Lecture 10

ORTHOGRAPHIC PROJECTIONS

:: DIMENSIONING

TA 101 : Engineering Graphics

2007-08 Semester II

January – May 2008

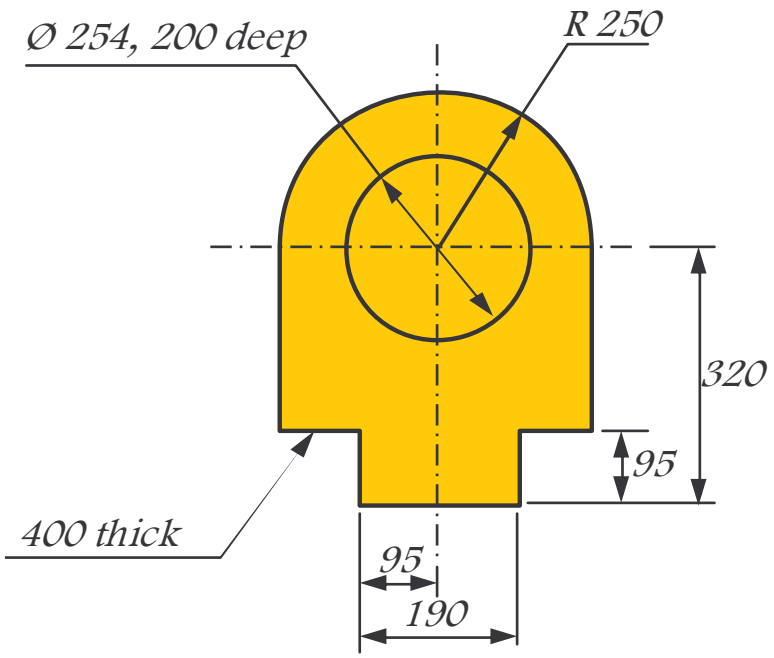
OUTLINE

- Philosophy behind dimensioning
- Styles of dimensioning
- Some examples

PHILOSOPHY

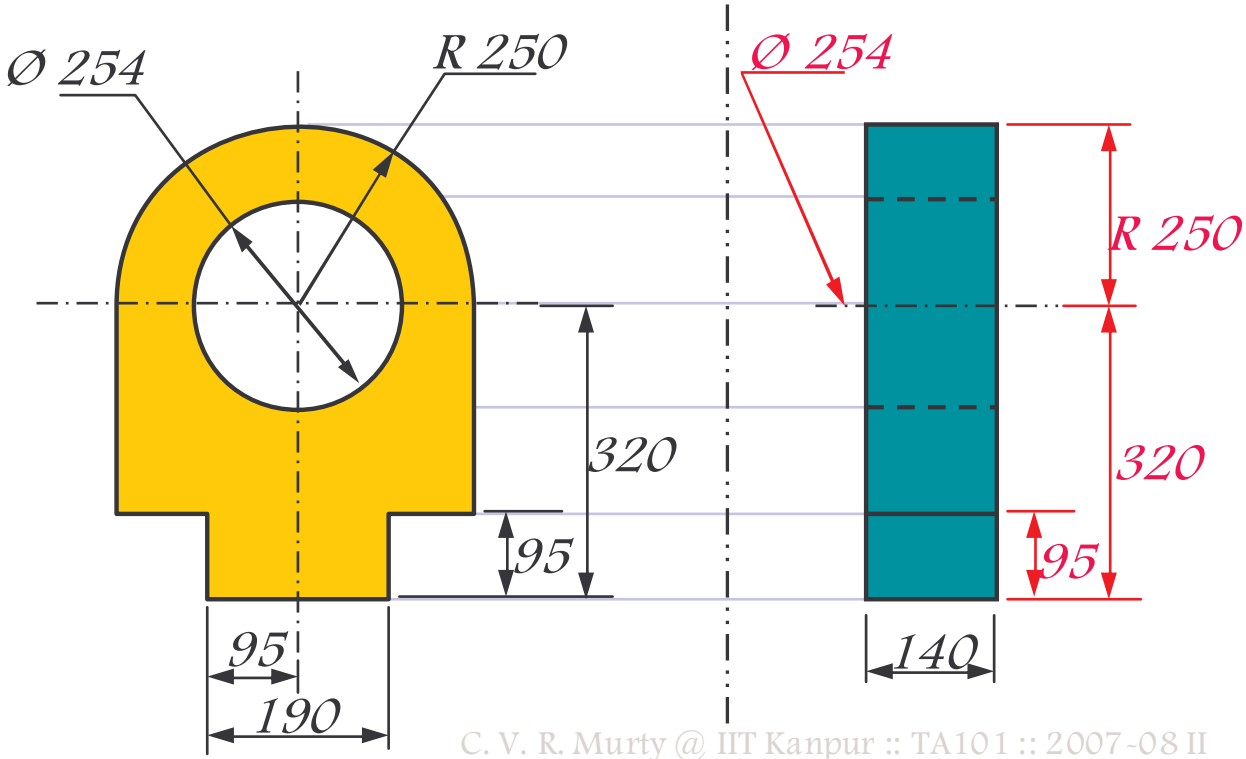
DIMENSIONING

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

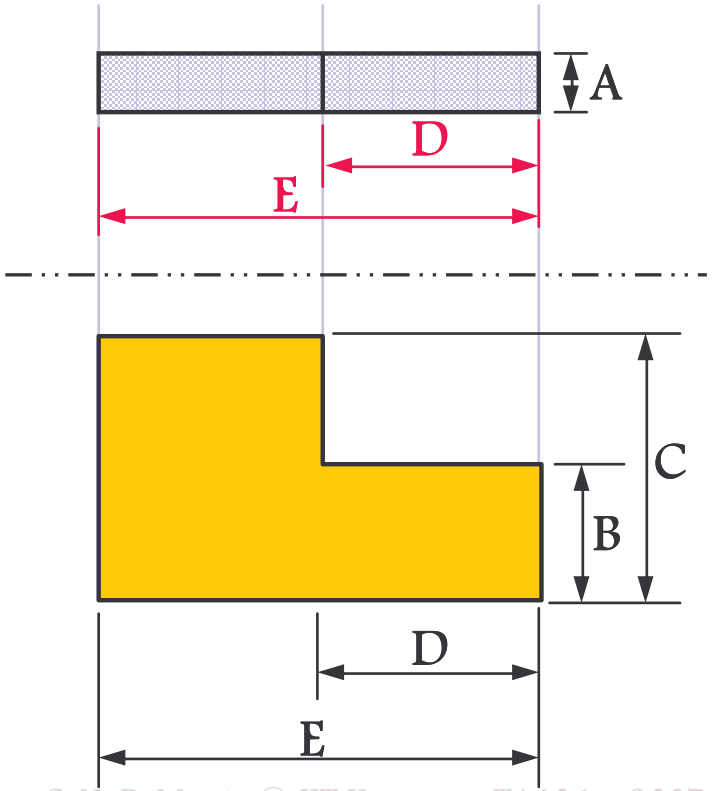


PRINCIPLES

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

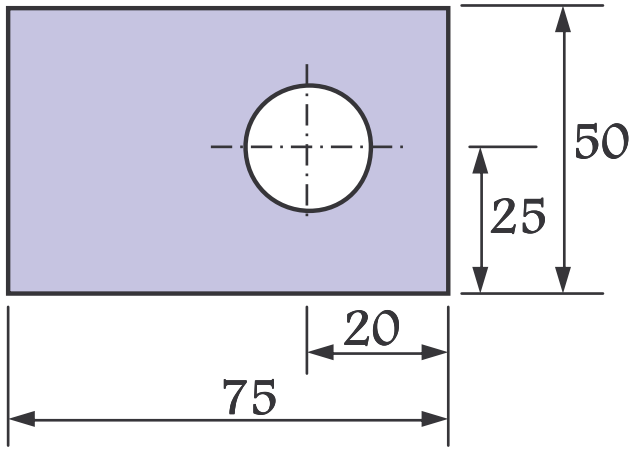


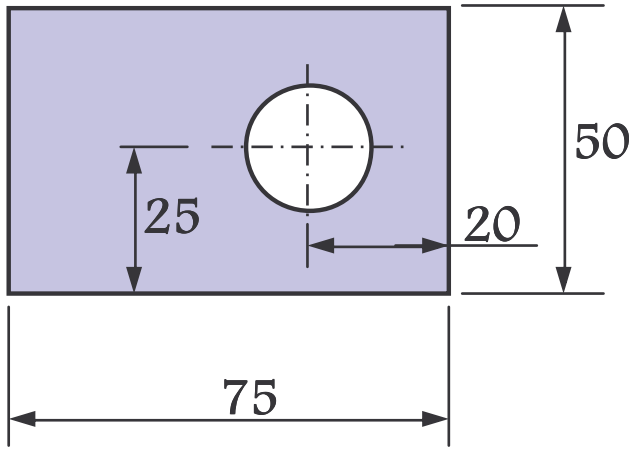
- Basic principles…
  - Need not show dimensions marked in one view in the other



PRINCIPLES

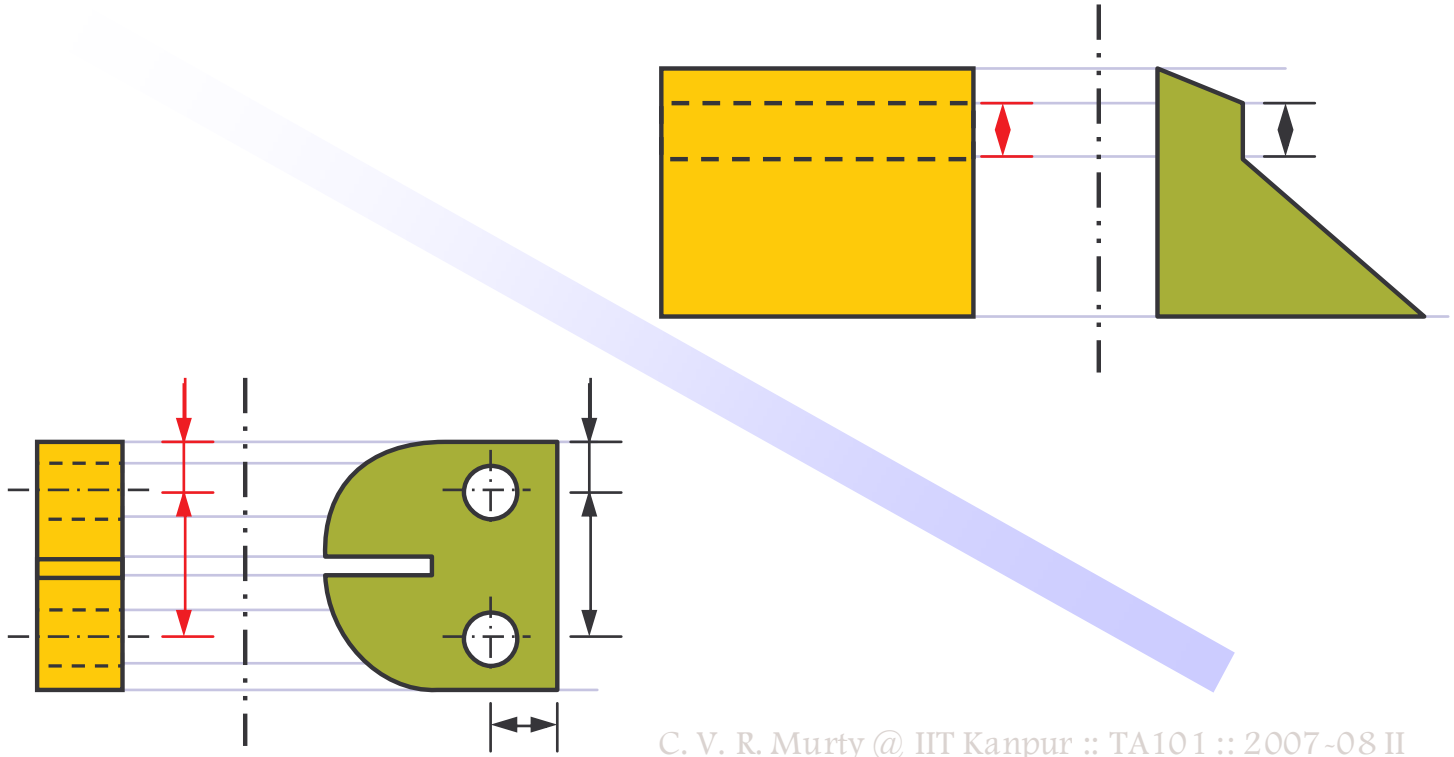
- Basic principles…
  - Place dimensions outside the view, as far as possible





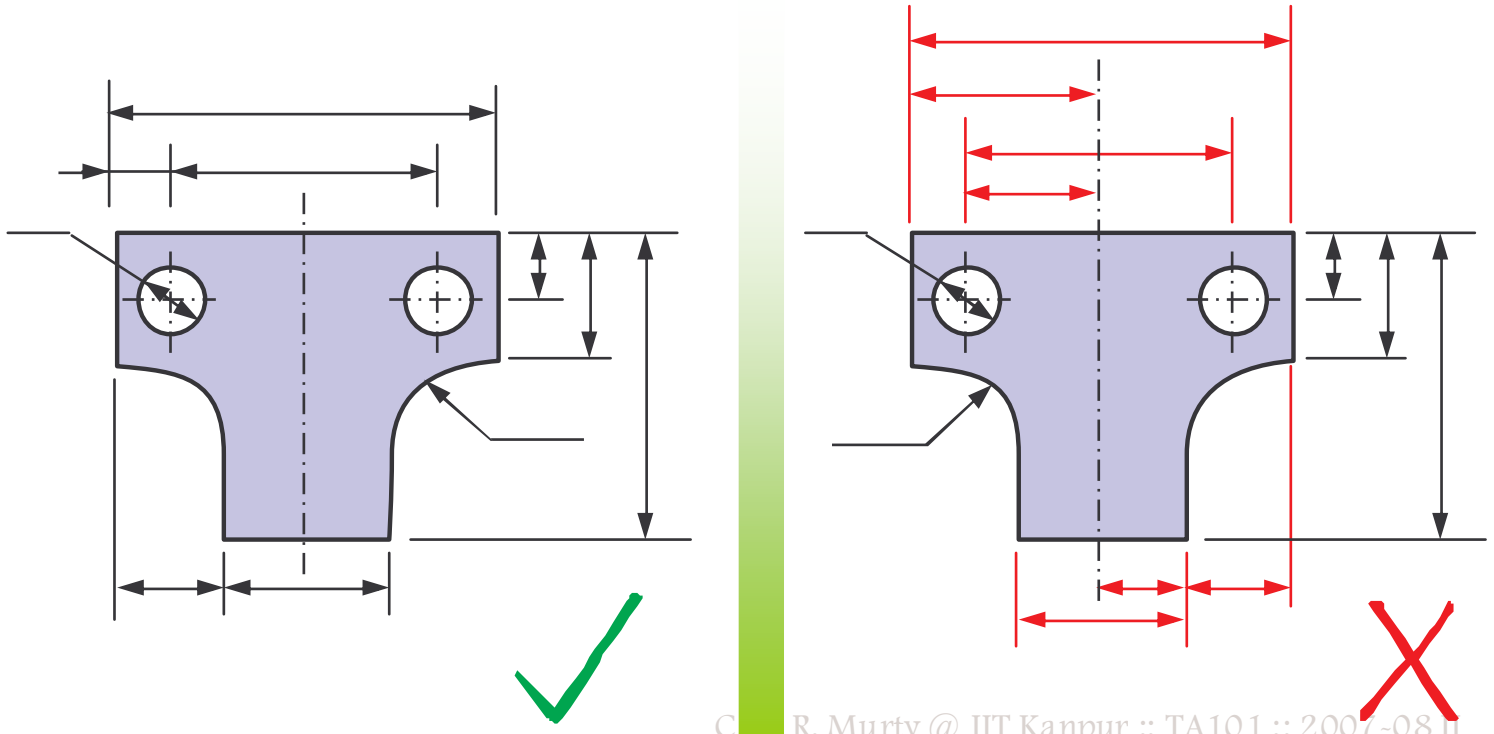
PRINCIPLES

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

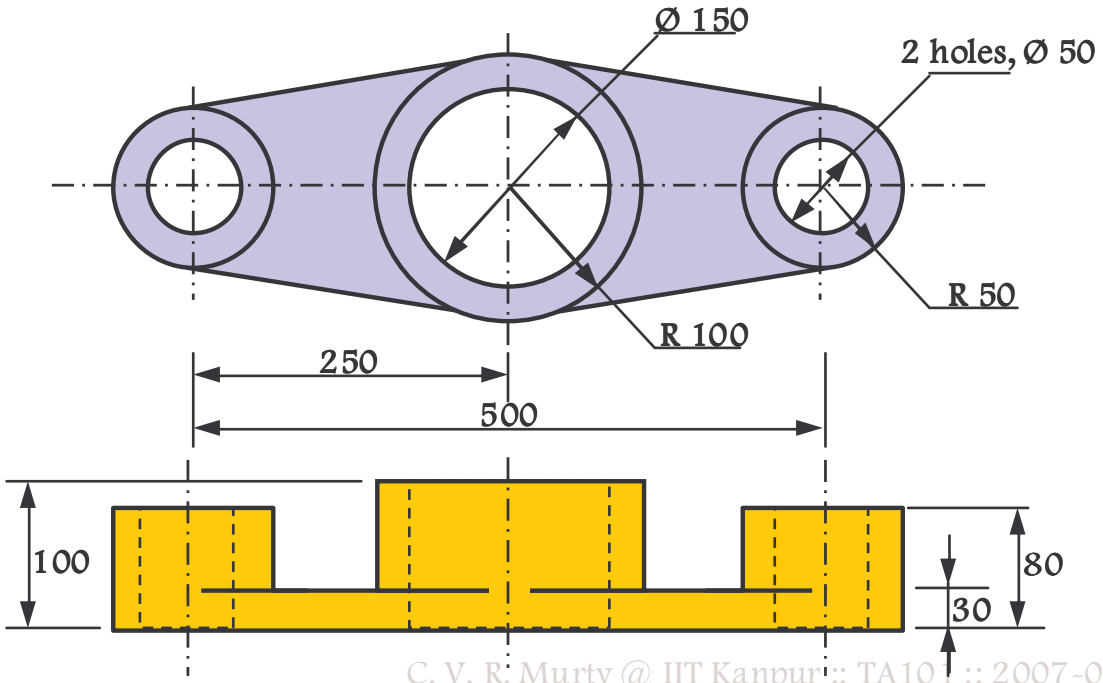


PRINCIPLES

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



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



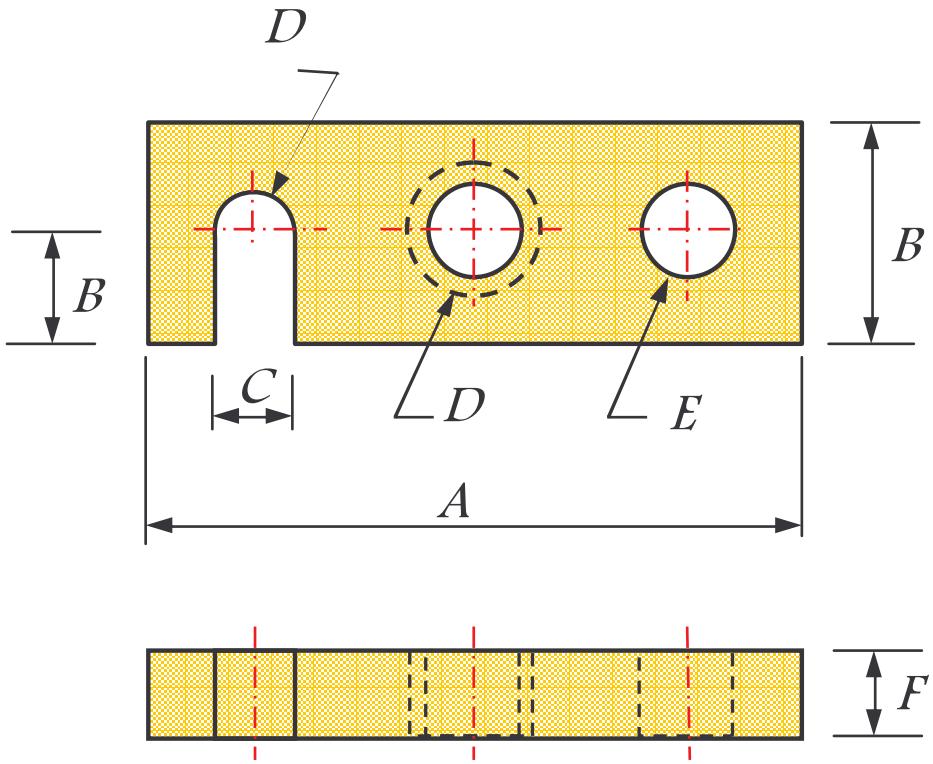
INTENTION

- 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

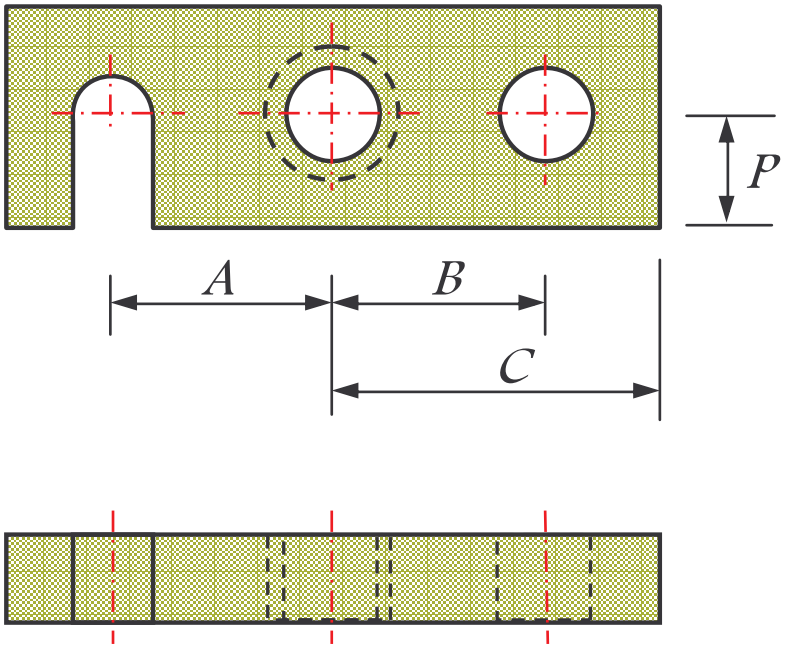
TYPES OF DIMENSIONS

- Two types
  - Size
  - Location



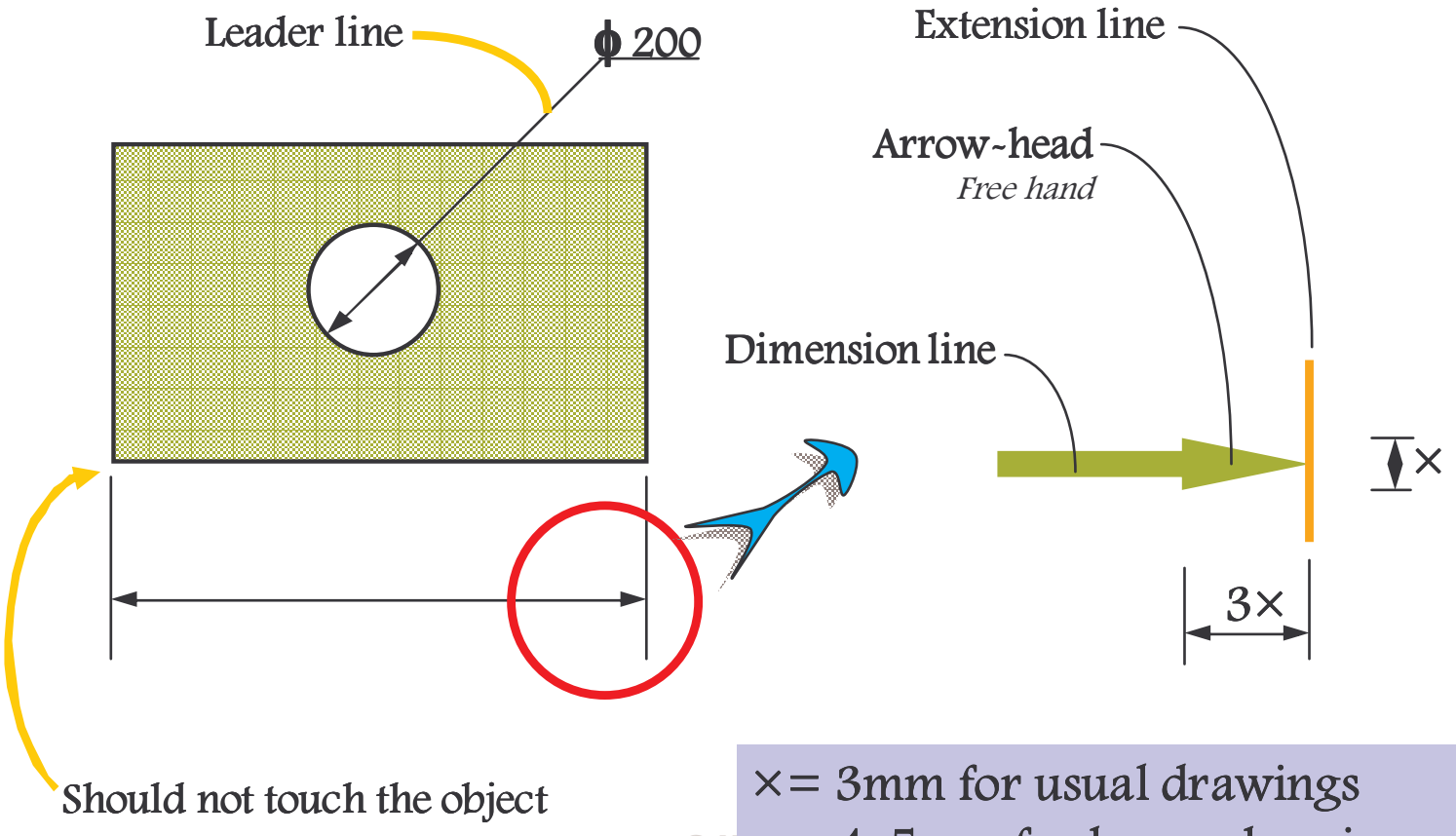
TYPES OF DIMENSIONS

- Two types
  - Size
  - Location



EXECUTION OF DIMENSIONING

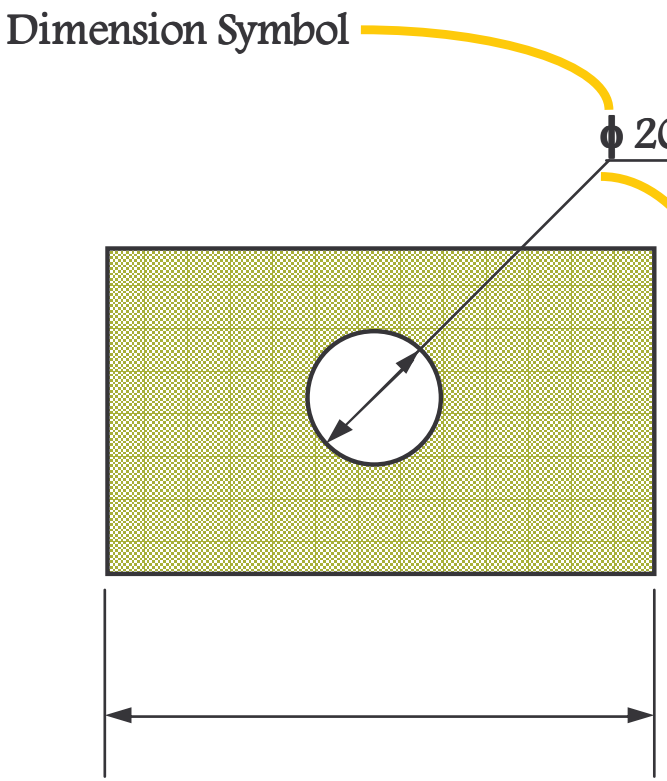
- Components of dimensioning lines



×= 3mm for usual drawings
= 4~5mm for larger drawings

EXECUTION OF DIMENSIONING

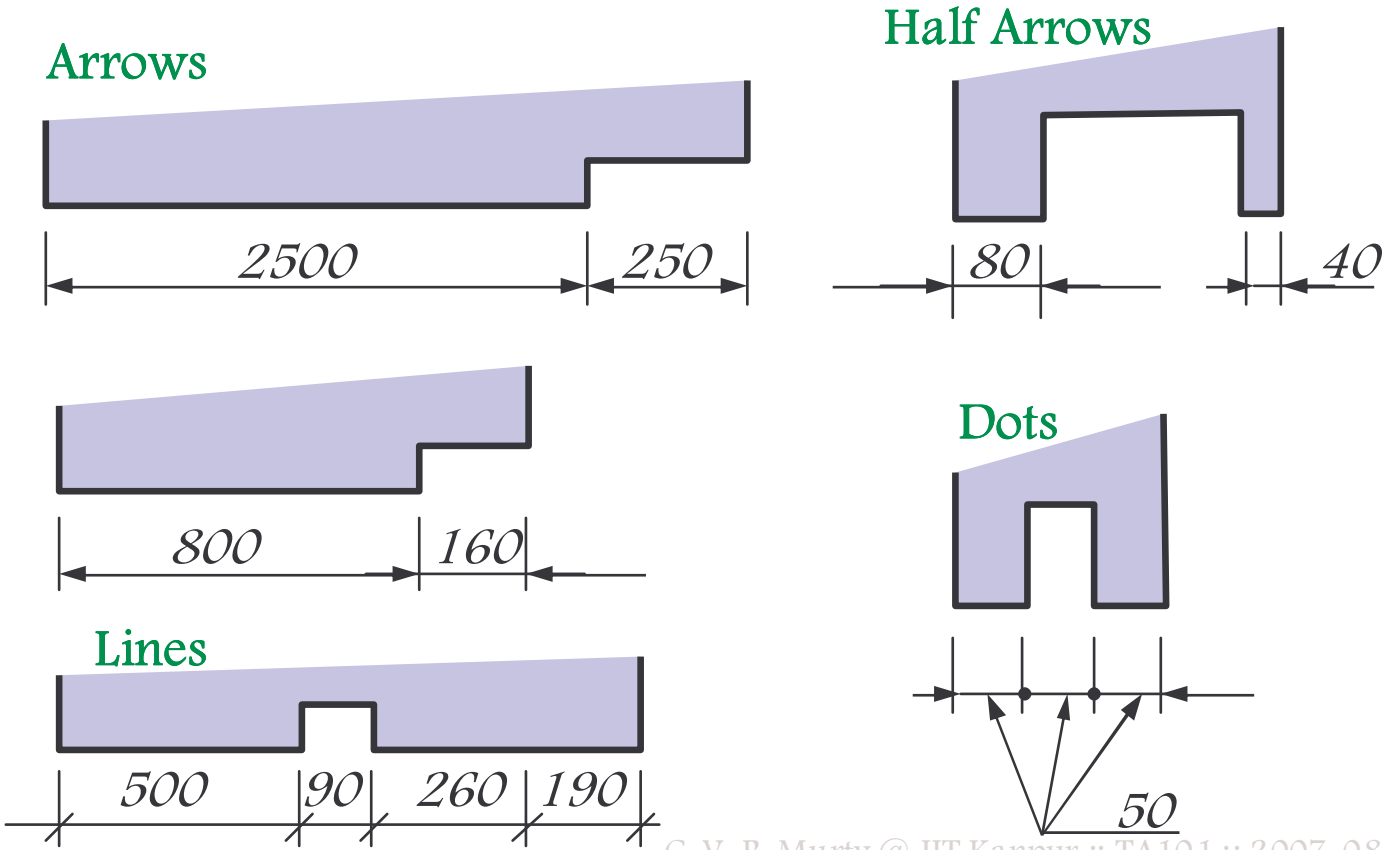
- Components of dimensioning lines…



(a) Straight lines
(b) Angle>30°; ≠0° or 90°; 30°, 45° or 60° preferred
(c) Drawn radial

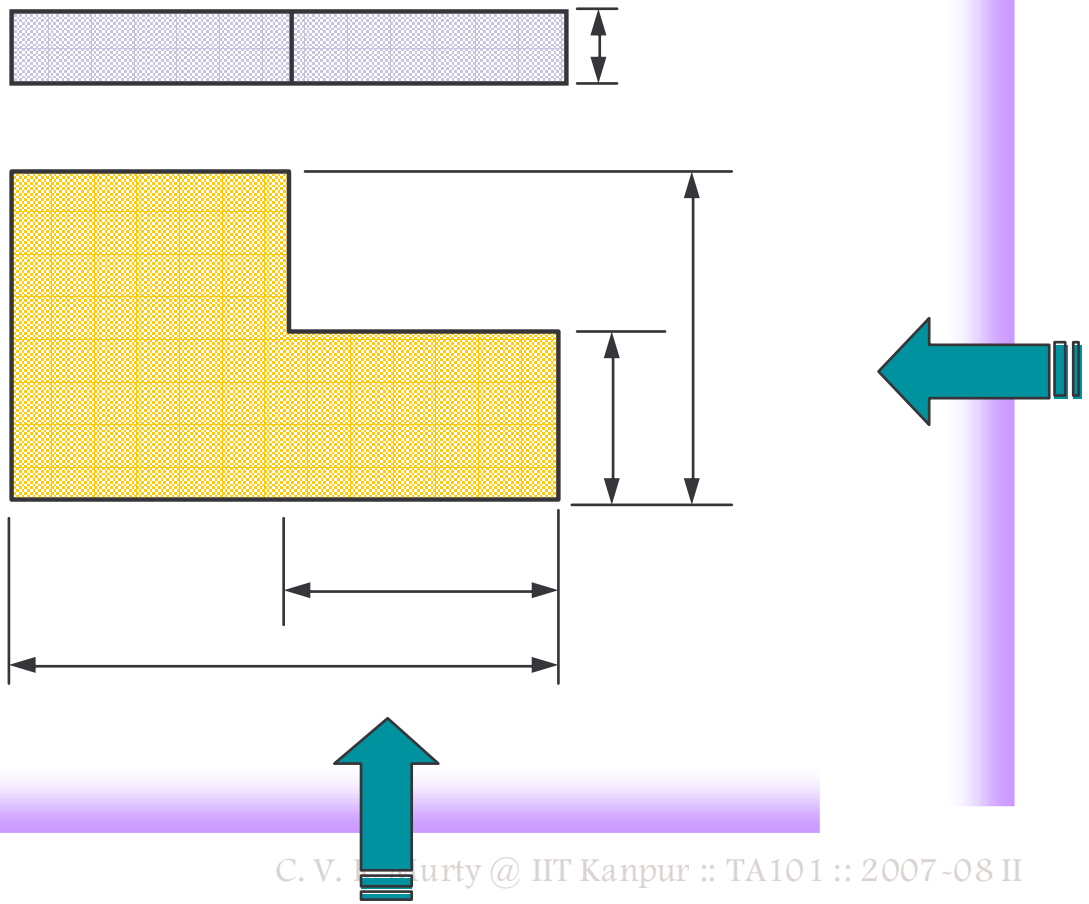
DIMENSIONING A LENGTH

- Depending on available space



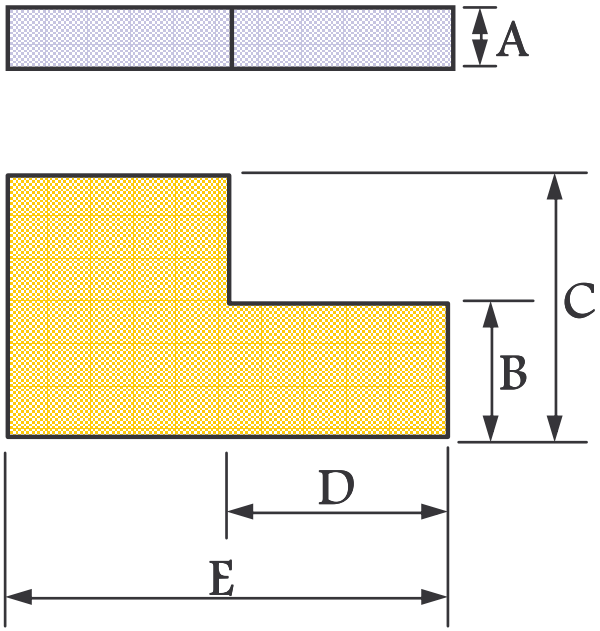
PLACING OF DIMENSIONING

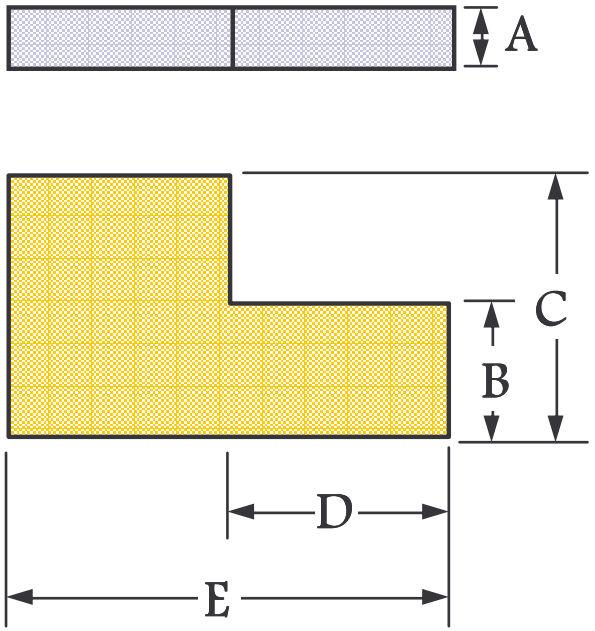
- Two sides only preferable



PLACING OF DIMENSIONING

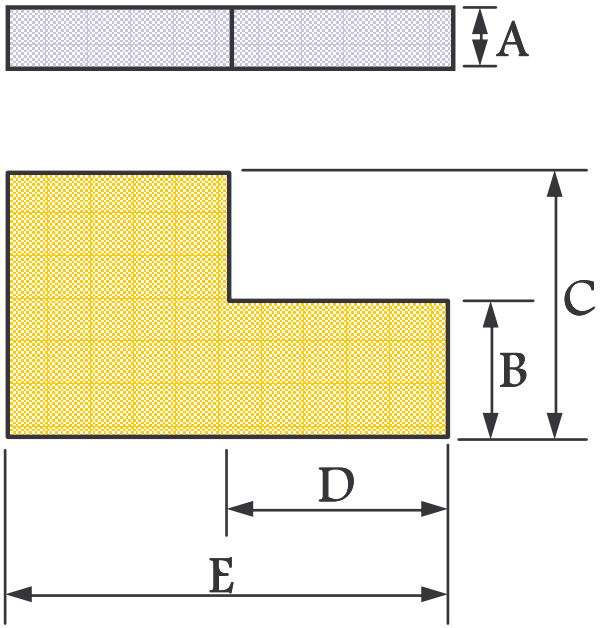
- Arrow and text



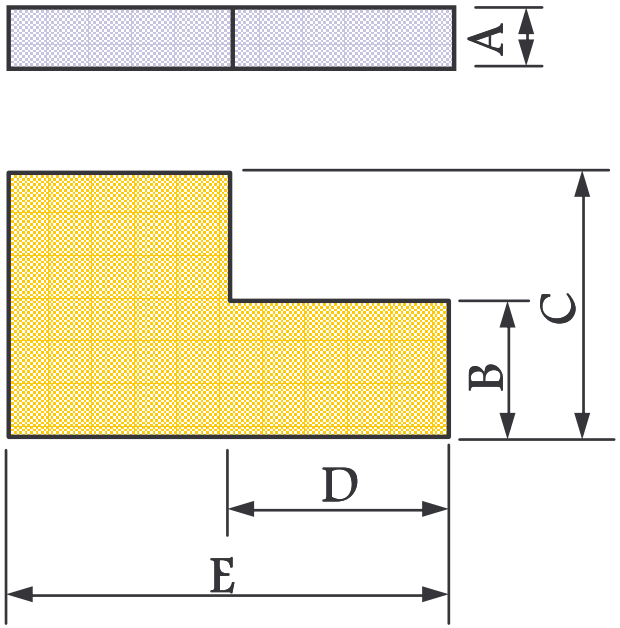


PLACING OF DIMENSIONING

- Orientation of dimensioning text



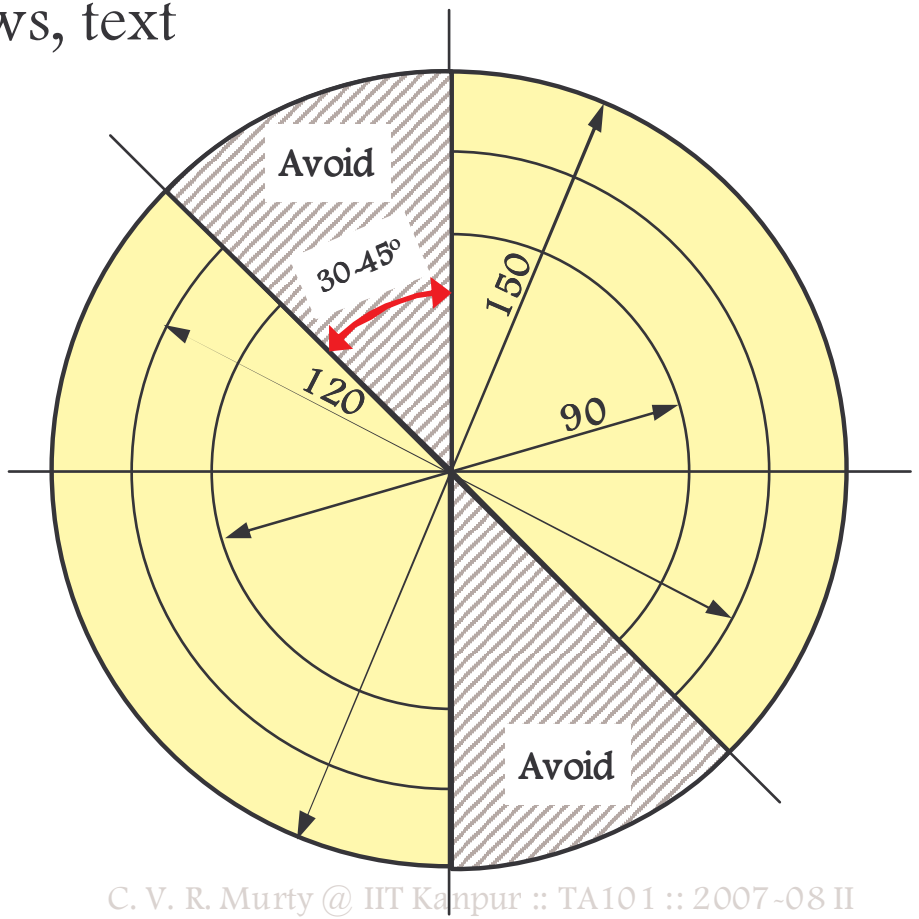
Unidirectional



Aligned

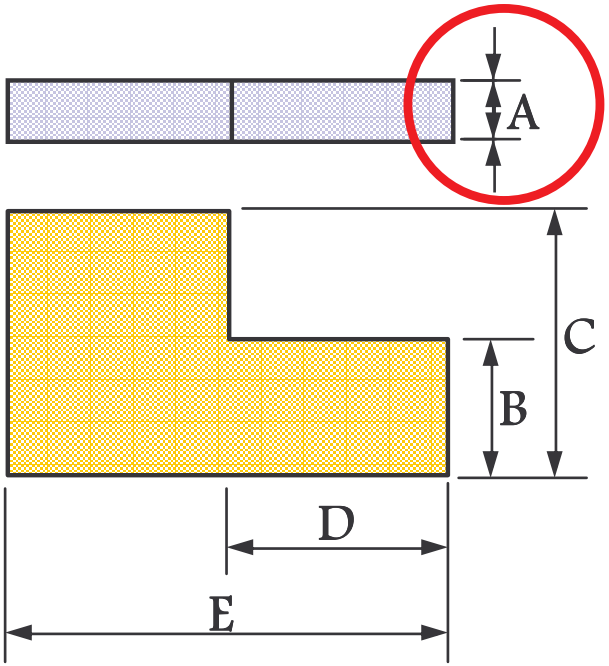
PLACING OF DIMENSIONING

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

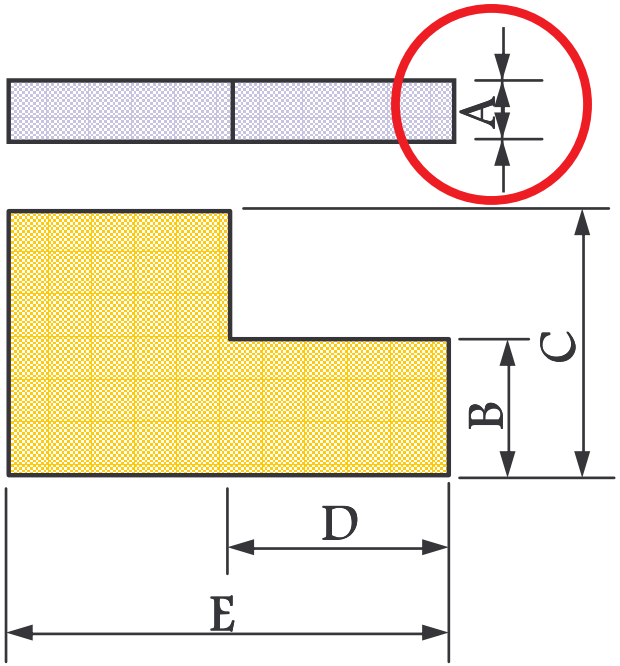


PLACING OF DIMENSIONING

- Narrow spaces



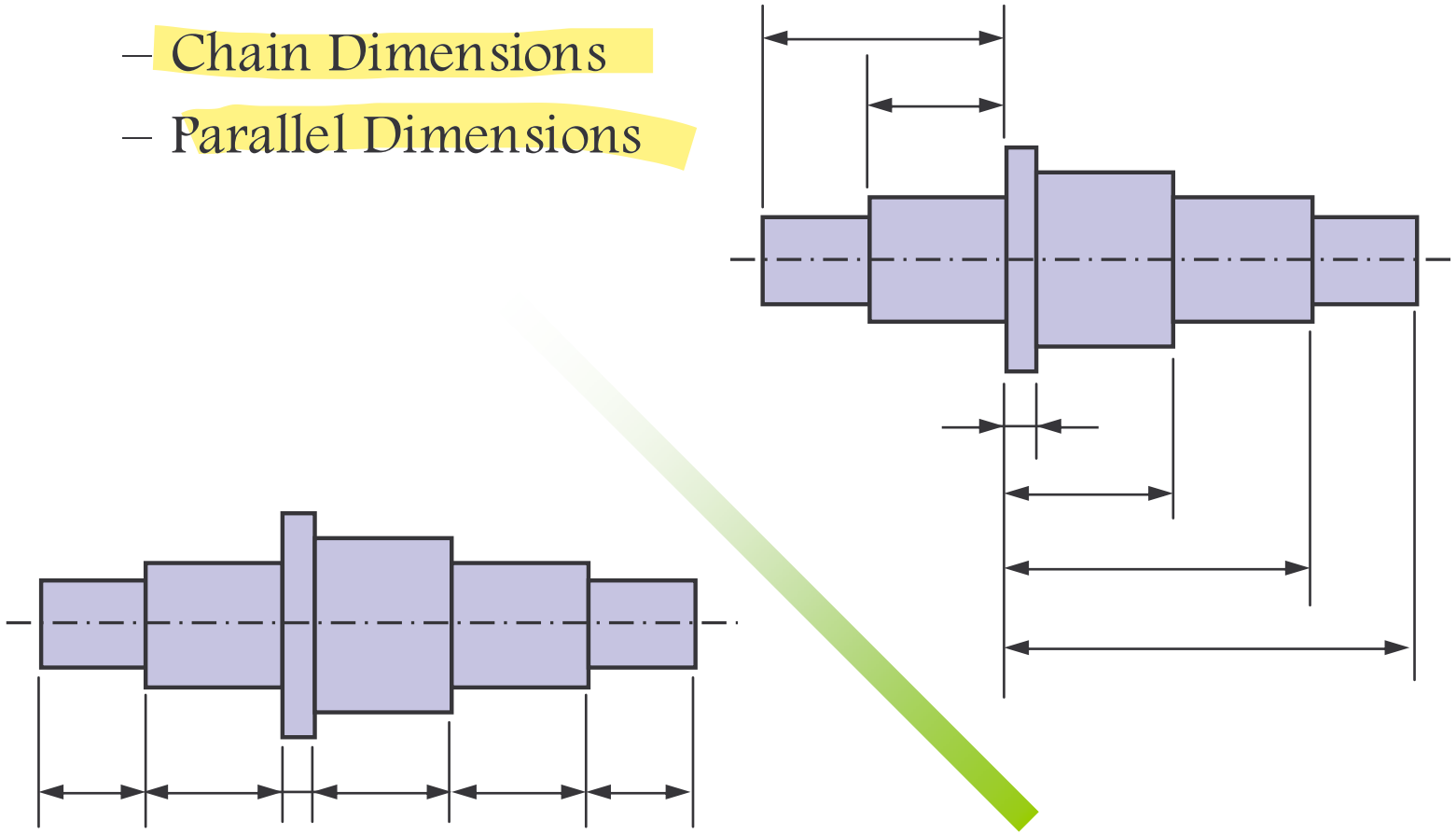
Unidirectional



Aligned

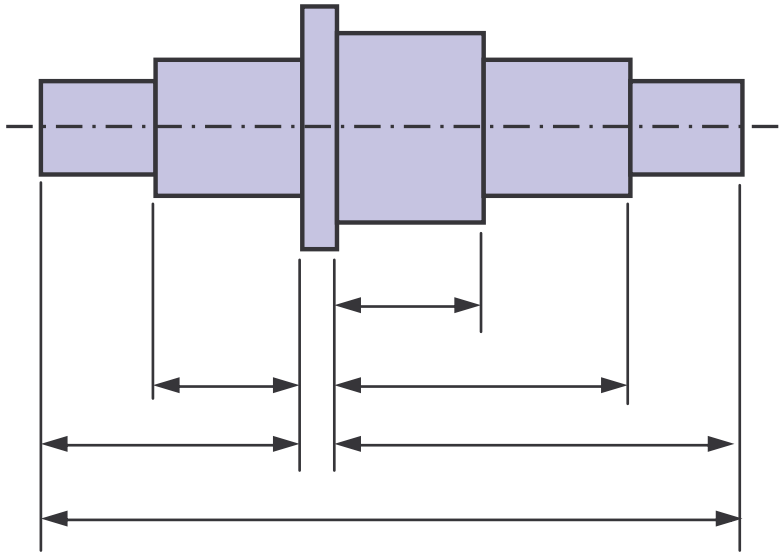
ARRANGEMENT OF DIMENSIONS

- Two basic styles
  - Chain Dimensions
  - Parallel Dimensions



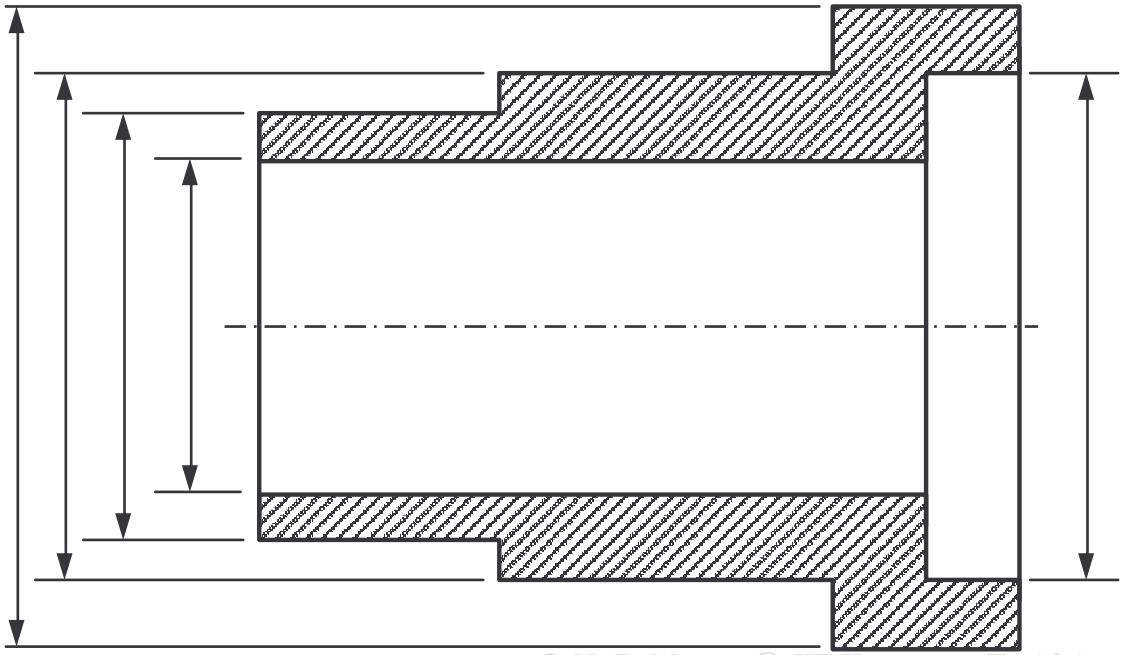
ARRANGEMENT OF DIMENSIONS

- Combined style



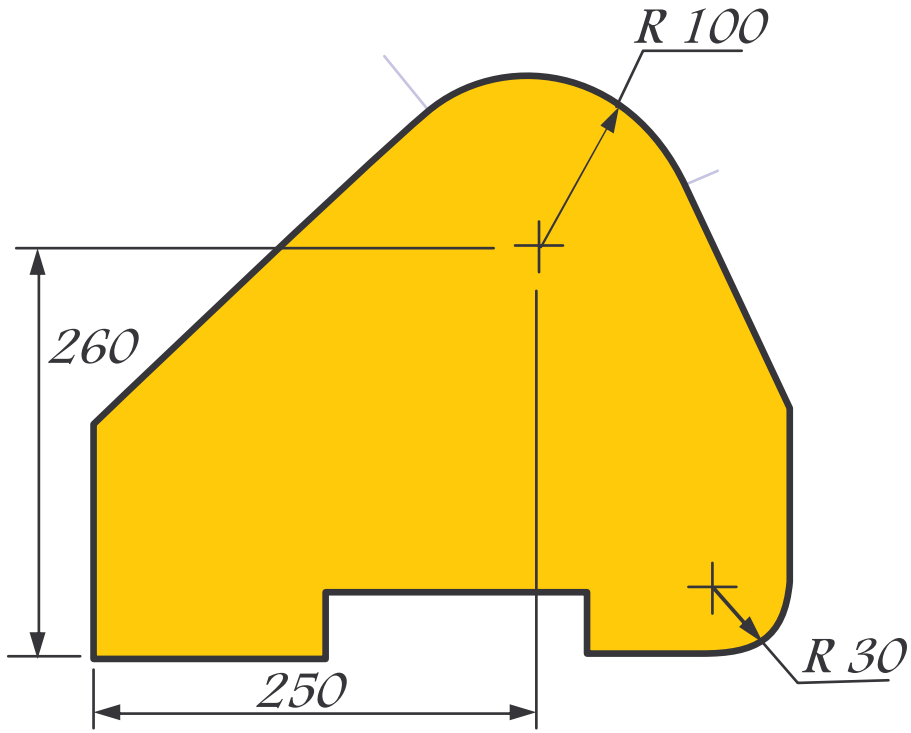
DIMENSIONING DIAMETERS

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



DIMENSIONING RADII

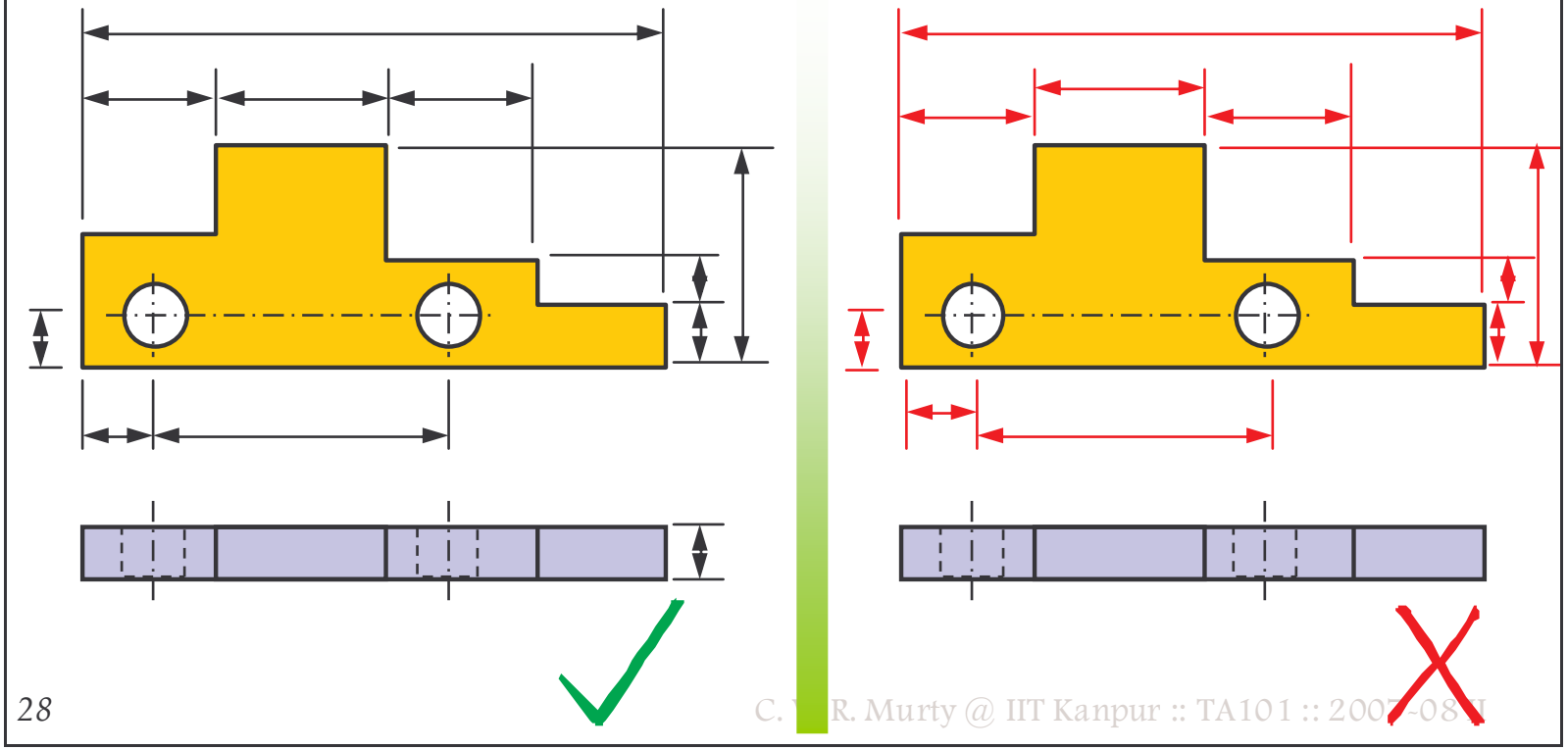
- Arcs of circles
  - Precede with "R" to distinguish from length



EXAMPLES

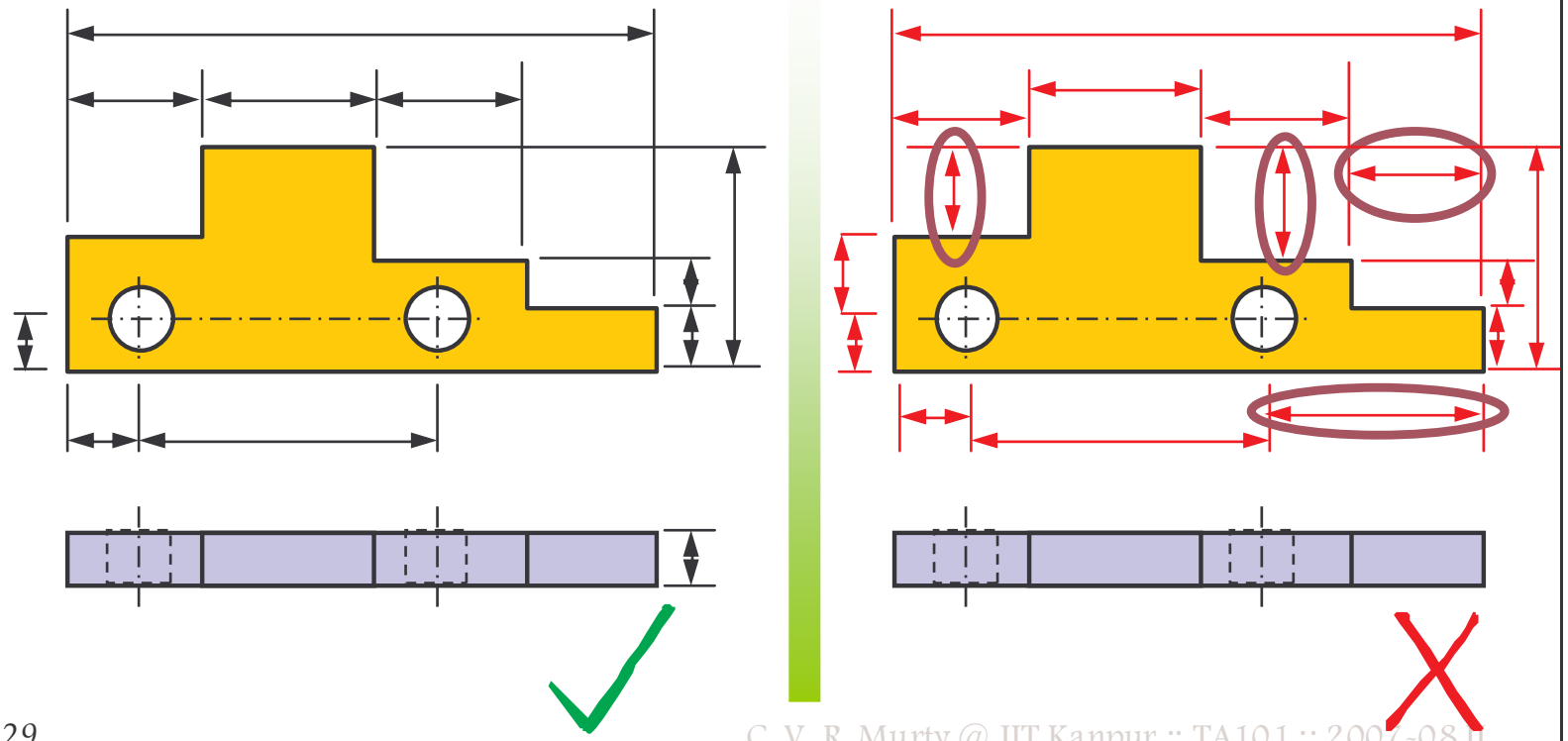
ARRANGEMENT OF DIMENSIONS

- Two styles
  - Chain Dimensions
  - Parallel Dimensions



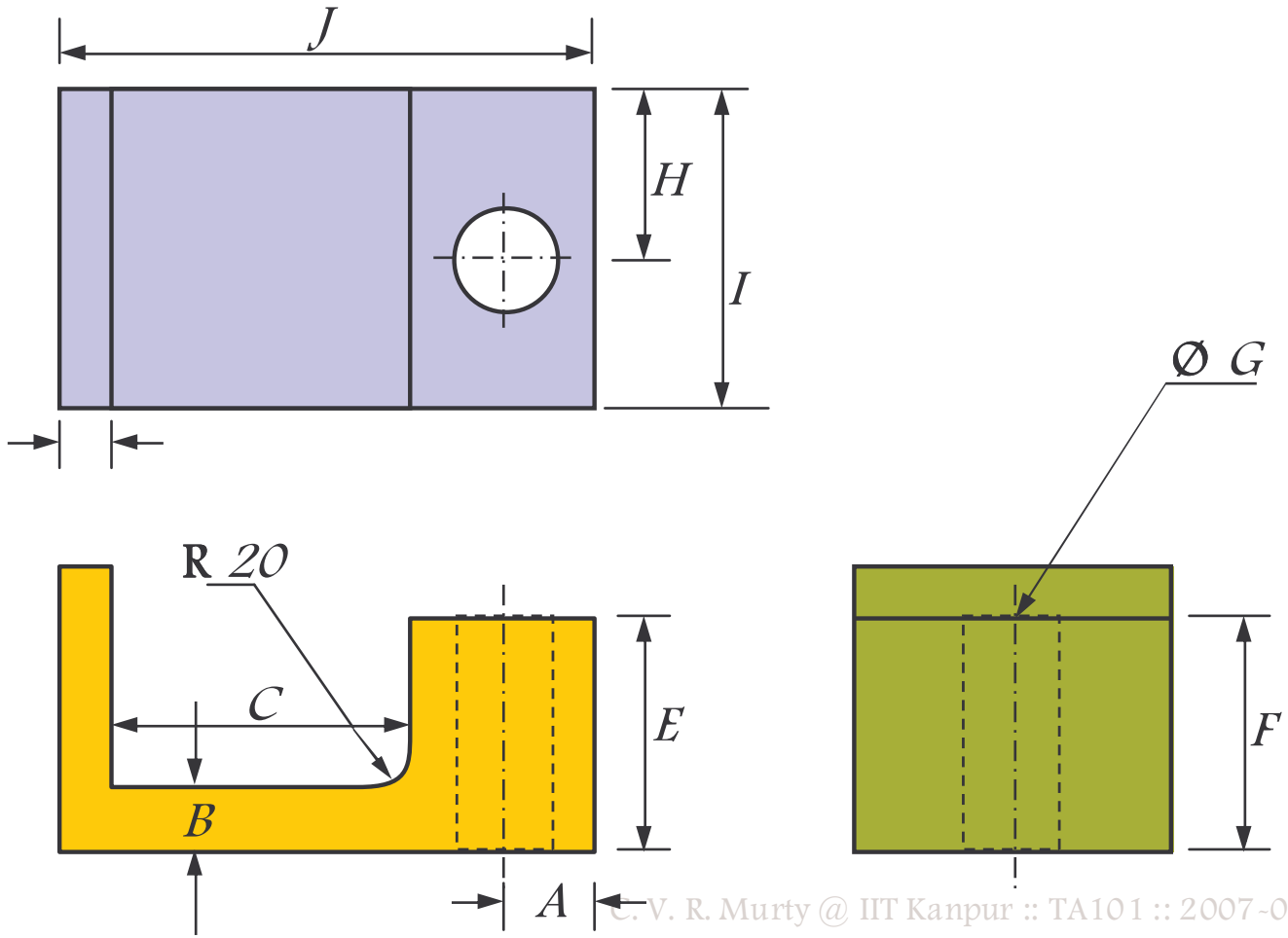
OVER-DIMENSIONING

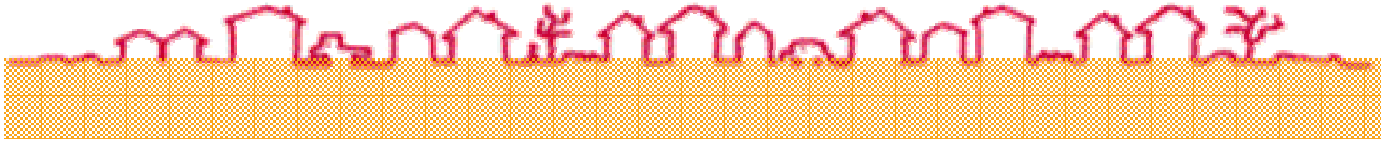
- Do not provide too many dimensions



POSITIONING

- Choose appropriate location





Have a Great Day!!