

Lecture 10

ORTHOGRAPHIC
PROJECTIONS
:: DIMENSIONING



TA 101 : Engineering Graphics

2007-08 Semester II

January – May 2008

OUTLINE

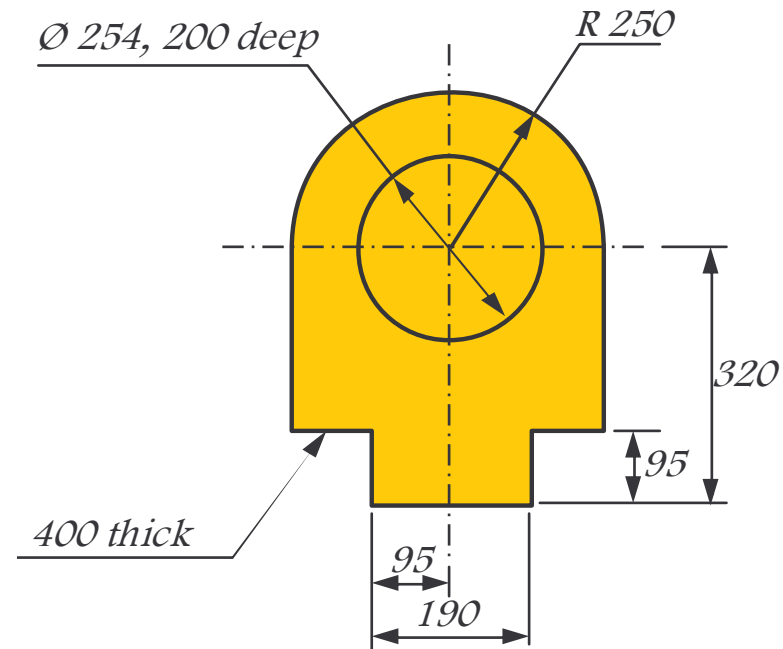
- Philosophy behind dimensioning
- Styles of dimensioning
- Some examples



PHILOSOPHY

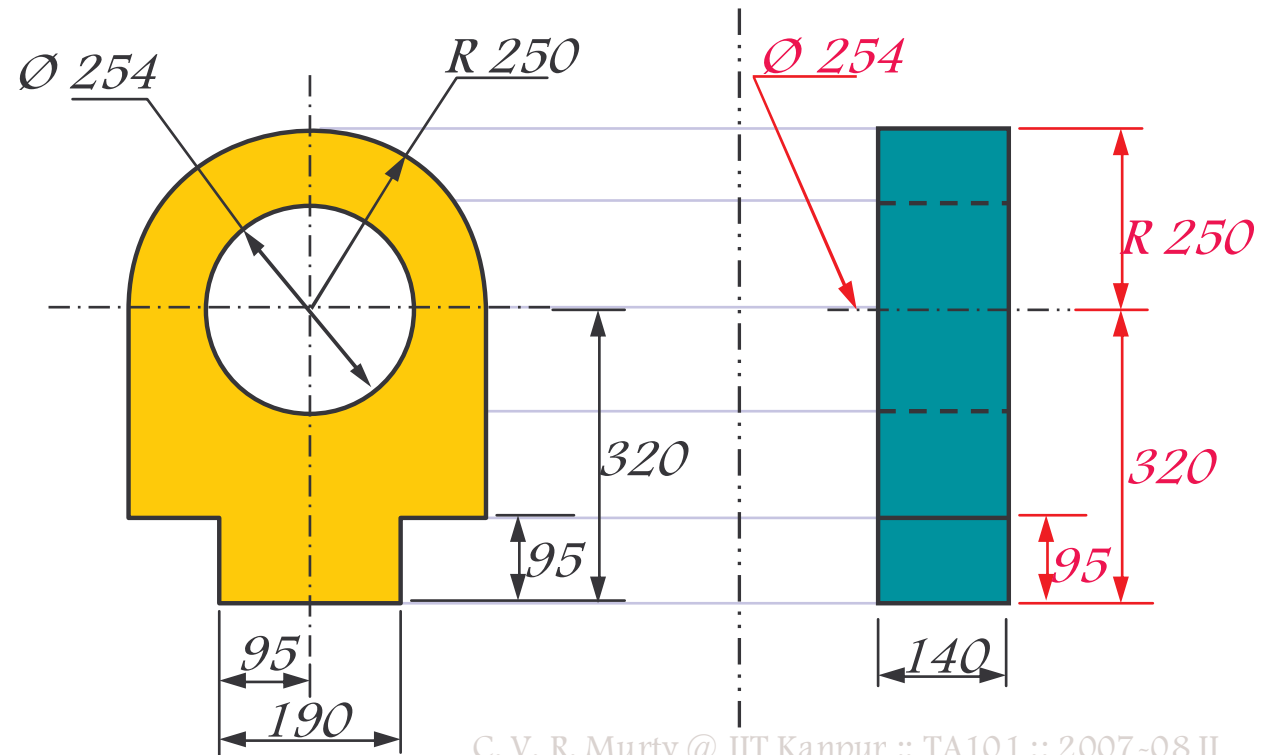
DIMENSIONING

- Four aspects of dimensioning
 - Lines
 - Symbols
 - Figures
 - Notes



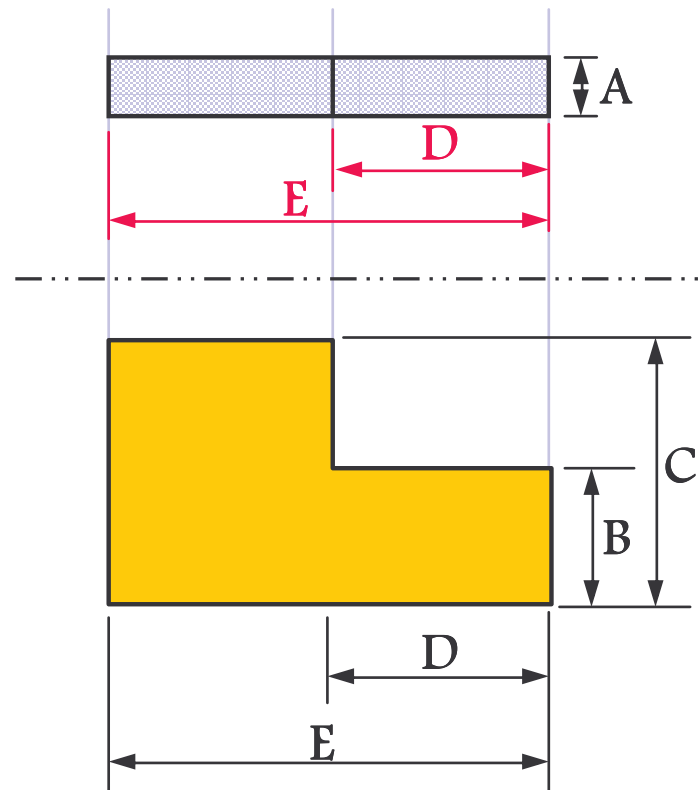
PRINCIPLES

- Basic principles
 - Show dimensions in the view that shows the relevant features



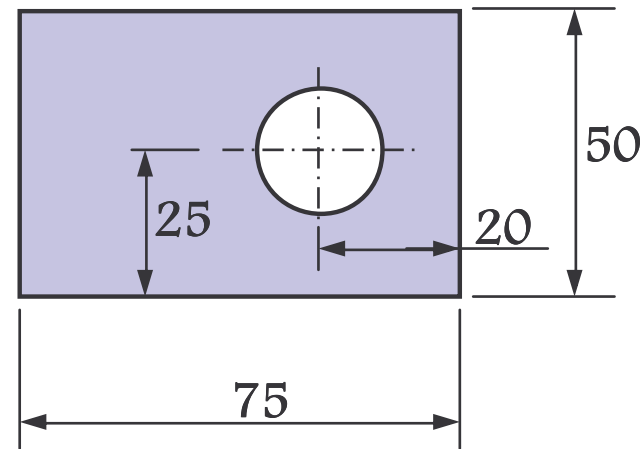
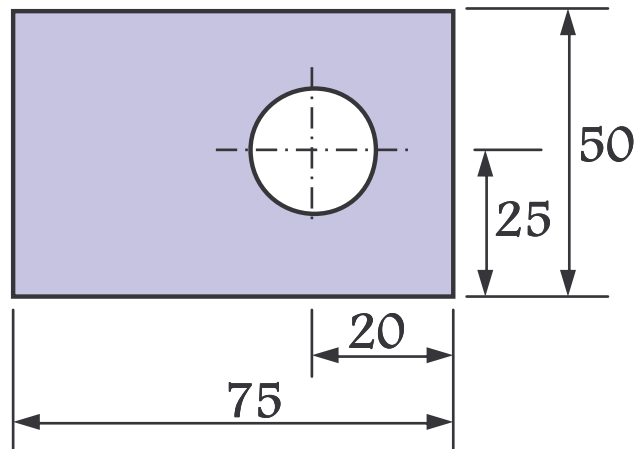
PRINCIPLES

- Basic principles...
 - Need not show dimensions marked in one view in the other



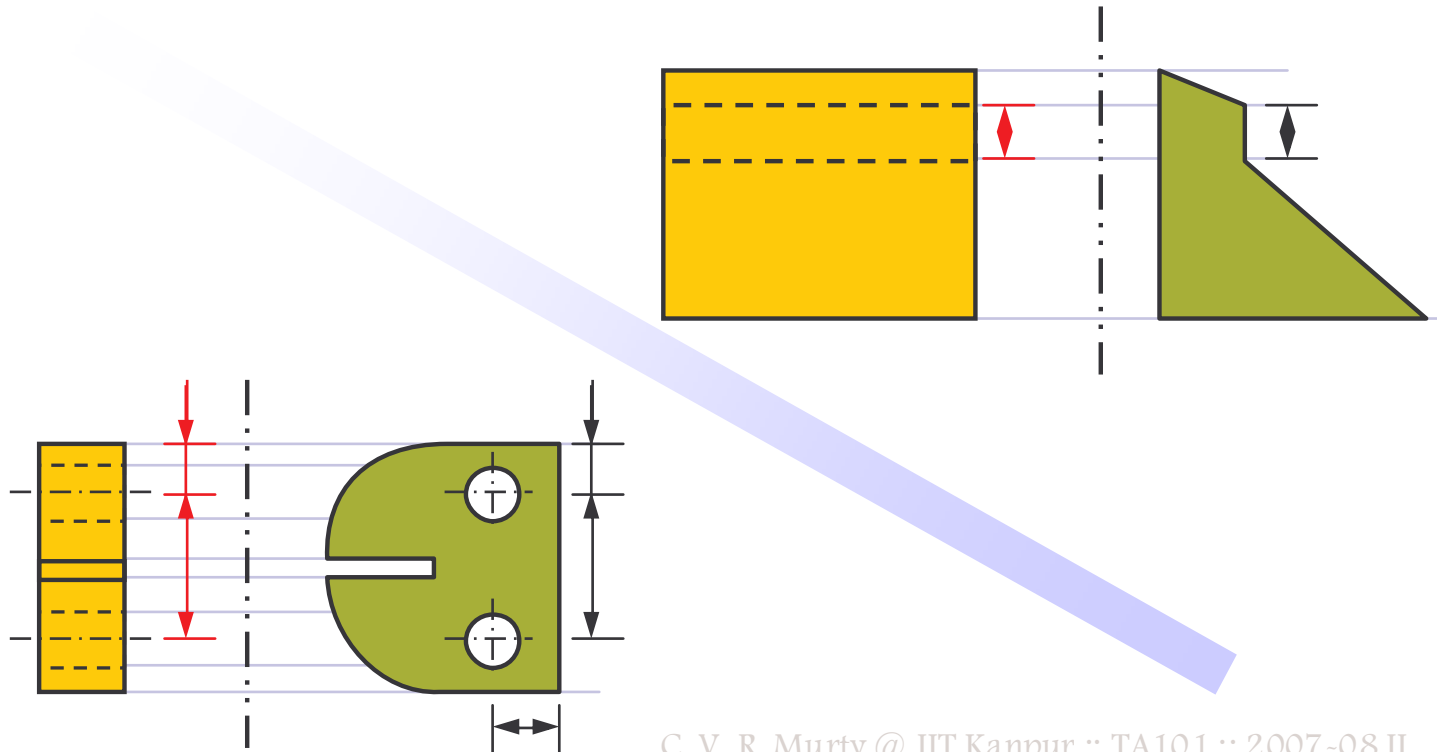
PRINCIPLES

- Basic principles...
 - Place dimensions outside the view, as far as possible



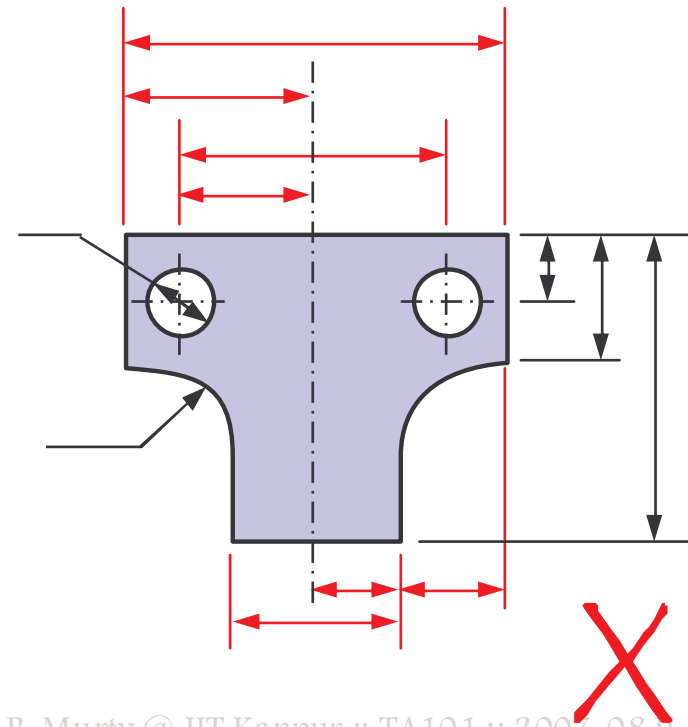
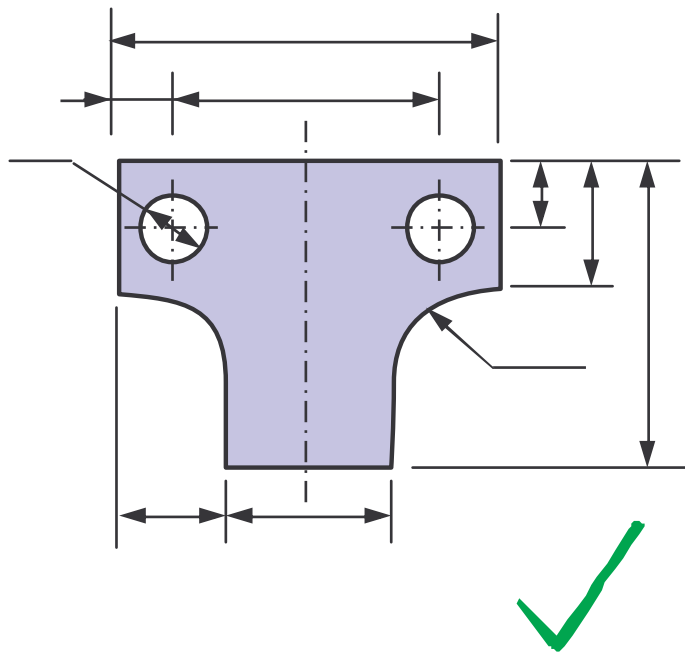
PRINCIPLES

- Basic principles...
 - Take dimensions out from visible outlines than from hidden lines



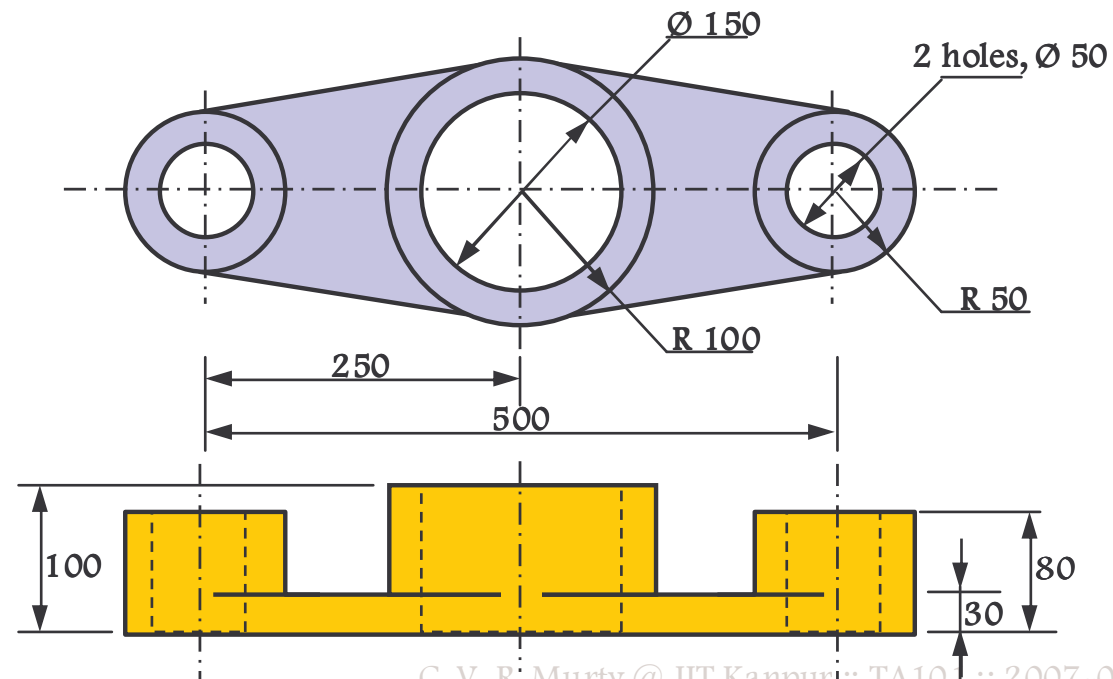
PRINCIPLES

- Basic principles...
 - Give dimension from
 - Baseline / finished surface / centerline of a hole



PRINCIPLES

- Basic principles...
 - Give dimension from
 - Baseline / finished surface / centerline of a hole
 - ❑ Except when centerline passes through center of hole




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INTENTION

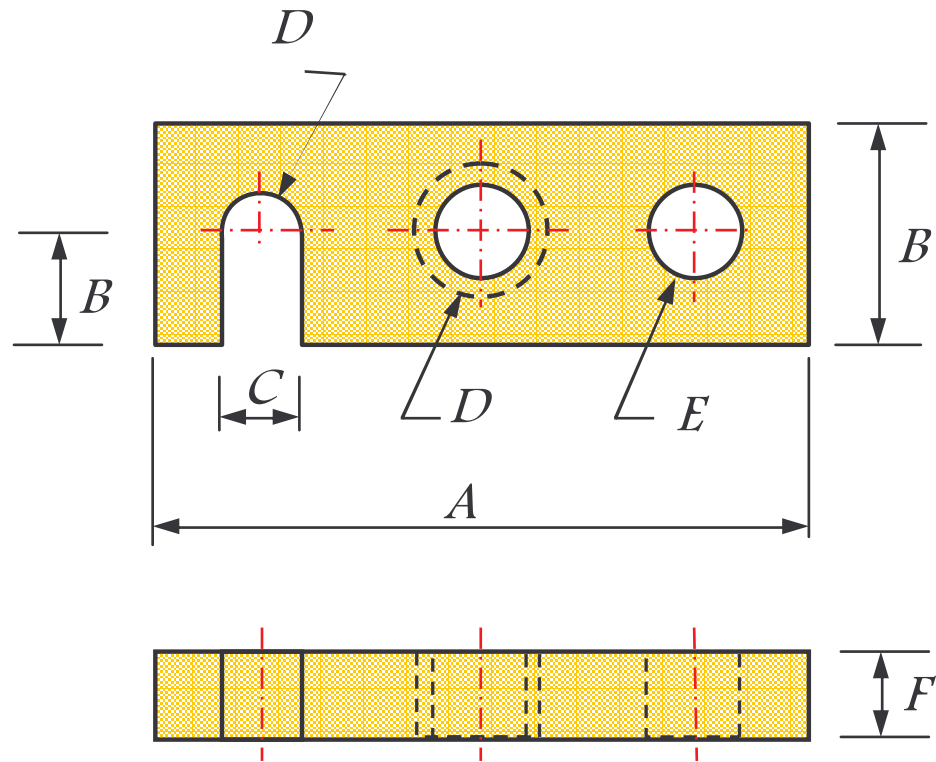
- Outcome
 - Simple to draw
 - Simple, clean & legible drawing
 - Appropriate number of dimensions
 - Not too many
 - Not too few
 - Easy to manufacture
 - Easy to read the drawing by the machinist/builder/...



TYPES & STYLES

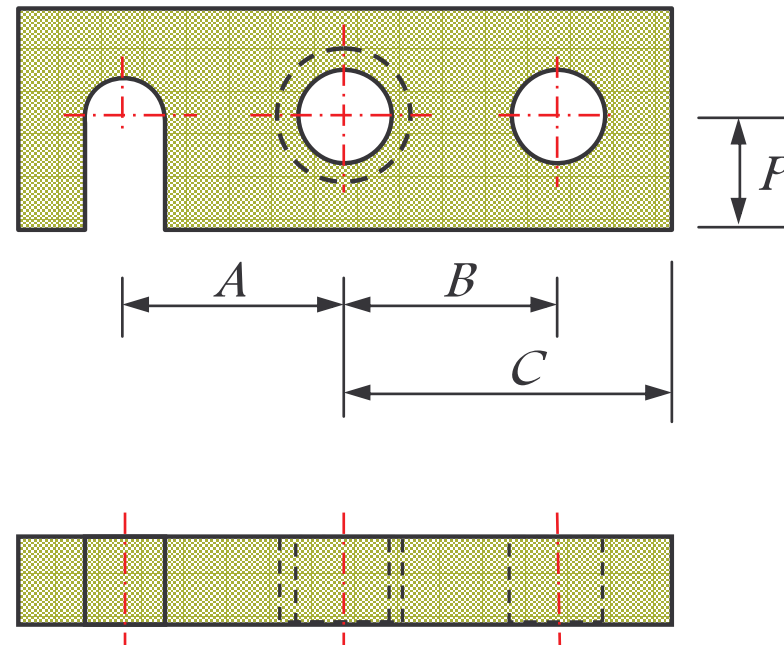
TYPES OF DIMENSIONS

- Two types
 - Size
 - Location



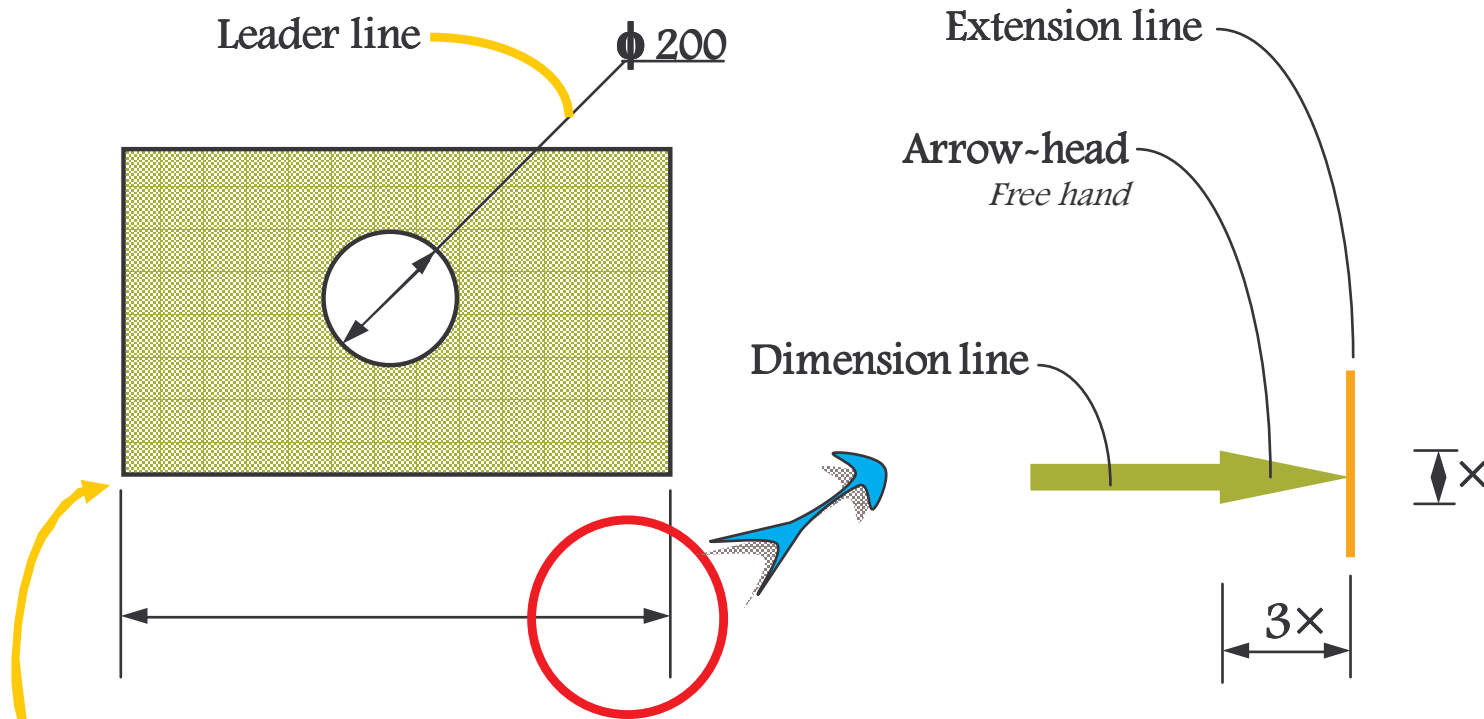
TYPES OF DIMENSIONS

- Two types
 - Size
 - Location



EXECUTION OF DIMENSIONING

- Components of dimensioning lines



x = 3mm for usual drawings
= 4-5mm for larger drawings

EXECUTION OF DIMENSIONING

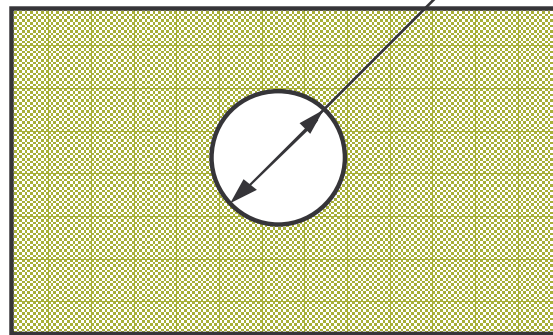
- Components of dimensioning lines...

Dimension Symbol

ϕ 200

Dimension Figure

Leader line



(a) Straight lines

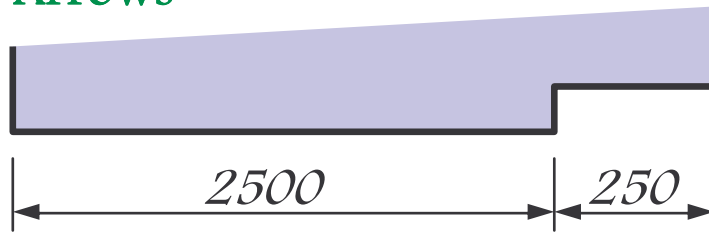
(b) Angle $> 30^\circ$; $\neq 0^\circ$ or 90° ; 30° , 45° or 60° preferred

(c) Drawn radial

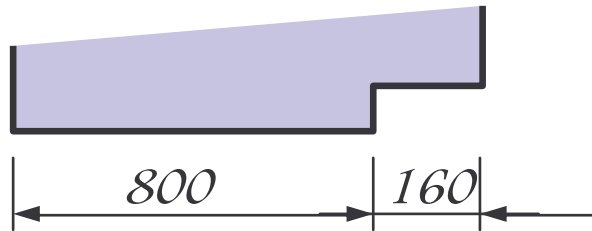
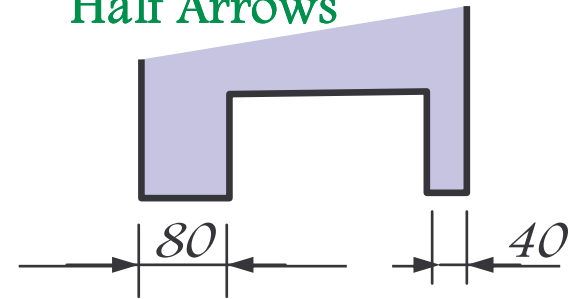
DIMENSIONING A LENGTH

- Depending on available space

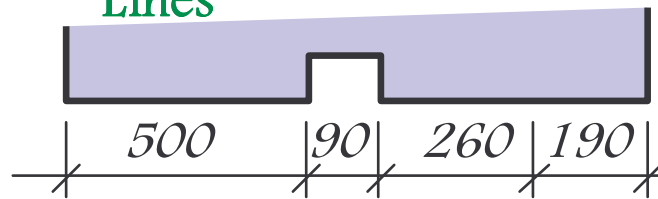
Arrows



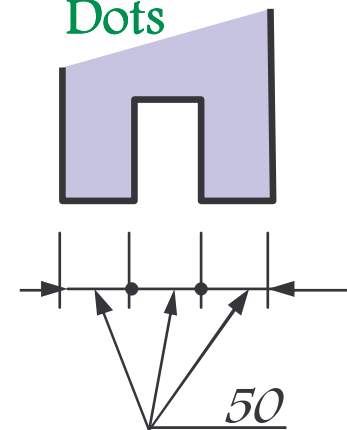
Half Arrows



Lines

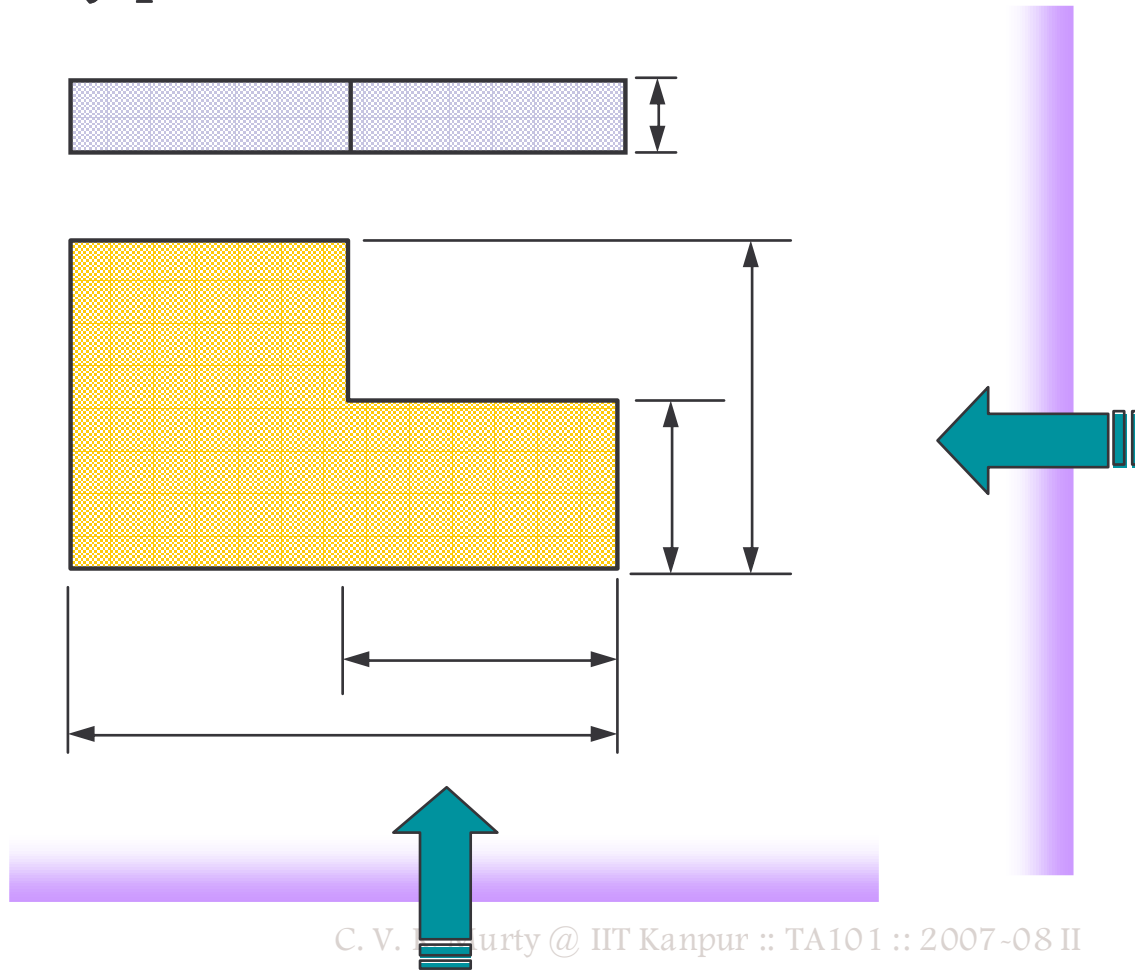


Dots



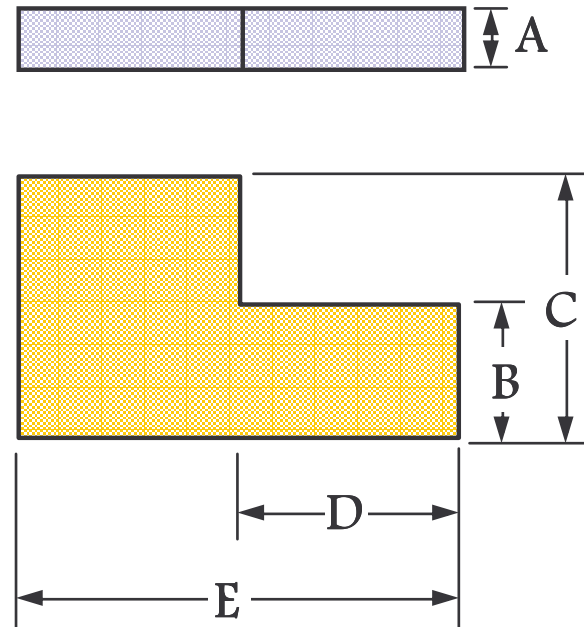
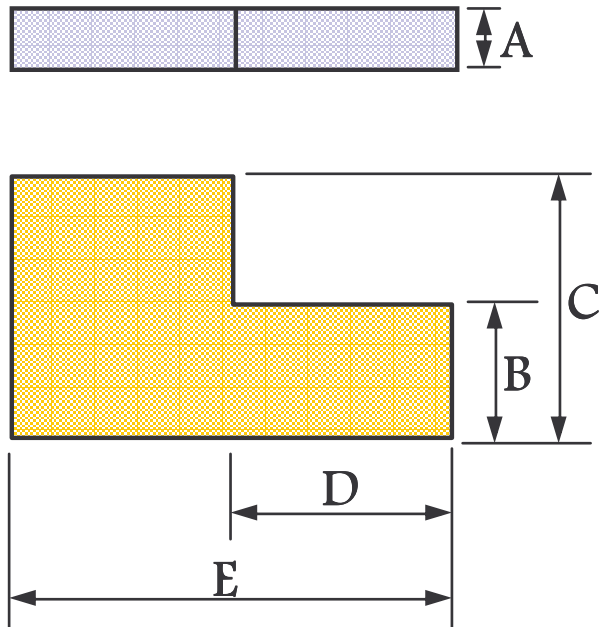
PLACING OF DIMENSIONING

- Two sides only preferable



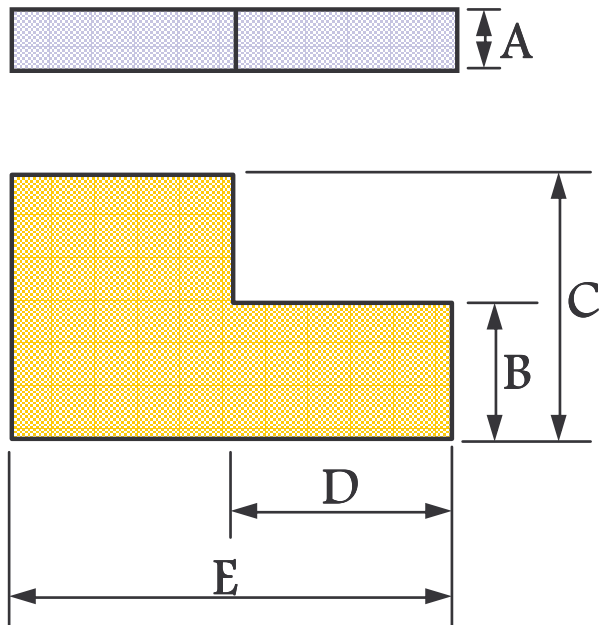
PLACING OF DIMENSIONING

- Arrow and text

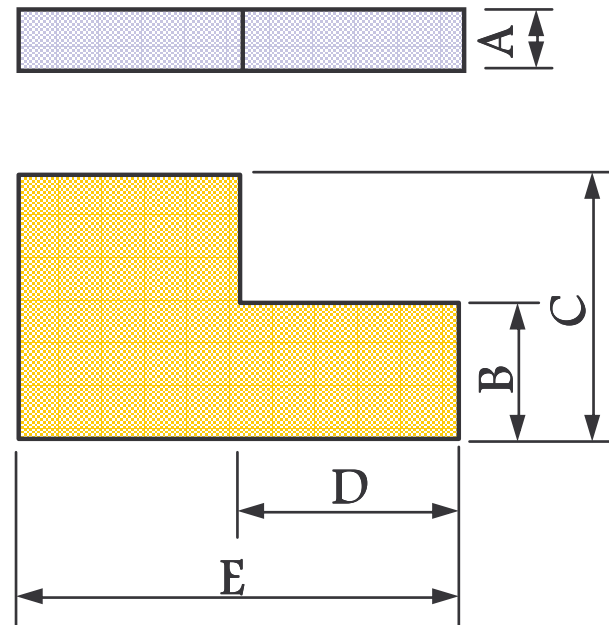


PLACING OF DIMENSIONING

- Orientation of dimensioning text



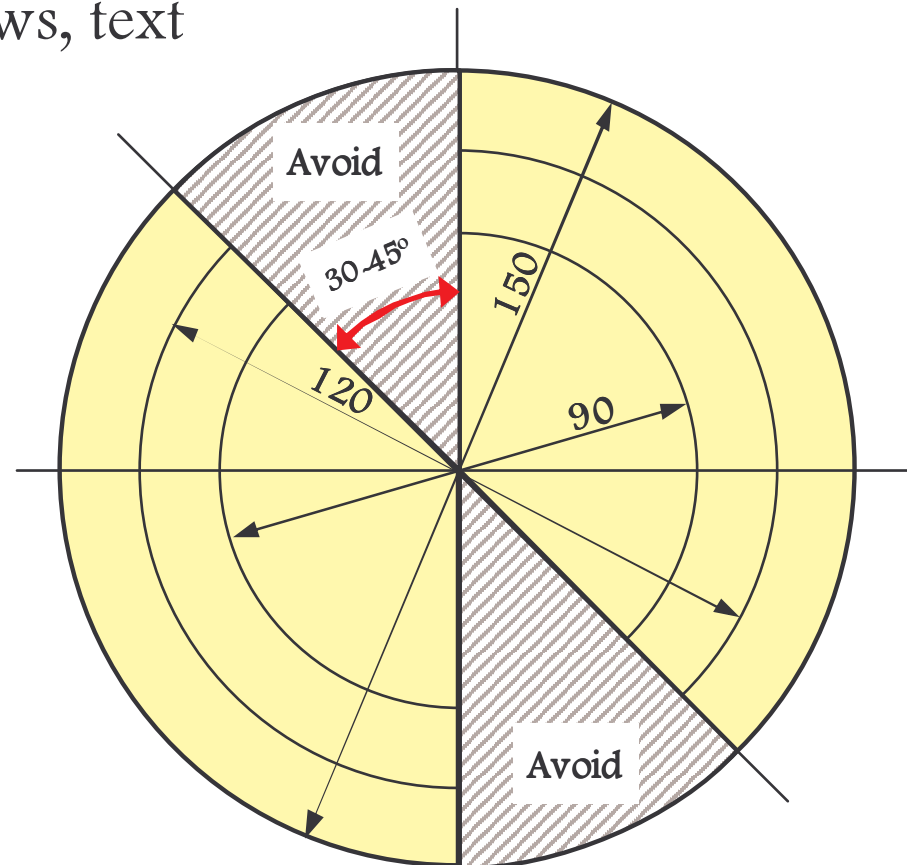
Unidirectional



Aligned

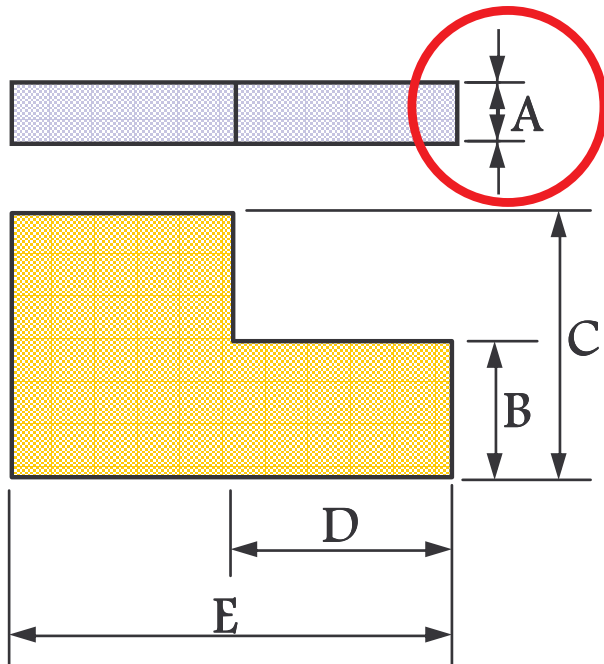
PLACING OF DIMENSIONING

- Zones for allowed alignments
 - Leader lines, Arrows, text

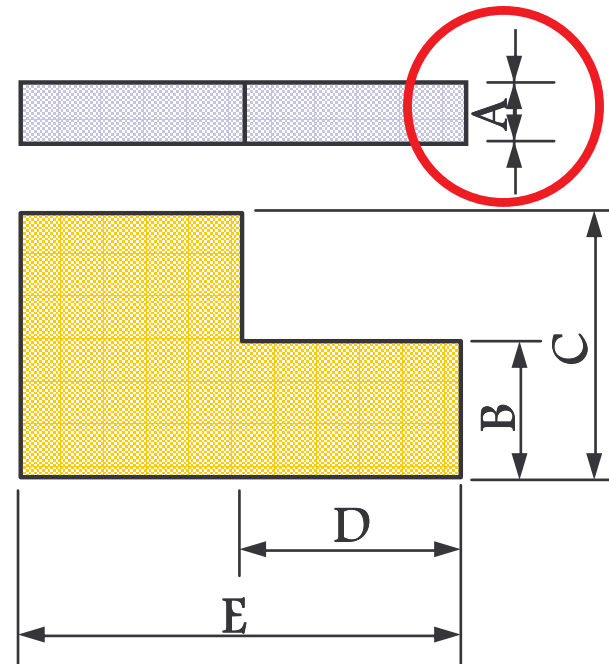


PLACING OF DIMENSIONING

- Narrow spaces



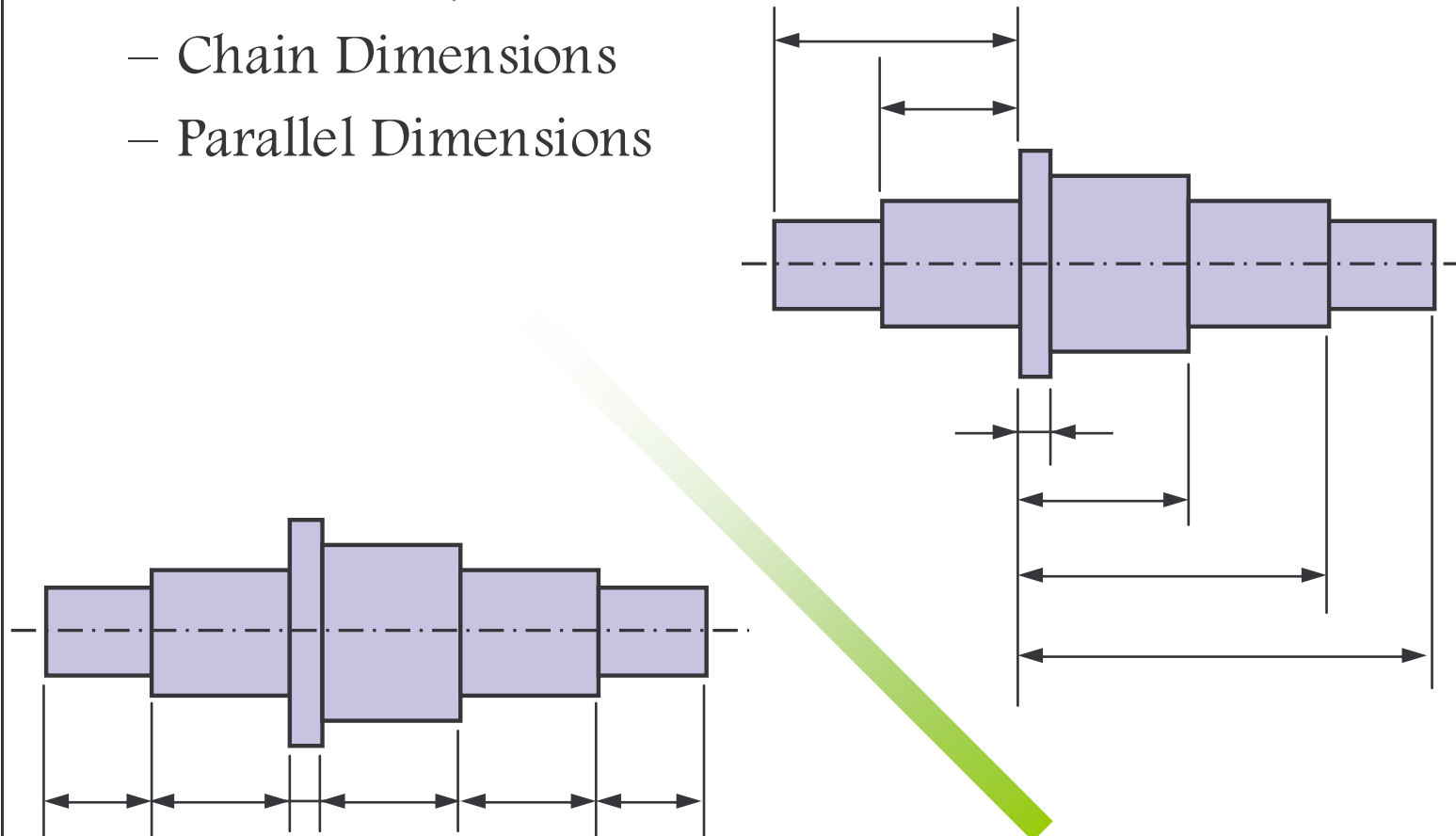
Unidirectional



Aligned

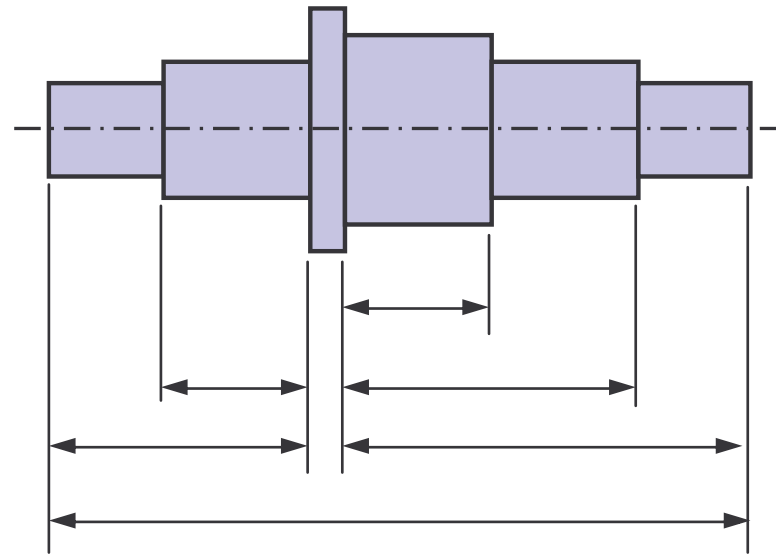
ARRANGEMENT OF DIMENSIONS

- Two basic styles
 - Chain Dimensions
 - Parallel Dimensions



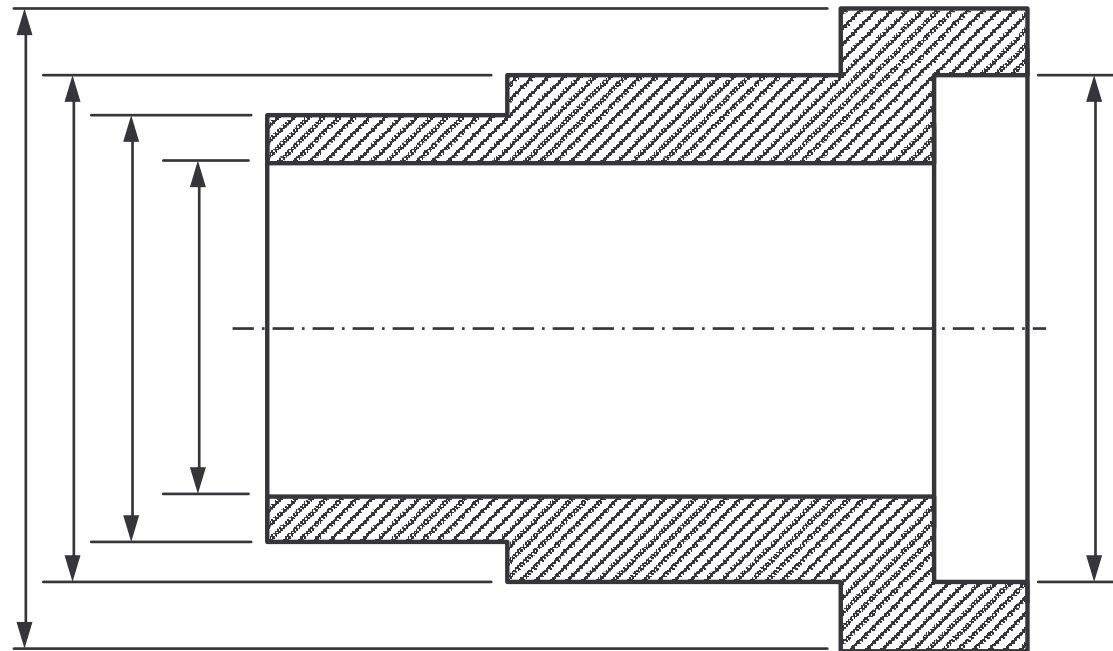
ARRANGEMENT OF DIMENSIONS

- Combined style



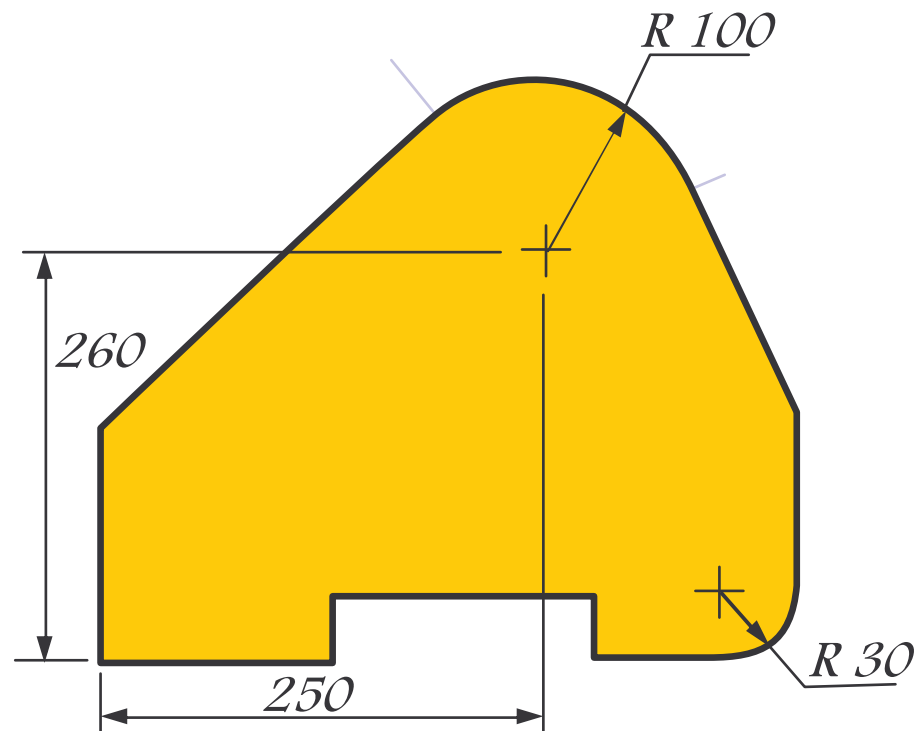
DIMENSIONING DIAMETERS

- Most appropriate view
 - Ensure clarity
 - Precede with “ ϕ ” to distinguish from length



DIMENSIONING RADII

- Arcs of circles
 - Precede with “R” to distinguish from length

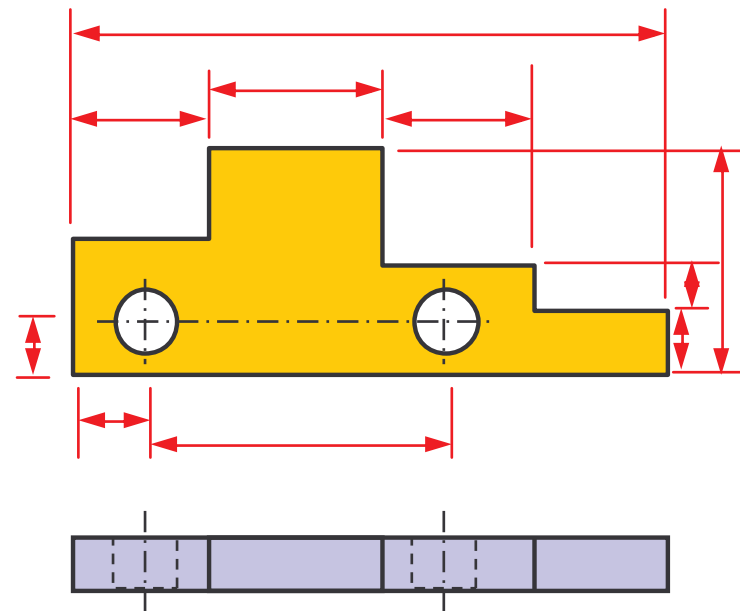
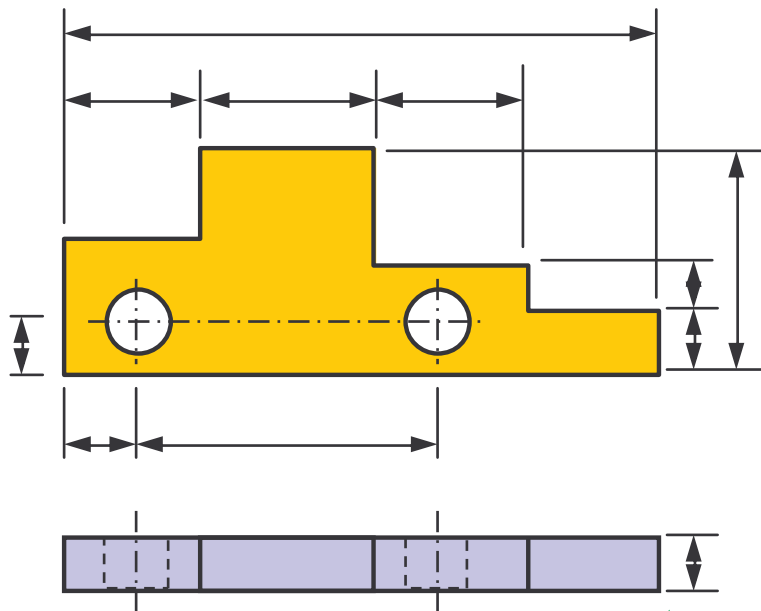




EXAMPLES

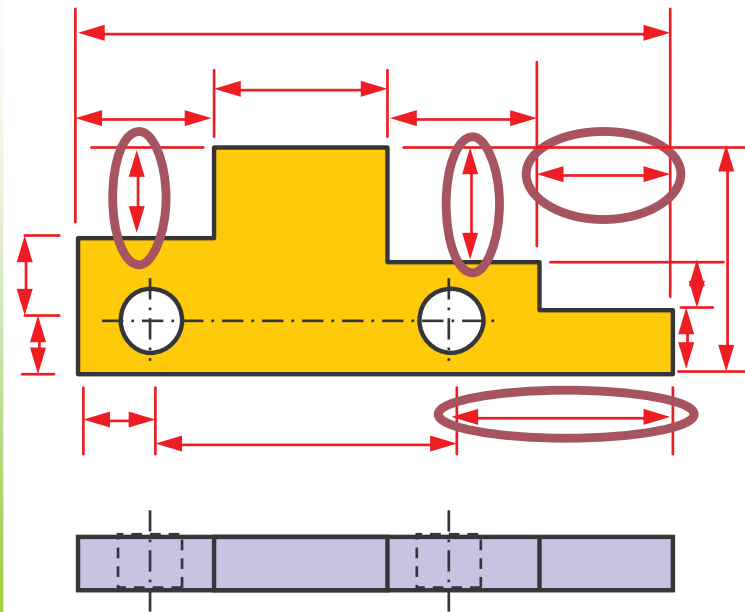
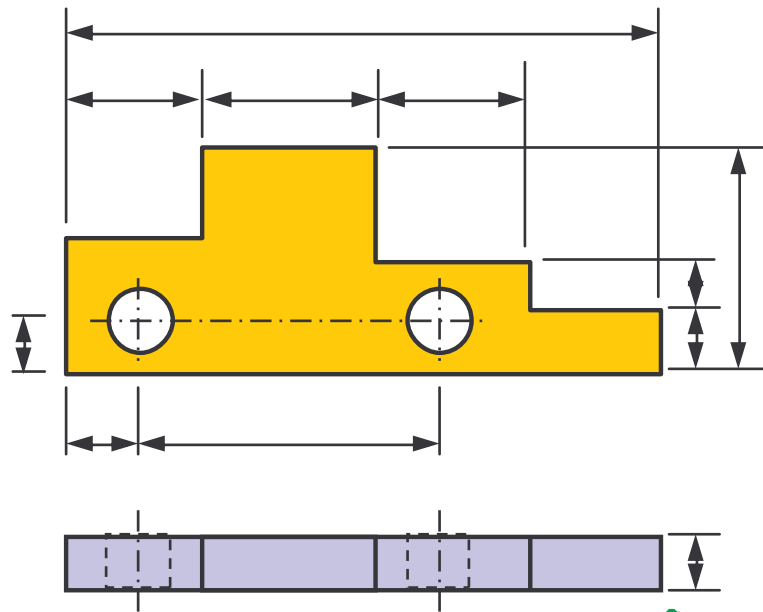
ARRANGEMENT OF DIMENSIONS

- Two styles
 - Chain Dimensions
 - Parallel Dimensions



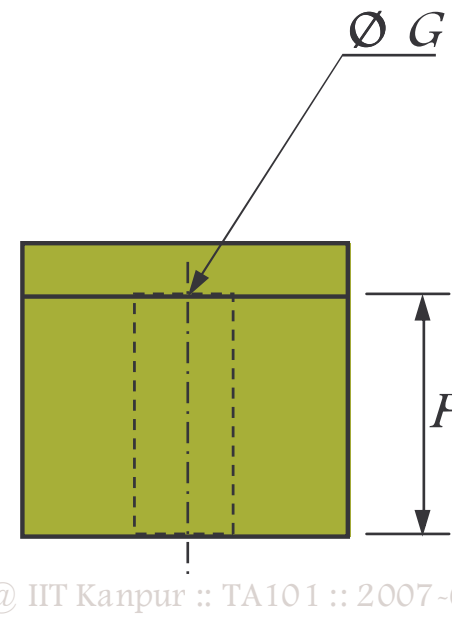
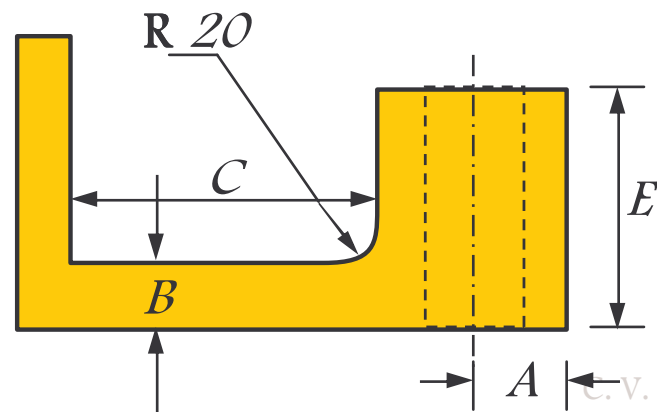
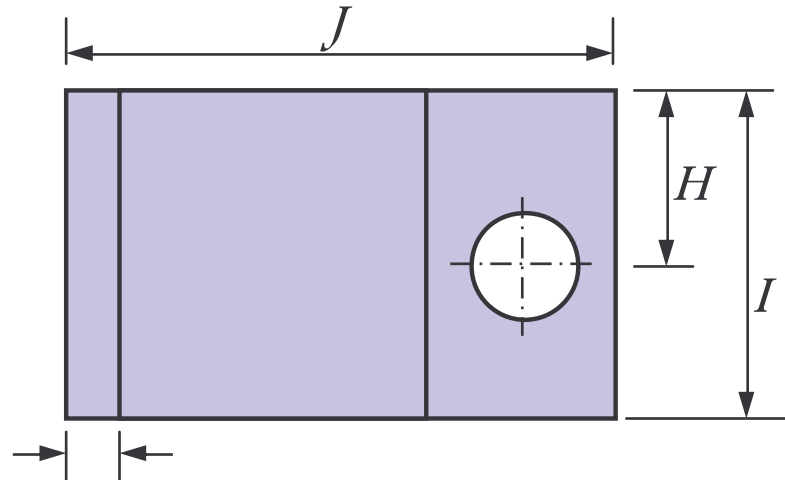
OVER-DIMENSIONING

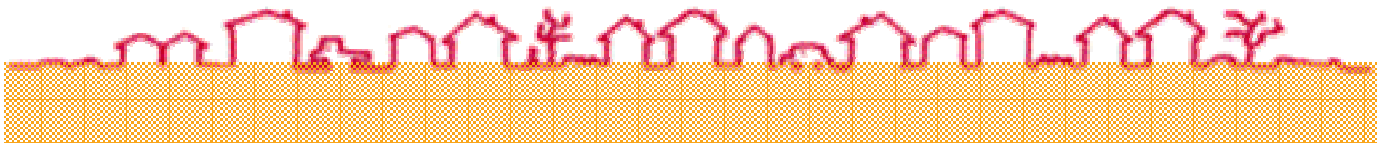
- Do not provide too many dimensions



POSITIONING

- Choose appropriate location





Have a Great Day!!