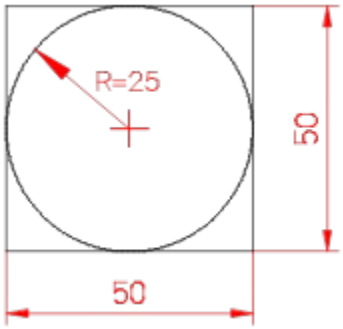
E X E R C I S E S

Exercise SQUARE



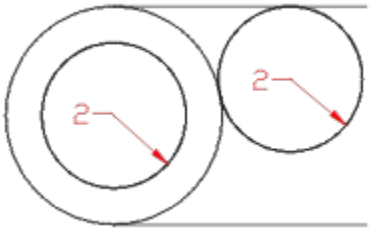
Task Text

In the first exercise you will learn about the drawing commands LINE and CIRCLE.

You will draw a square with an edge length of 50 drawing units and lower left corner at 15,15. The other point corners can be entered either with absolute or relative or polar coordinates. The square should be entered in a counter-clockwise direction.

Finally, draw a circle that will circumscribe the square so that the circle fits exactly inside the square. Use the CIRCLE command and enter its center at the coordinate 40,40. The radius is 25 drawing units.

Exercise CIRCLE



Task Text

This exercise will give you practice using the CIRCLE Command. The task should be fulfilled starting with two lines.

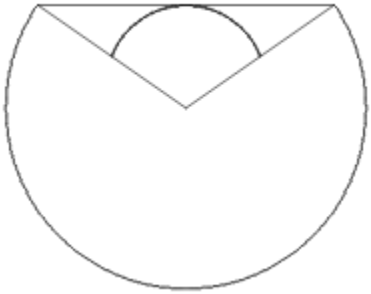
You have to draw circles with the <Center>, <2Point> and the <Tangent> option.

First draw a circle with the <2P> option. Specify the endpoints of the two lines.

Draw the next circle with the <Tangent> option. Enter <2> for the radius of the circle.

Use the object snap mode CENter to specify the <Center> point of the third circle. Enter <2> for the radius of the circle.

Exercise ARC

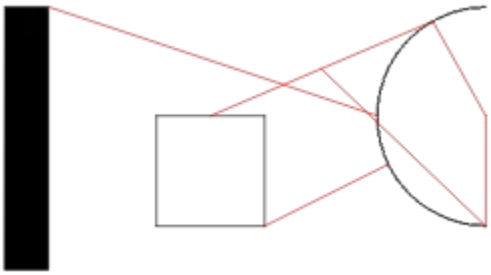


Task Text

You draw the first arc with the <3P> option (3 points). Use the object snap facility MIDdle to specify the middle of each line.

Draw the next arc with the <CS> option (center point, start point, end point). The center point is the lower corner of the triangle, the start point is the upper left corner. The end point of the arc is the upper right corner of the triangle.

Exercise OSNAP



Task Text

In this exercise you will learn more about simple drawing commands and the object snap modes (OSNAP).

First draw a solid face (Start point: 40,30, Second point: 60,30, Third point: 40,150, Fourth point: 60,150).

Then construct a square with an edge length of 50 drawing units. The left lower corner point lies at the coordinates 100,50. The square is drawn with LINE entities.

The third drawing entity is an ARC with a radius of 50 drawing units. Its center point is at the coordinates 250,100, start point is at 250,150 and end point at 250,50.

The second part of the exercise deals with object selection options. You will learn how to snap on to the exact end of a line or to the midpoint of a line. Your drawings will have clean corners and greater accuracy through the use of the OSNAP command.

Steps:

> LINE <RETURN>

From point: END <RETURN> *of* <pick the bottom right corner of the square>

To point: PER <RETURN> *of* <pick the arc>

To point: <RETURN>

> <RETURN>

LINE

From point: QUA <RETURN> *of* <pick the middle part of the arc>

To point: INT <RETURN> *of* <pick top right corner of the solid>

><RETURN>

LINE

From point: MID <RETURN> *of* <pick top side of square>

To point: TAN <RETURN> to <pick top half of arc>

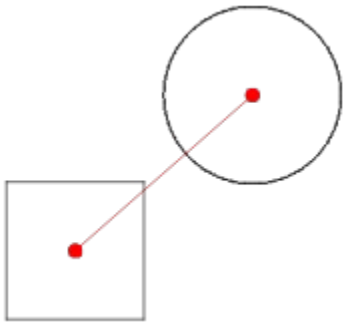
To point: CEN <RETURN> *of* <pick arc>

To point: END <RETURN> *of* <pick bottom half of arc>

To point: MID <RETURN> *of* <pick the line connecting the square to the tangent of the arc>

To point: <RETURN>

Exercise FILTER



Task Text

In this exercise you will find the mid point of a square using point filters in a convenient way.

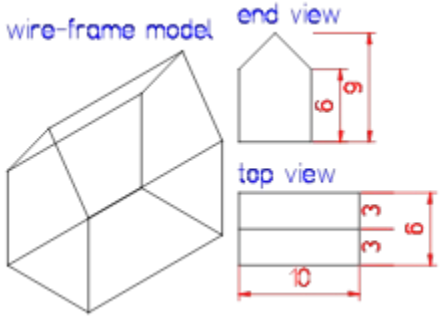
First draw a square and a circle using the commands shown in exercise SQUARE. The square has it's lower left corner at 15,15 and side length of 30 units.

The circle's center is located at 75,75 and has a radius of 20 drawing units.

Finally you will draw a line connecting the center of each object. You could draw this by drawing a diagonal in each object and using object snap to locate the mid points. However the mid point of the square can be found quickly by using X/Y/Z point filters: use the X and Y component of the square's side midpoint.

The center of the circle can be located directly by using object snap CENter option and this will override the filter setting. 2D and 3D points can be quickly defined by using components of different intermediate points.

Exercise HOUSE



Task Text

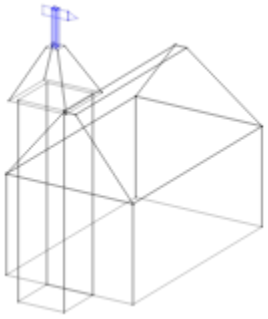
In this exercise you will construct a wire frame model of a house.

You can practice your LINE and point entry skills. The edit command COPY will improve your productivity skills by saving on repetitive work.

The house has a rectangular plan of 10 x 6 drawing units with the lower left corner located at 30,30,0. The eaves height is 6 units and the ridge height is 9 units.

Once you have entered all the coordinates, experiment with the ZOOM and 3DVIEW commands to achieve different views.

Exercise BARN



Task Text

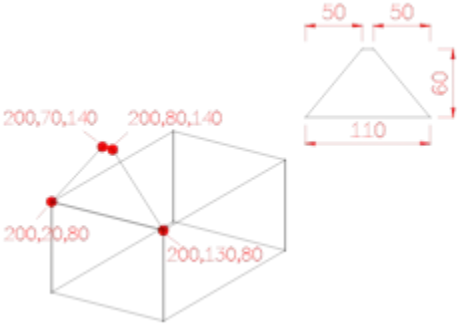
In this exercise you will draw a true three dimensional barn using the 3DFACE command.

Drawing the walls

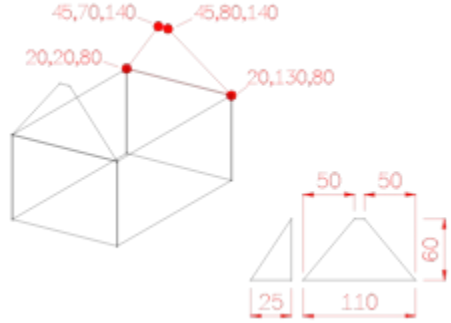
The task should be fulfilled starting with two walls. Use the COPY command to construct the side walls. The endpoints of the existing walls are used as base points or second points.

Drawing the gable

To draw the gable you can use either absolute or relative coordinates and object snap options.



You could draw the inclined gable by entering all the coordinates however all the corner points can be snapped onto with the object snap options.



Drawing the roof

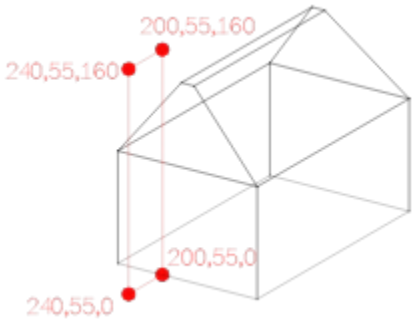
If you have selcted a convenient view point of your model, you may identify all the corner points of the roof surface very quickly.

To draw the roof ridge all the corner points of the 3DFACE can be pointed with object snap option ENDpoint.

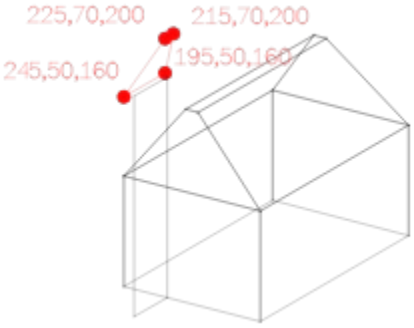
The second roof face can be created with the edit command MIRROR. The mirror line has a zero Z coordinate.

Drawing the tower

The easiest way to draw the first side wall of the tower is to enter absolute coordinates.



The first roof surface of the tower can be entered with absolute coordinates.

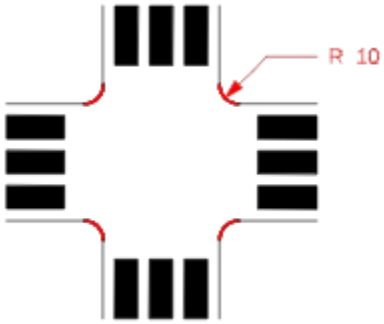


The other faces of the tower are drawn using the command ARRAY. Respond to the array prompt with CIR for circular rotated. The faces to be copied by ARRAY are selected using the object selection mode Crossing or by single picks. Use filters to find the center point of the array.

Insert the weather vane part

Finally, use the INSERT command to place a weather vane on top of the barn silo. The weather vane is named VANE.FLX in your TUTOR directory. Use point filters to define the insertion point. Take 200 drawing units to be the Z coordinate and the X/Y scale factor to be 1. The part insertion point is defined to be the center of the roof top face.

Exercise ZEBRA



Task Text

As you start with the exercise, you will find a number of entities already in the drawing. The stripe is 12 units width. From the given situation you will continue.

To form your first crossing multiply the stripe with the ARRAY command. The ARRAY should be 'Rectangular' with a distance of 6 drawing units.

The other three crossings can be created within a single command sequence using an array circular rotated. To use this technique you will need to find the center point for each crossing and this can be achieved by using coordinate filters and object snaps.

Finally place a 10 unit radius curb by using the FILLET.