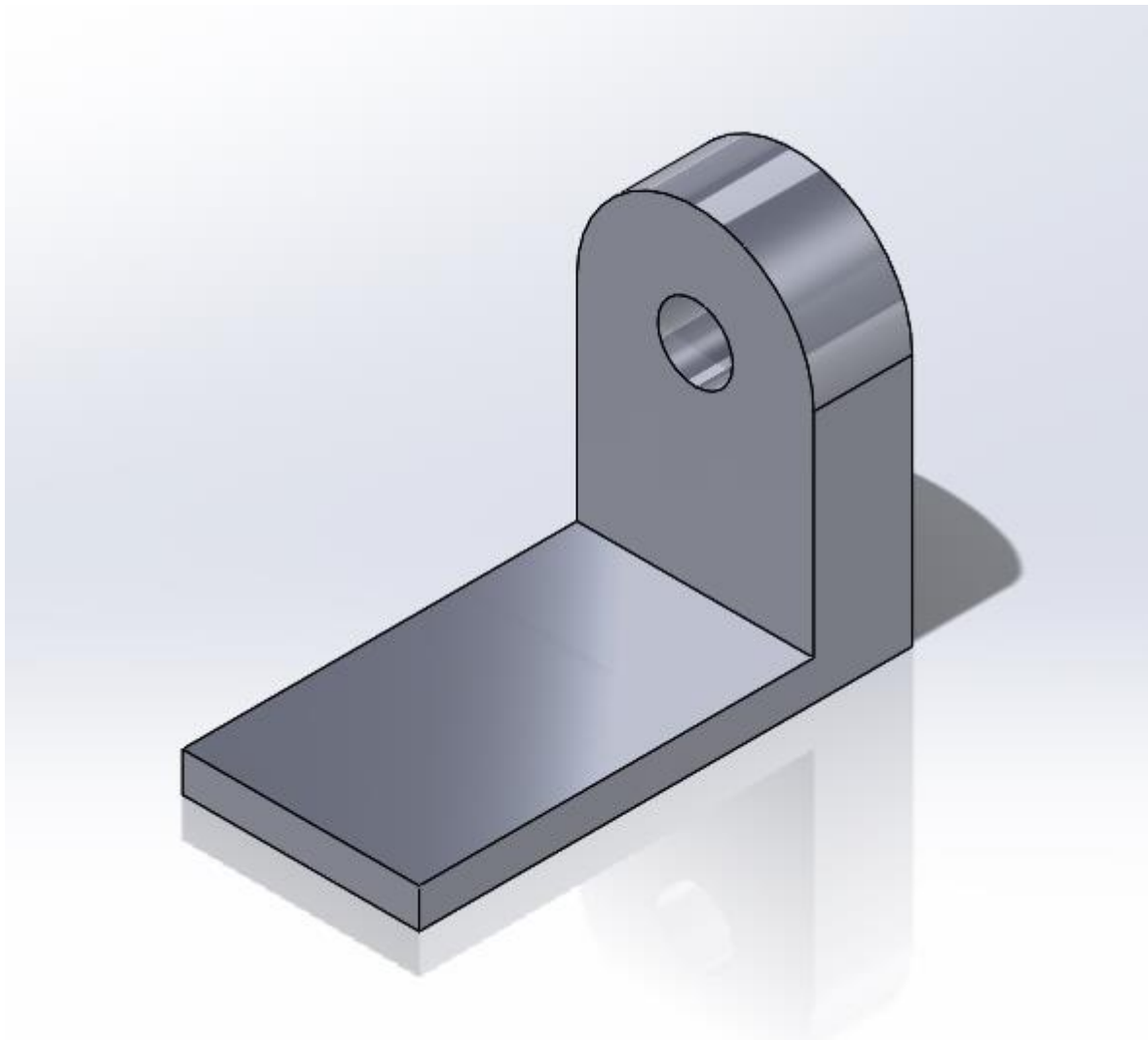


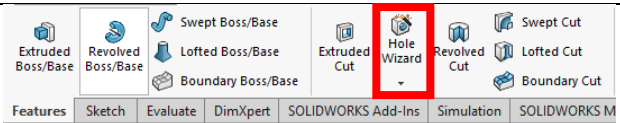
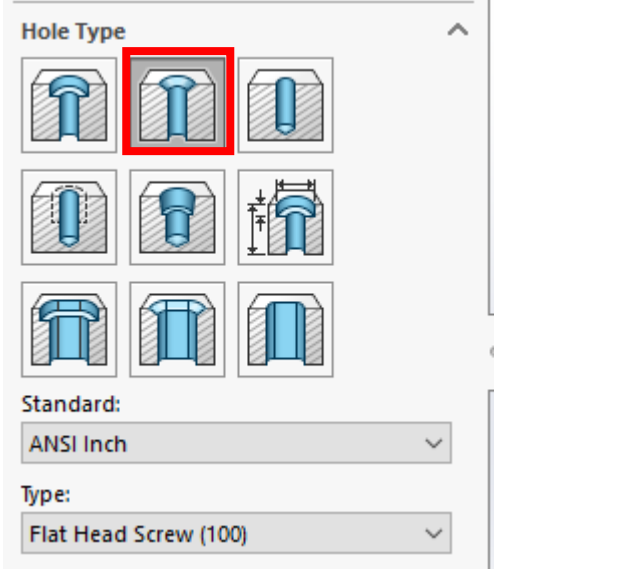
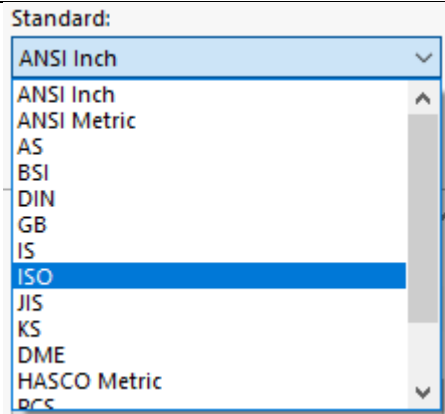
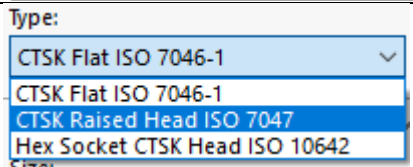
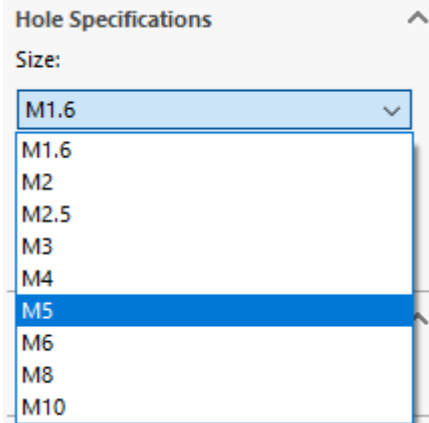
4 – HOLES, THREADS AND FURTHER ENGINEERING DRAWINGS

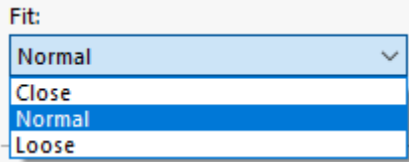
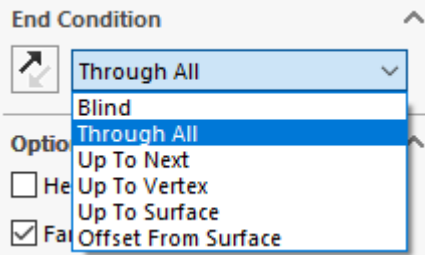
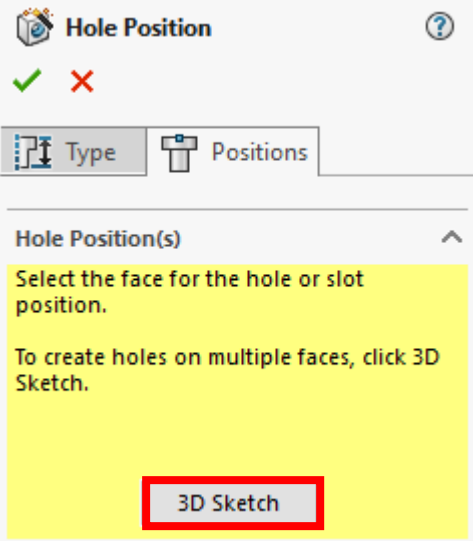
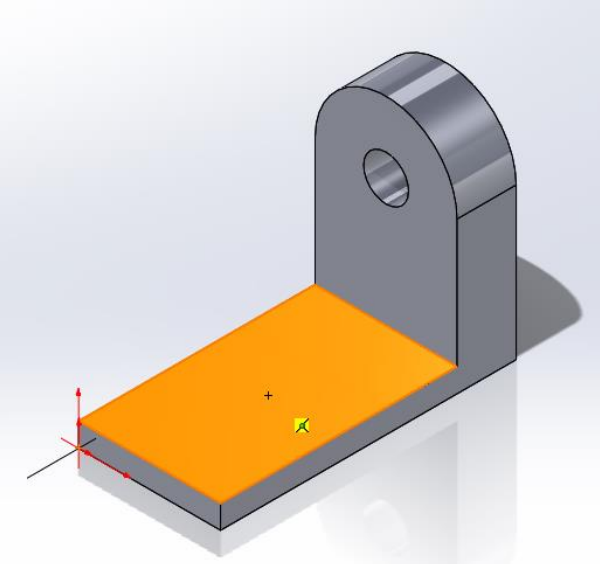
By following this tutorial, you will learn how to:

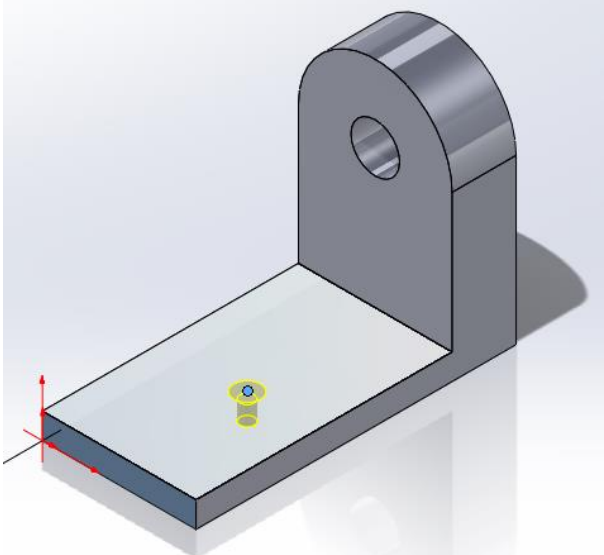
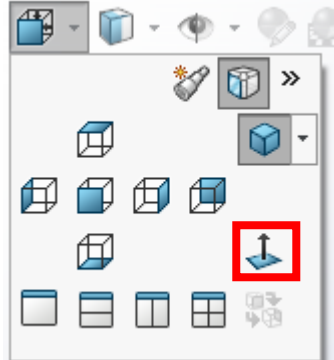
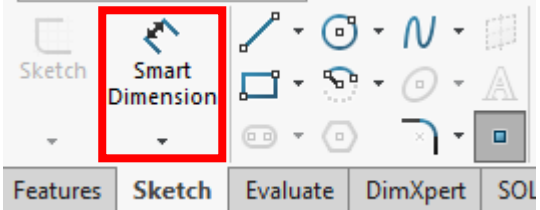
1. Use the Hole Wizard
2. Use the Measure tool
3. Create and show cosmetic threads
4. Dimension holes

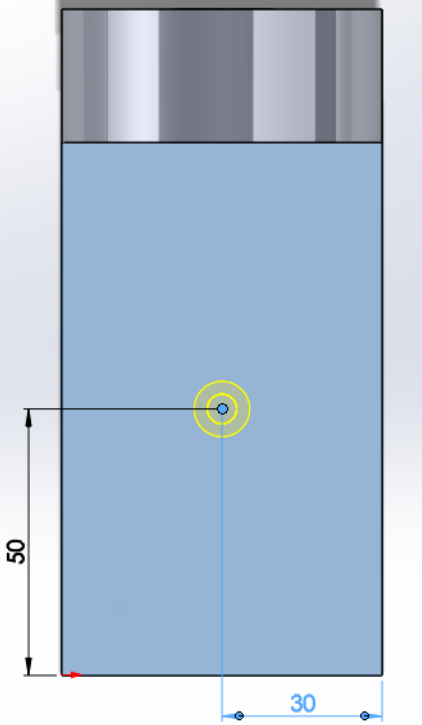
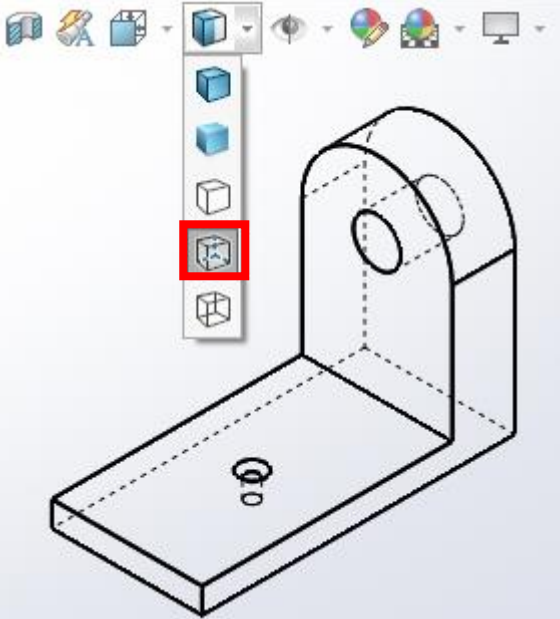
For the purpose of this handout, please download “4-1.SLDPRT” to be used in this tutorial.

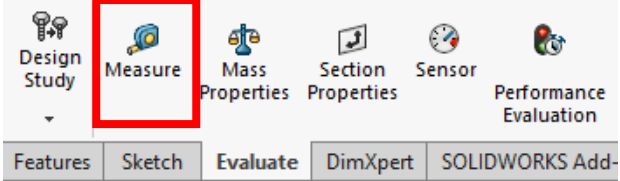
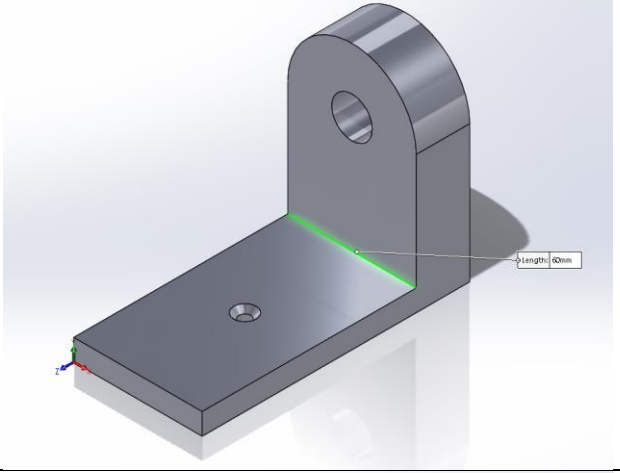
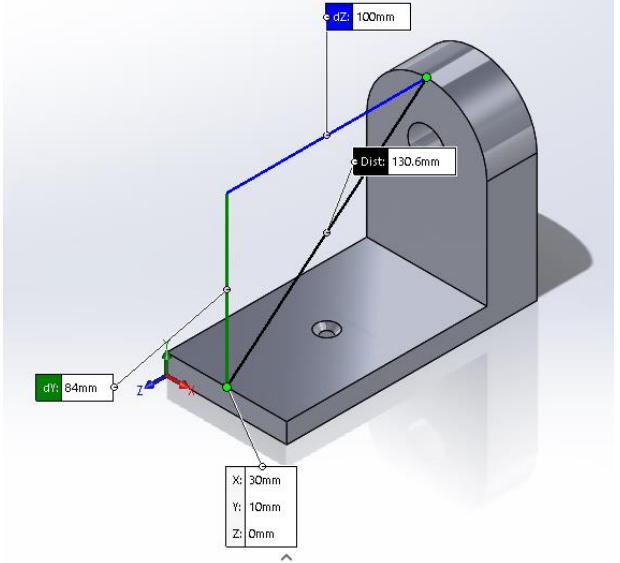


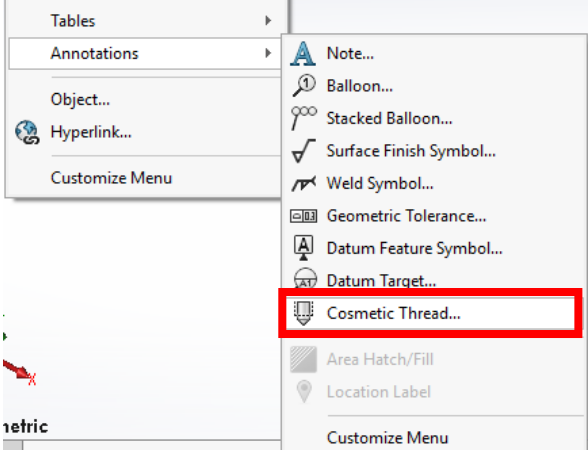
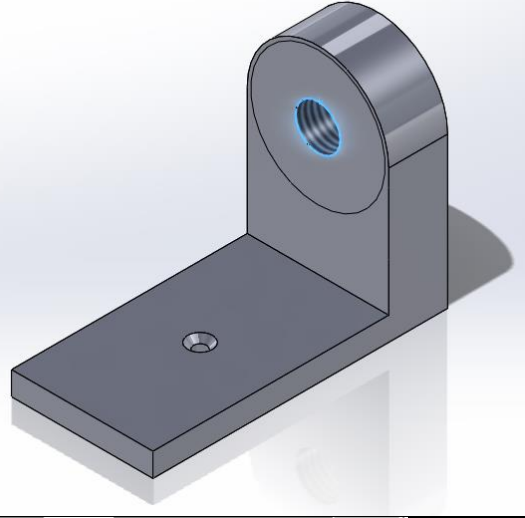
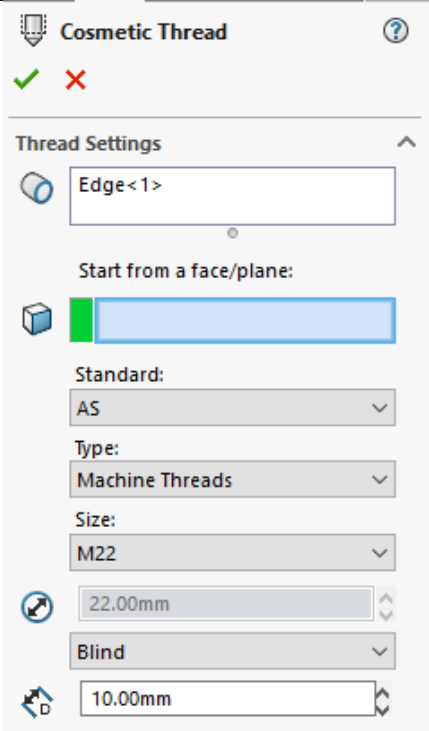
Use the Hole Wizard		
No.	Instruction	Screenshot
1	Click on the Hole Wizard button in the Features tab.	
2	On the Hole Specification sidebar, choose the Countersink Hole.	
3	Under the Standard drop-down, select ISO for the standard.	
4	Under the Type drop-down, select CTSK Raised Head ISO 7047.	
5	Under the Size drop-down, select M5 as the size.	

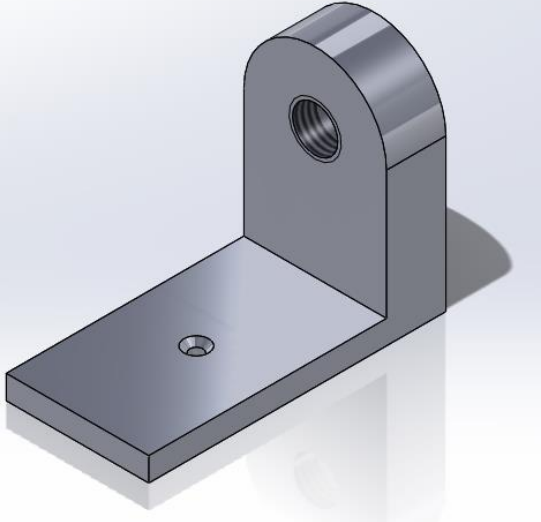
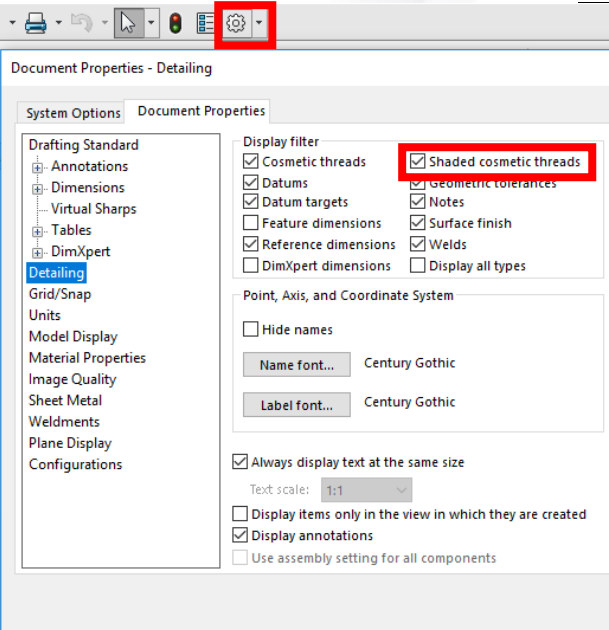
6	Under the Fit drop-down, select Normal.	
7	Under the End Condition drop-down, select Through All.	
8	Click the Positions tab in the Hole Wizard sidebar. Click 3D Sketch.	
9	Move your mouse over the surface on the part as shown. This will highlight the surface which you want to place your hole.	

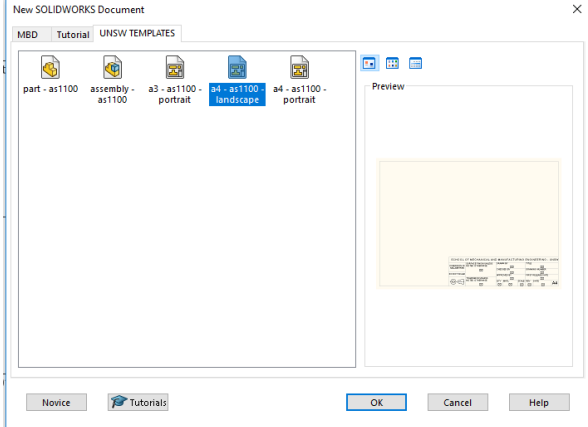
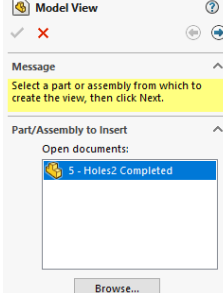
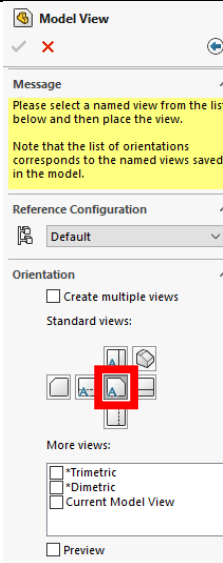
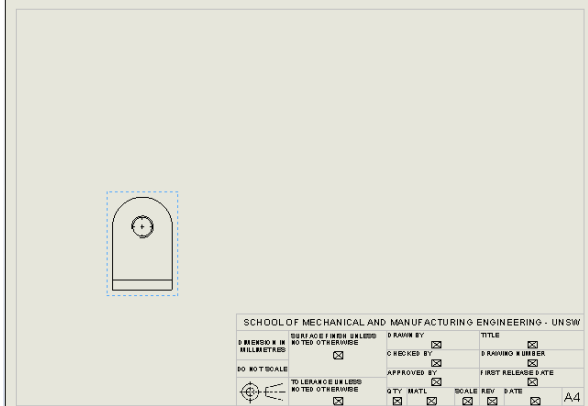
10	<p>Click the middle of this surface. A preview of the hole will be displayed.</p> <p>Note: You can click on another area of the surface to create more holes.</p>	
11	<p>Click the View Orientation button on the top of the workspace.</p> <p>Select the Normal To button. This will orient you to view to 2D which will aid you in dimensioning the position of the hole.</p>	
12	<p>Click on the Smart Dimension button on the Sketch tab.</p>	

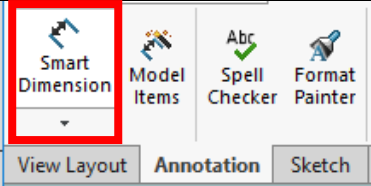
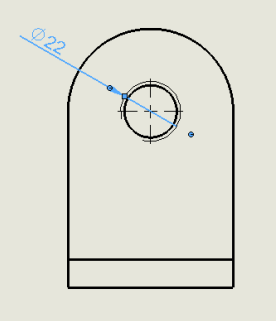
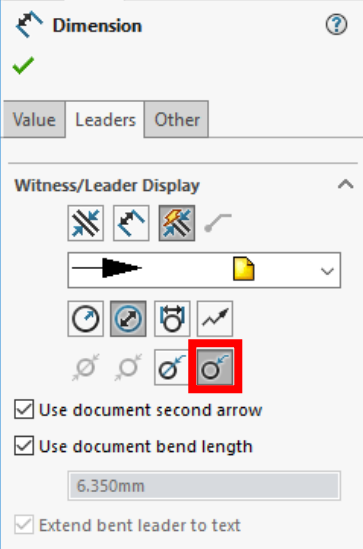
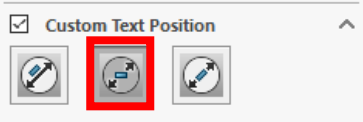
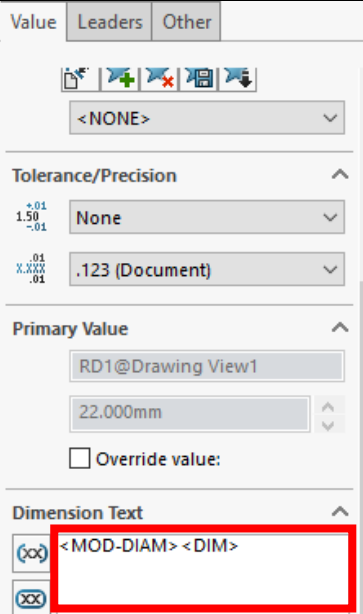
13	<p>Dimension the hole as 50mm from the bottom edge and 30mm from the right edge of the part.</p> <p>Click OK to confirm and exit the Hole Wizard.</p>	
14	<p>Click the Hidden Lines Visible button in the Display Style menu.</p> <p>Now you can clearly see the hole that you have created.</p>	

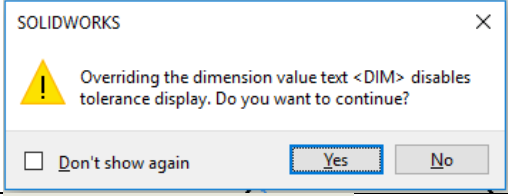
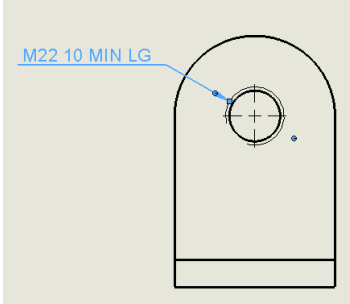
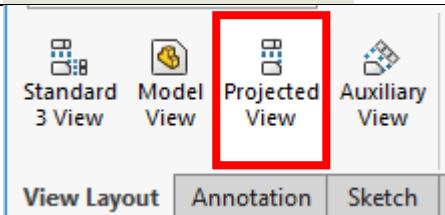
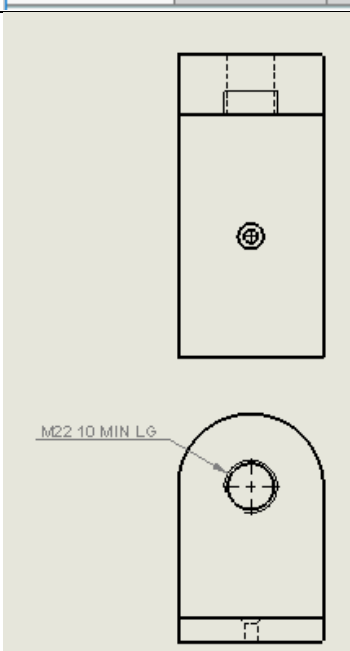
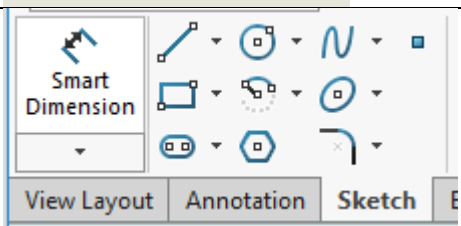
Use the Measure tool		
No.	Instruction	Screenshot
1	Click the Measure button in the Evaluate tab.	
2	Click the edges you want to measure.	
3	Click two areas to measure the distance between the areas.	

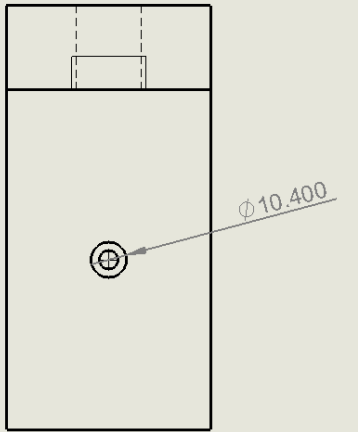
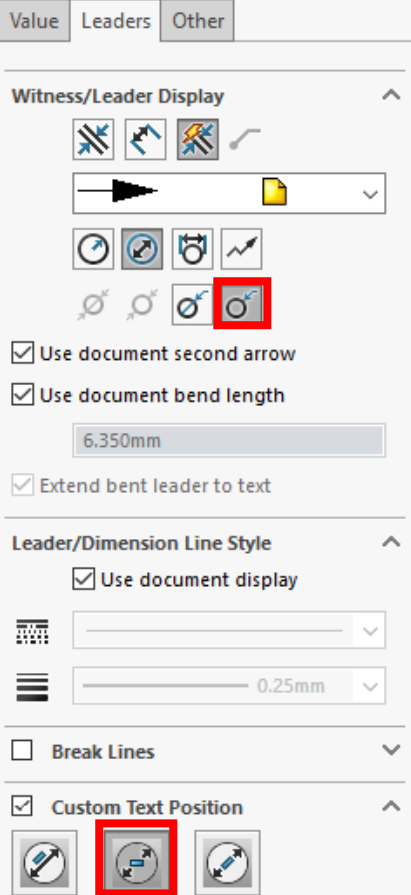
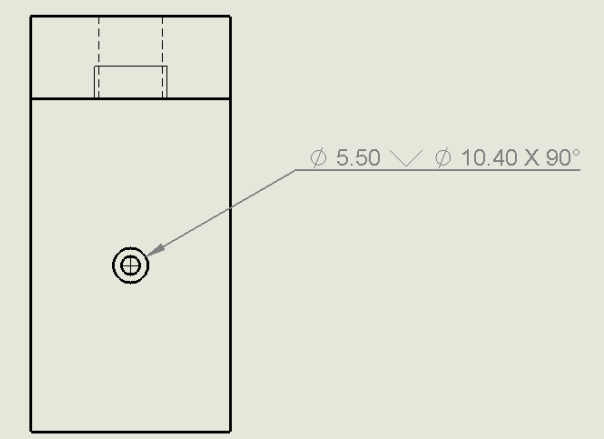
Create and show cosmetic threads		
No.	Instruction	Screenshot
1	Click Insert in the SolidWorks menu, move your mouse over Annotations and then click Cosmetic Thread...	
2	Click the edge of the hole as shown.	
3	<p>Click the Standard drop-down and select AS.</p> <p>Click the Type drop-down and select Machine Threads.</p> <p>Click the Size drop-down and select M22.</p> <p>Click the Depth dropdown and select Blind.</p> <p>Click the Depth value box and enter 10.00mm.</p> <p>Click OK to confirm.</p>	

4	You will now see the shaded cosmetic thread.	
5	If you cannot see the shaded cosmetic thread, click Options in the SolidWorks, click Document Properties, click Detailing and ensure that Shaded Cosmetic Threads is ticked.	

Dimension holes		
No.	Instruction	Screenshot
1	Open a new 'a4-as1100-landscape' engineering drawing document.	
2	Ensure that the part file is selected.	
3	Click on the Front View button from the Orientation options menu.	
4	Move your mouse to the bottom left corner of the A4 sheet and click to place. Click OK to confirm.	

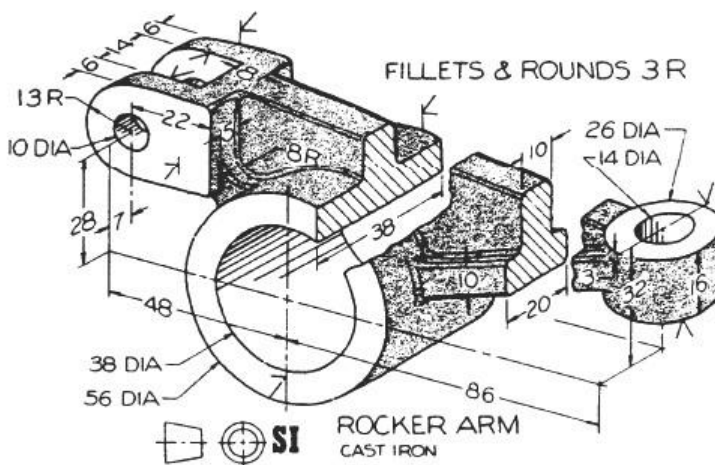
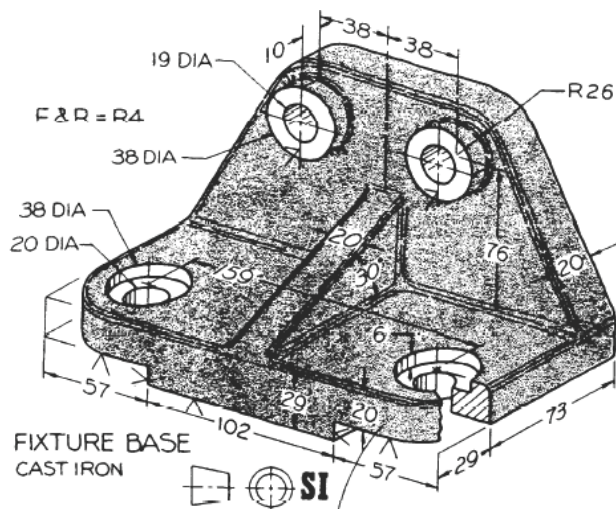
5	Click the Smart Dimension button in the Annotation tab.		
6	Zoom into the Front View and select the cosmetic thread.		
7	Click the leaders tab and click the One Arrow/Open Leader option.		
8	Change the custom text position to horizontal text.		
9	Click the Value tab. Delete the text in the Dimension Text box.		

10	Click the Yes button.	
11	Enter the appropriate design value into the Dimension Text box. Click OK to confirm.	
12	Click on Projected View in the View Layout tab.	
13	Place a top view into the engineering drawing.	
14	Click on the Smart Dimension button in the Sketch tab.	

15	Click on the edge of the countersink hole and click again to place the dimension.	
16	Click the leaders tab and click the One Arrow/Open Leader option. Change the custom text position to horizontal text.	
17	Delete the text from the Dimension Text box and enter the appropriate design value.	

Isometric view of a bearing mount casting. Dimensions and labels include:

- 30 DIA (top flange outer diameter)
- 46 DIA (top flange inner diameter)
- 18 DIA 2 HOLES (top flange holes)
- 30 (top flange thickness)
- 17 (vertical support thickness)
- 61 (vertical support height)
- 80 DIA (base outer diameter)
- 22 R (base fillet radius)
- 76 (base height)
- 18 (base thickness)
- 50 (base width)
- FILLETS & ROUNDS 3R (fillet and round specification)
- BEARING MOUNT CAST IRON (part name and material)

[illegible][illegible]

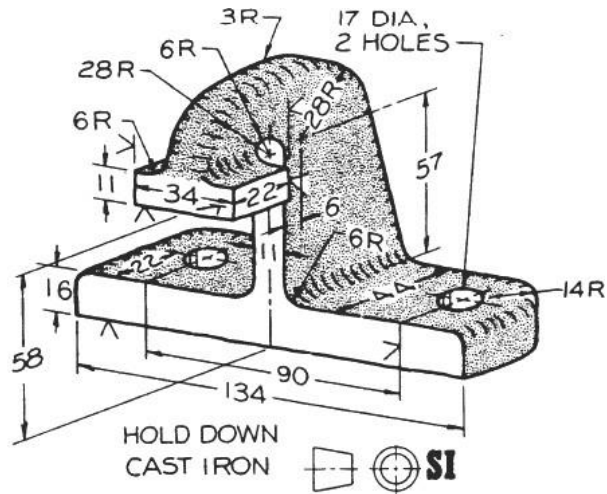


FIGURE 8.109 Problem 41: Hold down.

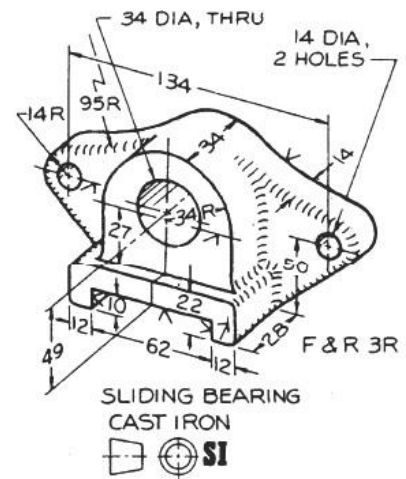


FIGURE 8.111 Problem 43: Sliding bearing.