

POLAR COORDINATE INPUT

In Lesson 9 you learned to control the length and direction of horizontal and vertical lines using Relative Input and Direct Distance Entry. Now you will learn how to control the length and **ANGLE** of a line using **POLAR Coordinate Input**.

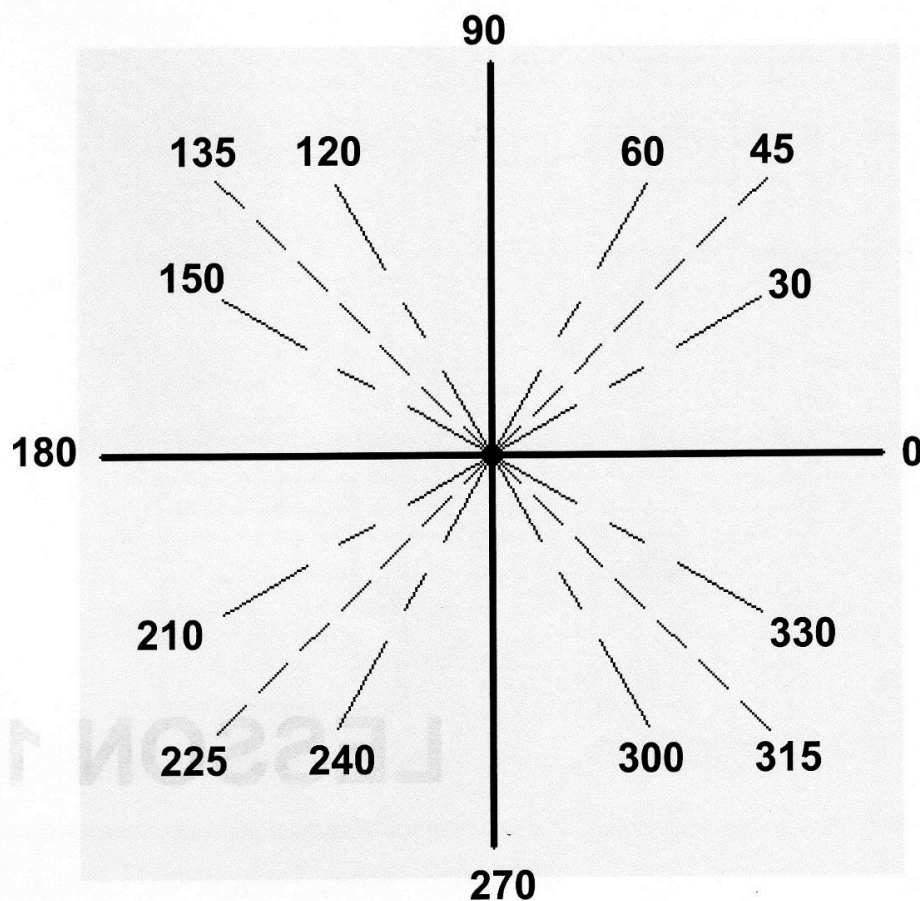
UNDERSTANDING THE "POLAR DEGREE CLOCK"

Previously when drawing Horizontal and Vertical lines you controlled the direction using a Positive or Negative input. **Polar Input is different**. The Angle of the line will determine the direction.

For example: If I want to draw a line at a 45 degree angle towards the upper right corner, you would use the angle 45. But if I want to draw a line at a 45 degree angle towards the lower left corner, you would use the angle 225.

You may also use Polar Input for Horizontal and Vertical lines using the angles 0, 90, 180 and 270. No negative input is required.

POLAR DEGREE CLOCK



POLAR COORDINATE INPUT....continued

DRAWING WITH POLAR COORDINATE INPUT

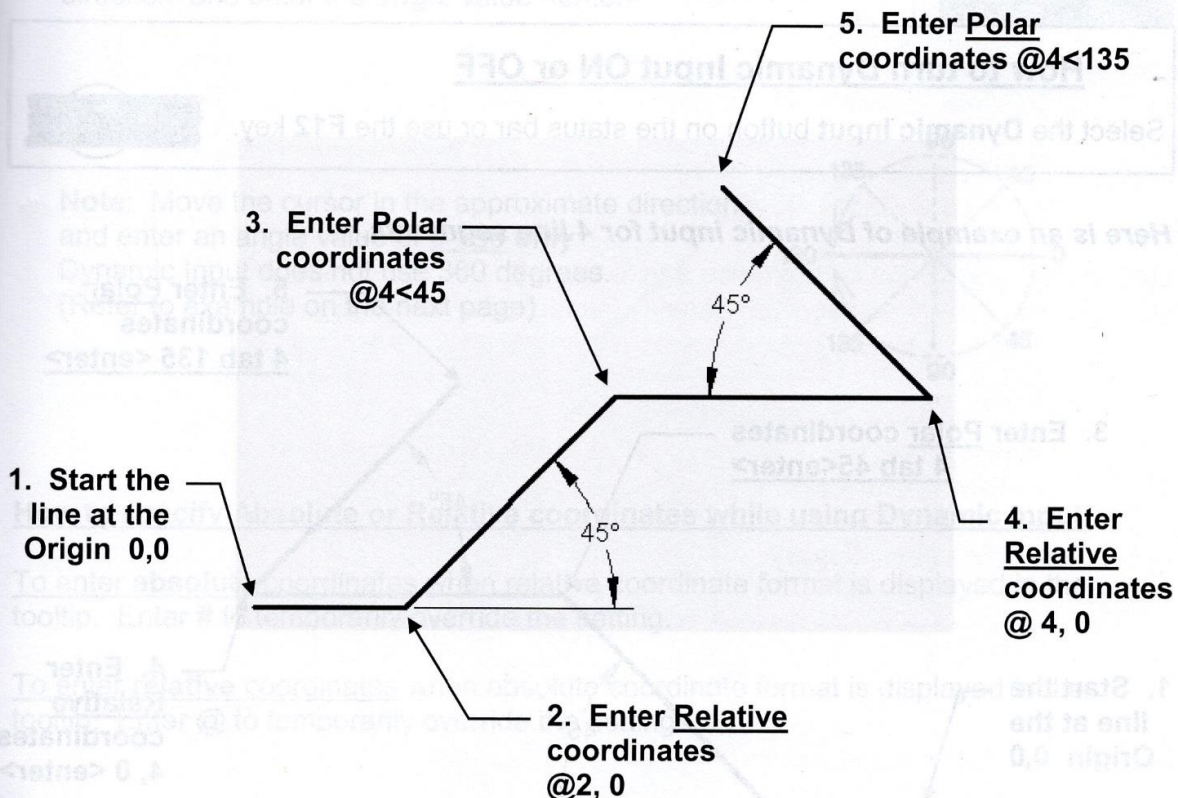
When entering polar coordinates the first number represents the **Distance** and the second number represents the **Angle**. The two numbers are separated by the **less than (<)** symbol. The input format is: **distance < angle**

Note: If you are using Dynamic Input, refer to the next page.



A Polar coordinate of **@6<45** will be a distance of 6 units and an angle of 45 degrees **from the last point entered**.

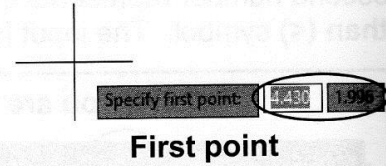
Here is an example of Polar input for 4 line segments.



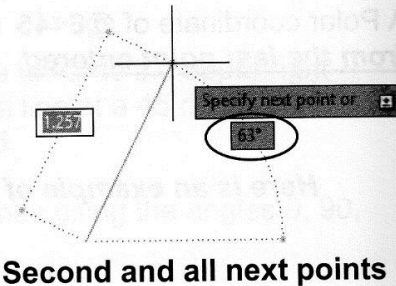
DYNAMIC INPUT

To help you keep your focus in the “drawing area”, AutoCAD has provided a command interface called **Dynamic Input**. You may input information within the Dynamic Input tool tip box instead of on the command line.


When AutoCAD prompts you for the **First point** the Dynamic Input tool tip displays the **Absolute: X, Y** distance from the Origin.
 Enter the **X** dimension, press the **Tab key**, enter the **Y** dimension then **<enter>**.



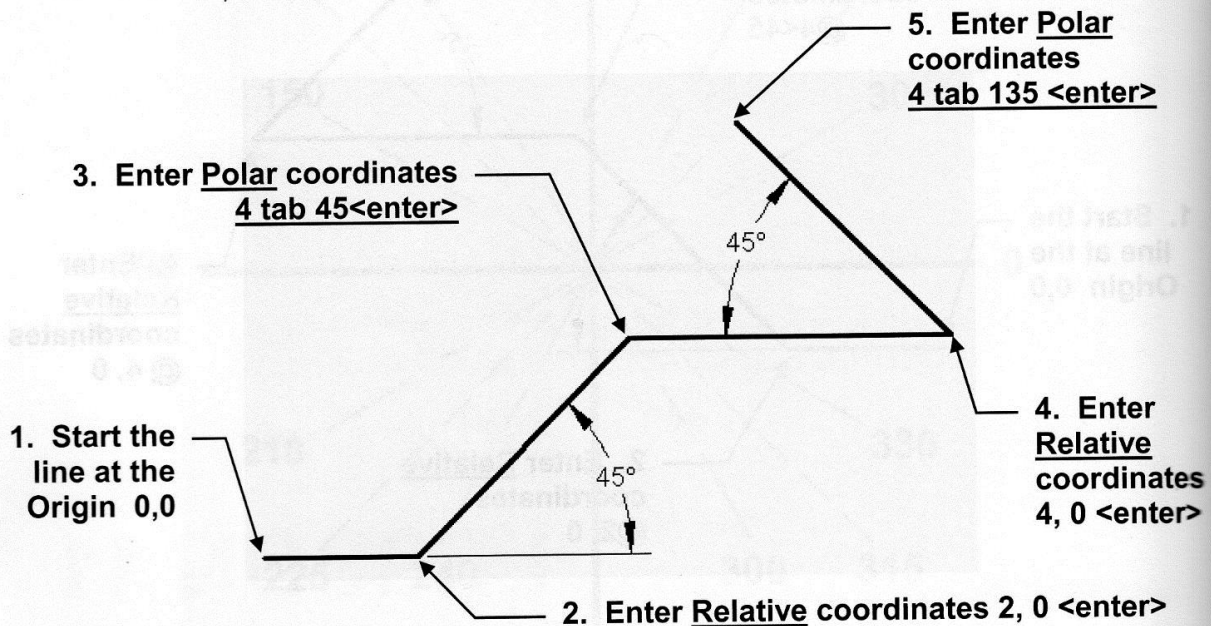
When AutoCAD prompts you for the **Second** and all **Next points** the Dynamic Input tool tip displays the **Relative: Distance and Angle** from the last point entered.
 Enter the **distance**, press the **tab key**, move the cursor in the approximate desired angle and enter the **angle** then **<enter>**. (Note: The @ is not necessary)



How to turn Dynamic Input ON or OFF

Select the **Dynamic Input** button on the status bar or use the **F12** key. 

Here is an example of Dynamic input for 4 line segments.

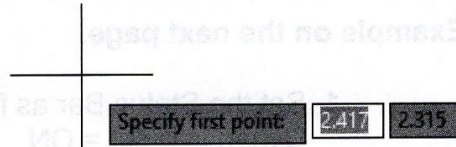


Note: Refer to **Appendix C** for more ways to control the Dynamic Input Tool tip box display.

DYNAMIC INPUT....continued

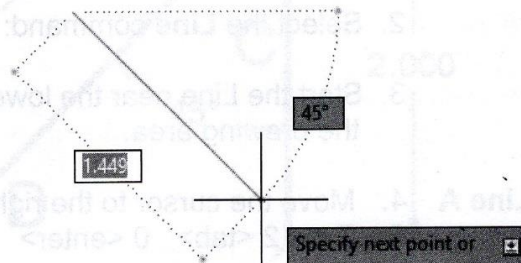
To enter Cartesian coordinates (X and Y)

1. Enter an "X" coordinate value and a comma.
2. Enter an "Y" coordinate value <enter>.

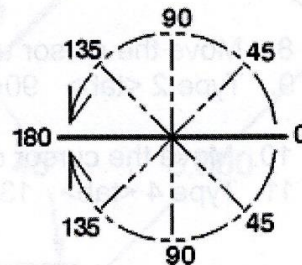


To enter Polar coordinates (from the last point entered)

1. Enter the **distance** value from the last point entered.
2. Press the **Tab** key.
3. Move the cursor in the approximate direction and enter the **angle** value <enter>



Note: Move the cursor in the approximate direction and enter an angle value of 0-180 only. Dynamic Input does not use 360 degrees. (Refer to example on the next page)



How to specify Absolute or Relative coordinates while using Dynamic Input.

To enter **absolute** coordinates when relative coordinate format is displayed in the tooltip. Enter **#** to temporarily override the setting.

To enter **relative** coordinates when absolute coordinate format is displayed in the tooltip. Enter **@** to temporarily override the setting.

Note about OrthoMode

You may toggle OrthoMode **ON** and **OFF** by holding down the **shift** key. This is an easy method to use Direct Distance Entry while using Dynamic Input.

USING DYNAMIC INPUT and POLAR COORDINATES

The following is a simple drawing to practice Dynamic Input and Polar coordinates. Think about how this differs from the basic polar input on page 11-2 and 11-3.

Example on the next page.

- 1 Set the Status Bar as follows:
Dynamic Input = ON All others = OFF



2. Select the **Line** command:
3. Start the Line near the lower left corner of the drawing area.

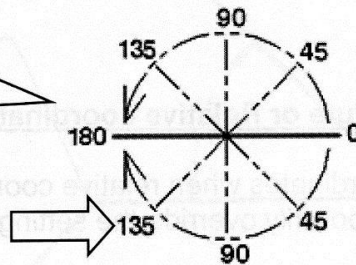
- Line A**
4. Move the cursor to the right.
 5. Type 2 <tab> 0 <enter>

- Line B**
6. Move the cursor up and to the right
 7. Type 3 <tab> 45 <enter>

- Line C**
8. Move the cursor up.
 9. Type 2 <tab> 90 <enter>

- Line D**
10. Move the cursor down and to the left.
 11. Type 4 <tab> 135 <enter> (Note: $180 - 45 = 135$)

If you move the cursor around you will notice that the angle value display never exceeds 180

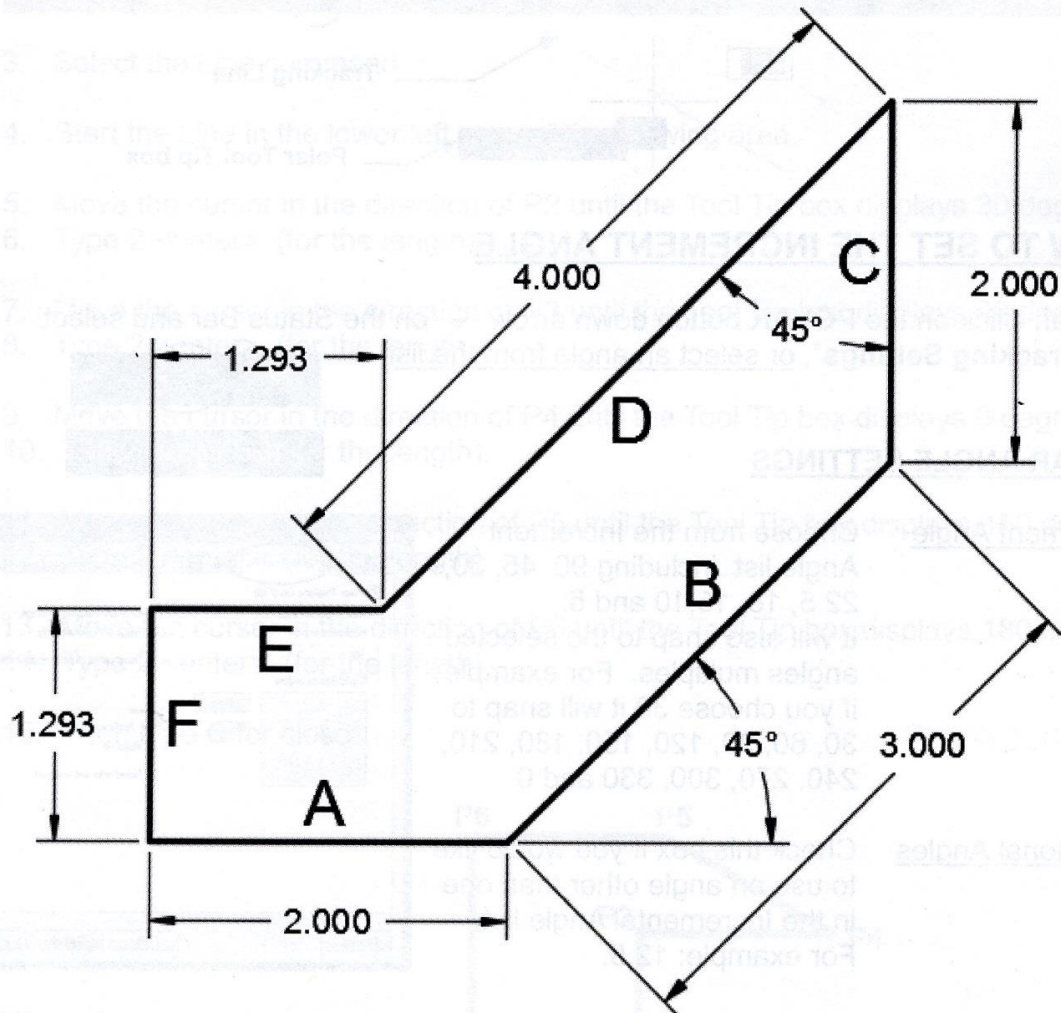


- Line E**
12. Move the cursor to the left.
 13. Type 1.293 <tab> 180 <enter>

- Line F**
14. Move the cursor down.
 15. Type 1.293 <tab> 90 <enter>
 16. <enter> to stop

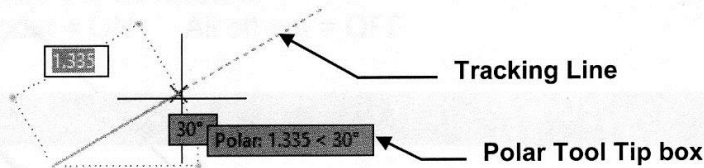
Continued on the next page...

USING DYN INPUT and POLAR COORDS....continued



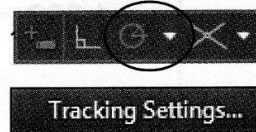
POLAR TRACKING

Polar Tracking can be used instead of **Dynamic Input**. When **Polar Tracking** is “ON”, a dotted “**tracking**” line and a “**tool tip**” box appear. The tracking line.... “snaps” to a **preset angle increment** when the cursor approaches one of the preset angles. The word “**Polar**”, followed by the “**distance**” and “**angle**” from the last point appears in the box. (A step by step example is described on the next page.)



HOW TO SET THE INCREMENT ANGLE

1. Left Click on the **POLAR** button down arrow ▼ on the Status Bar and select “**Tracking Settings**”, or select an angle from the list.



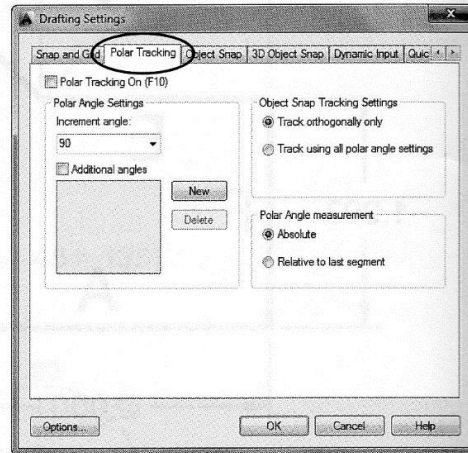
POLAR ANGLE SETTINGS

Increment Angle Choose from the Increment Angle list including 90, 45, 30, 22.5, 18, 15, 10 and 5. It will also snap to the selected angles multiples. For example: if you choose 30 it will snap to 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, 330 and 0.

Additional Angles Check this box if you would like to use an angle other than one in the Incremental Angle list. For example: 12.5.

New You may add an angle by selecting the “New” button. You will be able to snap to this new angle in addition to the incremental Angle selected. But you will not be able to snap to it’s multiple. For example, if you selected 7, you would not be able to snap to 14.

Delete Deletes an Additional Angle. Select the Additional angle to be deleted and then the **Delete** button.



POLAR ANGLE MEASUREMENT

ABSOLUTE Polar tracking angles are relative to the UCS.

RELATIVE TO LAST SEGMENT Polar tracking angles are relative to the last segment.

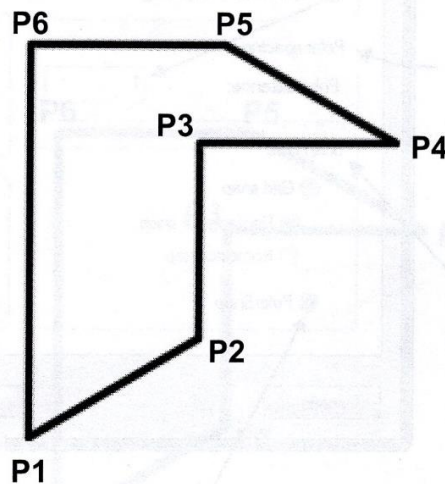
USING POLAR TRACKING and DDE

1. Set the Polar Tracking Increment Angle to 15.
2. Turn all the Status Bar buttons to Off except POLAR.
(Note: Dynamic Input should be OFF but you may wish to leave it ON)



3. Select the Line command.

- P1** 4. Start the Line in the lower left area of the drawing area.
- P2** 5. Move the cursor in the direction of P2 until the Tool Tip box displays 30 degrees.
6. Type 2 <enter> (for the length).
- P3** 7. Move the cursor in the direction of P3 until the Tool Tip box displays 90 degrees.
8. Type 2 <enter> (for the length).
- P4** 9. Move the cursor in the direction of P4 until the Tool Tip box displays 0 degrees.
10. Type 2 <enter> (for the length).
- P5** 11. Move the cursor in the direction of P5 until the Tool Tip box displays 150 degrees.
12. Type 2 <enter> (for the length).
- P6** 13. Move the cursor in the direction of P6 until the Tool Tip box displays 180 degrees.
14. Type 2 <enter> (for the length).
- P6** 15. Then type **C** for close.



POLAR TRACKING ON or OFF

You may toggle Polar Tracking On or Off using one of the following:
Left click on the **POLAR** button on the Status Bar or Press **F10**

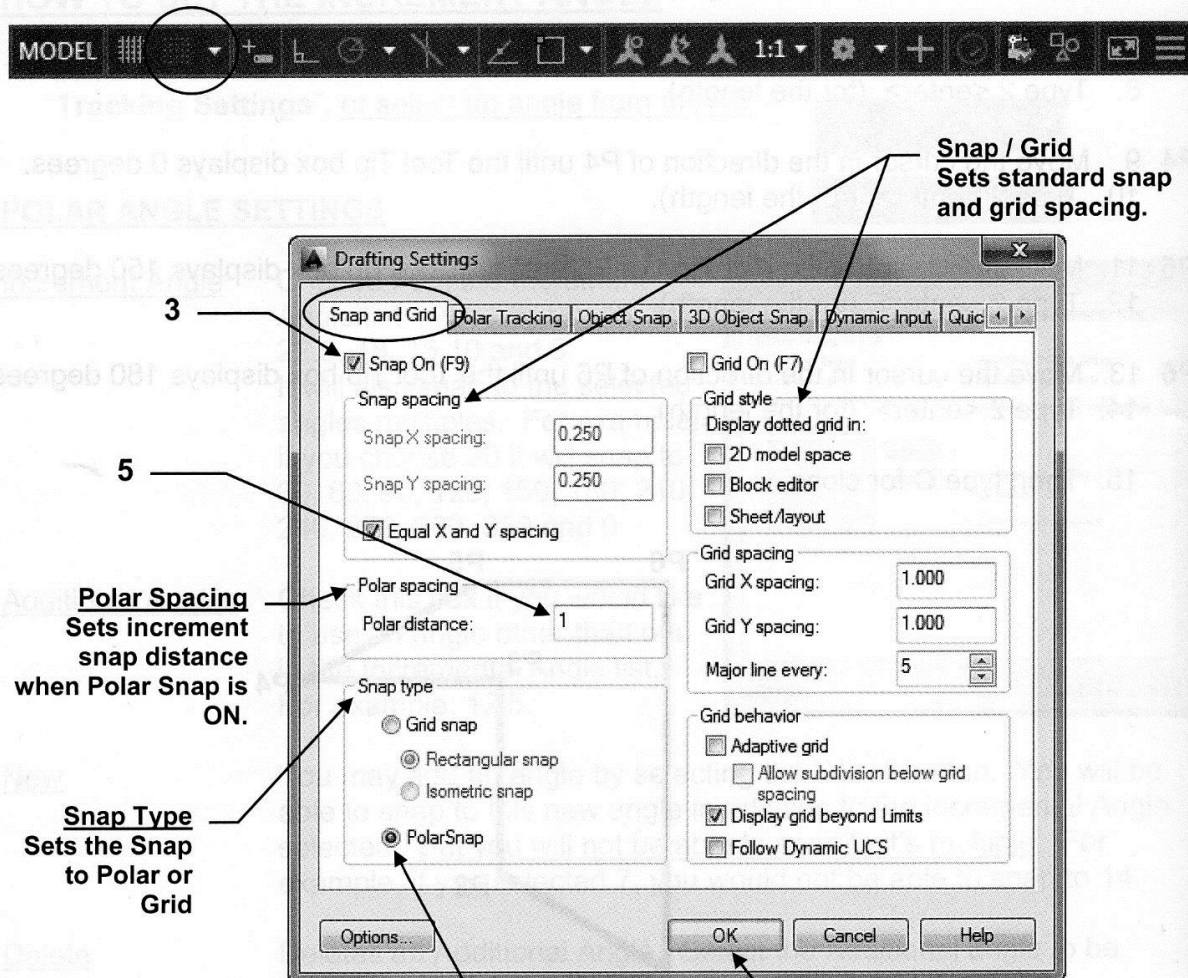
POLAR SNAP

Polar Snap is used with **Polar Tracking** to make the cursor snap to specific **distances** and **angles**. If you set **Polar Snap distance to 1** and **Polar Tracking to angle 30** you can draw lines 1, 2, 3 or 4 units long at an angle of 30, 60, 90 etc. without typing anything. You just move the cursor and watch the tool tips.

(A step-by-step example is described on the next page)

SETTING THE POLAR SNAP

1. Set the **Polar Tracking Increment Angle** as shown on page 11-8
2. Left Click on the **SNAP** button down arrow ▼ on the Status Bar and select **“Snap Settings”**

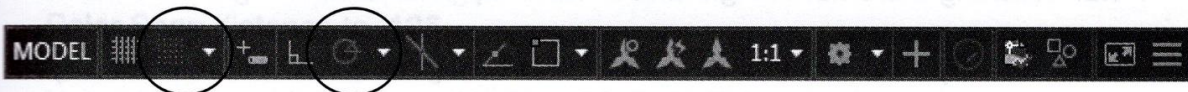


3. Select **Snap ON**
4. Select **PolarSnap**
5. Set the **Polar Distance**
6. Select **OK** button.

USING POLAR TRACKING and POLAR SNAP

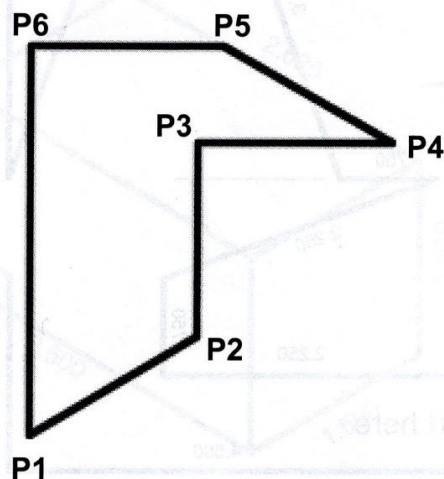
Now let's draw the objects below again, but this time with "Polar Snap".

1. Set **Polar Tracking** Increment Angle to 30 and **Polar Snap** to 1.00.
2. Turn all the Status Bar buttons Off except **SNAP** and **POLAR**.



3. Select the Line command:

- P1** 4. Start the Line in the lower left area of the drawing area.
- P2** 5. Move the cursor in the direction of P2 until the Tool Tip box displays **Polar 2.00 <30°**
- P3** 6. Move the cursor in the direction of P3 until the Tool Tip box displays **Polar 2.00 <90°**
- P4** 7. Move the cursor in the direction of P4 until the Tool Tip box displays **Polar 2.00 <0°**
- P5** 8. Move the cursor in the direction of P5 until the Tool Tip box displays **Polar 2.00 <150°**
- P6** 9. Move the cursor in the direction of P6 until the Tool Tip box displays **Polar 2.00 <180°**
- 10 Then type **C** for close.



NOTE: You may **OVERRIDE** the Polar Settings at any time by typing: Polar coordinates (@ Length < Angle) on the Command line.