

Introduction to AutoCAD 2010

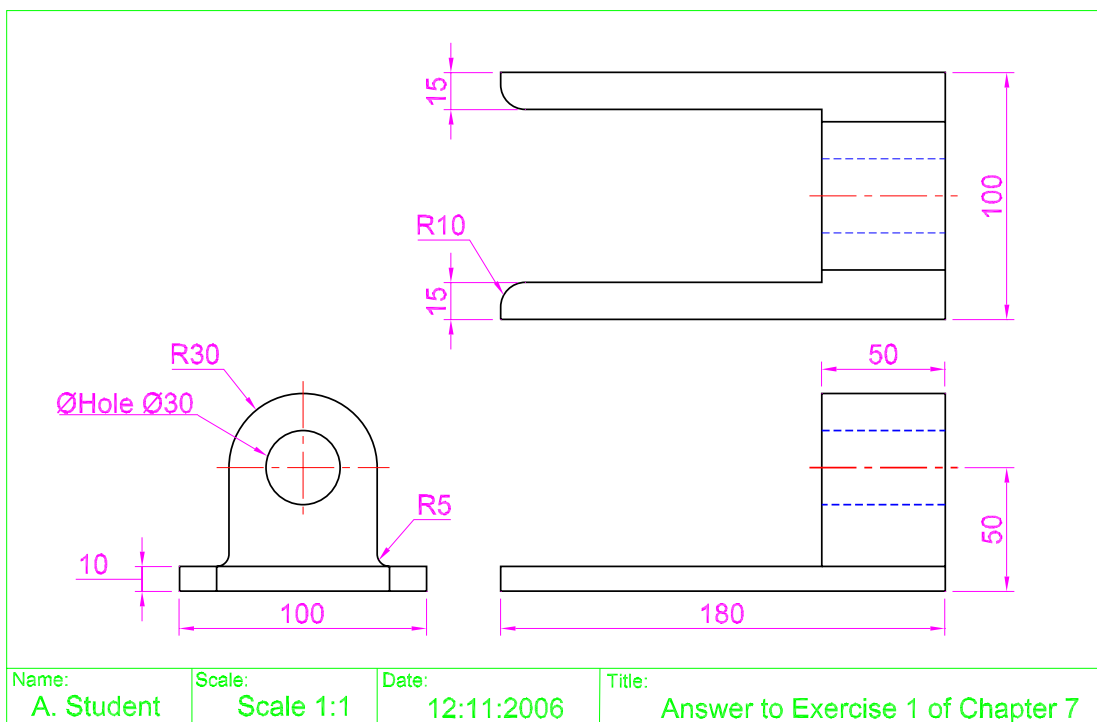
Alf Yarwood

Chapter 7 Exercise 1

1. Open **AutoCAD 2010** with a *double-click* on its shortcut icon in the Windows desktop.
2. Open the template **acadiso.dwt**.
3. Call the **Polyline** tool from the **Home/Draw** panel with a *left-click* on its tool icon.
4. Set the **Poyline width** to **0.7** and construct the outline of the given front view on layer **0**. Include the hidden lines and centre lines with **Polyline width** set to **0.3**.

Note To draw the hidden detail and centre lines make the relevant layer the current layer.

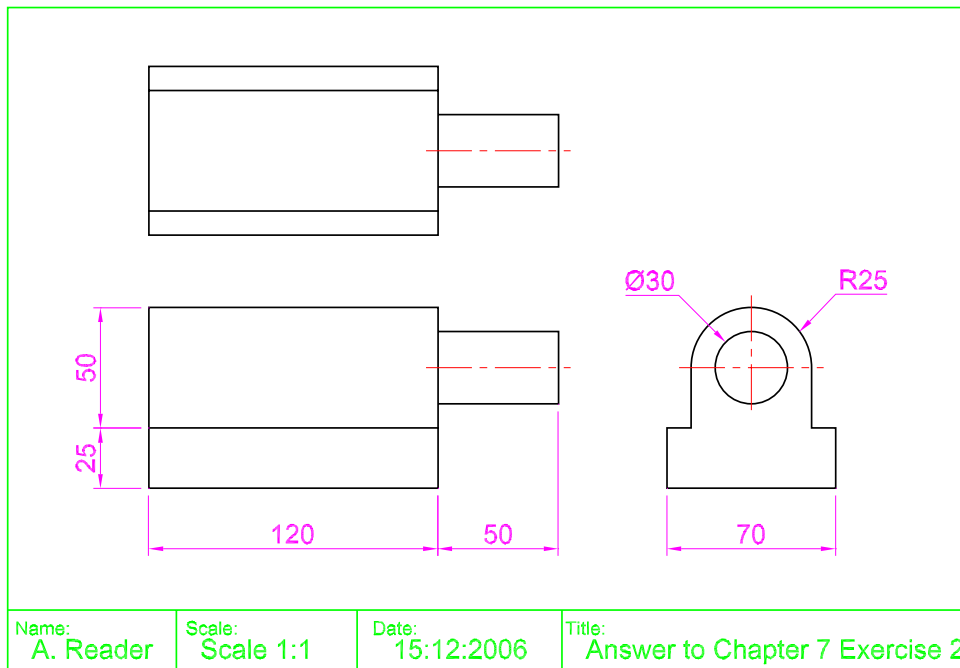
5. Add an end view to the left of the front view.
6. Add the plan above the front view.
7. Add all dimensions on the **Dimensions** layer.
8. Add a border and title block.



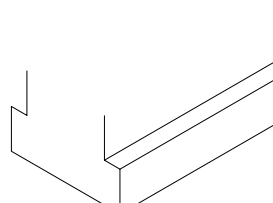
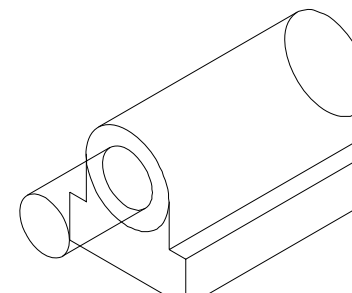
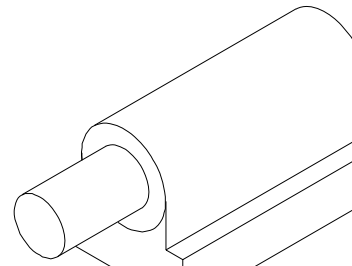
9. Save your drawing with the file name **7_Exercise01.dwg** to your floppy disk.
10. *Left-click* the **Close** button of the drawing window.

Chapter 7 Exercise 2

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. Call the **Polyline** tool from the **Home/Draw** panel with a *left-click* on its tool icon.
3. Set the **Poyline width** to **0.7** and construct the outline of the given front view on the layer **0**. Include the hidden lines and centre lines with **Polyline width** set to **0.3** on the layers **Hidden** and **Centre**.
4. Add an end view to the left of the front view.
5. Add the plan above the front view.
6. Add all dimensions working on the layer **Dimensions**.
7. Add a border and title block, working on the layer **Text**.
8. Save your drawing with the file name **7_Exercise02.dwg** to your floppy disk.
9. *Left-click* the **Close** button of the drawing window.

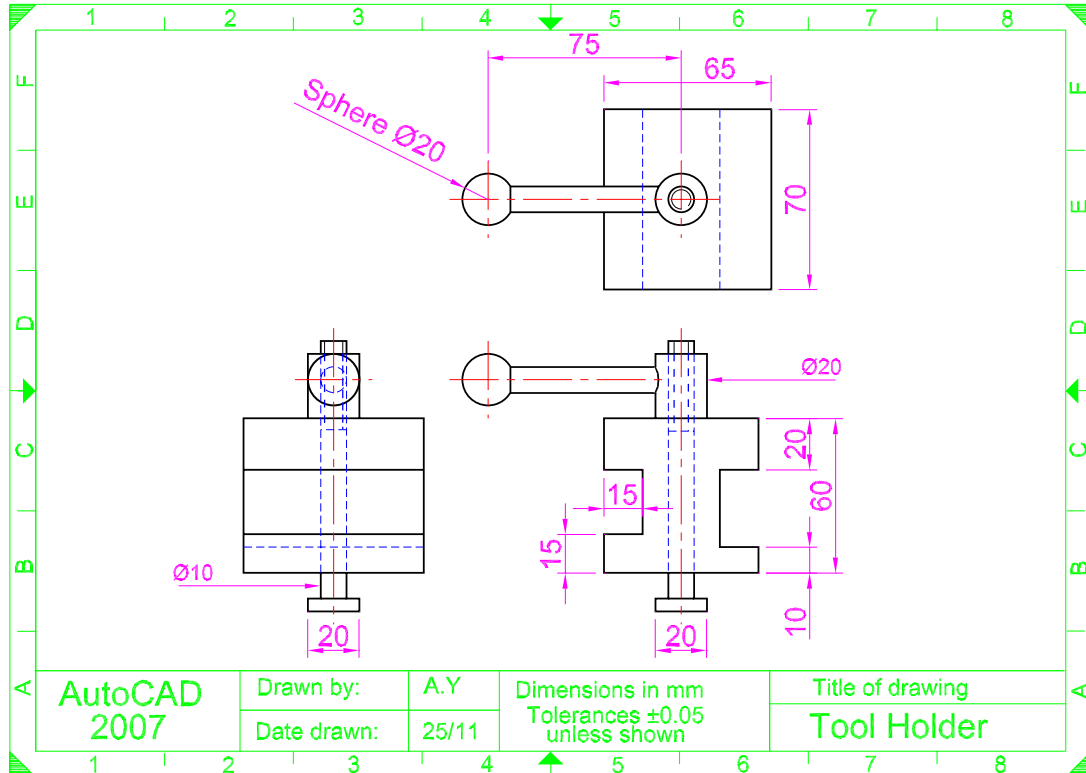


Chapter 7 Exercise 3

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. Set up an isometric drawing window:
Command: *enter snap right-click*
Specify snap spacing or [ON/OFF/Aspect/Rotate/Style/Type] <0>: *enter s right-click*
Enter snap grid style [Standard/Isometric] <S>: *enter i right-click*
Specify vertical spacing <0>: *enter 5 right-click*
Command:
3. Toggle snap lines by pressing either **F5** or **Ctrl+E**.
4. Construct the lines as shown using the **Polyline** tool - toggling isoplanes as needed. At this stage it is best to have **Ortho Mode** set on.

5. Set **Isoplane Left** and add ellipses as shown (these are isocircles):
Command: **_ellipse**
Specify axis endpoint of ellipse or [Arc/Center/Isocircle]:
enter i right-click
Specify center of isocircle: *pick*
Specify radius of isocircle or [Diameter]: *enter 15 right-click*
Command:

6. Draw tangential lines using the **Polyline** tool. *Enter qua* as the osnap point when drawing these tangential lines.
7. With the **Trim** tool trim unwanted detail.
8. Save your drawing with the file name **7_Exercise03.dwg** to your floppy disk.
9. *Left-click* the **Close** button of the drawing window.


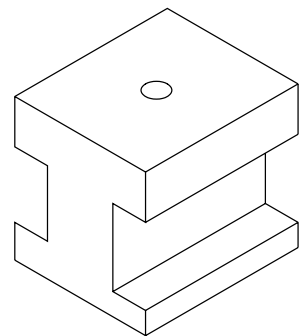
Chapter 7 Exercise 4

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. The drawing in answer to this exercise is shown below in a more elaborate border and title block than in previous examples.
3. Save your drawing with the file name **7_Exercise04.dwg** to your floppy disk.
4. *Left-click* the **Close** button of the drawing window.



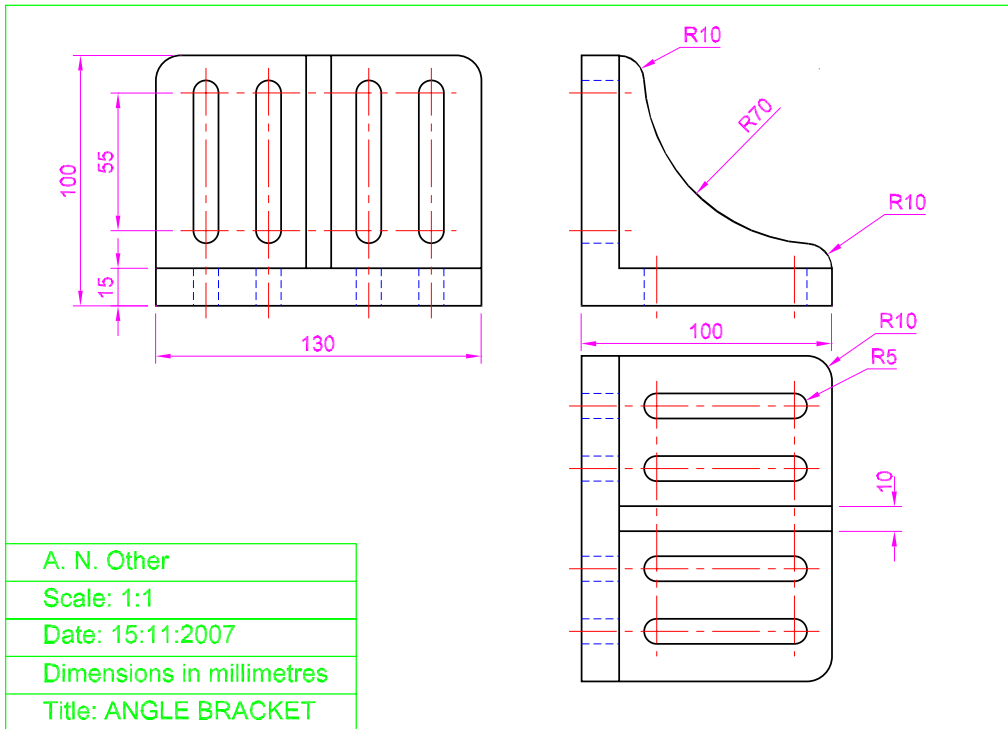
Chapter 7 Exercise 5

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. Set up an isometric drawing window.
3. The isometric drawing constructed in answer to this exercise is given to the right.
4. Save your drawing with the file name **7_Exercise05.dwg** to your floppy disk.
5. *Left-click* the **Close** button of the drawing window.



Chapter 7 Exercise 6

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. Construct the three views using the tools **Polyline** (Widths = **0.7** for the outlines and **0.3** for hidden detail and centre lines), **Fillet**, **Copy**, **Rotate**, **Circle** and **Trim**. **Copy** and **Rotate** are used after constructing one of the slots in the front view and plan.
3. Save your drawing with the file name **7_Exercise06.dwg** to your floppy disk.
4. *Left-click* the **Close** button of the drawing window.



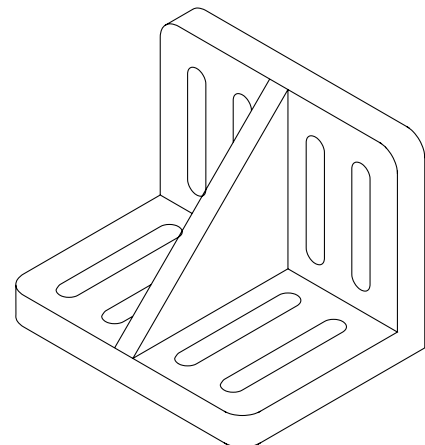
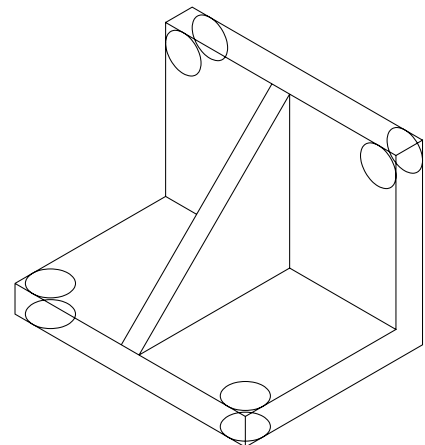
Chapter 7 Exercise 7

1. Open **acadiso.dwt** - *left-click New...* in the **Quick Access** toolbar.
2. Set up the AutoCAD window for isometric drawing:
Command: *enter snap right-click*
Specify snap spacing or [ON/OFF/Aspect/Rotate/Style/Type] <5>: *enter s right-click*
Enter snap grid style [Standard/Isometric] <S>: *enter i right-click*
Specify vertical spacing <5>: *right-click*
3. Construct the outlines of the drawing using the **Polyline** tool, adjusting the isoplanes by pressing the **F5** key.
4. Add isometric circles to form the fillets at the corners of the bracket and trim to complete the fillets. At two fillets plines are drawn tangential to the trimmed fillets - make use of osnaps for this.
5. Construct one of the slots for the base, using **Polyline** and isocircles. Trim unwanted parts and with **Pedit** form a single polyline for the slot. Then with **Copy** copy the slot to its two other positions.
6. Repeat step 6 for the slots in the upright part of the drawing.

Note: To draw an isocircle:

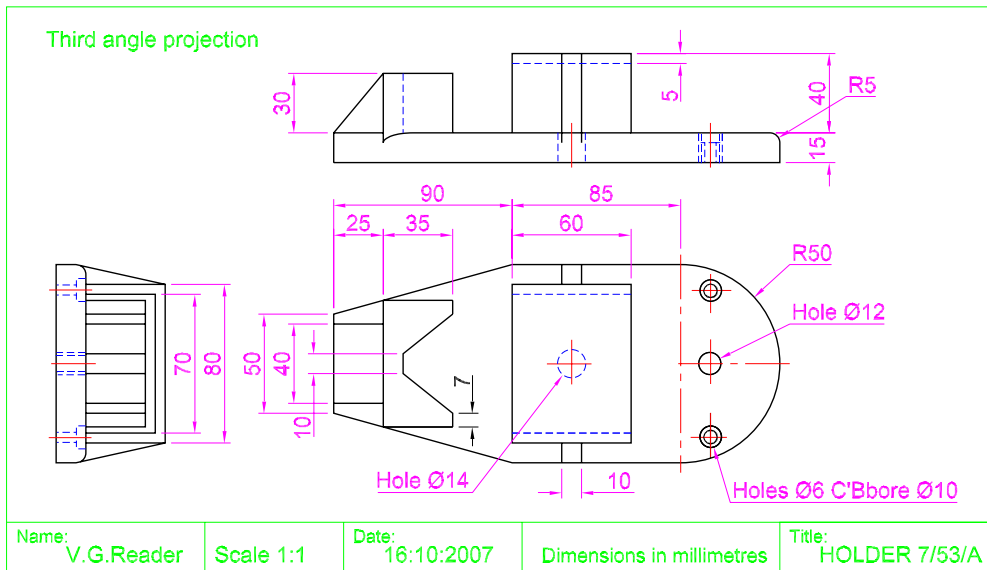
- Command:** **_ellipse**
Specify axis endpoint of ellipse or [Arc/Center/Isocircle]: *enter i right-click*
Specify center of isocircle: *pick*
Specify radius of isocircle or [Diameter]: *enter 10 right-click*
Command:

7. Save your drawing with the file name **7_Exercise07.dwg**.
8. *Left-click* the **Close** button of the drawing window.

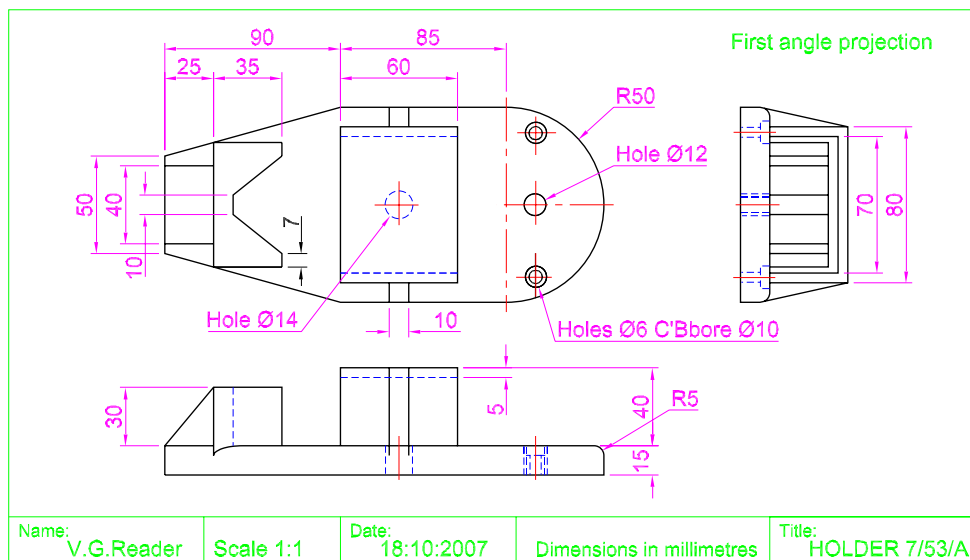


Chapter 7 Exercise 8

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. The **third angle** projection is given below.
3. The **first angle** projection is given below.



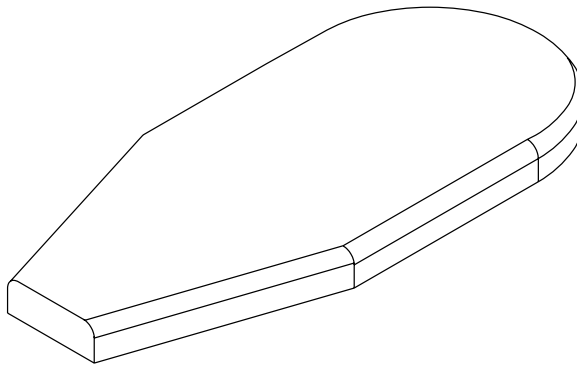
4. Save your drawing with the file name **7_Exercise08.dwg**.
5. *Left-click* the **Close** button of the drawing window.



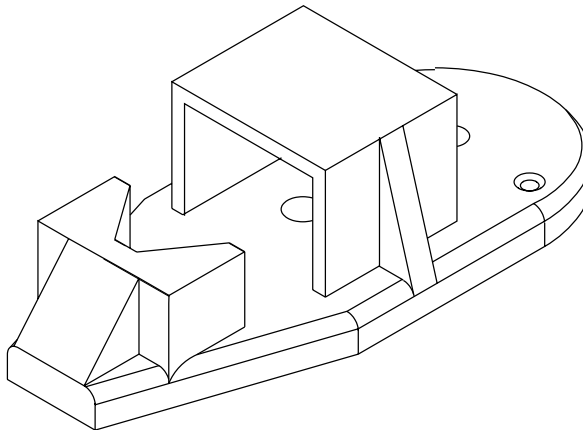
Chapter 7 Exercise 9

1. Open **acadiso.dwt** - *left-click* **New...** in the **Quick Access** toolbar.
2. *Enter* **snap** at the command line and set up the AutoCAD window for the drawing of isometric views.
3. Construct the base of the drawing using the **Polyline** and **Ellipse** tools. Before using the **Ellipse** tool set the set variable **PELLIPSE** to **1** in order to be able to trim unwanted parts of the ellipses.

- Care is needed to ensure the axes of the part ellipses forming the **R5** fillets and the upper part of the base are of the correct size.



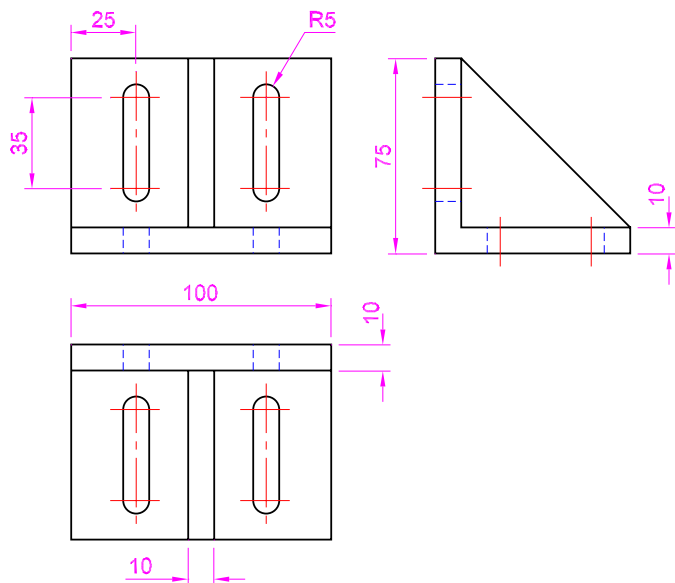
- Construct other details of the drawing using the **Polyline** and **Ellipse** tools.



- Save your drawing with the file name **7_Exercise09.dwg**.
- Left-click the **Close** button of the drawing window.

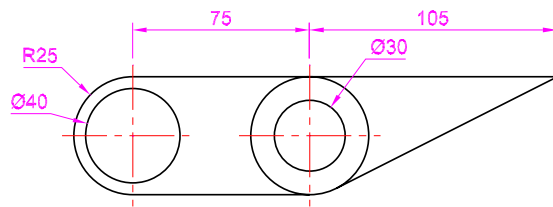
Additional exercises

- The drawing shows a three-view first angle orthographic projection of a bracket. Construct an isometric drawing of the bracket.

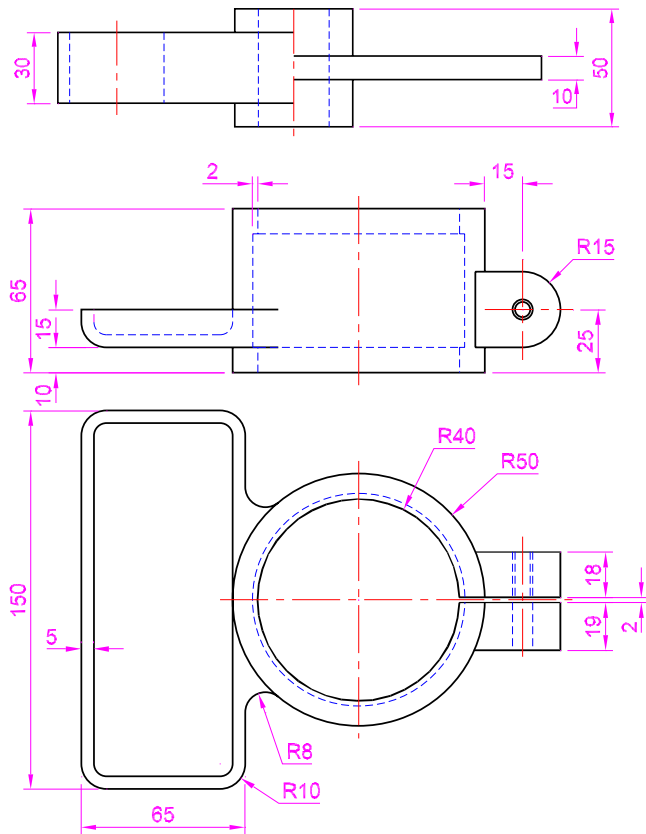


2. The drawing shows a two-view first angle projection of the pointer.

Construct a third angle projection of the pointer to a scale of 1:1, with the front view in section. The section plane is to be central to the plan.

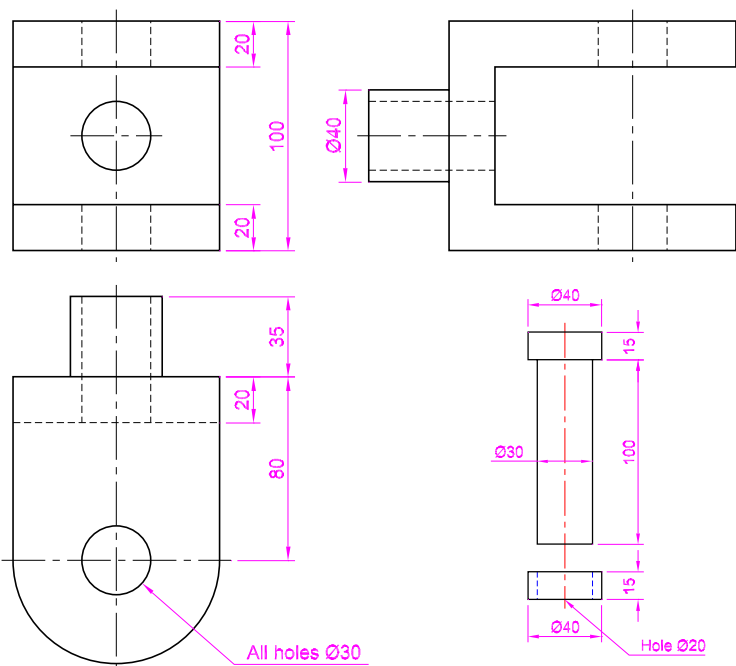


3. The given drawing is a two-view first angle projection of a tray from a drilling machine. Construct a two-view third angle projection of the tray to include a sectional front view, the section plane to be central to the plan.

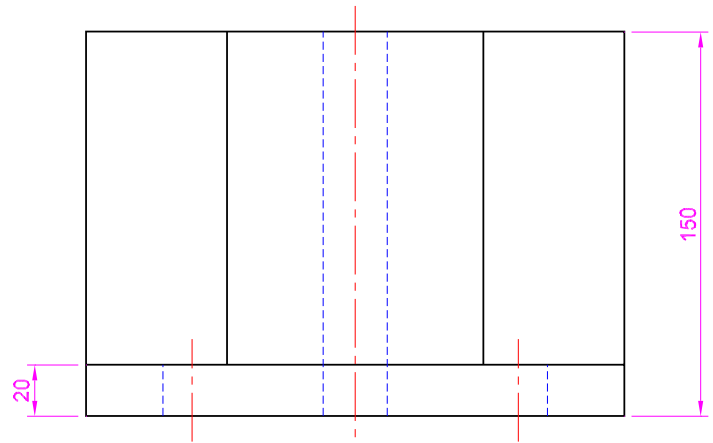


4. The main drawing is a three-view first angle projection of a fork connector. Construct a fully dimensioned three-view third angle projection of the connector which includes a sectional end view with the section plane central to the front view.

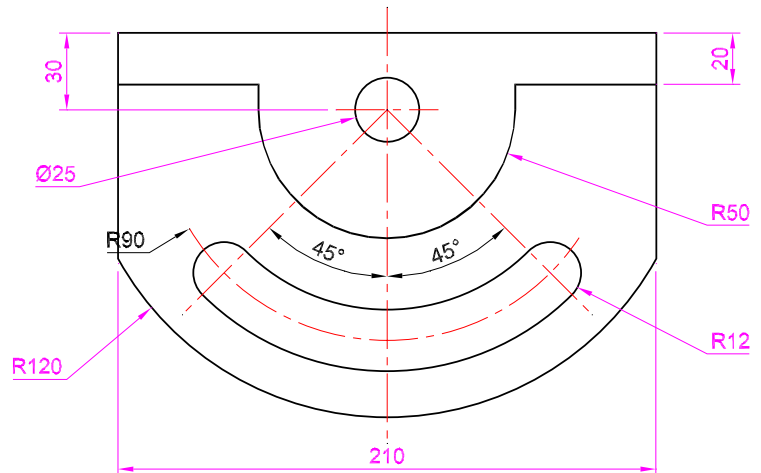
The smaller drawing is a two-view orthographic projection of a pin and a washer for fitting over the end of the pin. Include views of the pin with its washer fitted in the vertical holes of the connector.



5. Construct an isometric drawing of the connector shown in the drawing for exercise 4. Include an isometric drawing of the pin placed in position and its washer.



6. The given drawing is a two-view first angle orthographic projection of a stop from a planing machine stop. Construct a full scale isometric drawing of the stop.



Multiple choice questions

- In first angle orthographic projection an end view is:
 - Always placed to the right of the front view
 - Viewed from the one side and placed on the other side of the front view
 - Always placed to the left of the front view
 - Placed either side of the front view irrespective of the viewing position
- In third angle orthographic projection a plan is:
 - Placed either above or below the front view depending upon whether the viewing is from above or below
 - Always placed above the front view
 - Always placed below the front view
 - Placed either above or below no matter which viewing direction is chosen
- Isometric drawing is:
 - A true 3D (three-dimensional) pictorial view of the object being drawn
 - A 2D (two-dimensional) pictorial view of the object
 - An accurate perspective drawing of the object
 - None of the items a, b or c
- If a layer is locked:
 - Details can be added to a locked layer
 - Details can be erased from a locked layer
 - Details cannot be added or erased from a locked layer
 - Details can be added to a locked layer but they disappear when the drawing file is saved

5. When a layer is turned off:
- (a) File space is saved when saving the file
 - (b) It makes no real difference. Details can still be added to the layer
 - (c) Details cannot be erased from the layer
 - (d) Details on the layer cannot be seen