



Air Duct Fitting

Air Duct: are conduits or passages used in heating, ventilation, and air conditioning (HVAC) to deliver and remove air. The needed airflows include, for example, supply air, return air, and exhaust air. Ducts commonly also deliver ventilation air as part of the supply air. As such, air ducts are one method of ensuring acceptable indoor air quality as well as thermal comfort. There are two broad categories of ductwork: flexible and rigid.

Air Duct Fitting: are the important parts among ductwork parts for connection or transitions, protection and decoration purposes. There are many types of ducts, such as Round Duct Fittings (Round Ductwork Fittings), Rectangular Ductwork Fittings, Oval Duct Fittings, Ductwork Rectangular to Round Transition, and Flexible Duct Fittings.

The Air-duct fitting is consisted of the following:

1- Bends

It is used to change the direction of the air and keep the dimensions of the air duct constant, the bends may be rectangular in shape, and be either standing or in the form of an arc, and the bend may be circular in section and it can consist of one piece or several pieces

1.1. Bends with square Arch shape

If we suppose that the width of the duct (W) which the bend is located on it is 40 cm, draw a square its length equal to:

$$L_{sq} = W + \frac{3}{4} W$$

$$L_{sq} = 40 + \frac{3}{4} \times 40$$

$$L_{sq} = 40 + 30$$

$$L_{sq} = 70 \text{ cm}$$



Then we draw a square with 30 cm length, thereafter draw an arc with 70 cm and another one with 30 cm, and use the command Trim to delete the extra fonts, as shown in figure (1) & (2)

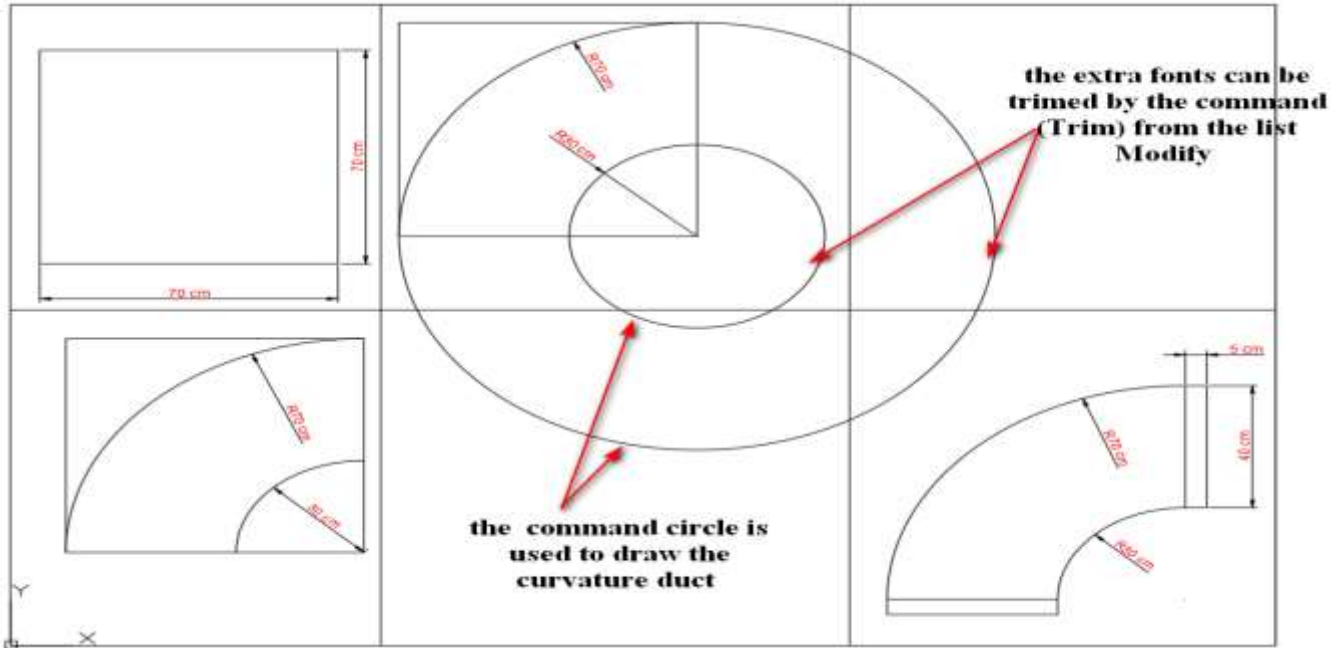


Figure (1)

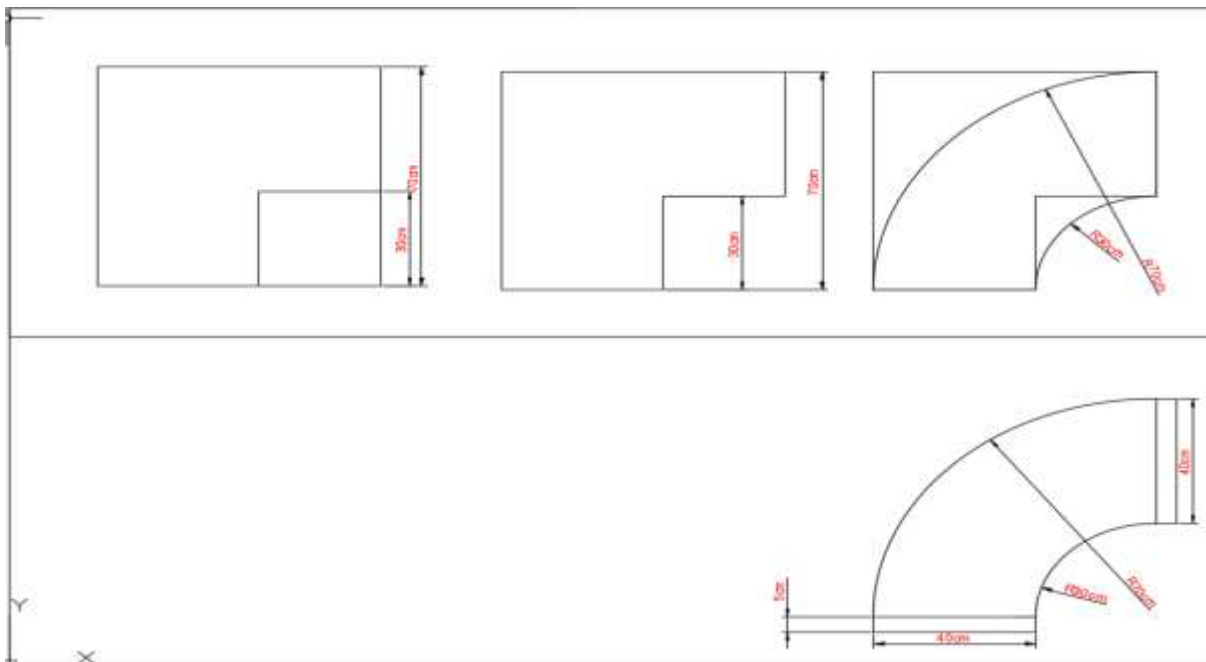


Figure (2)



1.2. Upright Bends of a Rectangular Air Duct

If we suppose a section of an air duct with a width equal to 40 cm we should follow the same steps in paragraph (1.1) by drawing a square with 30 cm length. Then use Trim to delete extra parts, as shown in figure (3).

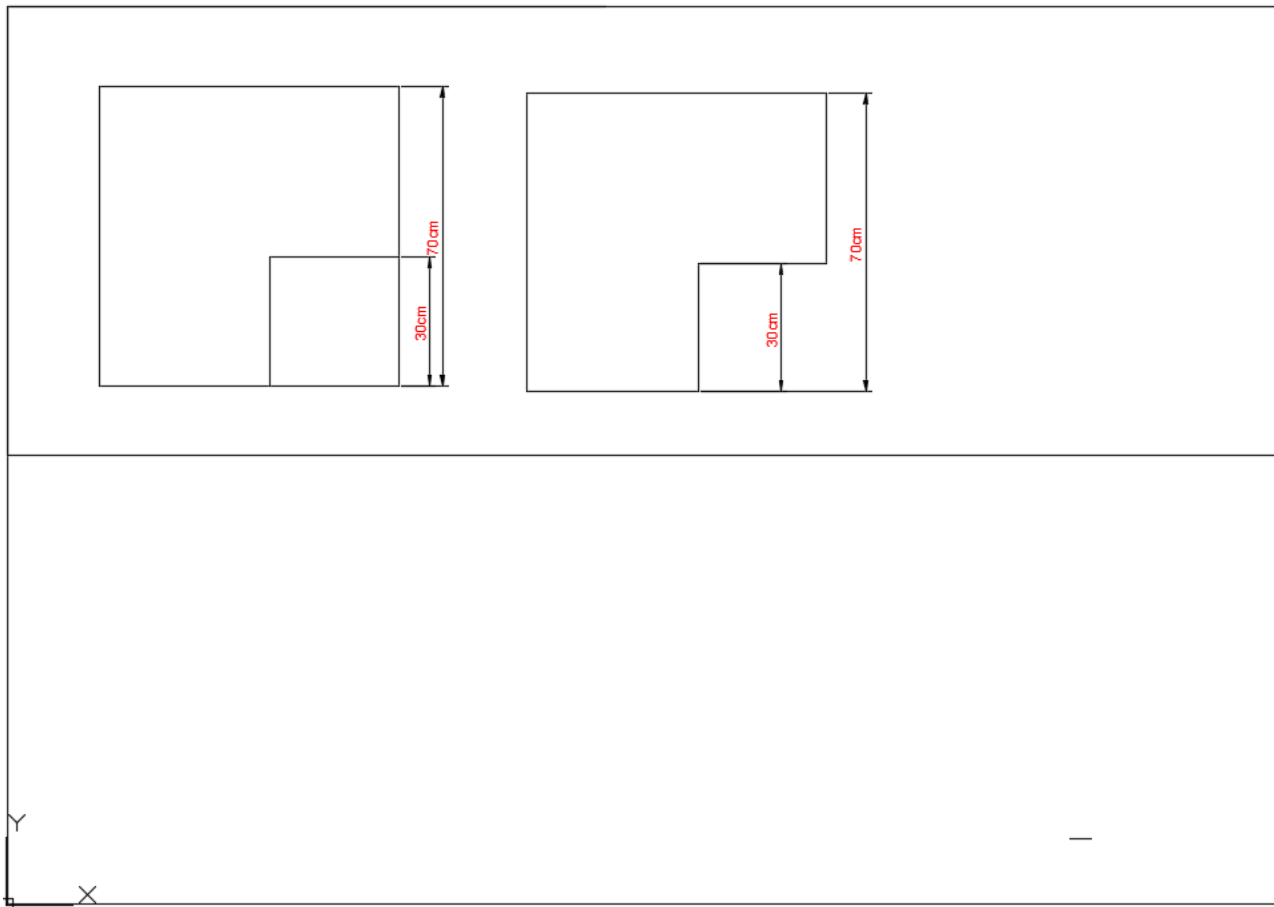


Figure (3)

1.3. Bending of an upright circular air duct consisting of six pieces

Draw a curvature air duct as it was explained in paragraph (1.1), then the right angle is divided into six pieces, by using the command Polar array, as shown in figure (4-a), (4-a), (4-b), (4-c) and (4-d) every piece has an angle equal to 15°.

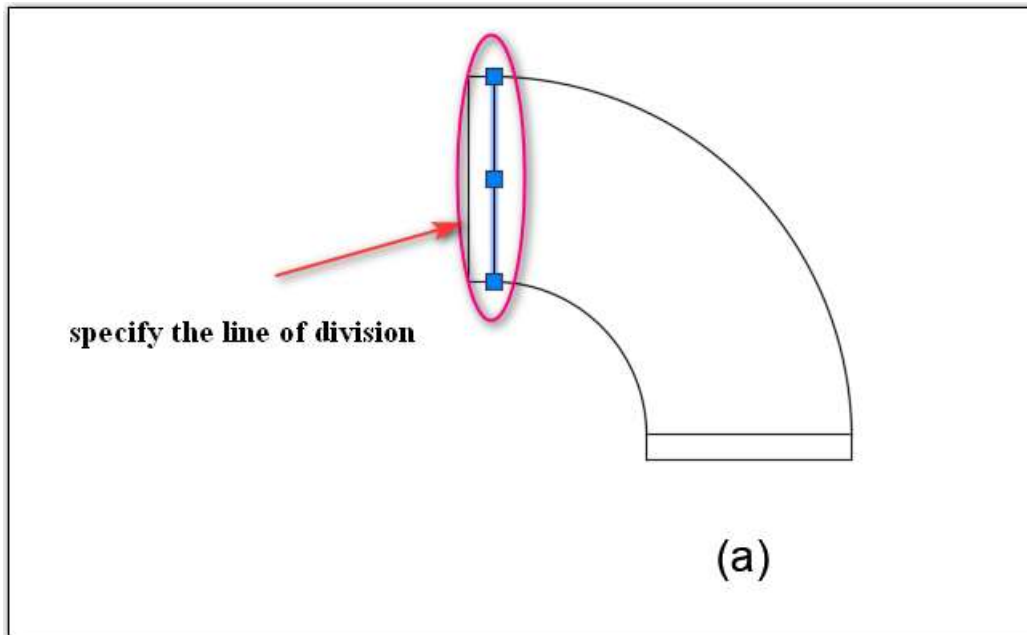


Figure (4-a)

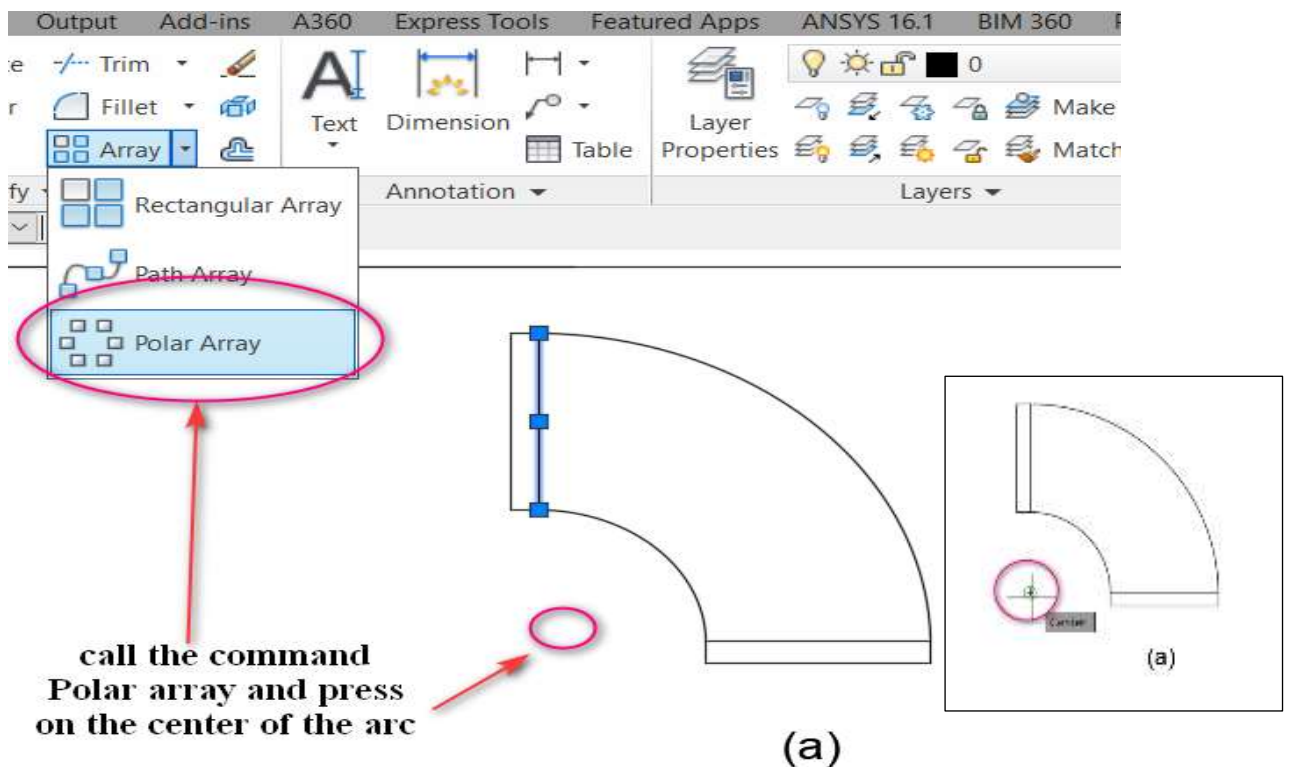


Figure (4-b)

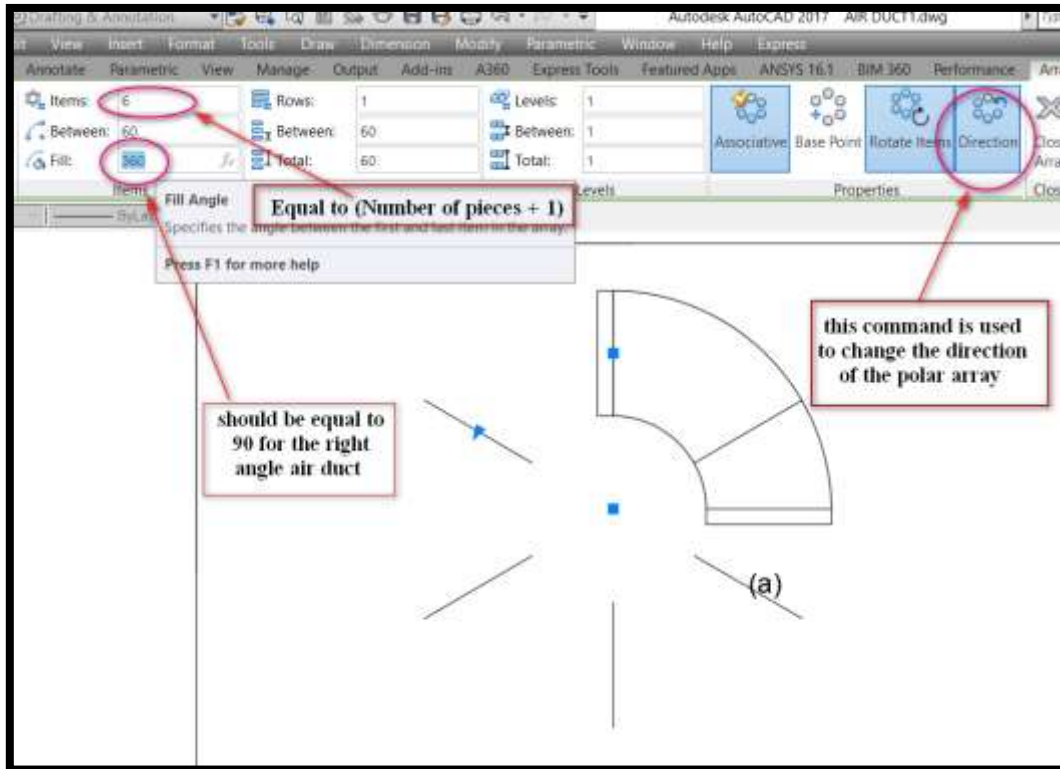


Figure (4-c)

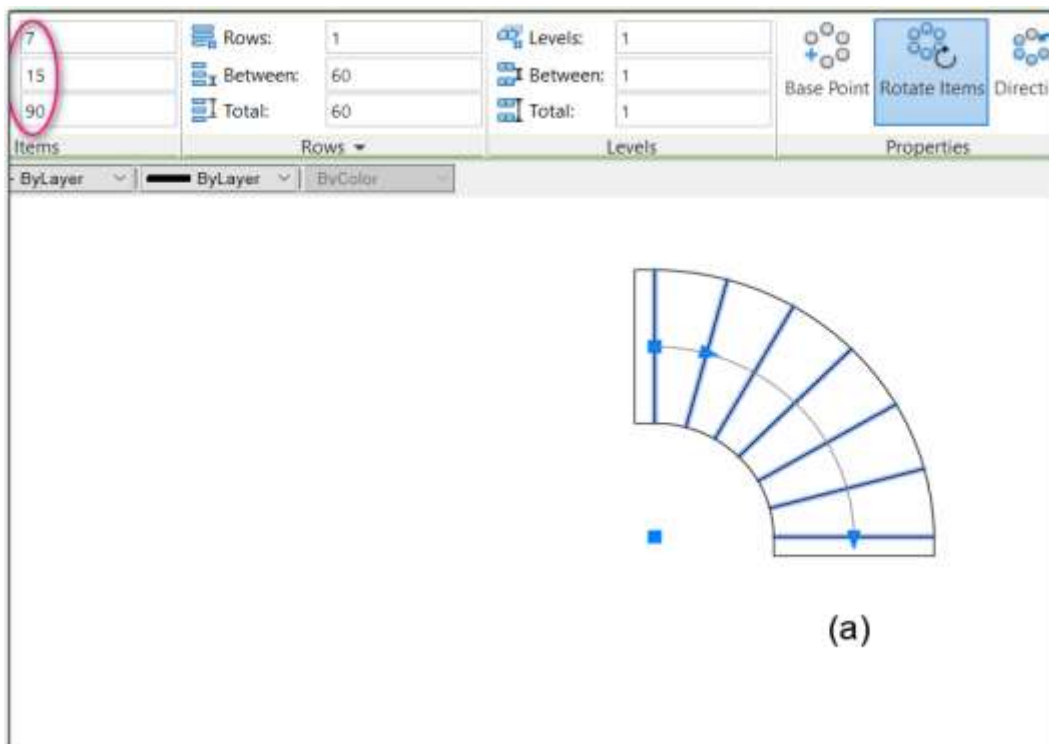


Figure (4-d)



The dimension should be put on the draw by the list of dimension as shown in figure (5).

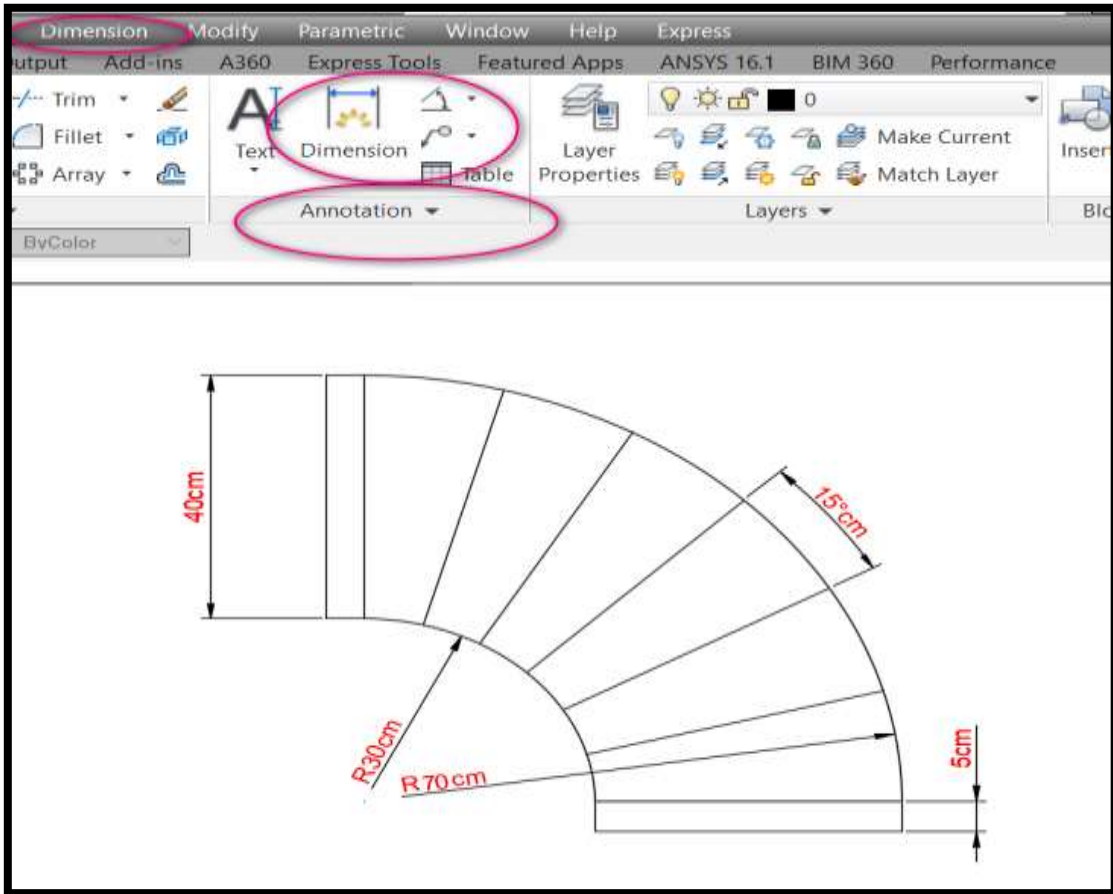


Figure (5)

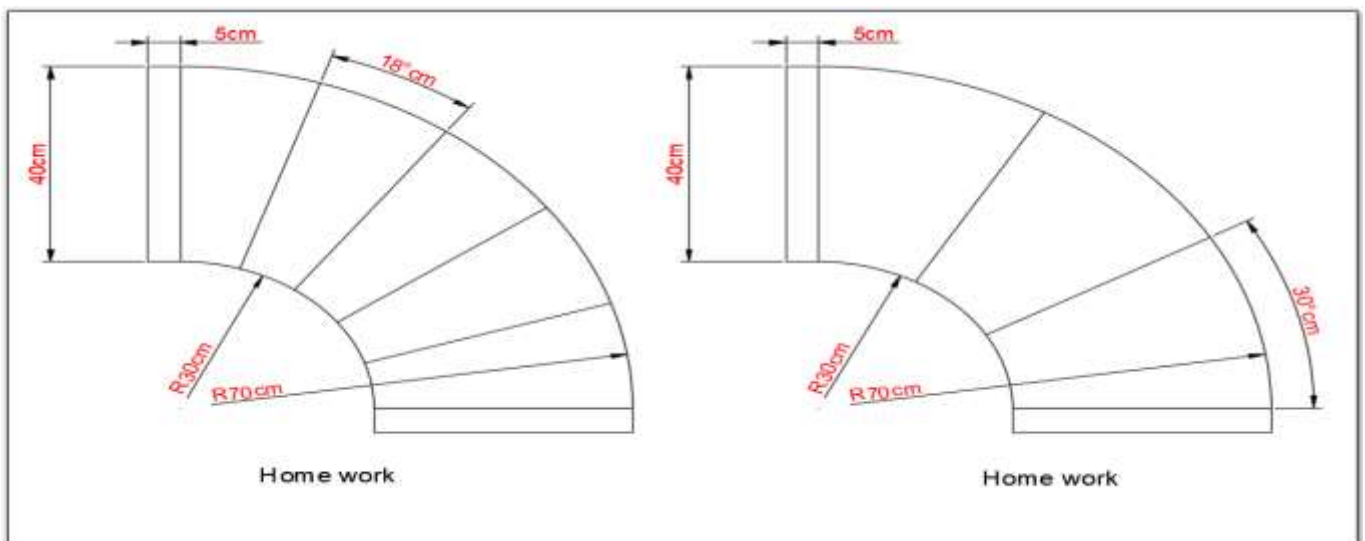


Figure (6)



1.4. Bending of a Rectangular Air Duct With Specific Angle

To draw a duct with an angle to be 30° , you should follow the following steps:

- 1- Draw a horizontal air duct with 40 cm width
- 2- From the upper corner of the duct draw a line with 30° angle
- 3- Use the command offset to draw a line parallel to the line that inclined with angle equal to 30° .
- 4- Use the command Trim to delete the Extra fonts. Figure (6) illustrates the steps of drawing.

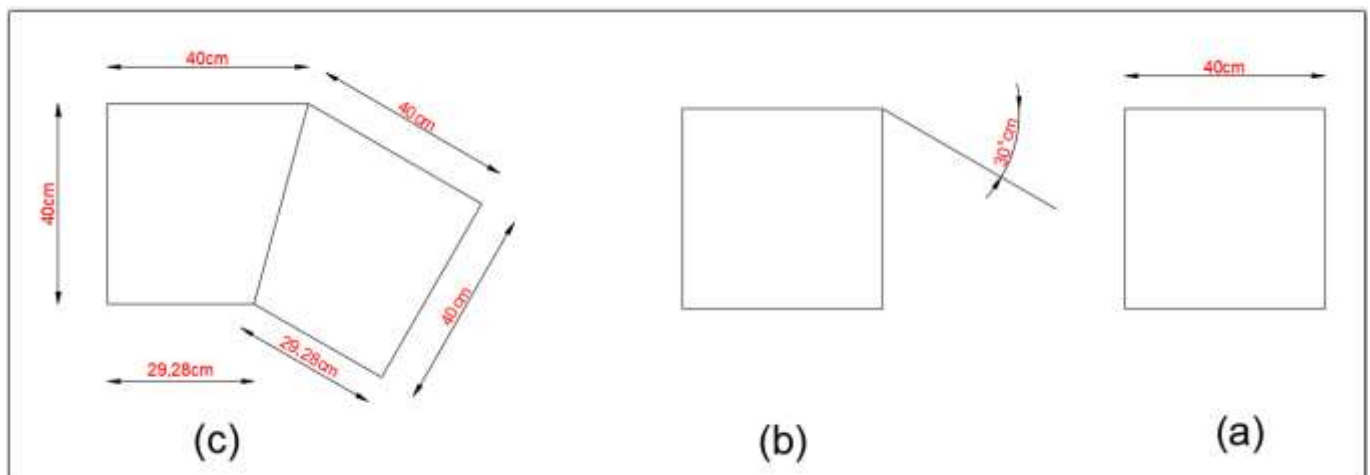
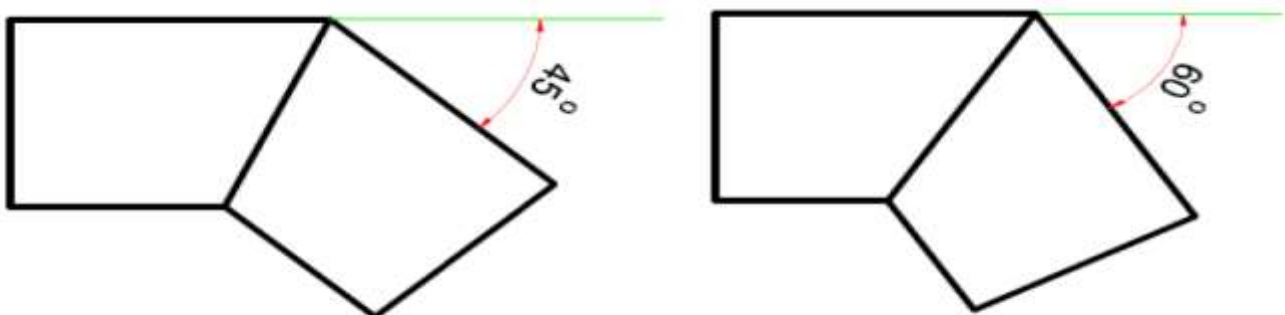


Figure (6)

Homework



Bending Air Duct with 45° , 60° angle

Figure (7)



1.5. Bending with Different Angle for a Circular Air Duct

To draw a bending with a different angle suppose the width of the air duct equal to 40 cm, should do the following steps:

- 1- Draw a vertical line its length equal to 70 cm.
- 2- Draw another line inclined with angle equal to 45° start from the lower end of the vertical line
- 3- Draw an arc with 70 cm radius
- 4- Use the command offset to draw another arc with distance 40cm parallel and downward of the first one.
- 5- Use Trim to delete the extra fonts. Figure (8) shows the steps of the drawing.

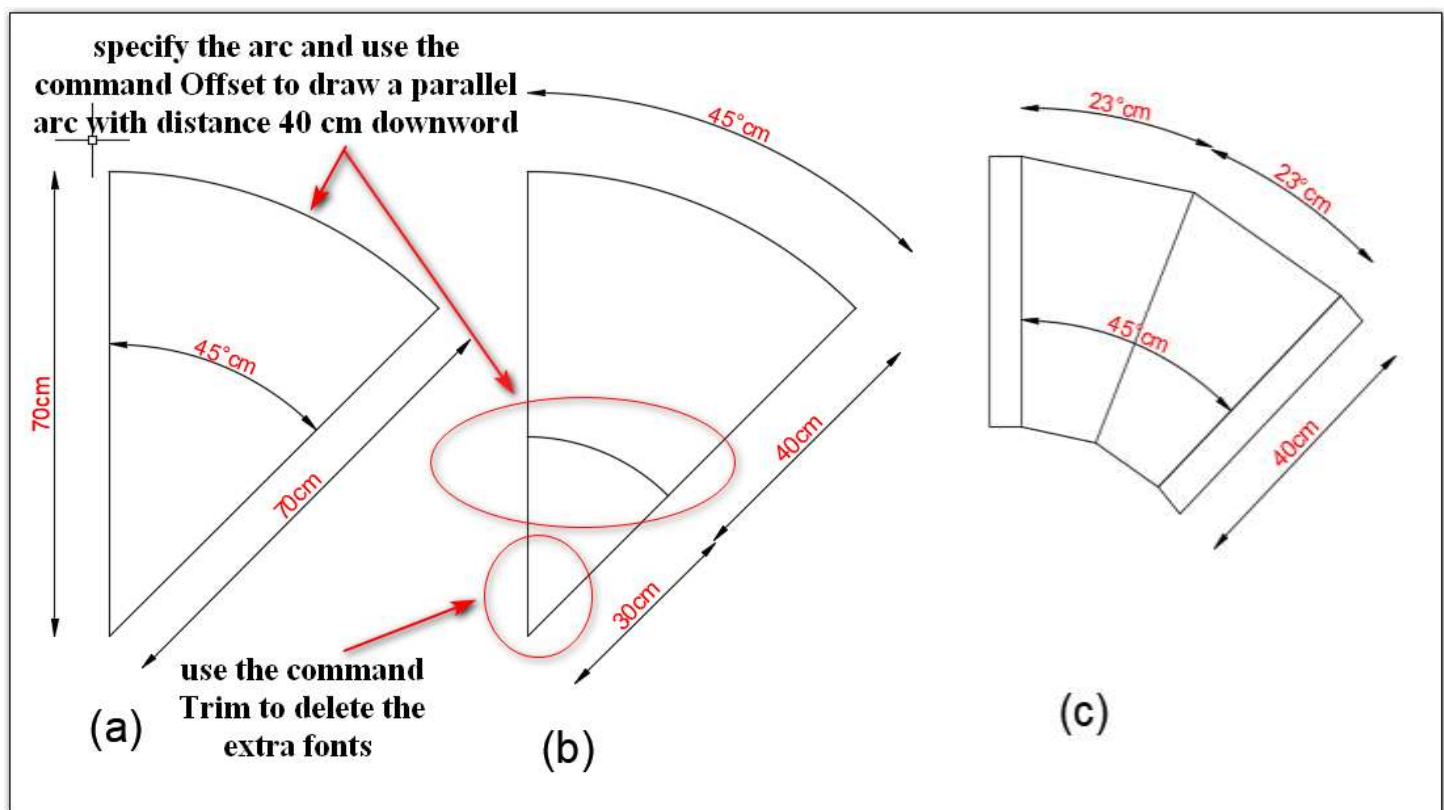


Figure (8)



Homework

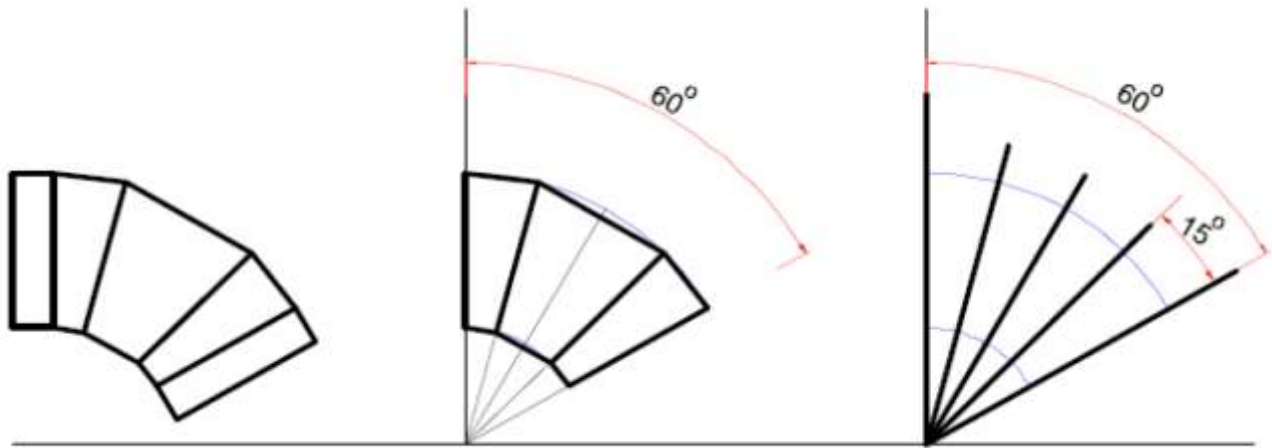


Figure (9) a bending for a circular air duct with 60° angle divide into (3) pieces

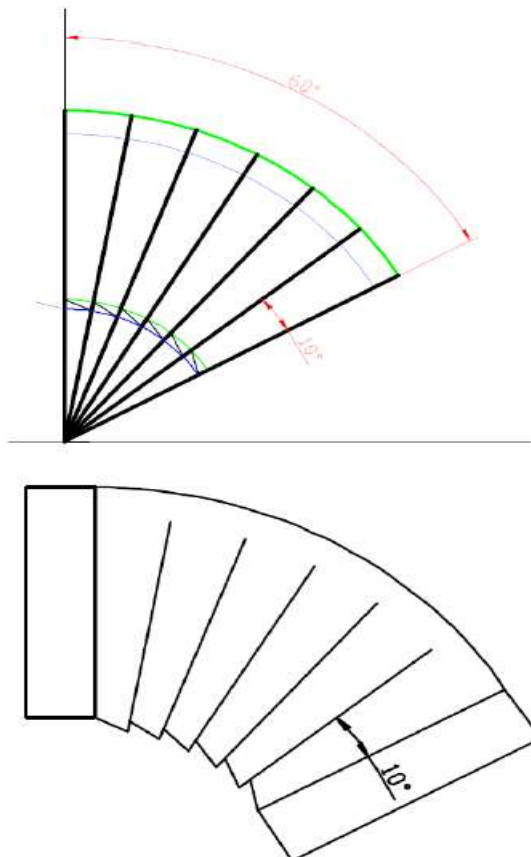
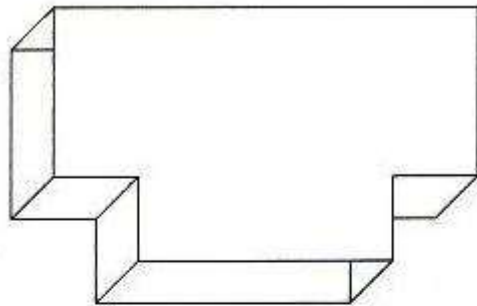


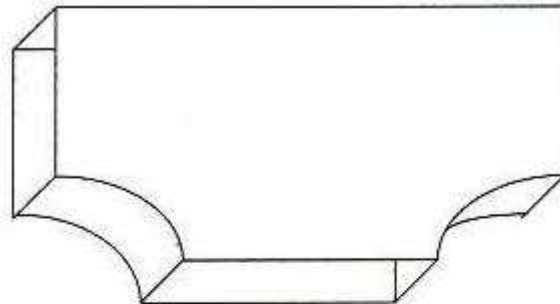
Figure (10) a bending for a circular air duct with 60° angle divide into (6) pieces



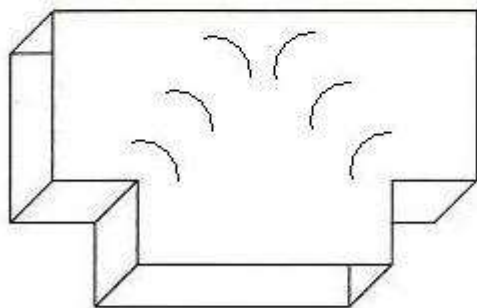
Extra Types of Duct



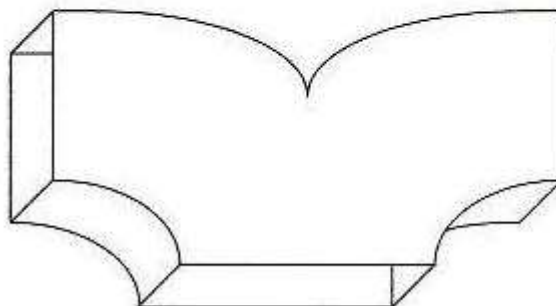
Poor



Better

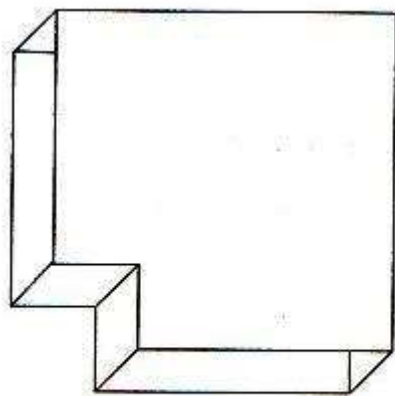


Better

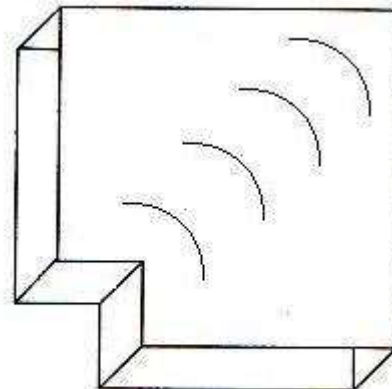


Best

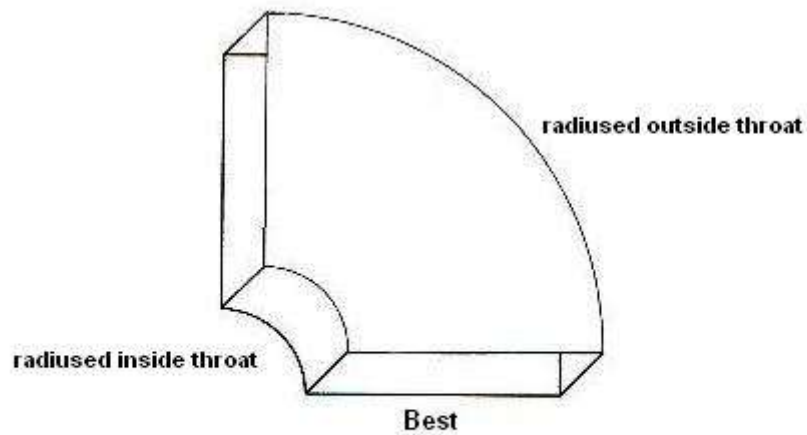
Rectangular double 90 degree tees



Poor



Better

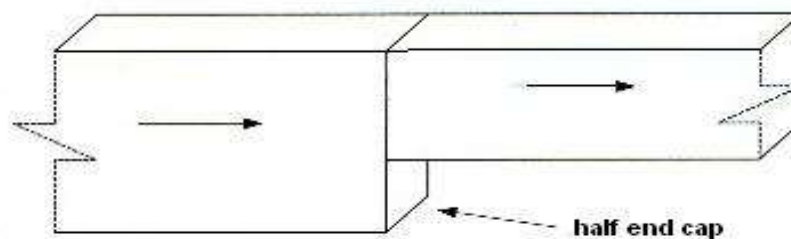


radiused inside throat

radiused outside throat

Best

Rectangular 90 degree ells



half end cap

Poor Man's Reducer



***8" x 8" X 8"
200 x 200 x 200
Y Vent Fitting***

