfy a set of requirements that has multiple solutions by using any available resources.



Make a freehand lettering.

(Problem is taken from "The Fundamentals of Engineering Drawing" by Sataporn)

NOTES :

1. Use a 4H pencil for drawing the guide lines.
2. Use a 2H or HB pencil (lead size 0.5 mm) for writing the letters.

Engineering drawing was a product of industrial revolution. Its origin depended on the emergence of new forms of manufacture and organisation. Its development depended on their success and consolidation. Although it is possible to trace roots back to the traditions of scientific and technical illustration which existed in medieval times, it was a distinctive form of production-the division of labor-that made engineering drawing essential. It is usual to include certain medieval manuscript illustrations, works by Renaissance military engineers, and of course, Leonardo da Vinci's notebooks in the 'prehistory' of engineering.