



Drawing in Isometric Mode

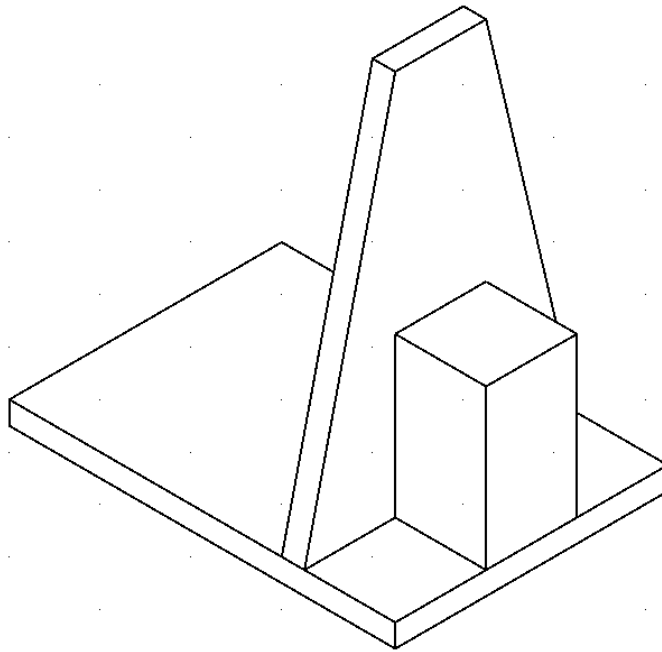
In this tutorial, you recreate the 2D drawing from the last chapter as a 3D-looking isometric drawing. (I assume that ARES is still running from the last tutorial.)

1. Enter the **New** command, and then choose *Isometric drawings.dwt* in the Specify Template dialog box.
2. Click **Open**. Notice that ARES creates a new drawing with the generic name *NONAME_1.dwg* (or similar).
3. With the **Save** command, save the drawing by the name of *Isometric part.dwg*.

You are now ready to start drawing in isometric mode.

Drawing Isometric Boxes

You will draw the part upside-down, so the details can be seen more clearly, as illustrated below.



1. Enter the **line** command:
: **line**

Notice the isometric cursor with its slanted crosshairs. It tells you which isometric drawing plane is current. There are three planes: left, top, and right (or front).

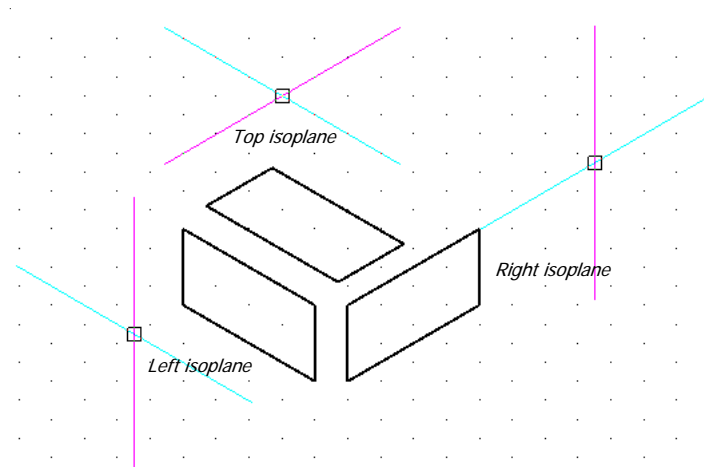
You switch between isoplanes by pressing the **F5** function key. Each time you do, ARES reports the name of the current plane:

F5 <IsometricPlane Top>

F5 <IsometricPlane Right>

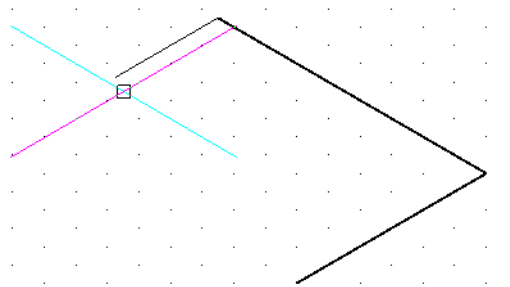
F5 <IsometricPlane Left>

In each plane, you can draw in two directions only, as summarized by the figure below:



This means you will be pressing **F5** frequently throughout the following tutorials!

2. Press **F5** until ARES reports the top isoplane:
F5 <IsometricPlane Top>
3. The first entity to draw is the top plate, which is 3" wide by 4.25" long. Continuing with the Line command, begin drawing at the center of the bottom portion of the drawing area. (The exact location is not important.)
Specify start point» *(Pick a point in the lower center of the drawing.)*
4. Move the cursor to the right. Notice that ARES's ortho mode forces the line to travel in the isoplane, 30 degrees up from the x axis.
5. Enter the length, **3**, and then press **Enter**.
Specify next point» *(Move cursor to the right.)* **3**
6. Move the cursor up, and then enter the next length, **4.5**. (Remember to press **Enter**.)
Specify next point» *(Move cursor up.)* **4.25**

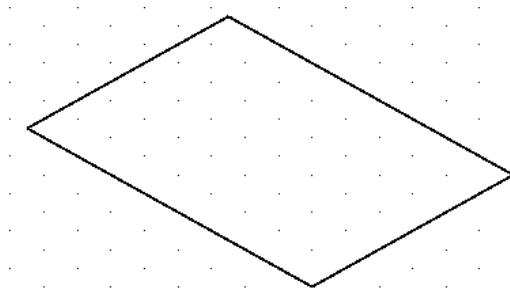


7. Move cursor left, and then enter **3**:
Specify next point» **3**



8. Close the “rectangle” by typing ‘c’:

Specify next point» **c**



9. To draw the right side of the plate, first switch to the next isoplane, right:

F5 <IsometricPlane Right>

10. Press the spacebar to restart the Line command, and then draw the 0.25" thick sides on the right isoplane, as follows:

: *(Press spacebar to repeat command.)*

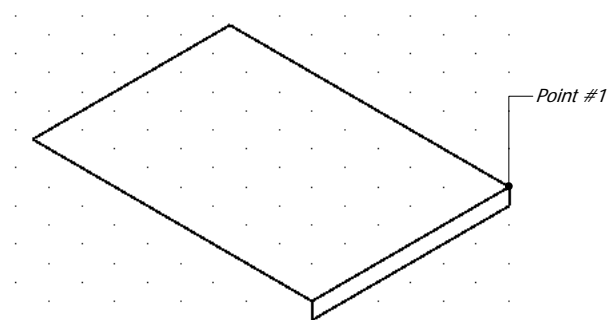
LINE Specify start point» *(Pick point #1.)*

Specify next point» **0.25**

Specify next point» **3**

Specify next point» **0.25**

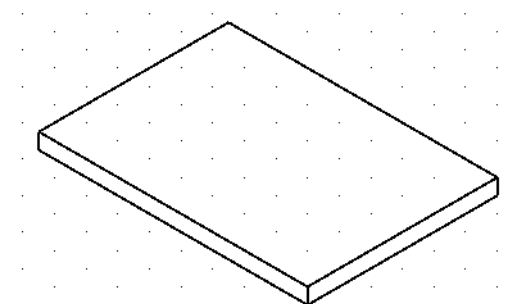
Specify next point» *(Press Enter to end the command.)*



11. To draw the left side of the plate, switch to the left isoplane:

F5 <IsometricPlane Left>

12. Press the spacebar to restart the Line command, and then draw the 0.25" thick sides on the left isoplane. You now have a rectangular plate that should look like the one in the figure below.



13. Press **Ctrl+S** to save your work.

Drawing Irregular Boxes

Drawing rectangles and squares isometrically is fairly straightforward, as the tutorial above showed. The difficulty comes with drawing irregularly-shaped objects; the workaround is to draw a rectangular outline, and then trim it.

In this tutorial, you draw the trapezoid-shape. It is 3" wide by 4.25" tall.

1. The trapezoid is located one inch from the front edge of the baseplate. Use **From** entity snap to begin the line, as follows:

: **line**

Press **F5** until the drawing is in the right isoplane.

Specify next point» **F5** <IsometricPlane Right>

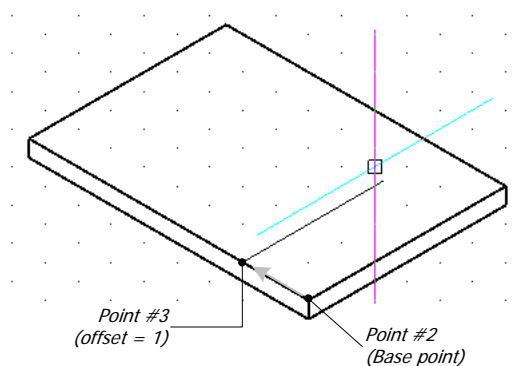
2. Enter **From** to indicate the offset distance, and then pick point #2:

Specify start point» **from**

Base point (**Pick point #2.**)

3. Move the cursor to the left-top, and then specify the offset distance, 1:

(Offset) (**Move cursor towards point #3.**) **1**



4. You can now draw the rest of the rectangle as per the earlier tutorial.

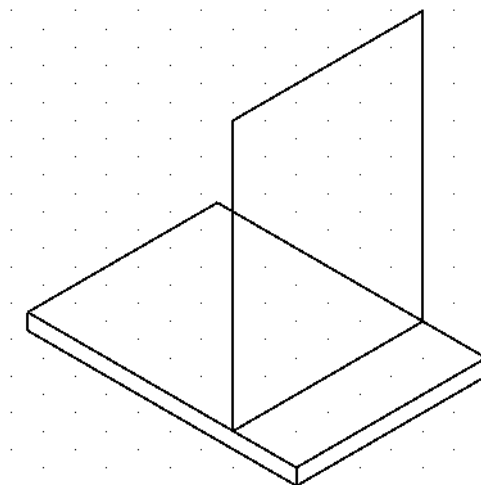
Specify next point» **3**

Specify next point» **4.25**

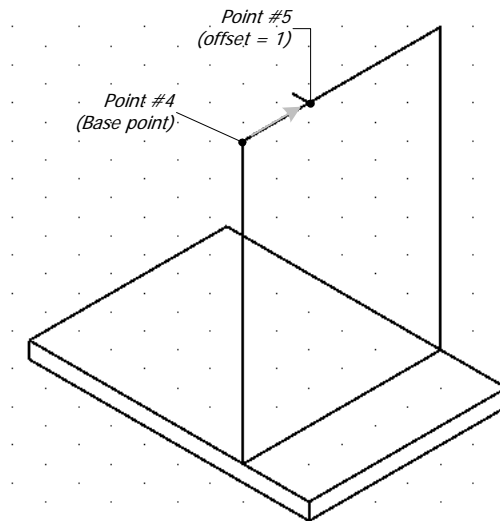
Specify next point» **3**

Specify next point» (**Press Enter.**)

The result should look like the figure below.

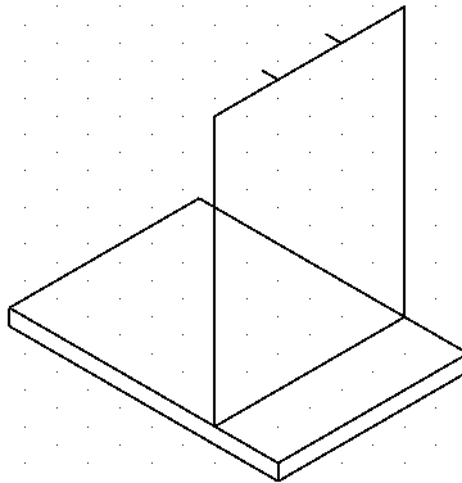


5. Now you need to trim the rectangle to represent the trapezoid. The top is 1" wide. Use **From** again to position the next line 0.25" long in the top isoplane:



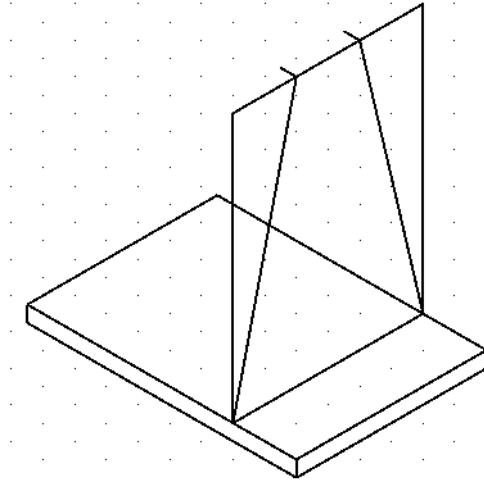
```
: (Press Enter.)
LINE F5 <IsometricPlane Top>
Specify start point» from
Base point (Pick point #4.)
(Offset) (Move cursor to point #5.) 1
Specify next point» .25
Specify next point» (Press Enter.)
```

6. Repeat to draw the other 0.25"-long line.



7. With the two stubby lines in place, you can add lines to form the trapezoid, as follows:
- Turn off ortho mode by clicking the **Ortho** button on the status bar.

- b. With the **Line** command, draw the two diagonal lines shown in the figure below.



8. Now you trim and erase some of the lines to complete the trapezoid:

- a. Start the **Trim** command.

: **trim**

- b. Press **Enter** to select all entities as cutting edges.

Specify cutting edges ...

Options: Enter to specify all entities or

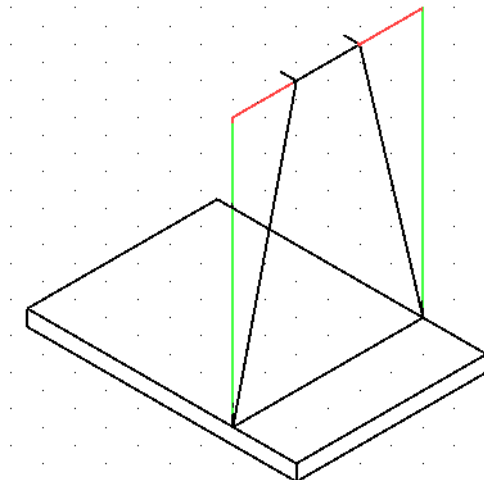
Specify entities» (*Press Enter to select all entities in the drawing.*)

- c. Remove the line segments shown in red by the figure below:

Specify segments to remove» (*Select one segment.*)

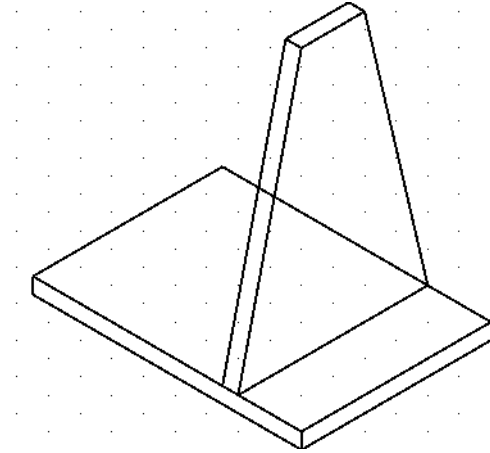
Specify segments to remove» (*Select other segment.*)

Specify segments to remove» (*Press Enter to end the command.*)

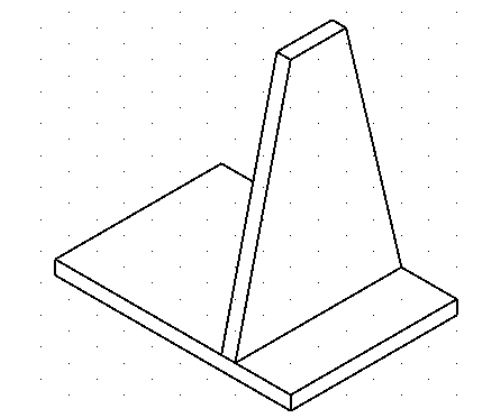


- d. Use the **Erase** command to remove the segments shown in green. (These cannot be removed by the Trim command.)

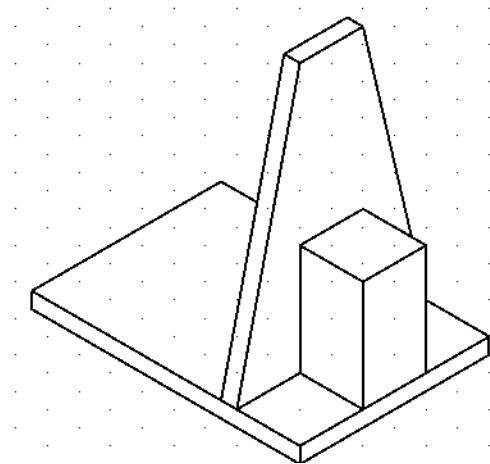
9. Draw the remainder of the trapezoid with the **Line** command.



10. Use the **Trim** command to remove the hidden lines.



11. To complete the drawing, use the techniques you learned above to draw the one remaining box. It has a 1"-square base and is 1.75" tall. The result should look like this:



12. Press **Ctrl+S** to save your work to disc.

Placing Isometric Text

Adding text to isometric drawings takes these two steps:

- i. Select an isoplane in which to work.
- ii. Start the `-SimpleNote` or `Note` command, and then specify the parameters appropriate to the isoplane:
 - Style name
 - Rotation angle

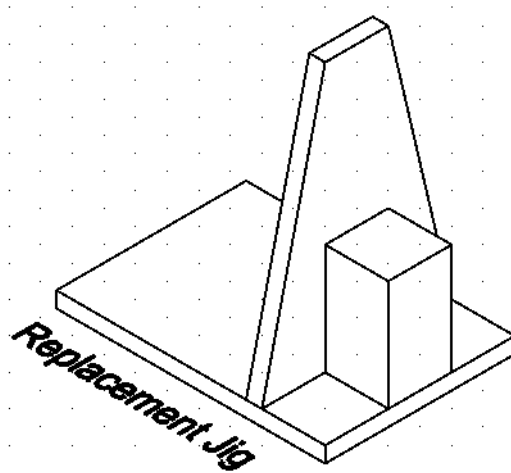
Use the following table to remind you which style names and rotation angles to use for each isoplane:

Isoplane	Text Style Name	Rotation Angle
Left	iso-30	-30°
Top	iso+30	-30°
Right	iso+30	30°

In the following tutorial, you add text to the top isoplane:

1. Press **F5** until you reach the top isoplane:
: **F5** <IsometricPlane Top>
2. Start the **-SimpleNote** command, and then enter 'st' to specify the text style:
: **-simplenote**
Options: Justify, textSTyle or
Specify start position» **st**
3. Specify the **iso+30** style name.
Default: Standard
Options: ? to list or
Specify name» **iso+30**
4. Pick a point in the drawing to start the text, and then specify a suitable height, such as 0.35":
Specify start position» *(Pick a point.)*
Specify height» **0.35**
5. From the table above, you know that the angle needs to be -30 degrees:
Specify text angle» **-30**
6. Finally, enter some text, and then press **Enter** twice.
Specify text» **Replacement Jig**
Specify text» *(Press Enter.)*

The result should look similar to the figure illustrated below.



Placing Isometric Dimensions

Adding dimensions to isometric drawings is much more complex than adding text, unfortunately. It takes these steps:

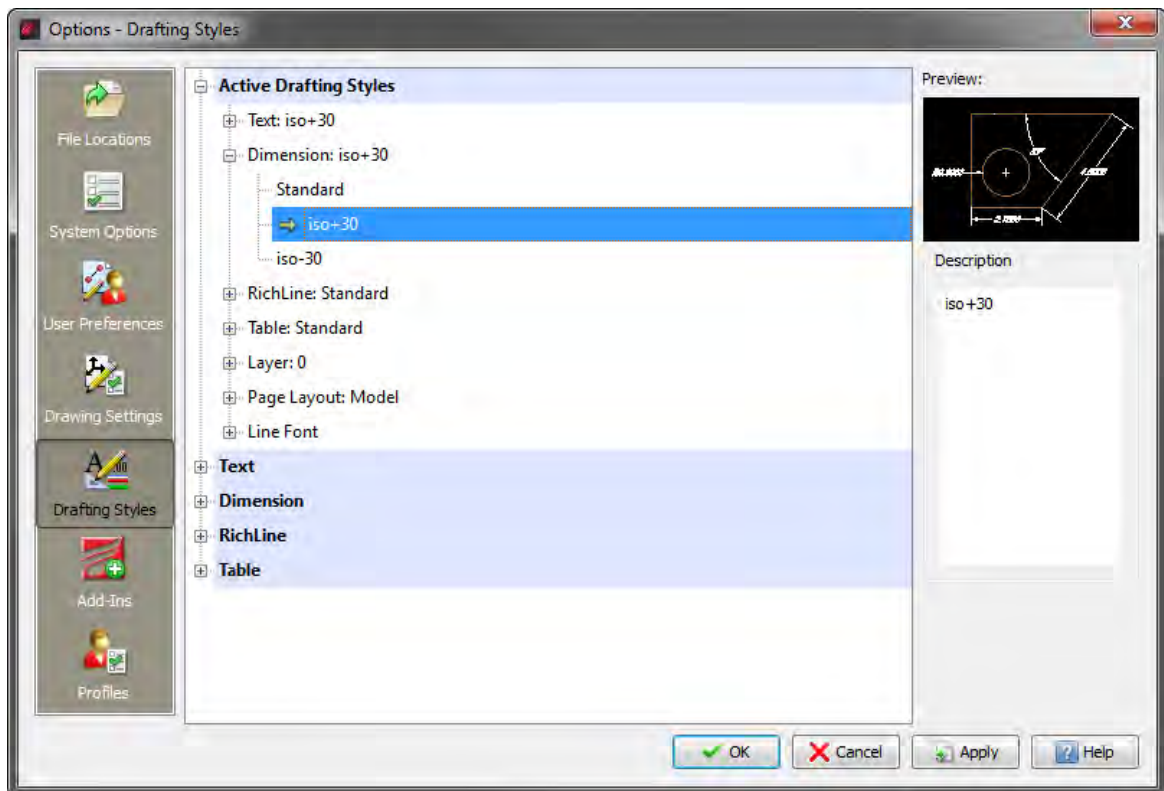
- i. Select an isoplane in which to work.
- ii. Set the appropriate dimension style.
- iii. Use the ParallelDimension command for linear dimensions.
- iv. After all dimensions are placed, use the Dimension | Oblique menu to adjust the angle of extension lines.

Use the following table to remind you which dimension styles to use for each isoplane:

Isoplane	DimStyle Name	EditDimension Oblique Angle
Left	iso-30	-60°
Top	iso+30	60°
Right	iso+30	60°

In this tutorial, you place a dimension in the top isoplane.

1. Before starting the DimAligned command for placing isometric dimensions, you need to set the dimension style name. This is done through the Styles command:
 - a. Enter the **Styles** command.
 - b. Open the **Dimension** node.
 - c. Double-click **iso+30** to make the active dimension style.



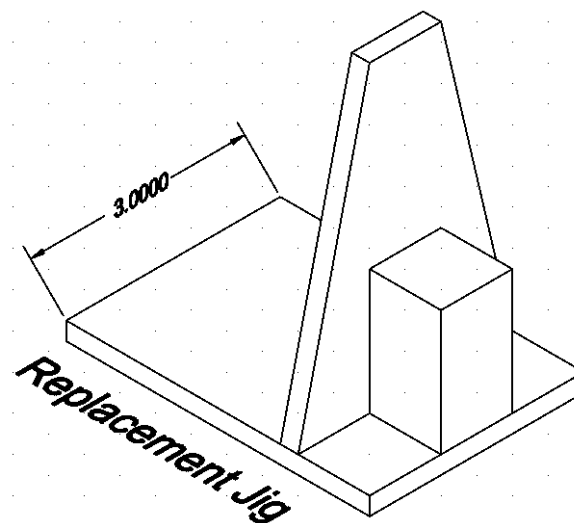
- d. Click **OK**.
2. Ensure the active isoplane is set to top.
3. Start the **ParallelDimension** command:

```

: paralleldimension
Default: Entity
Options: Entity or
Specify first extension line position» e
Specify entity» (Pick a line.)

Options: Angle, Note, Text or
Specify dimension line position» (Position the dimension line.)
Dimension Text : 3.0000

```





- After all dimensions are placed, use the **Dimension | Oblique** menu to adjust the angle of extension lines. (You could enter the EditDimension command and its Oblique Angle option, but the menu pick takes you directly to the obliquing option, which is more convenient.)

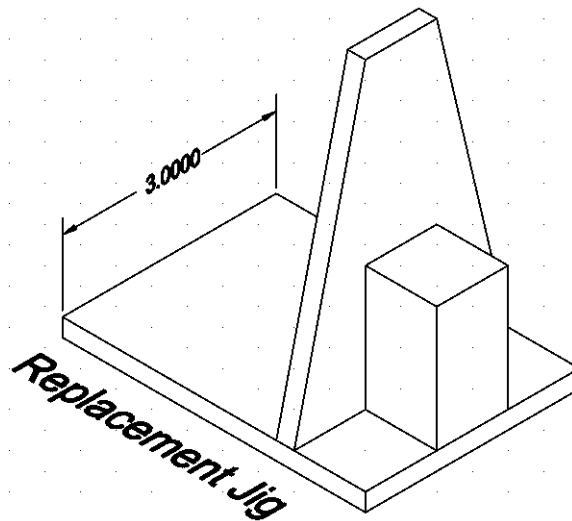
For this dimension, adjust the extension lines by 60 degrees, as follows:

```

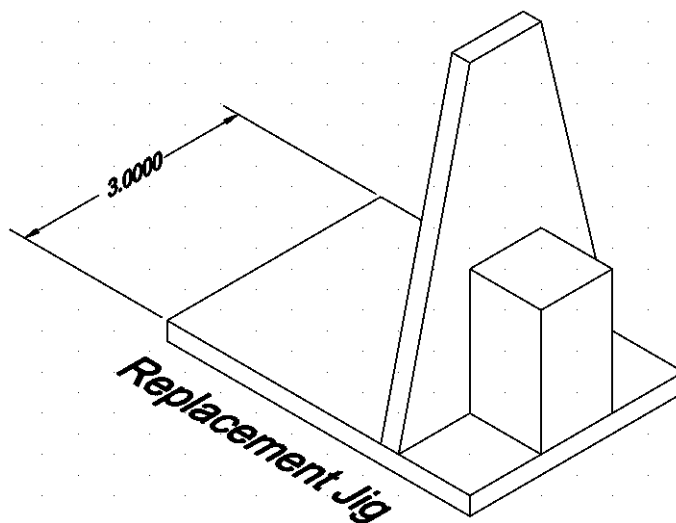
: _EDITDIMENSION
Default: Home
Options: Angle, Home, Move, New, Oblique or
Specify option» _O
Options: Enter to exit or
Specify oblique angle» -60

Specify entities» (Choose the dimension.)
1 found, 1 total
Specify entities» (Press Enter to end the command.)

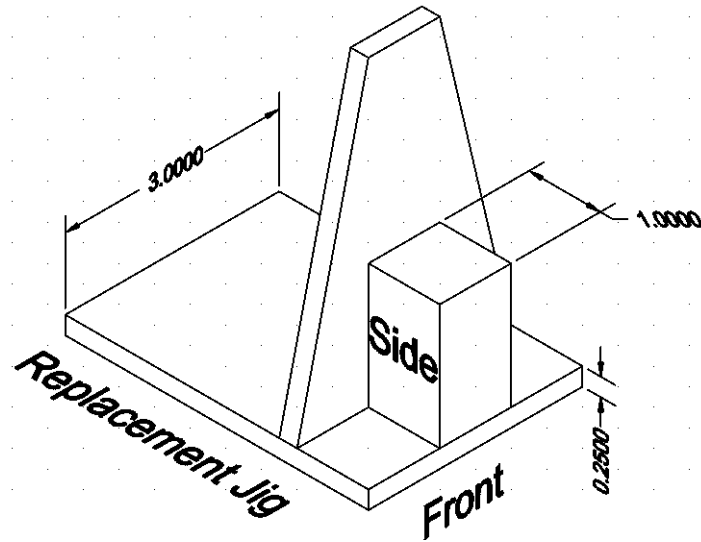
```



TIP You get a different — but equally as valid — result when you enter -60 degrees, as illustrated below.



5. If you wish, add more isometric text and dimensions to the drawing.



6. Press **Ctrl+S** to save your work, and then exit ARES.

Summary

In this chapter you learned how to simulate the look of a three-dimensional drawing through the use of isometric drafting. You learned how to oblique the angles of text and dimensions to make them look “correct.” In the next chapter, you turn this design into a real 3D drawing.