

## Exercise no 8

**New commands:** GEOMCONSTRAINT, DIMCONSTRAINT, DCLINEAR, AUTOCONSTRAIN

### 8.1. Drawing a parameterized equilateral triangle

Using LINE command draw a triangle having the size of approx. 100x100 units. Next using GEOMCONSTRAINT command define: in all vertices

geometric constraint COINCIDENT (GCOINCIDENT); for one of the

edges HORIZONTAL (GCHORIZONTAL) and FIX (GCFIX). For all edges

impose equality constraint (GCEQUAL). For the horizontal edge define

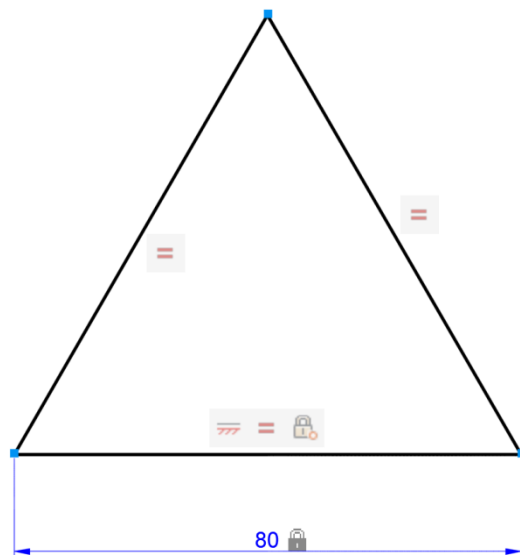
the linear dimensional constraint using DIMCONSTRAINT COMMAND and

change the length to 80. In the properties of geometric constraint

change CONSTRAINT FORM to ANNOTATIONAL. Check the behavior of the

triangle when changing the length of the edge. Check the print preview.

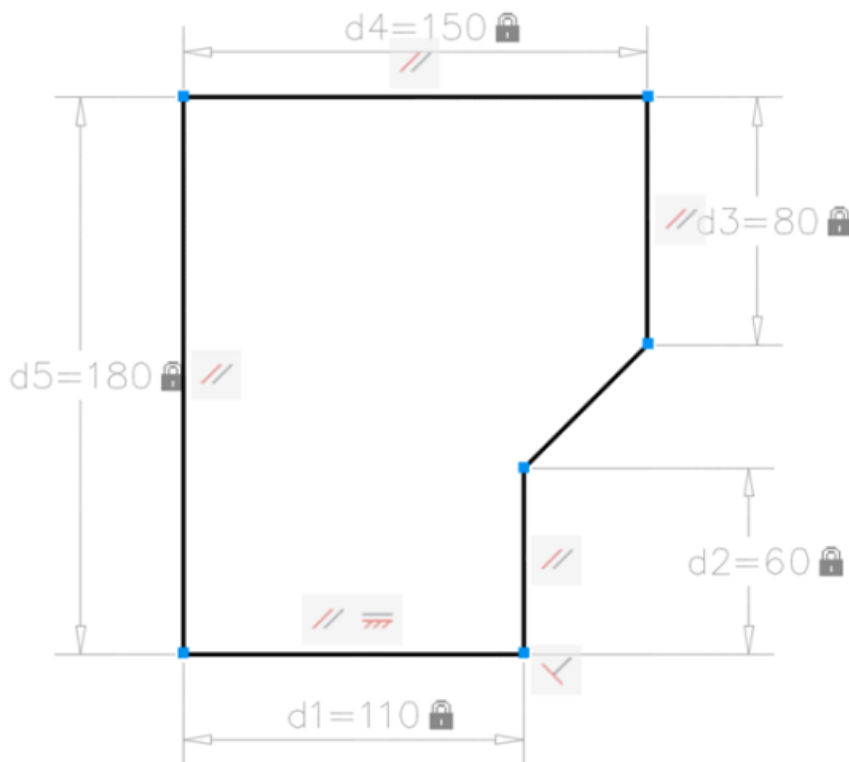
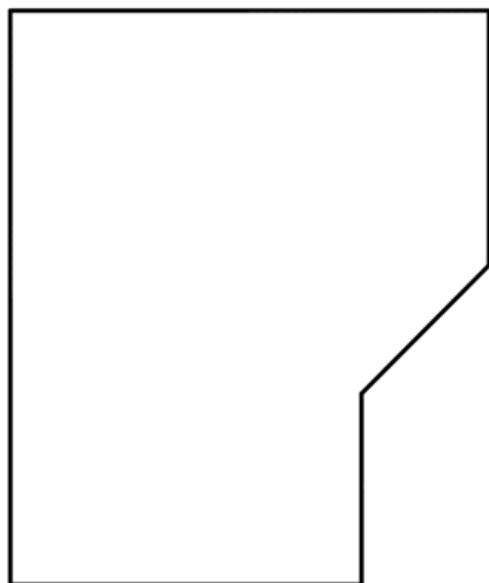
Choose the right dimension style.




### 8.2. Drawing a parametrized polygon

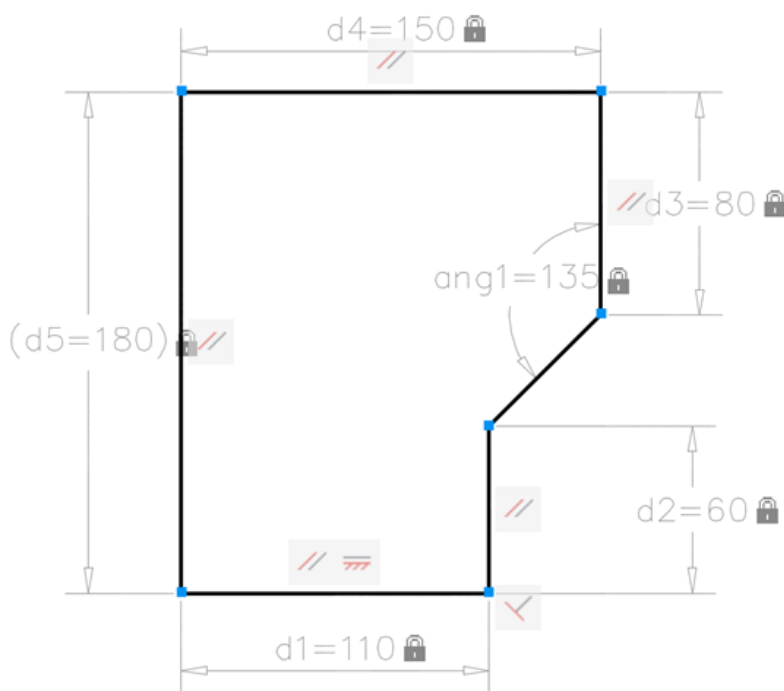
Use the LINE command to draw a contour as shown in the figure at left below (any dimensions). Using AUTOCONSTRAIN

command define automatic geometrical constraints. Use the MOVE command to try to move any line. Then use the DCLINEAR command to define dimensional constraints and assign appropriate line lengths as in the figure at right below



For the dimensional constraint of the left vertical line change REFERENCE to YES in PROPERTIES and then define the dimensional angle as in the left figure. Use the PARAMETERS command to open the parameter manager. Define the user parameter by

clicking on . Name the new parameter as LE and then modify the remaining parametric values of dimensional constraints as in the figure at right below. Check how the entire object changes when the LE parameter is modified. Use the CONSTRAINTSETTINGS command to set the DIMENSION NAME FORMAT to VALUE.

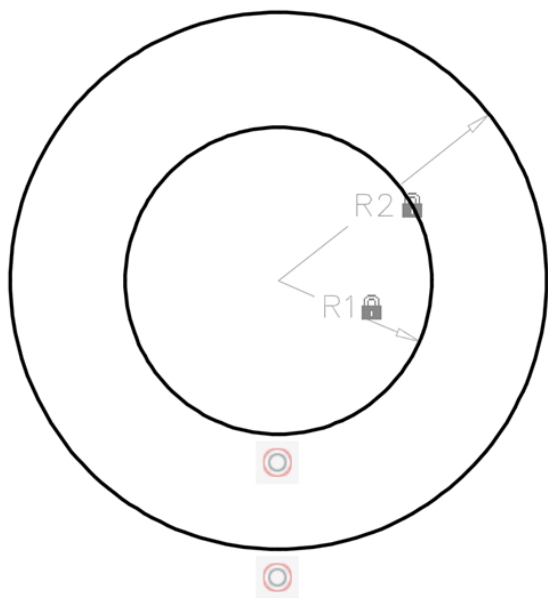


Name	Express	Value
Dimensional Constraint Parameters		
ang1	135	135
d1	le	100
d2	$0.6 * le$	60
d3	$0.8 * le$	80
d4	$1.5 * le$	150
Reference Parameters		
d5	190	190
User Parameters		
le	100	100

All: 7 of 7 parameters displayed

### 8.3. Drawing a parameterized ring with a fixed field

Draw two circles with a common center. Define the CONCENTRIC geometric constraint on both circles. Define radius dimensional constraints for both circles (DCRADIUS). Using PARAMETERS MANAGER set parametric values as in figure at right. Change the value of parameter R1 and check how circles change. Using MEASUREGEOM or AREA command, check the value of the ring area.



Name	Expression	Value
Dimensional Constraint Parameters		
R1	20	20
R2	$\sqrt{R1^2 + Area/PI}$	36.8094
User Parameters		
Area	3000	3000

All: 3 of 3 parameters displayed