Taking AutoCAD to a New Dimension

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Class summary

We have been dimensioning the same way in AutoCAD software for what seems like 100 years. Now you can finally reduce steps and accelerate your dimensioning with AutoCAD software's new and improved dimensioning tools. Instead of using different commands to create different types of dimensions, you will learn how the multipurpose DIM command anticipates the type of dimensions you want to create, eliminating steps and making you more productive than ever before. Discover how to create associative centerlines and center marks that automatically adjust as you make changes to your drawings. You will also learn how to automatically place dimensions on the proper layer. As Oliver Wendell Holmes, Jr., said, "A mind that is stretched by a new experience can never go back to its old dimensions."
This session features AutoCAD and AutoCAD LT. AIA Approved.

Key learning objectives

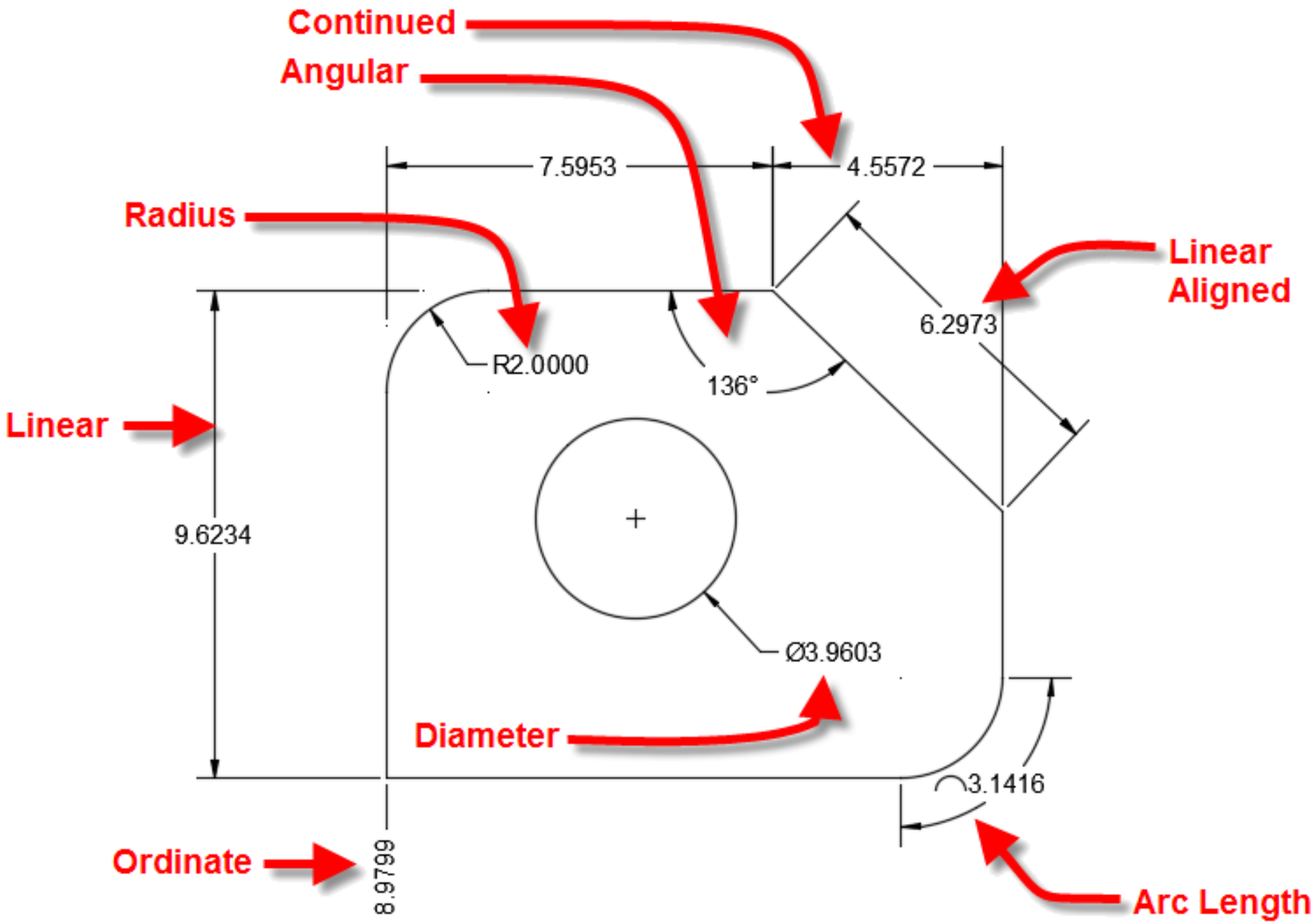
At the end of this class, you will be able to:

- Create any type of dimension in AutoCAD
- Dimension using the single DIM command
- Create and modify associative centerlines and center marks
- Edit dimensions and modify dimension components efficiently

Introduction

Types of Dimensions

- Linear
- Radial
  (radius, diameter, jogged)
- Angular
- Ordinate
- Arc length



Dimensioning the old way

- DIMLINEAR
- DIMALIGNED
- DIMANGULAR
- DIMARC
- DIMRADIUS
- DIMDIAMETER
- DIMJOGGED
- DIMORDINATE

Dimensioning the new way in AutoCAD

- DIM

  Automatically recognizes objects beneath the cursor and defaults to the appropriate dimension type.

Dimensioning the new way in AutoCAD

You may still need to specify certain types of dimensions

BUT

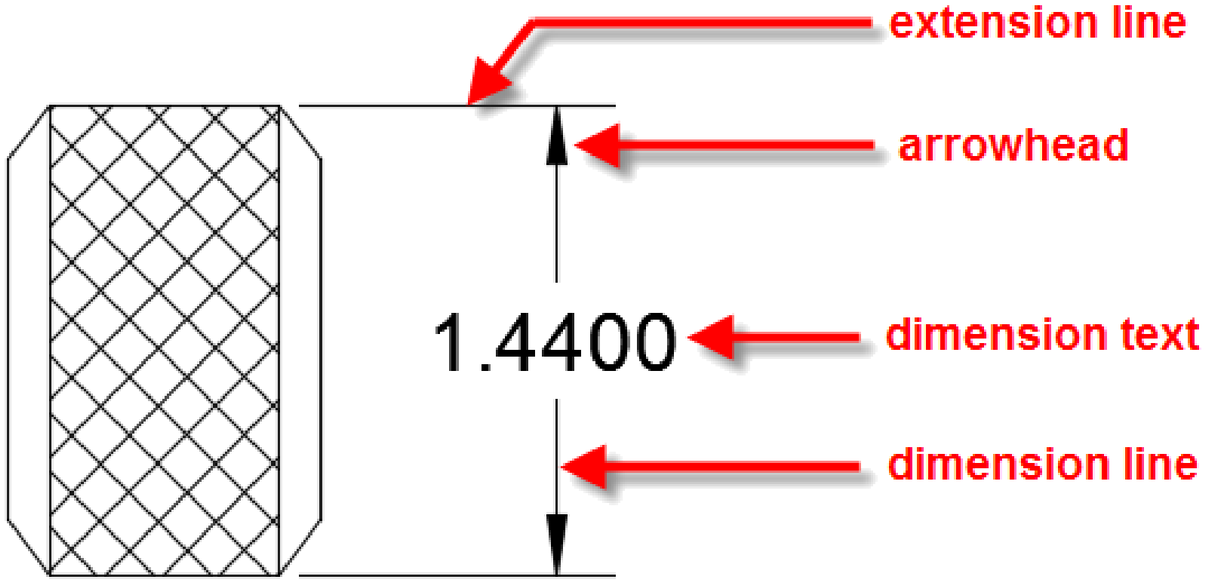
In most cases you can create multiple dimensions with minimal input.

AND

Dimensions appear on the appropriate layer

Elements of a dimension

- Dimension text
- Dimension line
- Arrowheads
- Extension lines
- Center mark/centerline

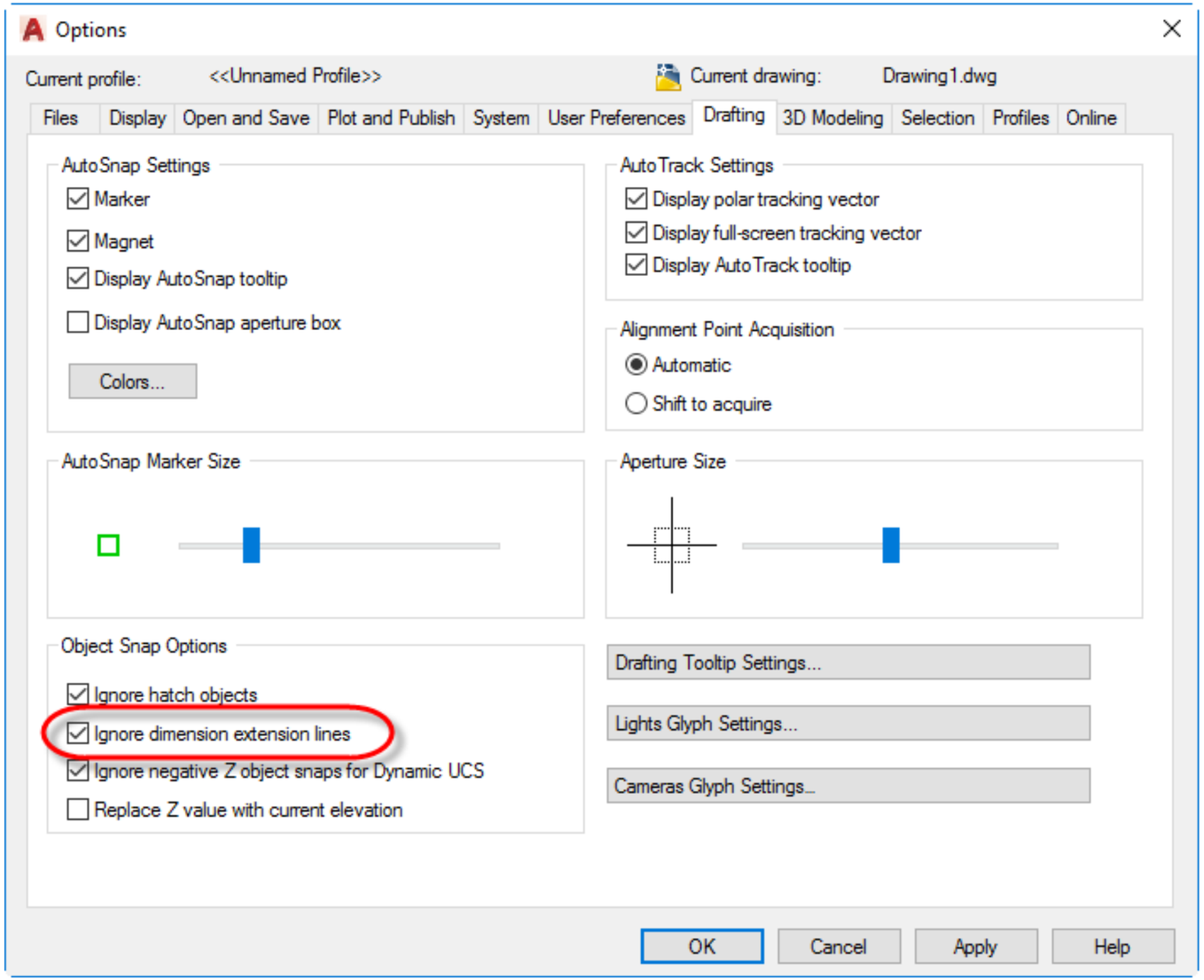


All part of a single associative dimension object

Extension lines are special

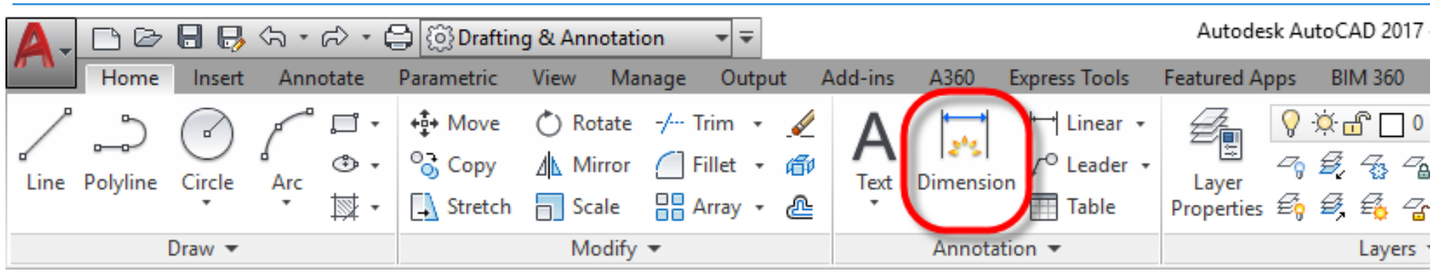
By default, they are ignored by OSNAP

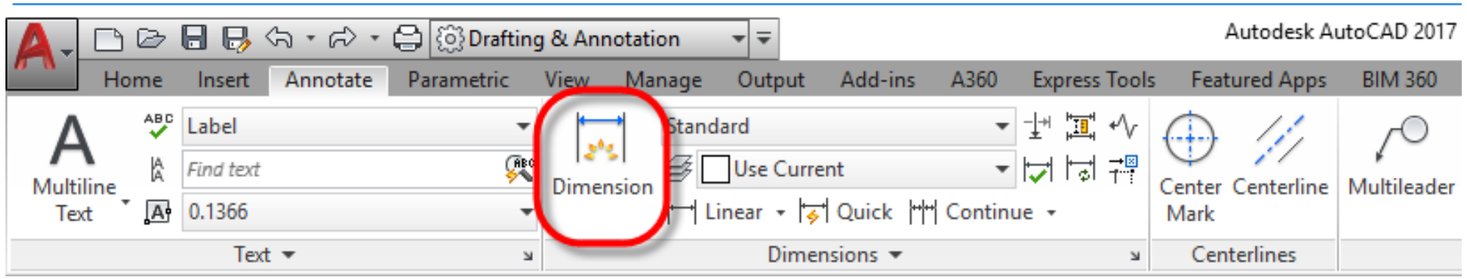
Controlled in Options



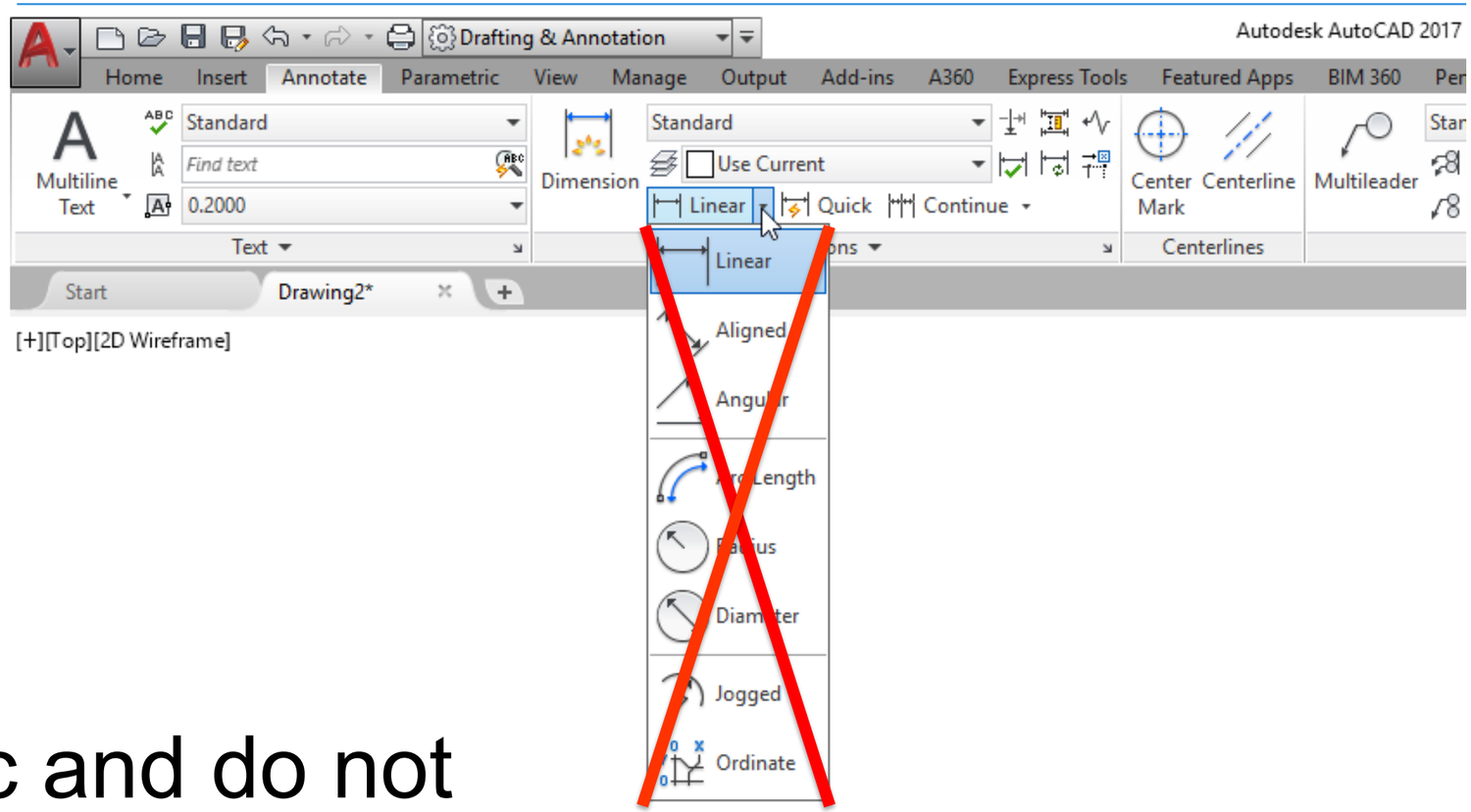
The new DIM tool

- **Home** ribbon
- **Annotate** ribbon





The old dim tools are still around



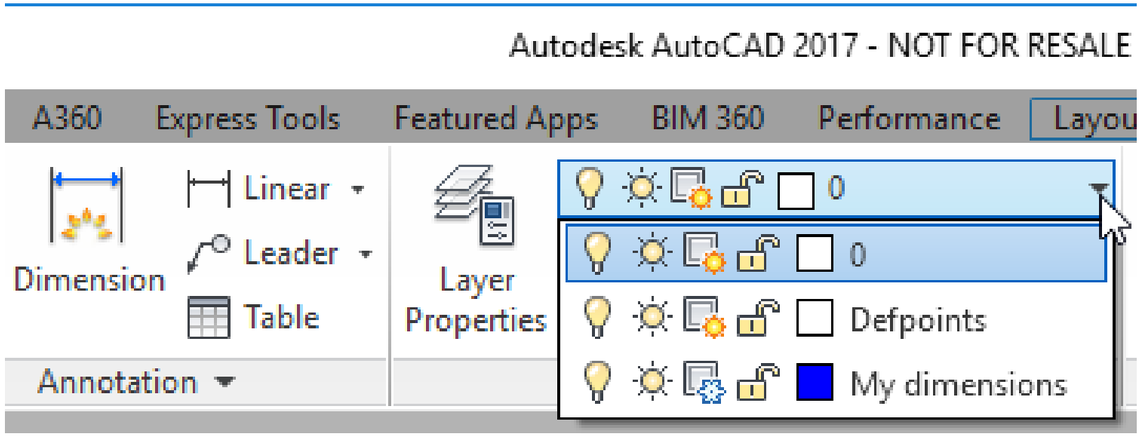
DO NOT USE THEM

They aren’t automatic and do not place dimensions on the DIMLAYER

Also remember Defpoints

Defpoints layer created when you add an associative dimension

- Stores invisible dimension nodes
- Defpoints do not print
- Cannot remove this layer

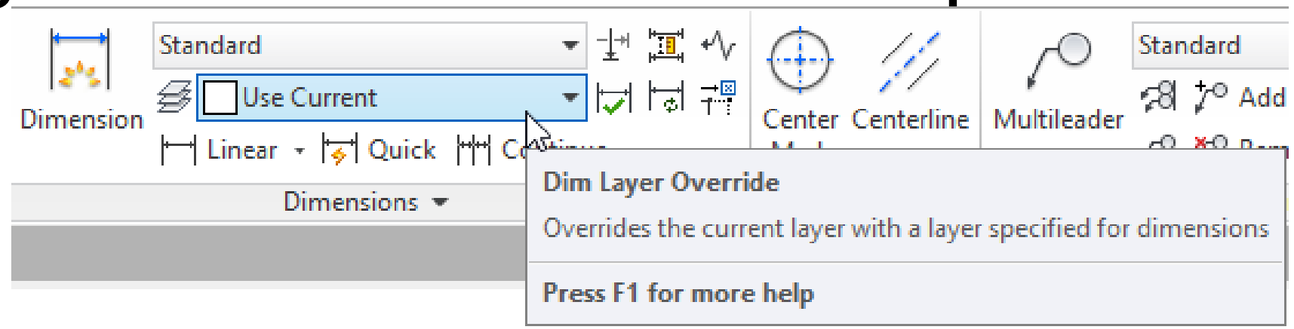


Setting the Dimension Layer

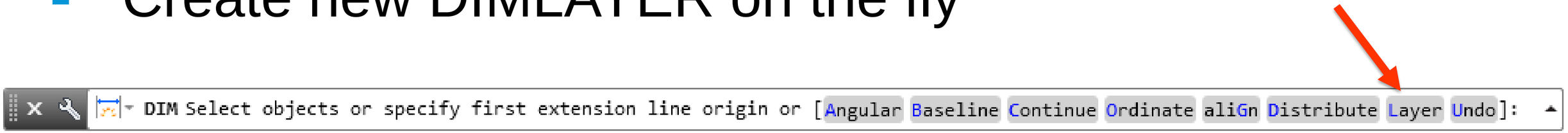
Dim Layer Override

Dimensions created using the DIM command are placed on the layer you specify

- Use Current
- Any specified layer



- Change layers even while DIM command is active
- Create new DIMLAYER on the fly

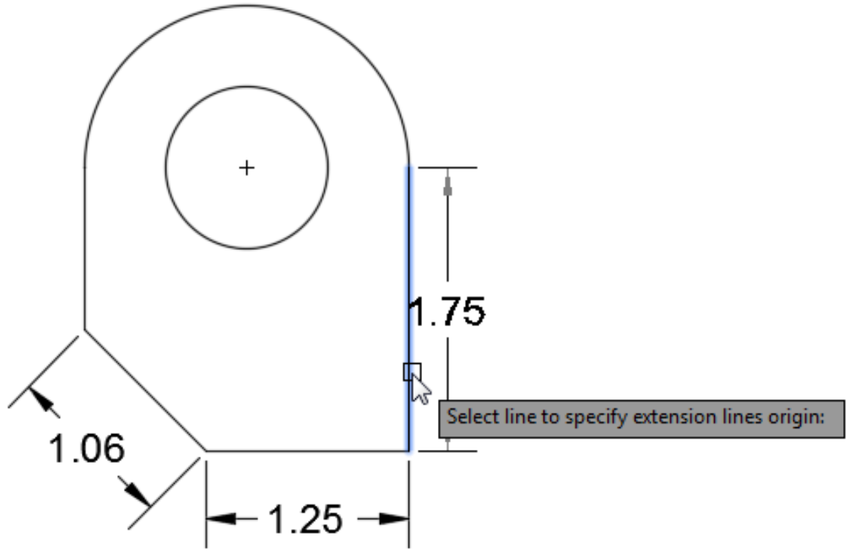


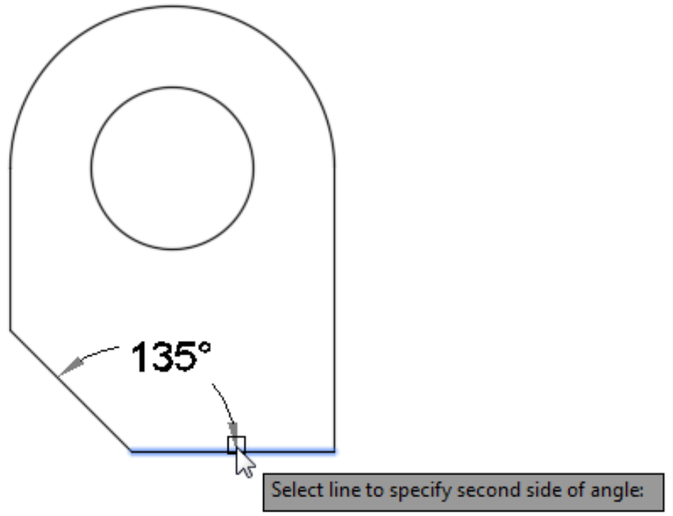
Creating Dimensions

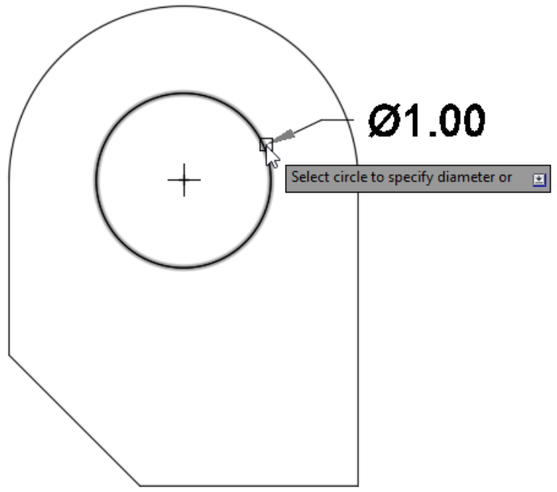
DIM can create nearly any type of dimension

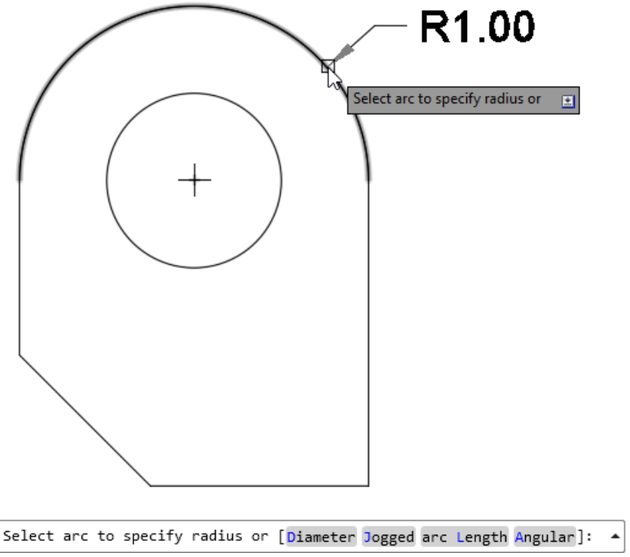
- Linear
- Angular
- Radial
- Arc length
- Ordinate

Remains active until stopped



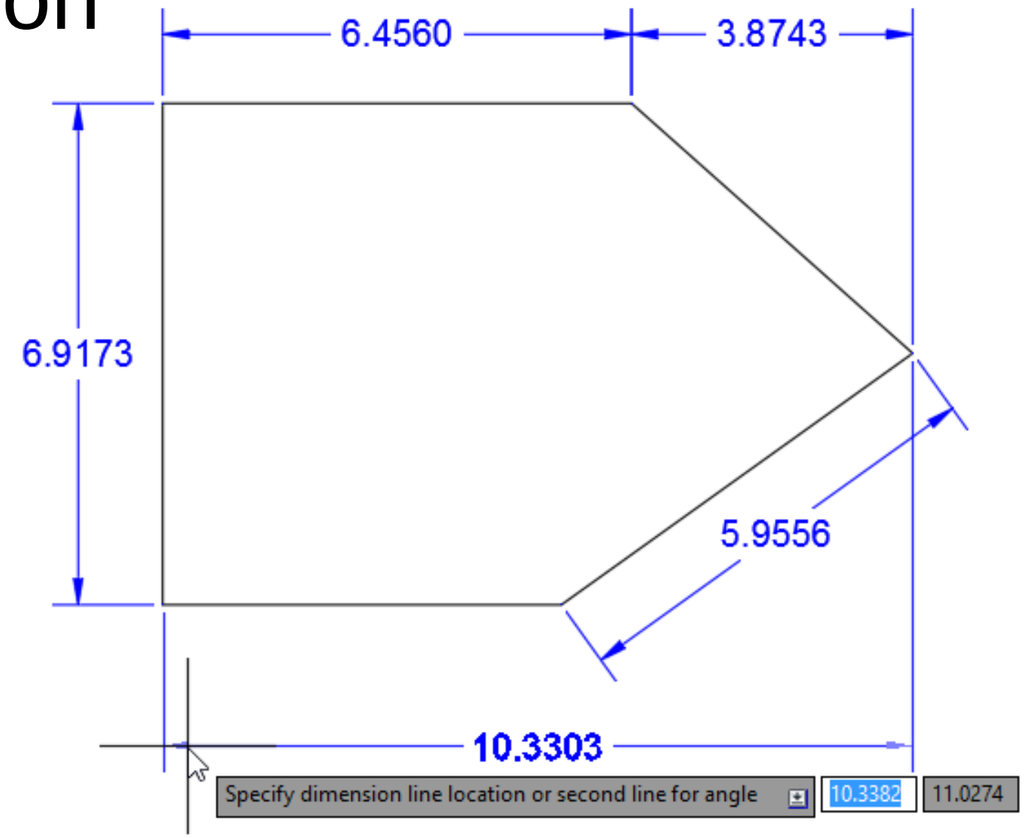






Creating Linear Horizontal, Vertical, and Aligned Dimensions

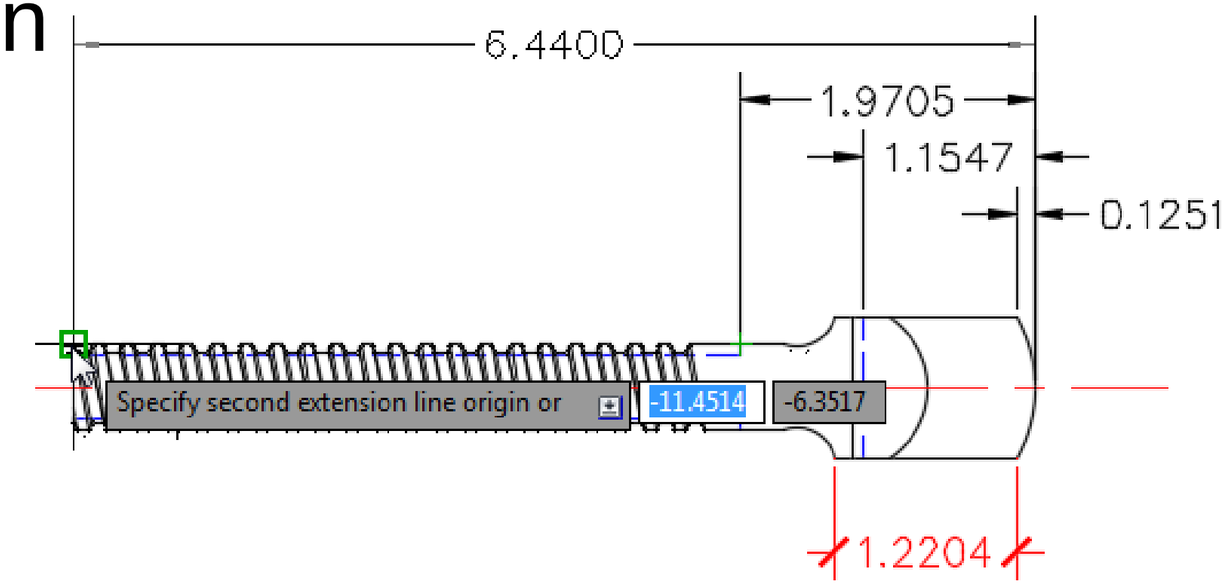
- By default, linear dimensions align with object
- Press **SHIFT** to force dimension to be horizontal or vertical
- Select extension line origins to dimension across multiple objects



Creating Linear Baseline Dimensions

Baseline dimension – begins from same extension line origin as an existing dimension

1. **Baseline** option
2. Select baseline origin
3. Adjust **Offset** as needed

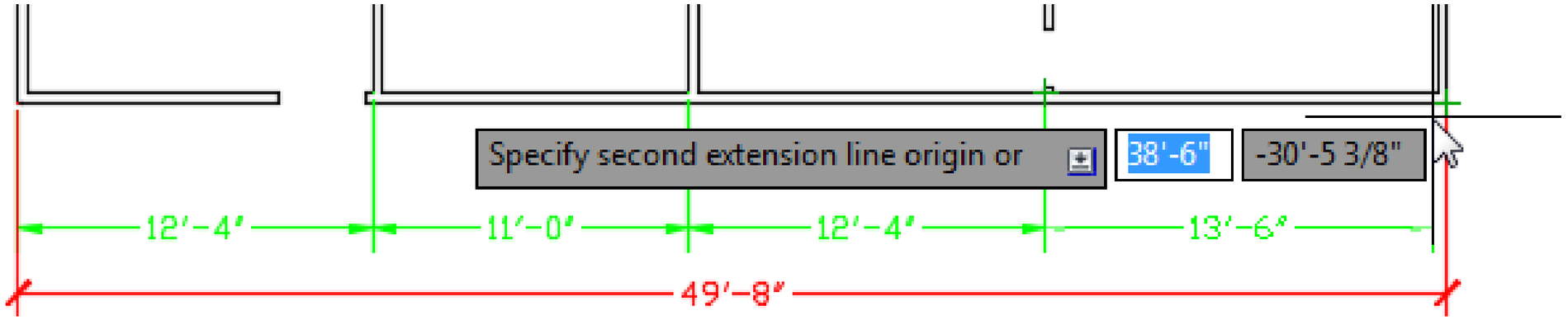


By default, baseline dimension takes on dimension style and layer of the extension line you select (controlled by DIMCONTINUEMODE)

Creating Linear Continued Dimensions

Continued dimension – starts from an extension line of an existing dimension

1. **Continue** option
2. Select extension line



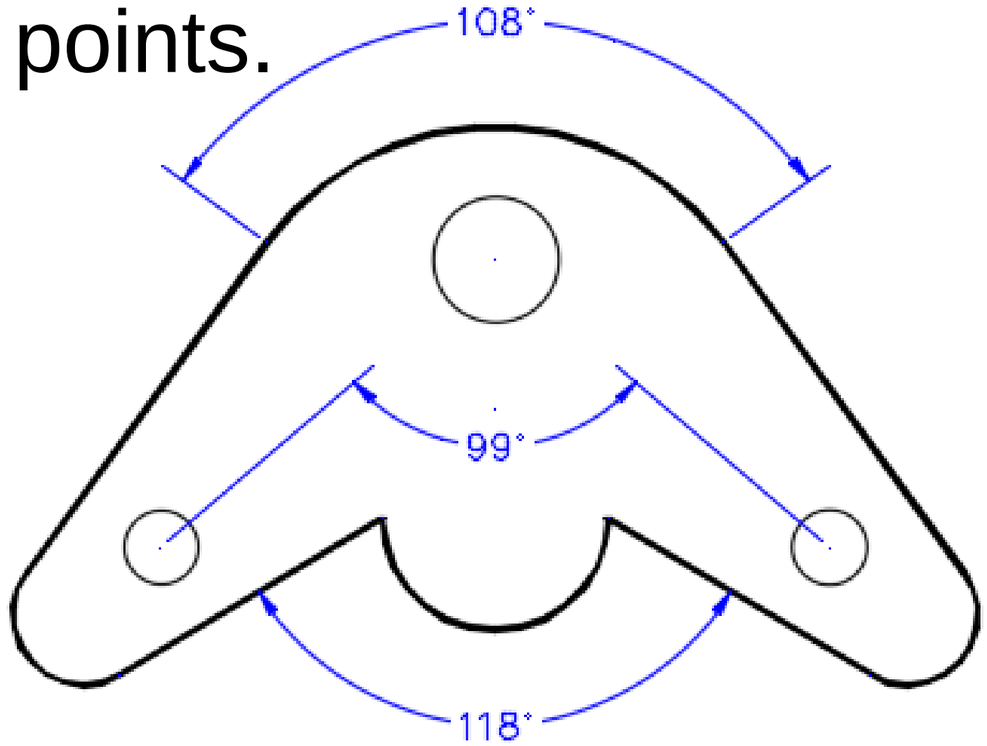
By default, baseline dimension takes on dimension style and layer of the extension line you select (controlled by DIMCONTINUEMODE)

Creating Angular Dimensions

Angular dimension – measures the angle between two non-parallel lines, the angle subtended by an arc, or the angle formed by three selected points.

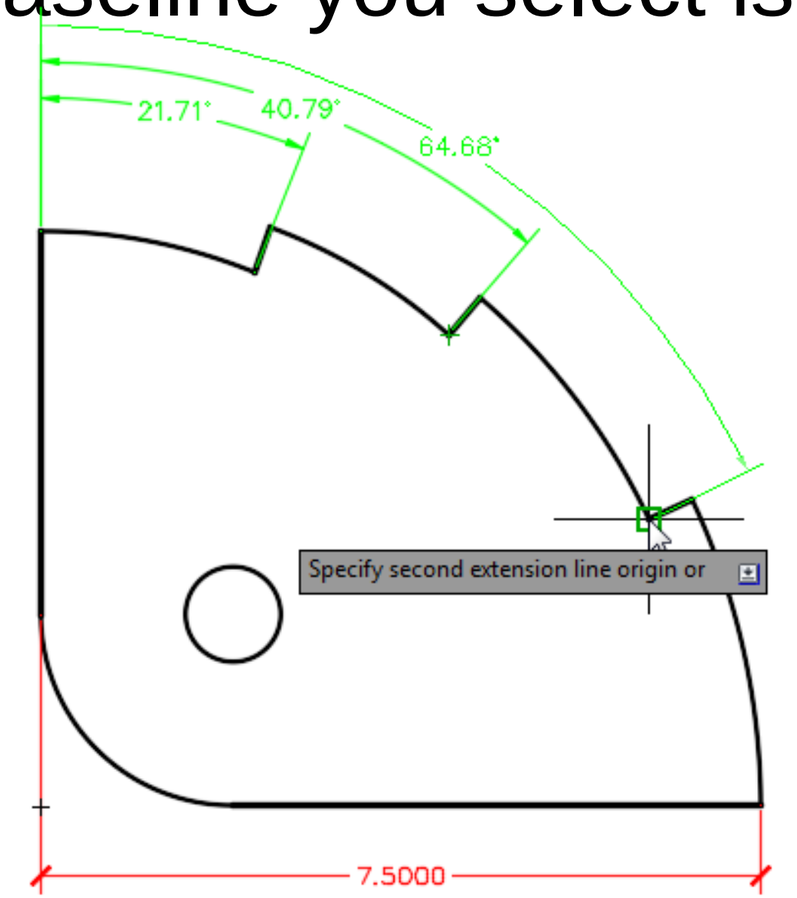
Three ways to create:

- Pick an arc
- Pick 2 lines
- Pick 3 points



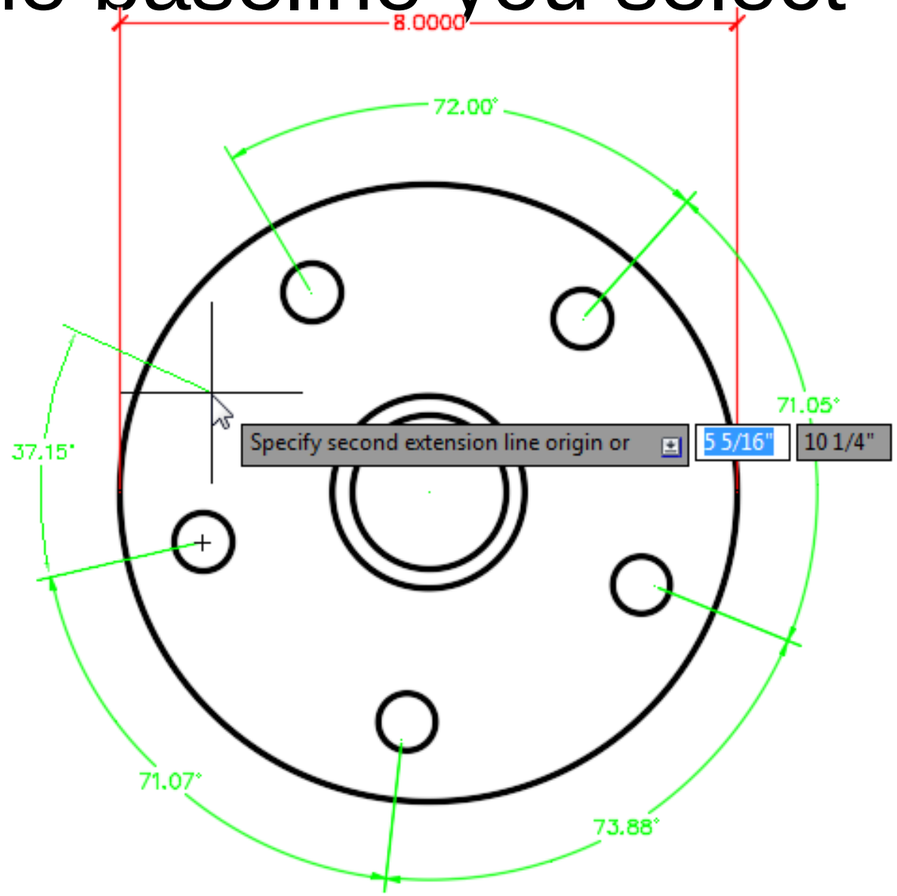
Creating Angular Baseline Dimensions

- Identical to linear baseline but the baseline you select is an angular dimension



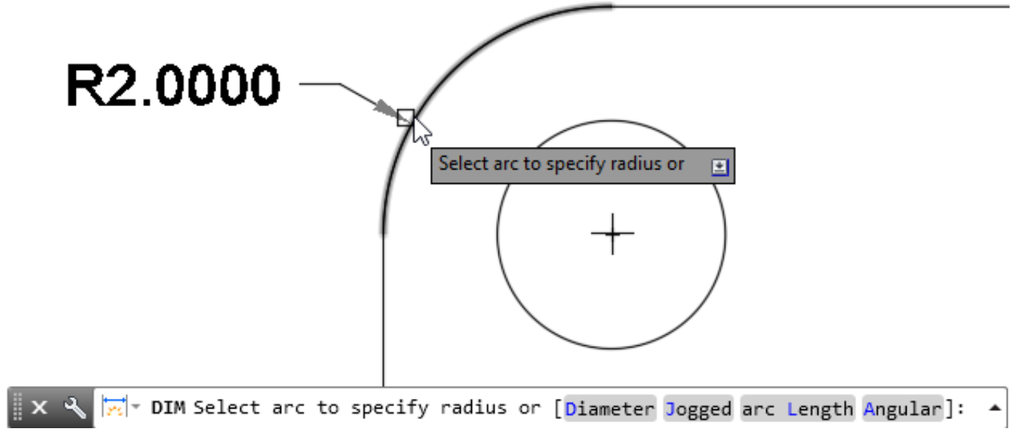
Creating Angular Continued Dimensions

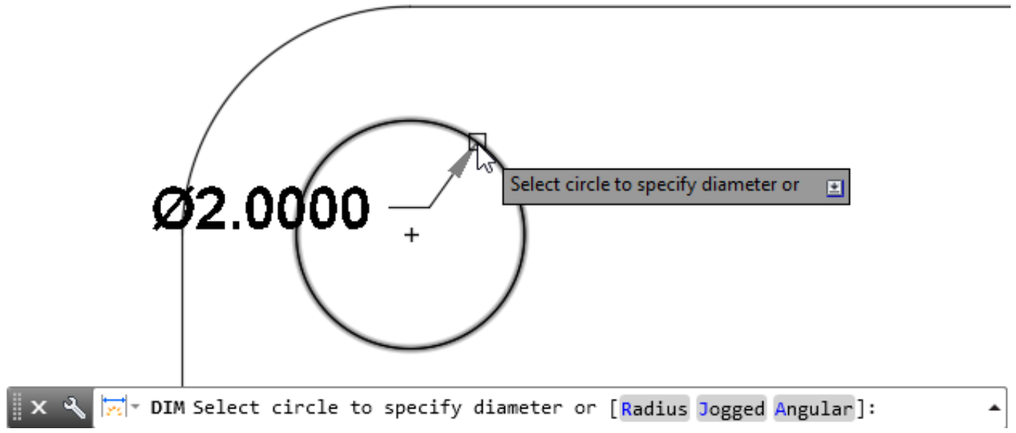
- Identical to linear continued but the baseline you select is an angular dimension



Creating Radial Dimensions

Radial dimension – measures the radii or diameter of arcs and circles (optional centerline or center mark)



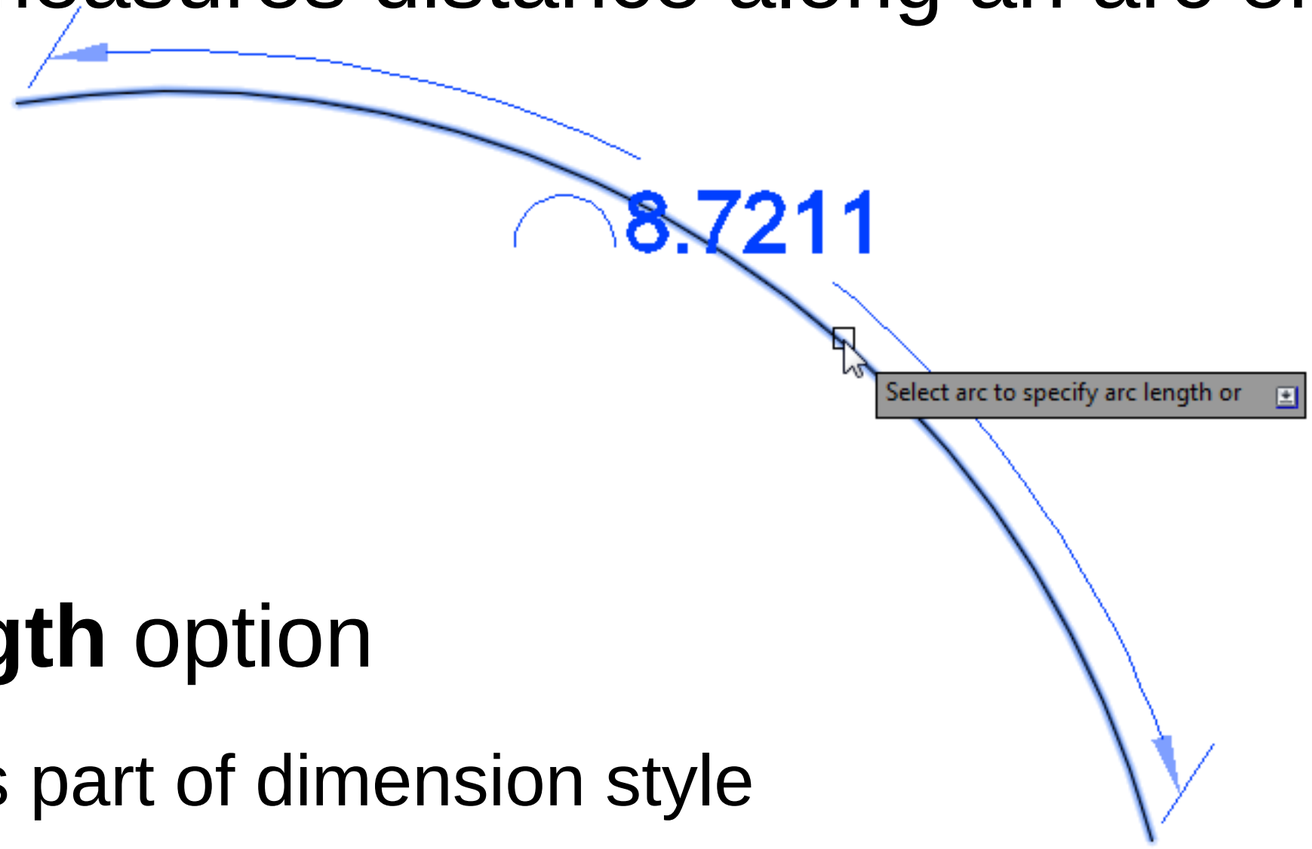


1. Automatic on hover
2. May have to select option

Symbol (∅ or R) and center mark defined as part of dimension style

Creating Arc Length Dimensions

Arc length dimension – measures distance along an arc or polyline arc



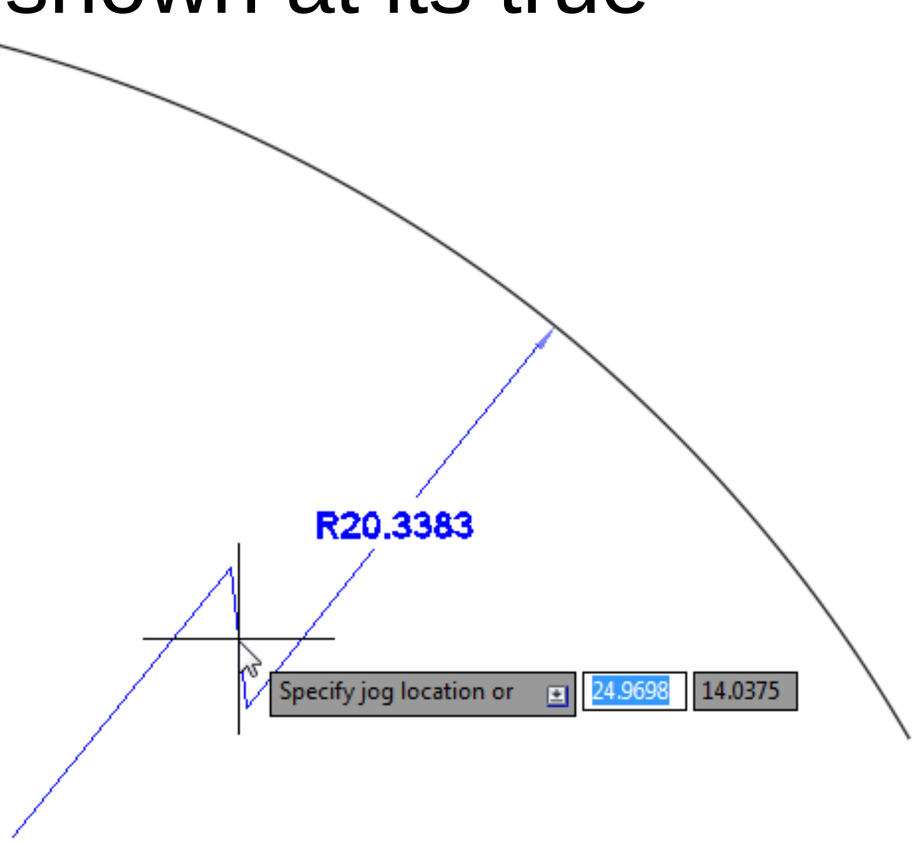
1. Choose the **arc Length** option

Hat/cap symbol (∩) defined as part of dimension style

Creating Jogged Radius Dimensions

Jogged or *foreshortened radius dimension* – measures radius of arc when center cannot be shown at its true location

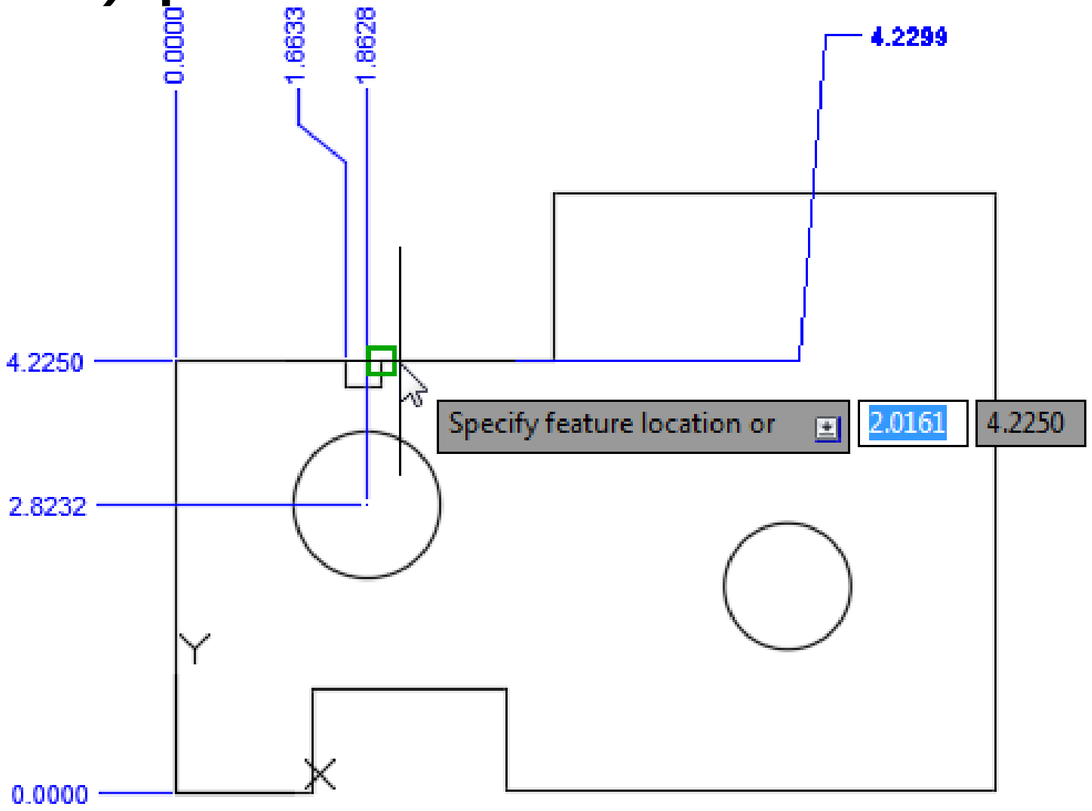
1. Choose the **Jogged** option
2. Select arc
3. Select center location
4. Select dimension line location
5. Select jog location



Creating Ordinate Dimensions

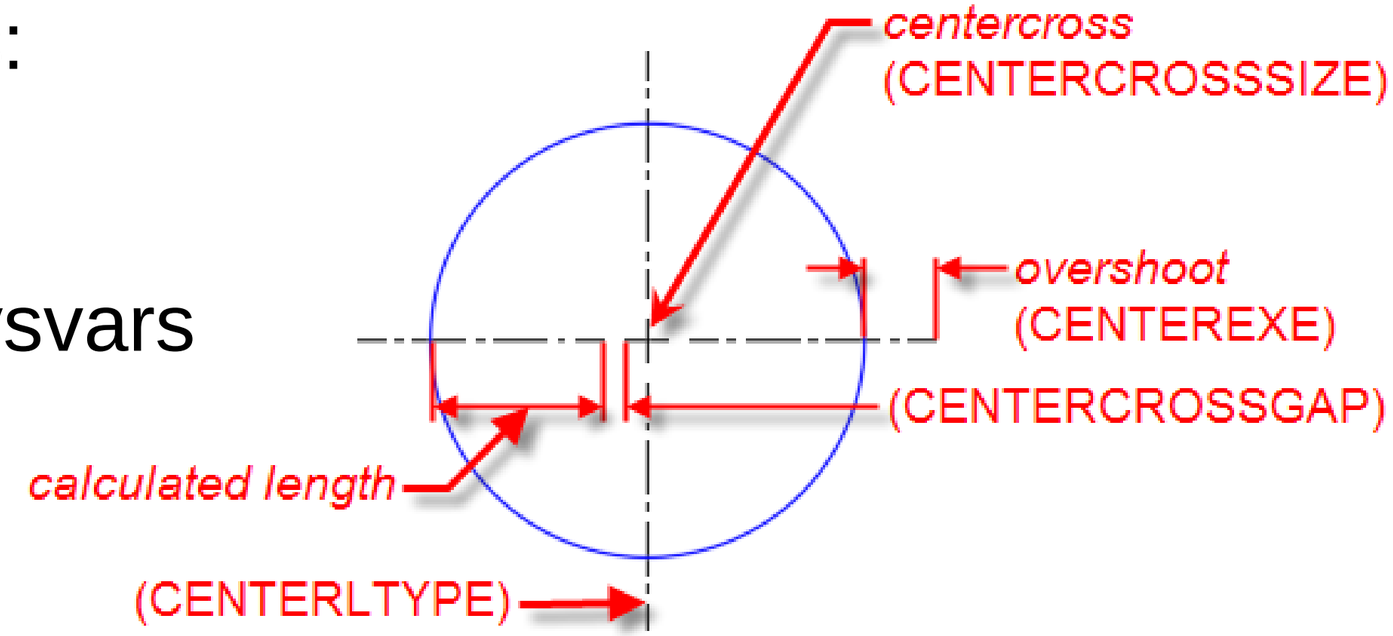
Ordinate dimension – measures perpendicular distance (X or Y value) from an origin (*datum*) point to a feature

1. Set UCS first
2. Choose **Ordinate** option



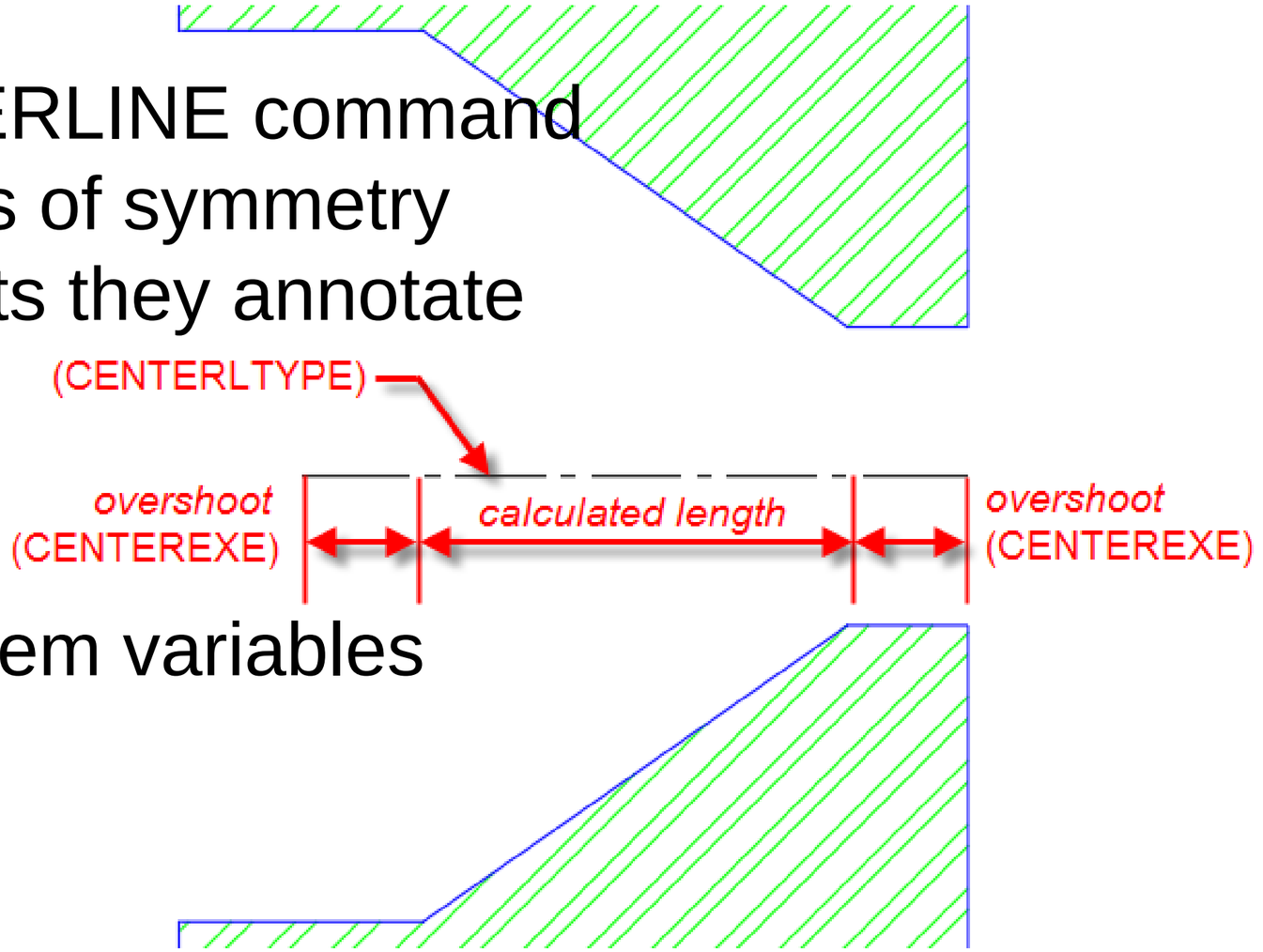
Adding Center Marks

- Created using the CENTERMARK command.
- Added at the center of an arc or circle.
- Associated with the objects they annotate.
- Different than center marks placed with dimension.
- Consist of two elements:
  - Center cross
  - Extension lines
- Controlled using new sysvars



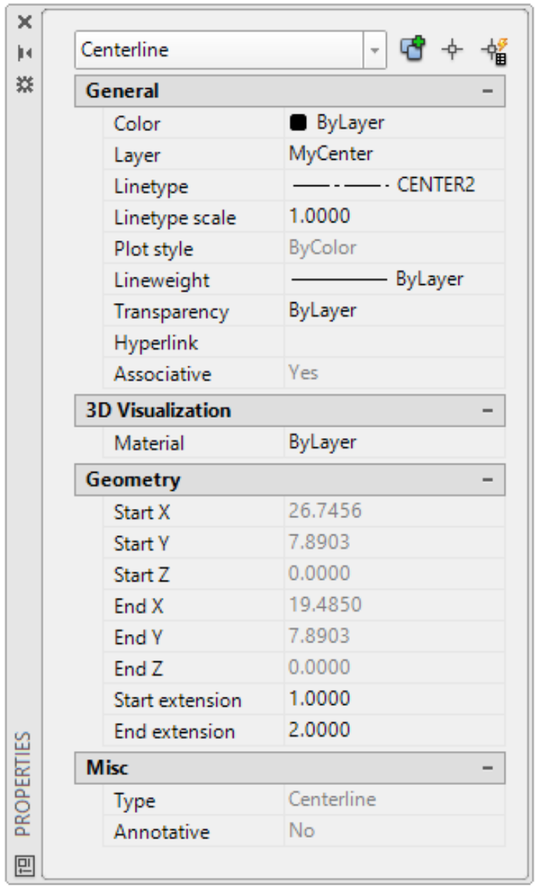
Adding Centerlines

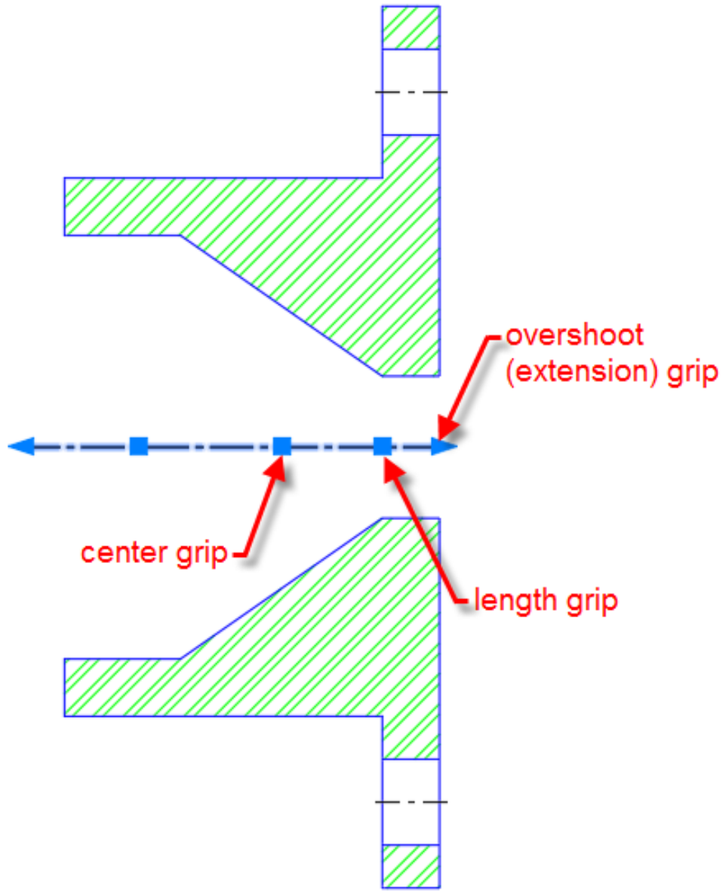
- Created using the CENTERLINE command
- Used as reference to axes of symmetry
- Associated with the objects they annotate
- Includes two parts:
  - Calculated length
  - Overshoot
- Controlled using new system variables



Modifying Center Marks and Centerlines

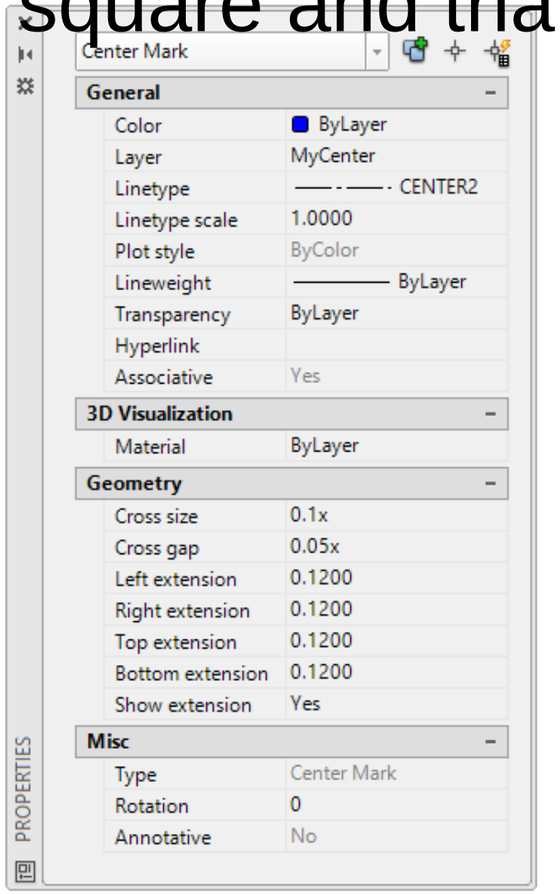
- Edit using grips or the Properties palette
- Centerlines have 5 grips
- CENTERREASSOCIATE
- CENTEREXE = overshoot
- CENTERRESET to reset extension lines

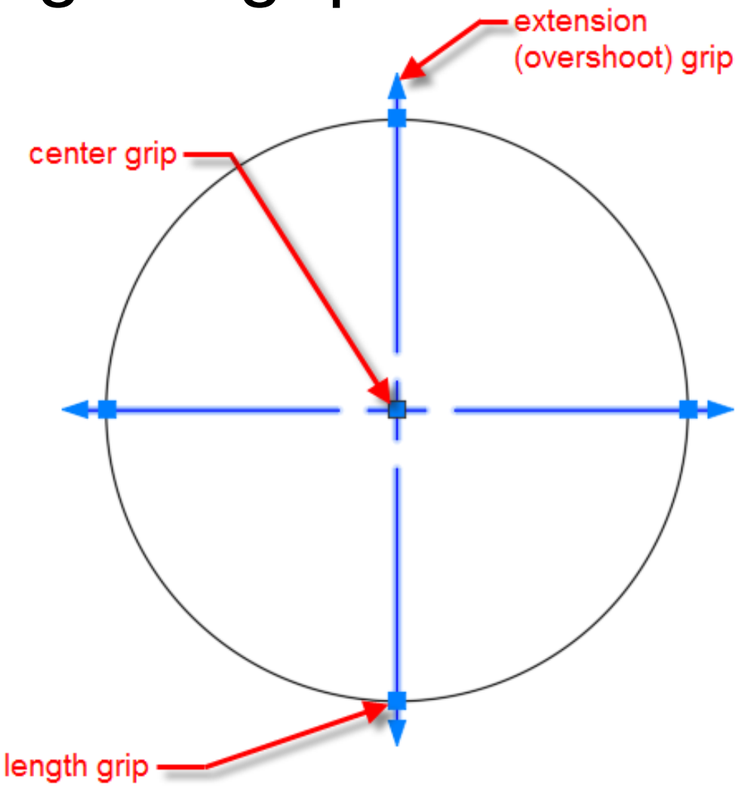




Modifying Center Marks and Centerlines

- Edit using grips or the Properties palette
- Center marks have multiple square and triangular grips
- CENTERREASSOCIATE
- CENTEREXE = overshoot
- CENTERRESET to reset extension lines

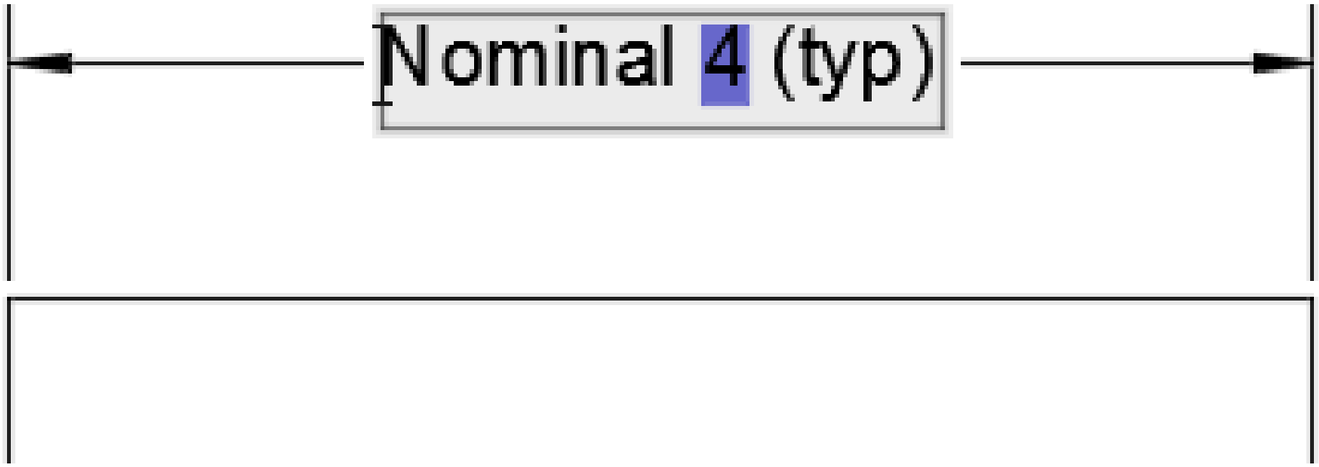




Adding and Modifying Dimension Text

Dimension Text

- Created automatically while dimensioning
- Can include prefix/suffix/other user-supplied text
- Treated as a single string of text
- You can control dimension text formatting



When using DIM command

- **Mtext** option – use Text Editor ribbon
- **Text** option– change actual dimension text
- **Text aNgle** option – change angle of text

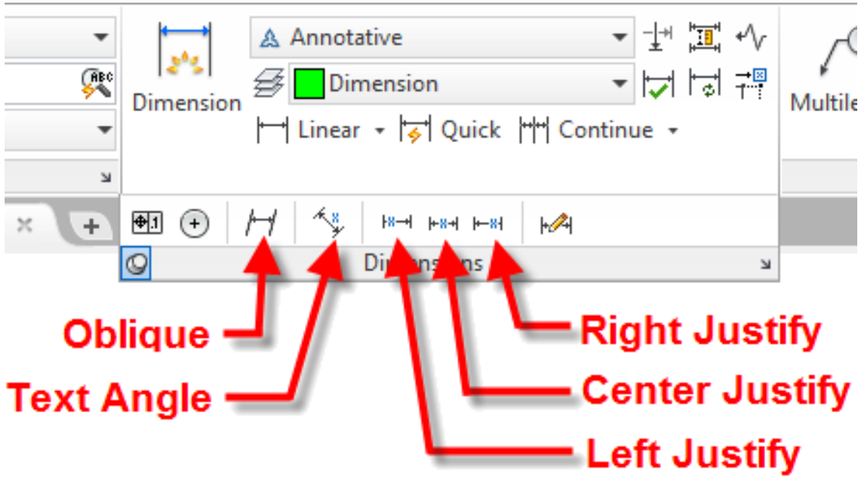
Modifying Dimension Components

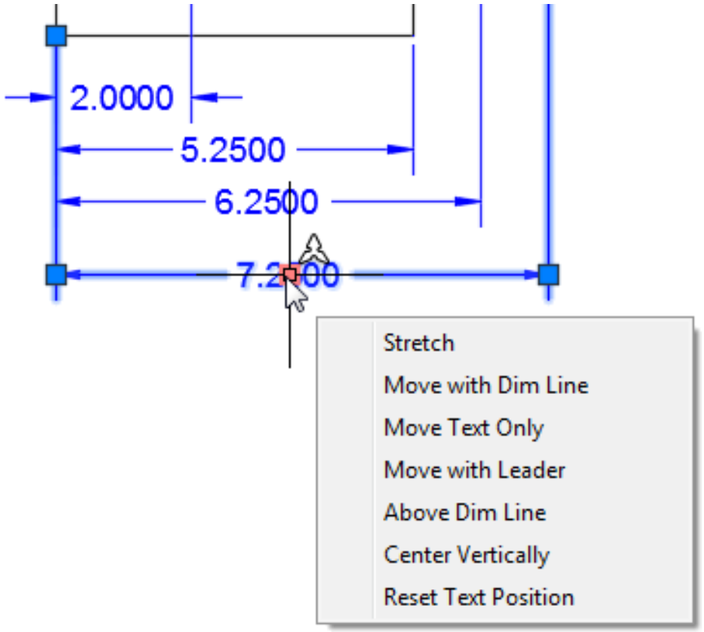
When you modify objects that have been dimensioned

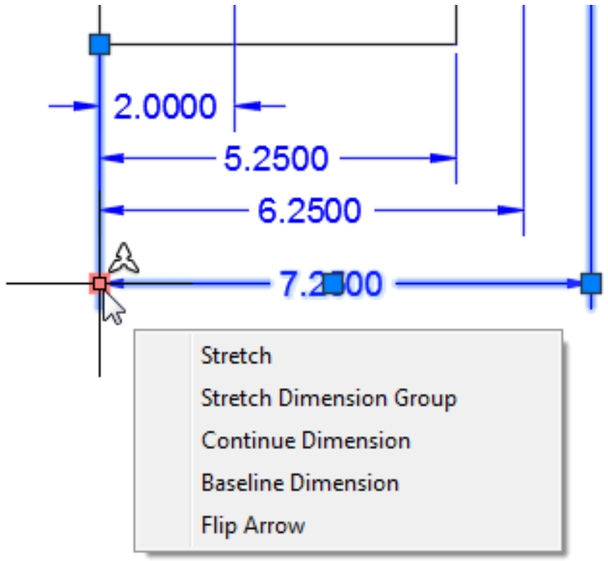
- Associative dimensions are *driven*: they update automatically when you modify objects that have been dimensioned
- Not bi-directional

You can modify dimension components

- Use grip editing
- Use tools in the Dimension panel
- Use cursor menu tools

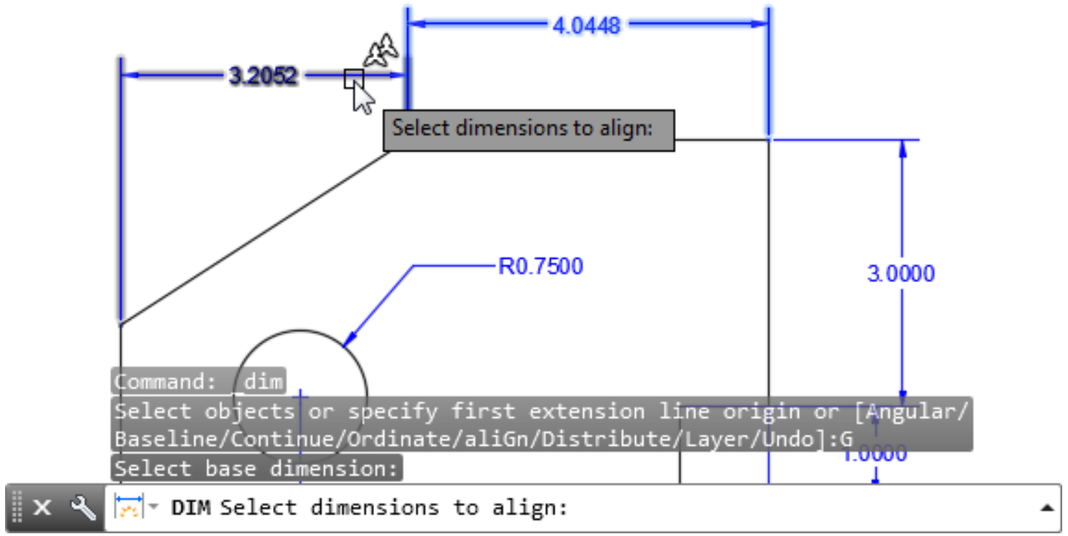


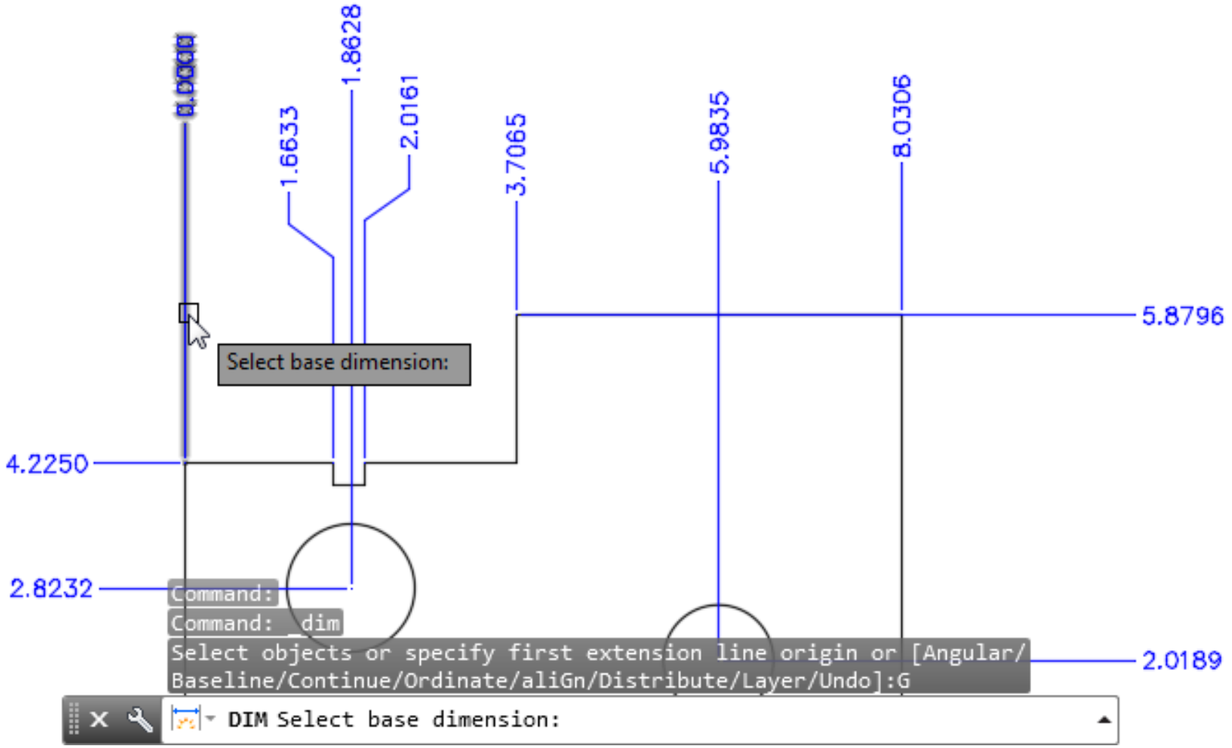




Aligning Dimensions

- Use the **aliGn** option of the DIM command



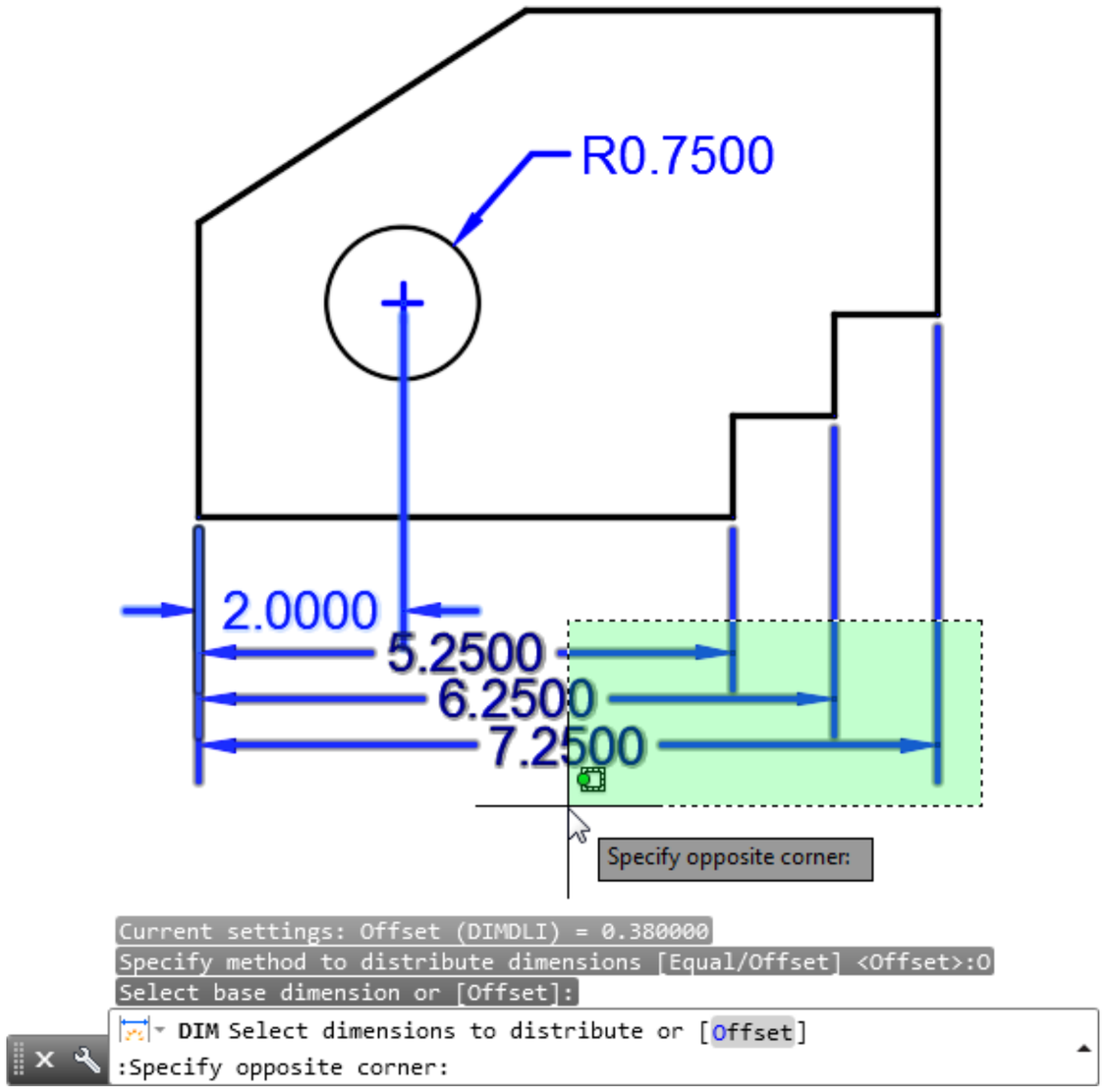


Even works with ordinate dimensions

Adjusting the Space between Dimensions

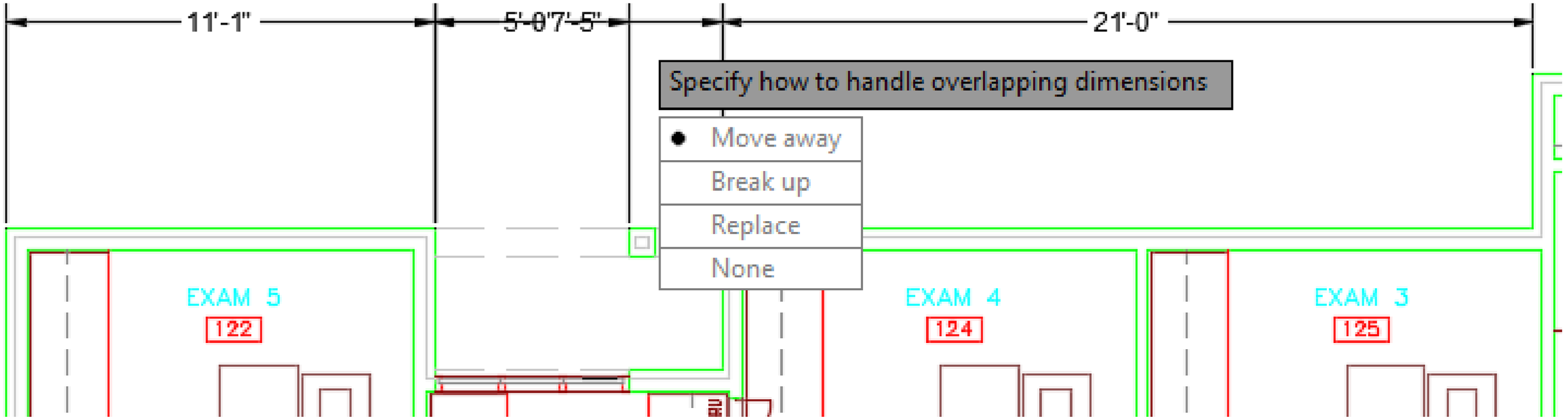
- Can use grip editing
- Use **Distribute** option of DIM command

Even works with ordinate dimensions



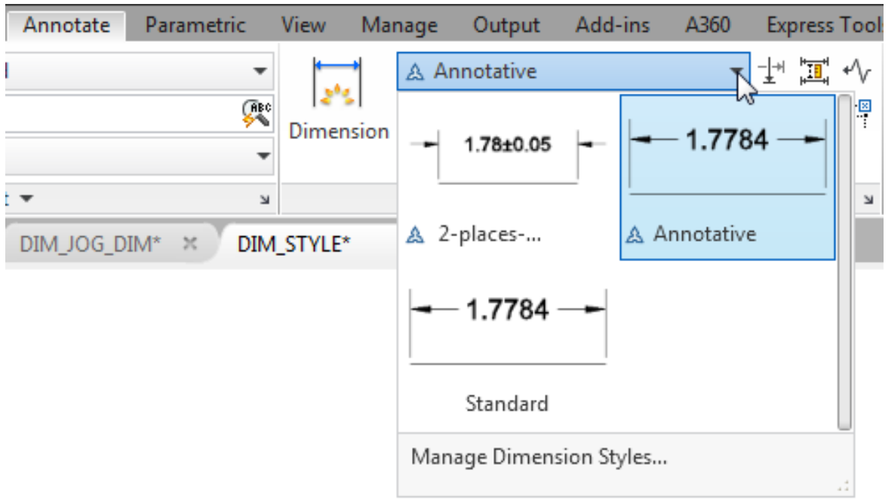
Adjusting Overlapping Dimensions

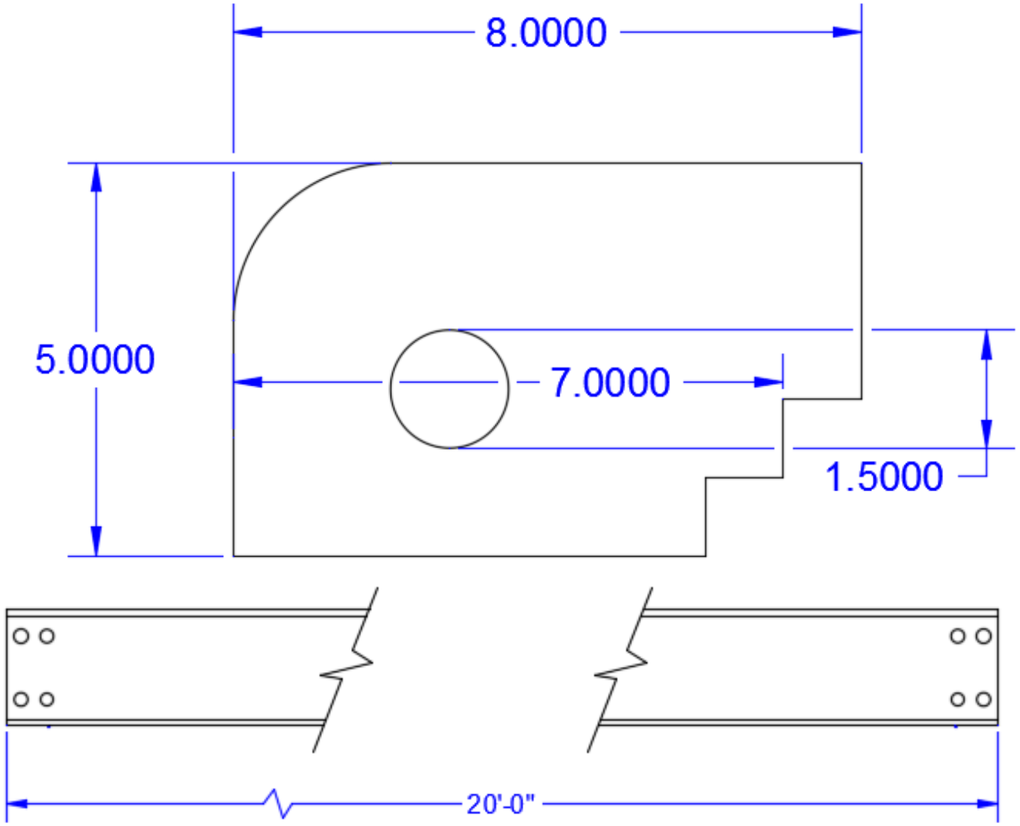
If you attempt to create a dimension that overlaps a similar dimension

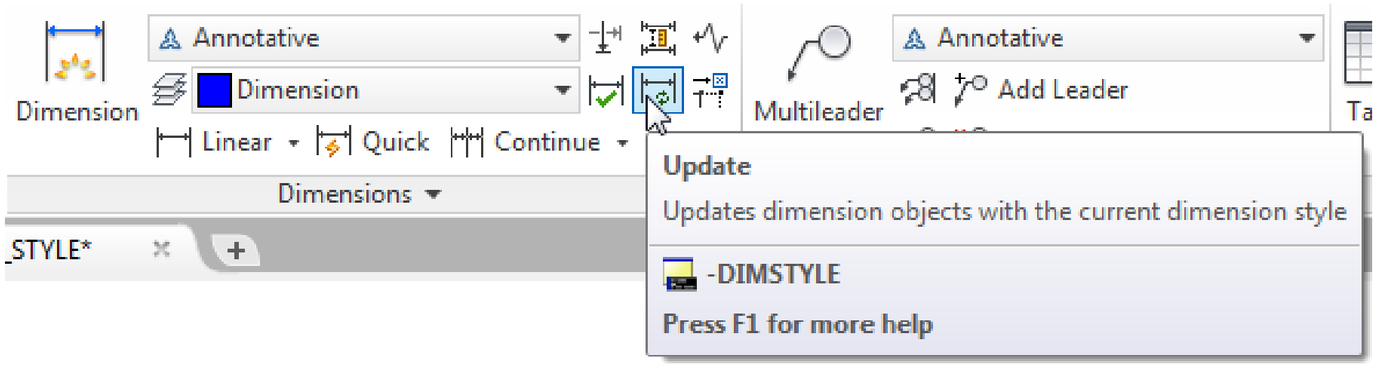


Other Dimensioning Tools

- **DIMBREAK**
- **DIMJOGLINE**
- **DIMSTYLE**







Questions & Answers

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