Isometric dimensions are parallel to and align with a corresponding plane. See Figure 20A-1. AutoCAD does not provide tools that automate the process of creating true isometric dimensions. You can use a combination of dimension commands to align extension lines and the dimension text with an isometric plane. However, the resulting arrowheads are not in an isometric format.

To create true isometric dimensions, you can draw extension and dimension lines as lines, the dimension value as mtext or text, and closed arrowheads as filled shapes. Another option is to dimension without arrowheads and then add isometric arrowheads as separate objects. A third option is to construct custom isometric arrowheads to assign to specific dimension styles.

Figure 20A-1.
An example of an isometric part drawing with isometric dimensions. Note the text and arrowhead orientation in relation to the extension lines.

Title: Bracket
Material: SAE4320
Using Dimension Commands

Using dimension commands to construct isometric dimensions is usually faster than creating isometric dimensions as separate objects. However, arrowheads do not display in isometric format unless you construct custom isometric arrowheads to assign to dimension styles. You can create isometric text styles and dimension styles for each isometric plane. However, you may find it easier to use standard text and dimension styles and edit each dimension as necessary to create isometric dimensions.

Add dimensions using the DIMALIGNED command. See Figure 20A-2A. You can use the DIMALIGNED or DIMLINEAR command to dimension vertically aligned points, but you must use the DIMALIGNED command for all other applications. Then use the Oblique option of the DIMEDIT command to align the extension lines with the isometric plane. Pick the dimension to edit and specify the isometric angle. Enter a specific value, such as 30 or 210, or pick two points. See Figure 20A-2B.

Rotate the dimension text to align with the isometric plane. See Figure 20A-2C. Use the Rotate option of the DIMEDIT command or the Angle option of the DIMTEDIT command.

**Figure 20A-2.**
The steps required to create isometric-looking dimensions using dimension commands. A—Use the DIMALIGNED command to dimension features. B—Use the Oblique option of the DIMEDIT command to edit the obliquing angle of extension lines. Be sure to specify the correct isometric angle. C—Use the Rotate option of the DIMEDIT command or the Angle option of the DIMTEDIT command to rotate the dimension text. D—Use the DIMEDIT command to edit the obliquing angle of dimension text.
Finally, edit the dimension text to specify an obliquing angle according to the isometric plane. See Figure 20A-2D. If you did not prepare separate isometric text and dimension styles, double-click on the dimension or use the DDEDIT command to modify the obliquing angle using the **Oblique Angle** text box in the **Formatting** panel of the **Text Editor** ribbon tab.

If you plan to add isometric arrowheads as separate objects, you can assign the **None** option to each drop-down list in the **Arrowheads** area in the **Symbols and Arrows** tab of the **New** (or **Modify**) **Dimension Style** dialog box. However, without arrowheads, the fit between close extension lines will not respond correctly. The dimension value and short dimension lines appear inside extension lines, without room for arrowheads.

---

### Isometric Arrowheads

True isometric dimensions require isometric arrowheads. See Figure 20A-3. To create an isometric arrowhead, use geometric construction and a command such as **PLINE** to draw the outline of the arrowhead. Use the same dimensions as a standard

**Figure 20A-3.**
An example of a drawing with true isometric dimension arrowheads. If you look closely, you can see that the wide portion of the arrowhead is parallel to the extension line.
arrowhead, using a 3:1 ratio and .125" (3mm) length. The wide portion of the arrowhead is parallel to the extension line. See Figure 20A-4A.

Use the HATCH or SOLID command to create filled arrowheads. Chapter 23 explains using the HATCH command, which is often the best method to apply a solid fill. To create filled arrowheads using the SOLID command, access the command and pick three points, or corners, in a clockwise or counterclockwise order. Then right-click twice or press [Enter] or the space bar twice to create the fill and exit the command. See Figure 20A-4B.

Save each arrowhead as a block for repeated use, and to group the outline with the fill. Blocks are described in Chapter 24.

Figure 20A-4.
A—Constructing the outline of isometric arrowheads. The wide portion of the arrowhead and the arrowhead length are the same as those of nonisometric arrowheads, but the wide portion of the arrowhead is parallel to the extension line. B—Filled arrowheads.

Activity 20A-1
1. Start a new drawing from scratch or use a template of your choice.
2. Draw the part shown in Figure 20A-2.
3. Use an appropriate text and dimension style to dimension the part as shown in Figure 20A-2D.
4. Save the drawing as ACT20A-1.