

AutoCAD 2010: One Step at a Time

Lesson 9: Constraints and Some More Editing Tools

10R9

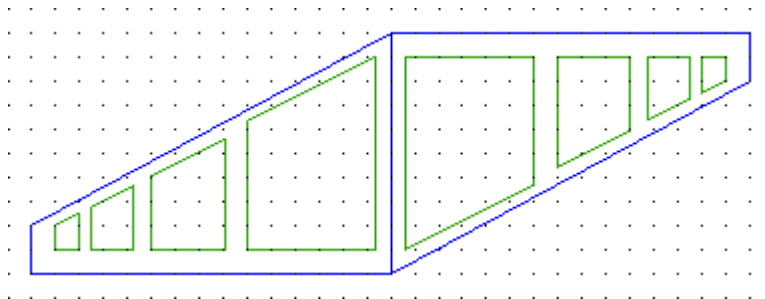
Exercises

1. Create a drawing template with the following parameters:

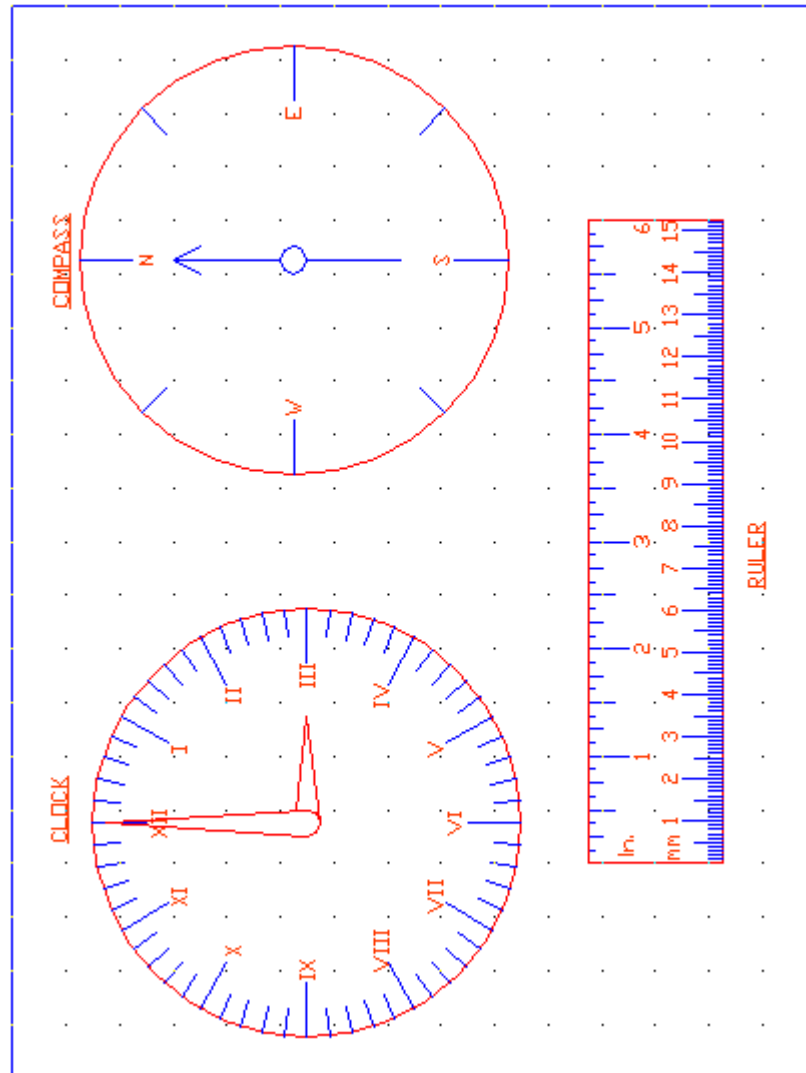
- 1.1. Lower left limits: 0,0
- 1.2. Upper right limits: 17,11
- 1.3. Grid: ½
- 1.4. Snap: ¼
- 1.5. Layers: At right
- 1.6. Save the template as *BwLay.dwt* in the C:\Steps\Lesson09 folder.

LAYER	COLOR	LINETYPE
Obj	red	continuous
Cl	blue	center2
Hidden	212	hidden2
Text	12	continuous
Dim	blue	continuous

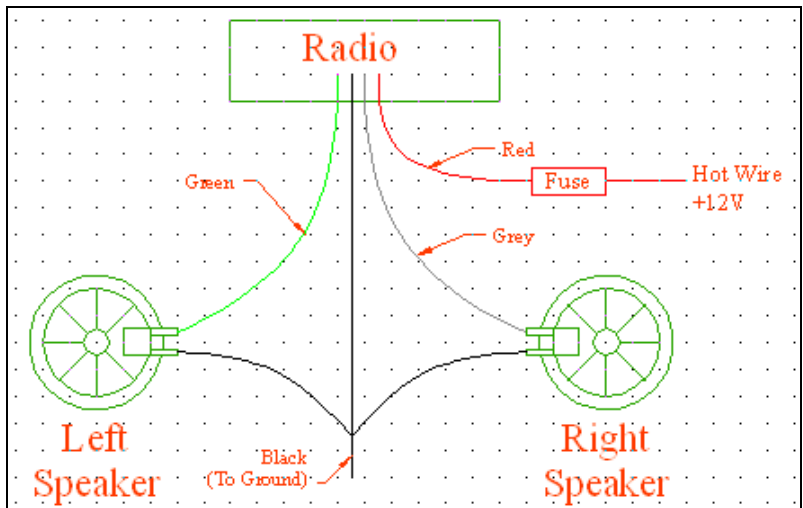
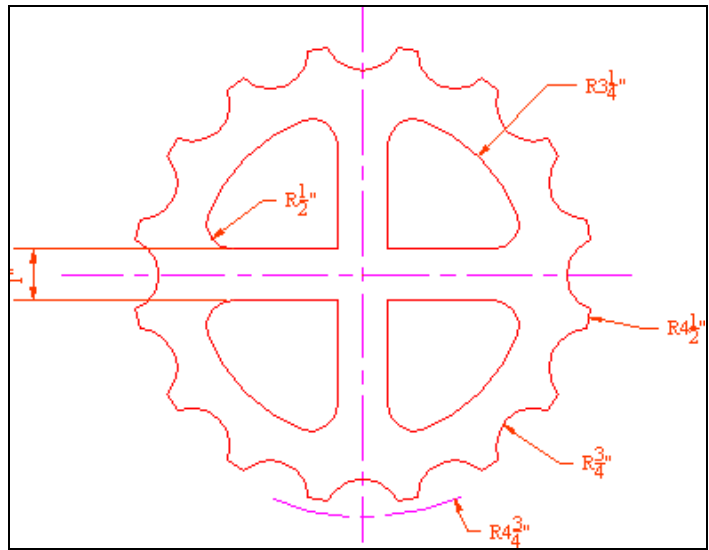
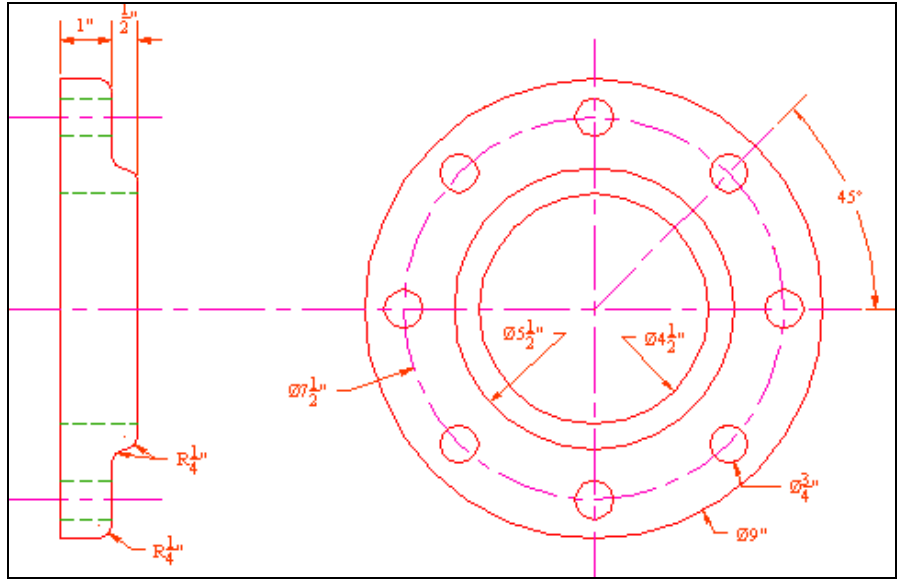
2. Start a new drawing using the *BwLay.dwt* template. (You created this in Exercise #1.)
 - 2.1. Create the drawing below. You're allowed to draw one box and the outline of the wall. You may use the following commands to help: **Copy**, **Rotate**, **Scale** and **Stretch**. The size of each window is 1.75x the size of the smaller window next to it. Feel free to add layers if you think it necessary.
 - 2.2. Create constraints so that when you move either of the horizontal lines up or down, the "windows" stretch accordingly.




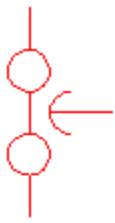










3. Open the *Ruler* drawing in the C:\Steps\Lesson09 folder. Create the drawing below. Feel free to add layers if you think it necessary.
 - 3.1. The circles have a 2" radius. The longer lines in the circles are 1/2", and the shorter lines are 1/4".
 - 3.2. The text in the circles and on the ruler is 1/8" high.
 - 3.3. The gradient lines on the ruler are: 3/8", 1/4", 1/8" and 1/16".
 - 3.4. Constrain the clock and compass hands to the center of their respective faces.



4. Now create the following drawings. The Sample Electrical Symbols uses the same border, sheet size, and grid as the previous detail sheets (Lessons 4 & 5). The other drawings will fit on an 11"x17" sheet of paper. Use constraints where possible!



			
<u>Electrolytic Capacitor</u>	<u>Air-Core Inductor</u>	<u>Terminal</u>	<u>Feed-Thru Capacitor</u>
			
<u>Coaxial Cable</u>	<u>Switch</u>	<u>Air-Core Transformer</u>	<u>Transistor</u>
			
<u>Logic Circuit</u>	<u>Incandescent Lamp</u>	<u>Coaxial Connector</u>	<u>Multi-Movable Connector</u>
North Harris College			
<u>Sample Electrical Symbols</u>			
<u>Drawn By:</u> [username]	<u>Checked By:</u> B. Bialkin	<u>Page 16</u> of <u>20</u>	
<u>Date:</u> [date]	<u>Scale:</u> N/A	<u>Approval:</u> FDE	<u>File:</u> 2 of 2

Use either the (1) or the (2) command to make an object longer.

- 1.
- 2.
3. Objects to be stretched must be selected using a _____.




Use the (4) option of the (5) command to make a line half as long as it is.

- 4.
- 5.

To make an existing line exactly 5" long, use the (6) option of the (7) command.













- 6.
- 7.
8. To lengthen more than one object at a time, use the _____ command.
9. Use the _____ command to adjust the angle of an object.
10. Use the _____ command to adjust the size of an object.

Identify these buttons and the hotkeys that are associated with their commands.

Button			
Command	11.	13.	15.
Hotkey	12.	14.	16.

17. Use the _____ command to create a revision cloud.
18. (T or F) You can create a revision cloud with a calligraphy style.
19. (T of F) The revision cloud command includes options for Arc Length, selecting an Object to convert to a cloud, and insertion of a Revision Triangle.
20. When two endpoints occupy the same location, they are said to be _____.
21. You can create any geometric constraint using the _____ command.

Identify these constraints.

22. 	23. 	24. 
25. 	26. 	27. 
28. 	29. 	30. 
31. 	32. 	33. 

To see all the constraint (bars) in a drawing, pick the (34) button on the (35) panel.

- 34.
- 35.

36. (T or F) You cannot constrain the center of an arc.
37. (T or F) You cannot constrain the center of a line.
38. Use the _____ command to have AutoCAD automatically constrain all selected objects.

Answers

1. Stretch
2. Lengthen
3. Crossing window or crossing-polygon
4. Percent
5. Lengthen
6. Total
7. Lengthen
8. Stretch
9. Rotate
10. Scale
11. Scale
12. Sc
13. Stretch
14. S
15. Rotate
16. Ro
17. Revcloud
18. T
19. F
20. Coincident
21. GeomConstraint
22. Coincident
23. Concentric
24. Collinear
25. Equal
26. Fixed
27. Horizontal
28. Vertical
29. Parallel
30. Perpendicular
31. Symmetrical
32. Smooth
33. Tangent
34. Show all
35. Geometric
36. F
37. T
38. AutoConstrain