



Lines

Line command:

- 1- **Ribbon:** Home tab > Draw panel > Line.
- 2- **Menu:** > Draw > Line
- 3- **Command entry:** line or L.

When you choose the line command by using one of the previous procedures, you need to pick a point or enter the coordinates of that point. Then you need to specify the second point and type “Enter” to complete the line. If you did not type “Enter” you can continue drawing more lines.

In the following exercises, the students will become familiar with drawing line using different procedures that enable them to use these procedures in their actual drawing.

Exercise # 1:

Draw different lines with two points as follow:

Start Point	Next Point	Command
(0,0)	(15,15)	Enter
(50,20)	(30,80)	Enter
(20, 120)	(45,65)	Enter
(10,10)	(86,99)	Enter
(30,35)	(120,95)	Enter



Exercise # 2:

Then, draw different lines with different length as follow:

Start Point	Next Point	Command
(0,0)	60	Enter
(50,20)	80	Enter
(20, 120)	120	Enter
(10,10)	130	Enter
(30,35)	170	Enter

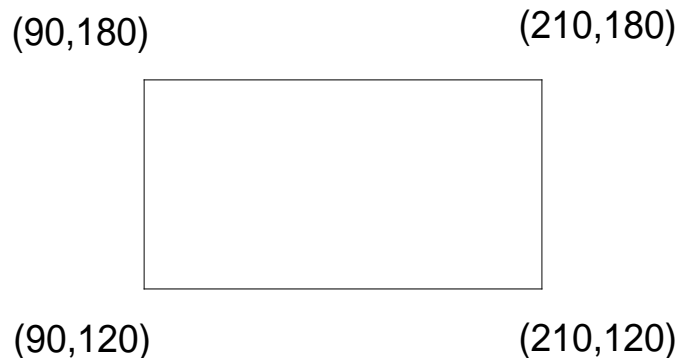
Exercise # 3:

Draw different lines with different length as follow: (note: these lines are separate from each other)

Start Point	Angle	Length
(0,0)	30°	60
(50,20)	85°	80
(20, 120)	120°	120
(10,10)	163°	130
(30,35)	280°	170

Exercise # 4:

To construct a rectangle you need to draw 4 lines or use the rectangle command. Use the line command with the absolute coordinate to construct a similar rectangle to the following drawing.



Draw another rectangle with the same dimensions and points but you should use the relative coordinate.



Arcs:

Arc command:

- 1- **Ribbon:** Home tab > Draw panel > 3-Point.
- 2- **Menu:** > Draw > Arc > 3-Points.
- 3- **Command entry:** arc.

Similar to the line command you can choose the Arc command by using one of the previous three procedures. You will be asked to three points (start, second, end point) for the arc. This arc is constructed using three points. However, AutoCAD enable you to draw different arc by choosing one way from the alternative ways of constructing Arcs. Choose the arrow head in the ribbon beside the arc command and find 11 ways to construct your arc.

In the following exercises, the students will become familiar with drawing arcs using different arc options that enable them to use these options in their actual drawing.

Exercise # 1:

Draw the following arcs using the 3 points (arc) option:

Start Point	Second point	End Point
(10,30)	(50,60)	(170,30)
(20,120)	(50,180)	(250,230)
Pick a point	Pick a point	Pick a point
Pick a point	Pick a point	Pick a point



Exercise # 2:

Draw the following arcs using start, center, end option:

Start Point	Center point	End Point
(50,40)	(80,20)	(110,40)
(90,160)	(120,180)	(150,160)
Pick a point	Pick a point	Pick a point
Pick a point	Pick a point	Pick a point

Please try the other types of arcs and try to draw 3 arcs from each type.



Creating Circles:

Circle Commands:

- 1- **Ribbon:** Home tab > Draw panel > Center, Radius.
- 2- **Menu:** > Draw > Circle > Center, Radius
- 3- **Command entry:** circle

There are several options available under the circle submenu:

- [Center, Radius]
- [Center, Diameter]
- [2 Points]
- [3 Points]
- [TTR-Tangent, Tangent, Radius]
- [TTT-Tangent, Tangent, Tangent]

To create [Center, Radius] or [Center, Diameter] circles in AutoCAD you need first to specify its center point and then pressing the [ENTER] key once to execute the command. Then you need to specify the radius or the diameter of the circle and of course pressing the [ENTER] key once to perform the task.

Exercise # 1:

Draw the following circles using the [Center, Radius]:

Center Point	Command	Radius	Command
(20,20)	Enter	5	Enter
(40,20)	Enter	7	Enter
(60,20)	Enter	10	Enter

Exercise # 2:

Draw the following circles using the [Center, Diameter]:

Center Point	Command	Diameter	Command
(20,40)	Enter	10	Enter
(40,40)	Enter	14	Enter
(60,40)	Enter	20	Enter



Polyline

Polyline command: Creates a 2D polyline, a single object that is composed of line and arc segments.

1- **Ribbon:** Home tab > Draw panel > Polyline.



2- **Menu:** Draw > Circle > Polyline.

3- **Command entry:** Pline.

A 2D polyline is a connected sequence of segments created as a single planar object. You can create straight line segments, arc segments, or a combination of the two.

Exercise # 1:

Draw the following triangles using polylines:

Start Point	Next point	Next point	Next point
50,50	100,50	75,75	50,50
75,75	100,100	50,100	75,75
73,75	48,100	48,50	73,75
77,75	102,100	102,50	77,75

Exercise # 2:

Draw the following squares using polylines:

Start Point	Next point	Next point	Next point	Next point
67.5,51	82.5,51	82.5,66	67.5,66	67.5,51
67.5,84	82.5,84	82.5,99	67.5,99	67.5,84
49.5,67.5	64.5,67.5	64.5,82.5	49.5,82.5	49.5,67.5
85.5,67.5	100.5, 67.5	100.5,82.5	85.5,82.5	85.5,67.5



ELLIPSE

Ellipse command:

- 1- **Ribbon:** Home tab > Draw panel > Ellipse.
- 2- **Menu:** > Draw > Ellipse.
- 3- **Command entry:** Ellipse or "el".

Creates an ellipse or an elliptical arc.

Exercise # 1:

Creates an ellipse using the (center) ellipse using the following table.

Center of ellipse	Endpoint of axis	Distance to other axis
50,50	100,100	10
50,50	0,0	10
50,50	100,0	10
50,50	0,100	10

Exercise # 2:

Creates an ellipse using the (axis,end) ellipse using the following table.

Axis endpoint of ellipse	Other endpoint of axis	Distance to other axis
50,50	-10,50	10
50,50	110,50	10
50,50	50,-10	10
50,50	50,110	10






Exercise # 3:

Creates an elliptical arc using different points.



Polygon

Polygon command:

- 1-  **Ribbon:** Home tab > Draw panel > Polygon. 
- 2-  **Menu:**  > Draw > Polygon.
- 3-  **Command entry:** Polygon.

Creates an equilateral closed polyline.

Exercise # 1:

1. Enter number of sides to be 6.
2. Specify center of polygon by picking a point.
3. Type "l".
4. Specify radius of circle by entering a number or picking a point.






Exercise # 2:

Repeat what you have done in exercise 1 but change the number of sides to be 10. Then choose "c" instead of "l" in step number 3.



Hatch

Hatching command: Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill.

- 1-  **Ribbon:** Home tab > Draw panel > Hatch. 
- 2-  **Menu:**  > Draw > Hatch.
- 3-  **Command entry:** Hatch.




Exercise # 1:

1. Choose "hatch"
2. Choose the pattern to be ANSI 31
3. Click on add: Pick point
4. Choose any enclosed area
5. Click enter Then OK



Rectangles:

Rectangle command:

- 1-  **Ribbon:** Home tab ➤ Draw panel ➤ Rectangle. 
- 2-  **Command entry:** rectang or rectangle.

Exercise # 1:

1. Specify first corner point.
2. Specify other corner point.

Exercise # 2:

Repeat exercise #1 and choose other points.




Exercise # 3:

Can you do similar rectangle by other command?



Spline

Spline command: Creates a smooth curve that passes through or near a set of fit points, or that is defined by the vertices in a control frame.

- 1-  **Ribbon:** Home tab > Draw panel > Spline. 
- 2-  **Command entry:** Spline or "Spl".

Try to use this command by drawing different splines.