UNIT 6 – EXERCISES

6.1 Notes

6.1.1 You will be briefed by lecturer in the respective lesson.

6.1.2 It depends on how fast you master the drawing skills. You may not be able to finish the respective exercise in the lesson. You are expected to complete the rest of the drawing by making use of FREE ACCESS.

6.1.3 Use your own judgement for any dimensions/information not given.

6.1.4 In general, there is more than one way to construct the same drawing.

6.1.5 All exercises are using A3 template.

6.1.6 There are more than 20 exercises in this Unit, including exercises to be done during Class and Test preparation.

6.1.7 There are more exercises for practice in BlackBoard to hone your AutoCAD skills.

6.2.1 Some instructions/suggestions

6.2.1 Exercise 1 to 5

- There are many ways of approach to drawing an object. Exercise 1 to 5 provide hints on how to draw using one of the methods.

6.2.2 Isometric & Orthographic Ex 1 and 2

- Some hints are given for Isometric drawings Ex1 and Orthographic drawings for Ex 1 & 2.

CADD ET0085 – TEST 1 (SAMPLE)

Students are given **1 hours 15 minutes** to complete the test. It is an open book test where textbook and notes are allowed for reference.

Students will be using notebook and the CADD lecturer will provide the instruction for students during the test.

Students are required to draw to details with **exact dimensions** given in the Test paper.

The students shall set **appropriate limits, border, title block, dimensions, text and linetypes**.

DRAWING SETTINGS:
Paper Limits = A3
Border size = 10mm from edge of paper
Title block = dimensions as shown in drawing
Text Font shall be **Times New Roman**, **Text height** = 10mm for large font
7mm for small font
Linetype Scale for centre lines **(LTS)** = 0.5

Overall Dimension Scale = 1.0
Baseline spacing = 15mm
Offset from origin = 2mm
Arrow size = 5
Text height = 5
All **dimensions** shall be drawn with colour **'Cyan'**.

Centre line shall be drawn with colour **'Red'**.

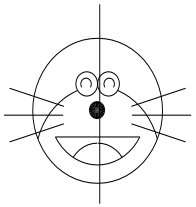
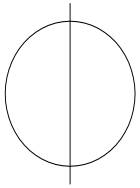
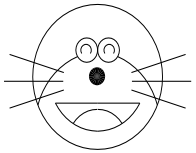
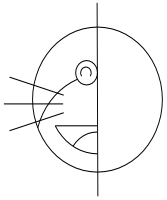
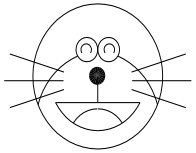
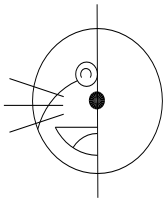
Hidden line shall be drawn with colour **'Green'**.

Students shall **save** the drawing under a **File Name: p1234567 test 1**, where the numbers represent the student's admission number.

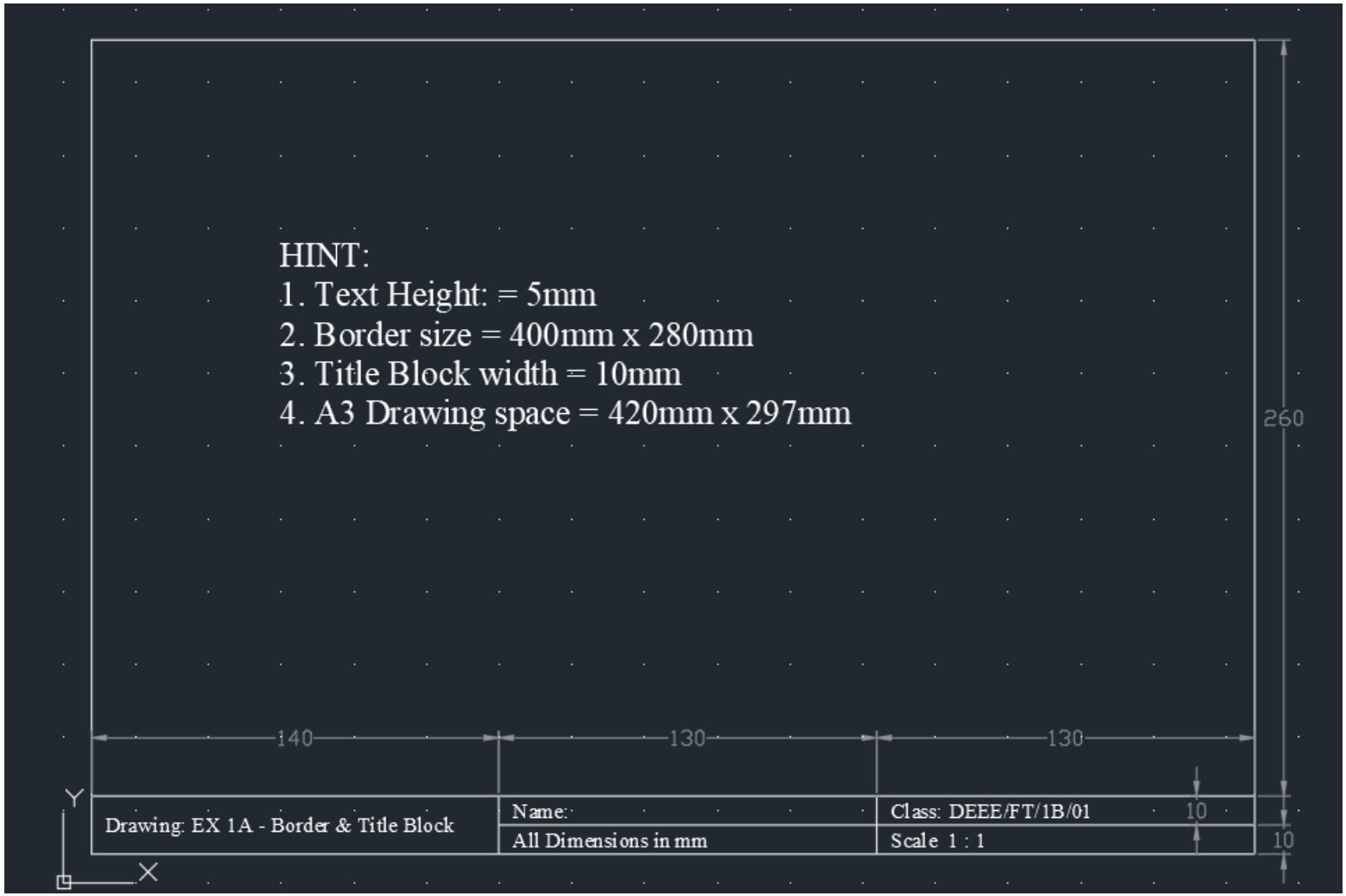
Inform the lecturer once you have completed the test and **return the test paper to the lecturer.**

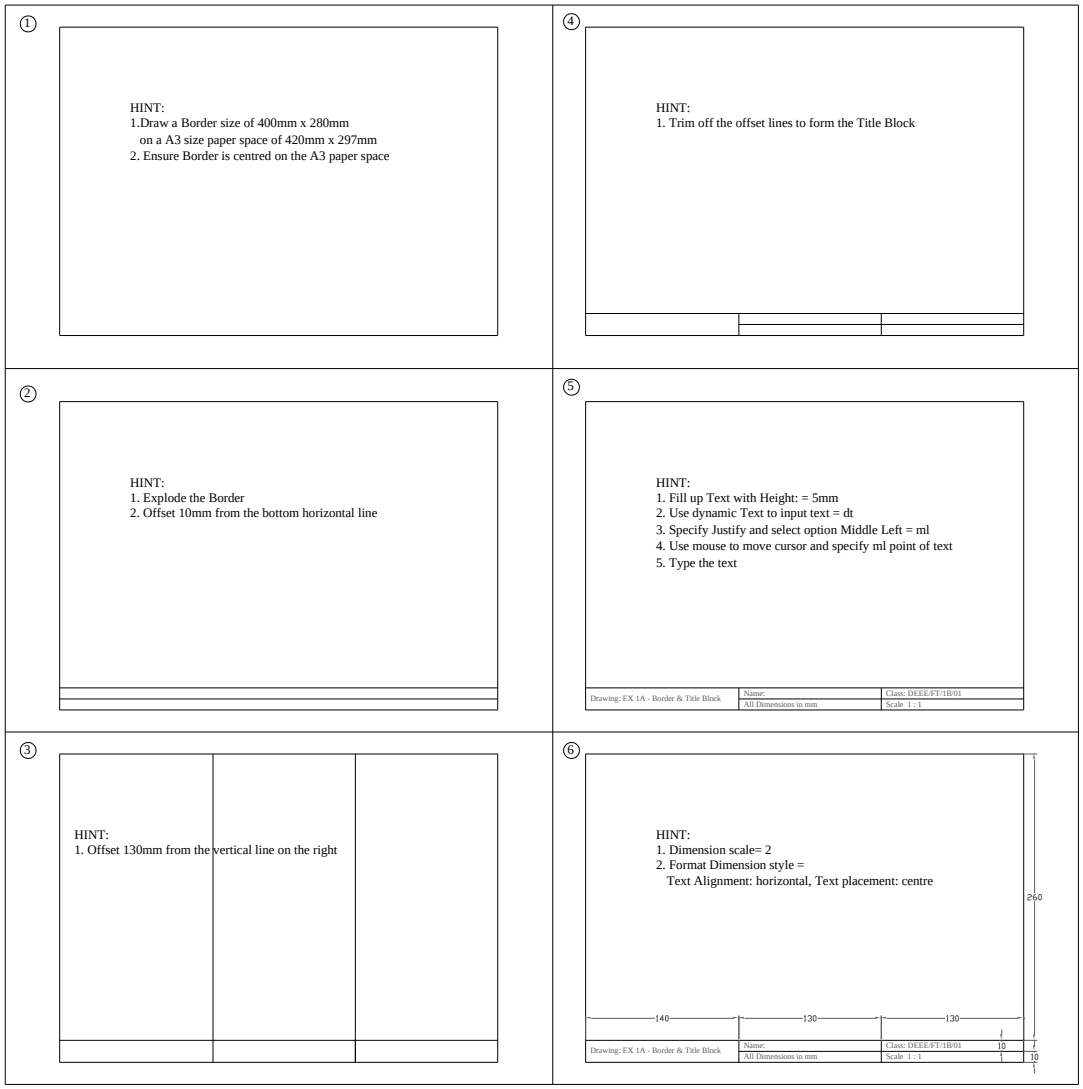
Appropriate actions shall be taken against any **students attempting to cheat, or caught cheating during the test,** and **will be severely dealt with subsequently.**

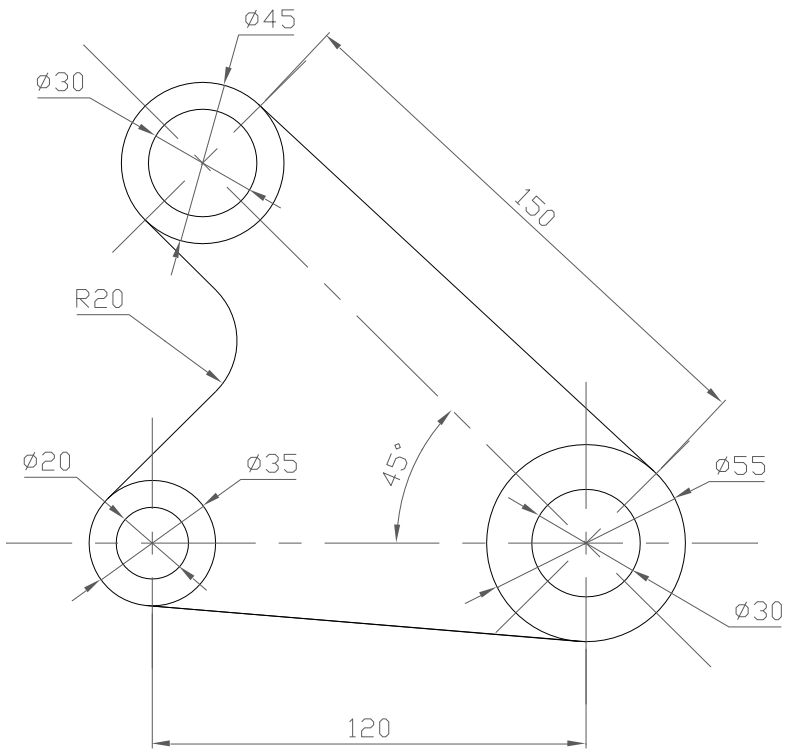
EX 1 (INTRODUCTION - HAVE FUN DRAWING DING-DONG)

	Line		Mirror
	Circle		Erase
	Line Circle Arc		Line Redraw
	Donut	Can You draw other cartoon characters? Examples: Goofy, Mickey or Minnie, Flintstone, Donald Duck, Bugs Bunny, etc.	

Drawing:EX 1-Ding Dong	Name: Tan Ah Kow (P1234567)	Class: DEEE/FT/1B/01	Scale = NTS


HINT:
1. Text Height: = 5mm
2. Border size = 400mm x 280mm
3. Title Block width = 10mm
4. A3 Drawing space = 420mm x 297mm
260
140
130
130
Drawing: EX 1A - Border & Title Block
Name:
All Dimensions in mm
Class: DEEE/FT/1B/01
Scale 1 : 1
10
10
Y
X


①
HINT:
1.Draw a Border size of 400mm x 280mm
on a A3 size paper space of 420mm x 297mm
2. Ensure Border is centred on the A3 paper space
②
HINT:
1. Explode the Border
2. Offset 10mm from the bottom horizontal line
③
HINT:
1. Offset 130mm from the vertical line on the right
④
HINT:
1. Trim off the offset lines to form the Title Block
⑤
HINT:
1. Fill up Text with Height: = 5mm
2. Use dynamic Text to input text = dt
3. Specify Justify and select option Middle Left = ml
4. Use mouse to move cursor and specify ml point of text
5. Type the text
Drawing: EX 1A - Border & Title Block
Name:
Class: DEEE/FT/1B/01
All Dimensions in mm
Scale 1 : 1
⑥
HINT:
1. Dimension scale= 2
2. Format Dimension style =
Text Alignment: horizontal, Text placement: centre
260
140
130
130
10
10
Drawing: EX 1A - Border & Title Block
Name:
Class: DEEE/FT/1B/01
All Dimensions in mm
Scale 1 : 1



EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

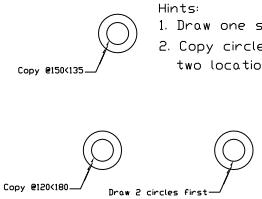
①

Hints:

1. Draw Border and Tile Block

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

②

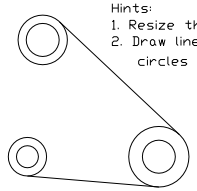


Hints:

1. Draw one set of circles first
2. Copy circles to the other two locations

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

③

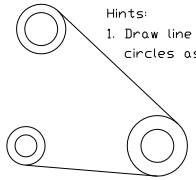


Hints:

1. Resize the circle as shown
2. Draw line tangent to circles as shown

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

④

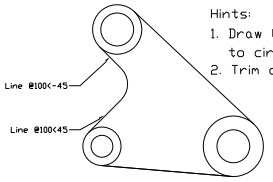


Hints:

1. Draw line tangent to circles as shown

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

⑤

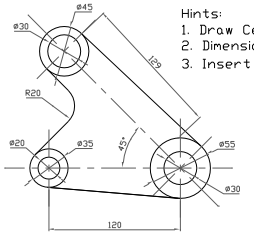


Hints:

1. Draw line tangent to circles as shown
2. Trim and Fillet

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

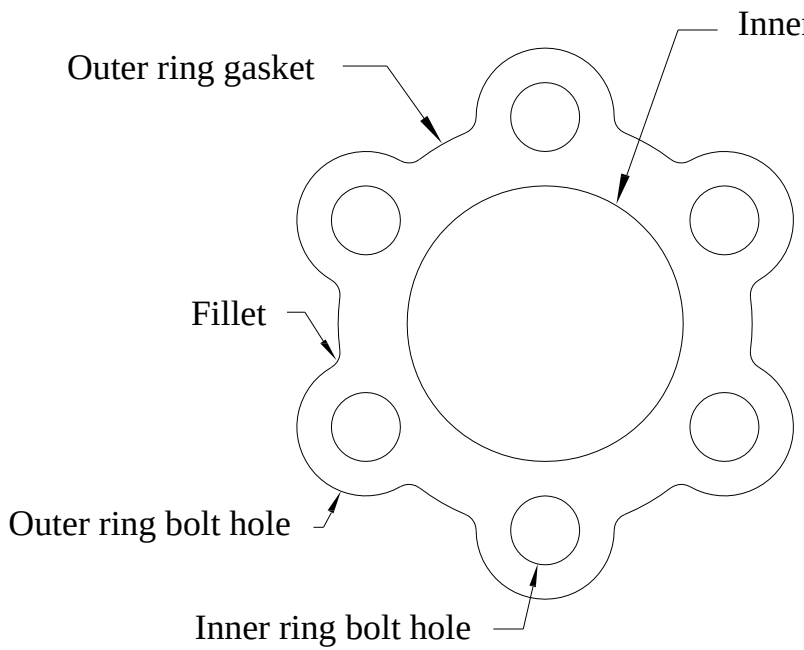
⑥



Hints:

1. Draw Centre lines
2. Dimension
3. Insert to Layers

EXERCISE 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1



Outer ring of gasket = 60 mm radius

Inner ring of gasket = 40 mm radius

Outer ring of bolt hole = 20 mm radius

Inner ring of bolt hole = 10 mm radius

Fillet = 5 mm radius

Array = Polar

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

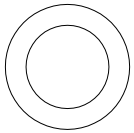
①

Hints:

Draw the Border and Tiltle Block

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

②

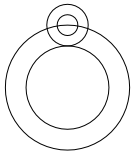


Hints:

Draw the 20mm and 30mm circle

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

③

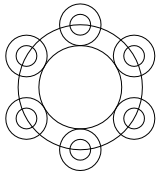


Hints:

Draw the 5mm & 10mm with centres on top quadrant of 30mm circle

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

④

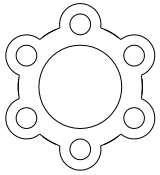


Hints:

Polar array the 5mm & 10mm circles

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

⑤

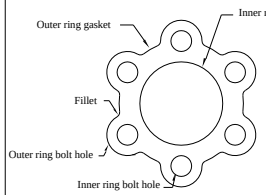


Hints:

Trim with cutting edges shown

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

⑥

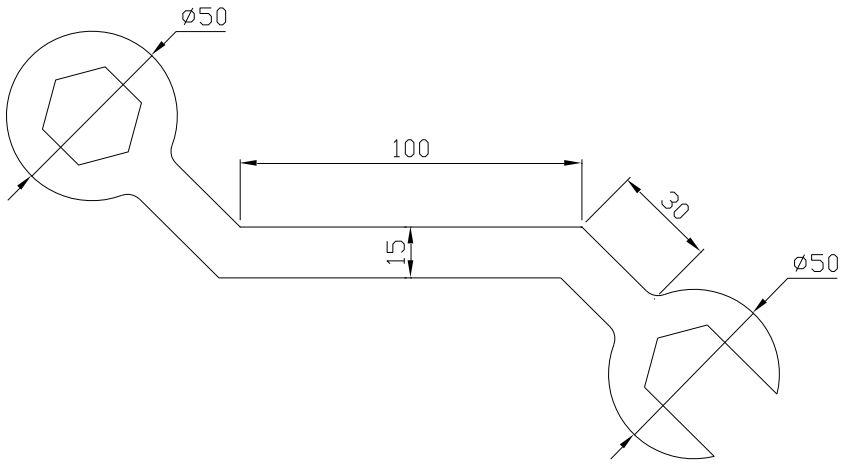


Hints:

Fillet = 1.25mm radius

Dimension using Leader

EXERCISE 3	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1



(1) Hexagon inscribed radius 15 mm
(2 places)

(2) Fillet 5 mm (4 places)

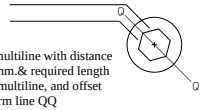
EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

①

Hints:
1. Draw Border and Title Block

EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

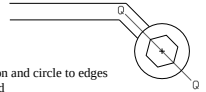
②



Hints:
1. Draw using multiline with distance width of 15mm.& required length
2. Explode the multiline, and offset 7.5mm to form line QQ
3. Draw Circle and Hexagon, making sure circle intersect the spanner handle

EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

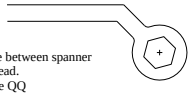
③



Hints:
1. Move hexagon and circle to edges of handle end

EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

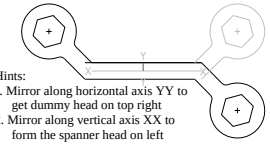
④



Hints:
1. Fillet the edge between spanner handle and head.
2. Erase the Line QQ

EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

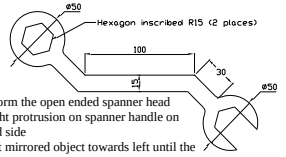
⑤



Hints:
1. Mirror along horizontal axis YY to get dummy head on top right
2. Mirror along vertical axis XX to form the spanner head on left
3. Erase source object on top right

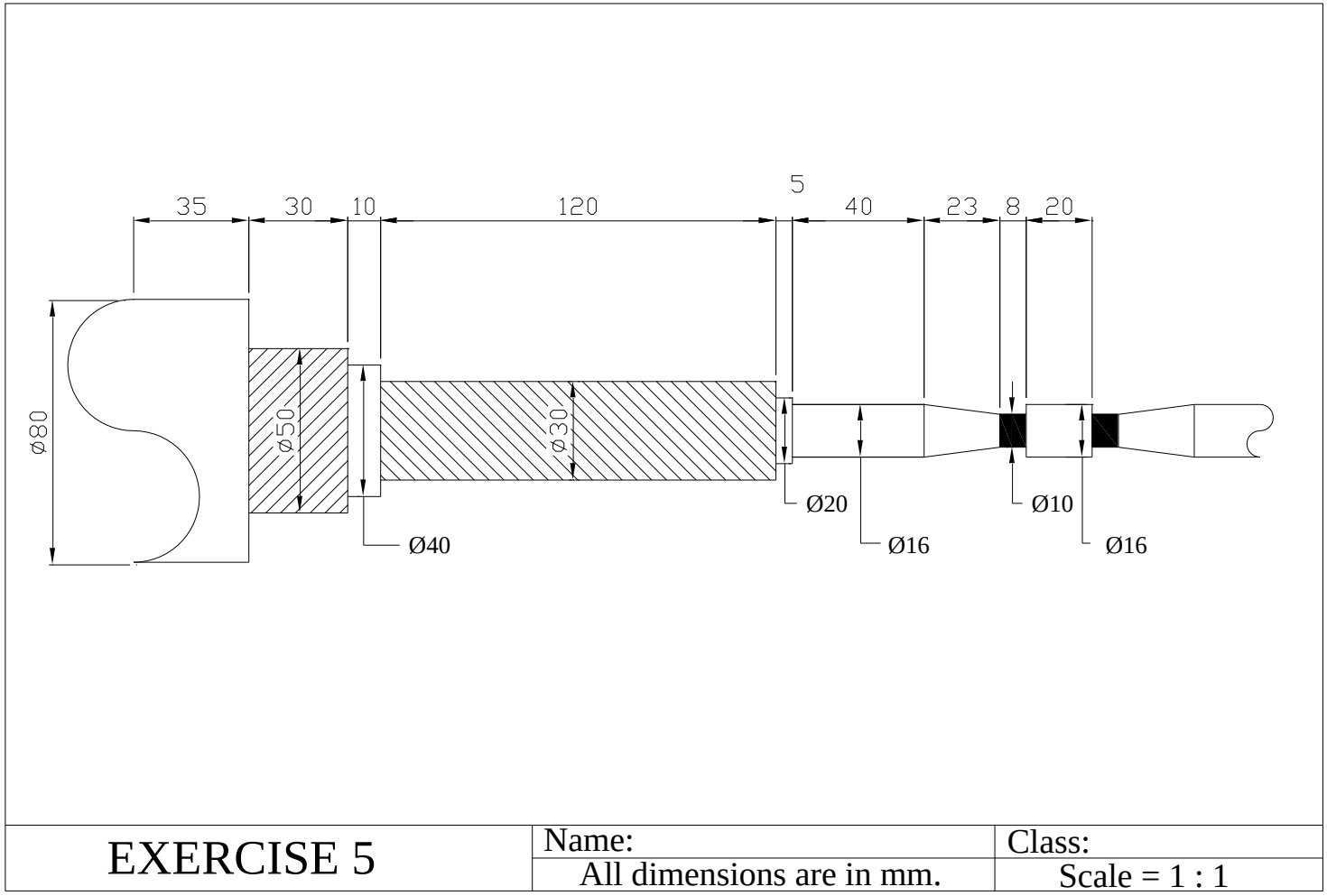
EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

⑥



Hints:
1. Trim to form the open ended spanner head
2. Trim slight protrusion on spanner handle on ring head side
3. Move left mirrored object towards left until the top slanted edge joint the top horizontal edge of handle
4. Extend bottom horizontal edge to bottom slanted edge of handle
3. Dimension

EXERCISE 4	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1



EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

①

Hint:
1. Draw the Border and Title Block

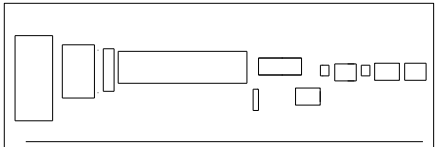
EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

②

Hint:
1. Draw the horizontal line

EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

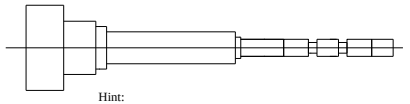
③



Hint:
1. Draw the rectangles to required size.
2. the last rectangle on the right are of estimated dimensions.

EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

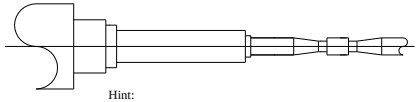
④



Hint:
1. Move all the rectangles with midpoints of vertical edges touching the horizontal line.

EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

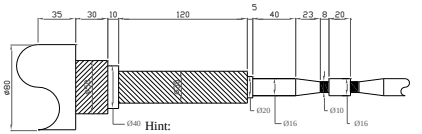
⑤



Hint:
1. Use Arc or circle to draw the ends
2. Chamfer or stretch the rectangle at edge nearest to solid squares to get slanted edges

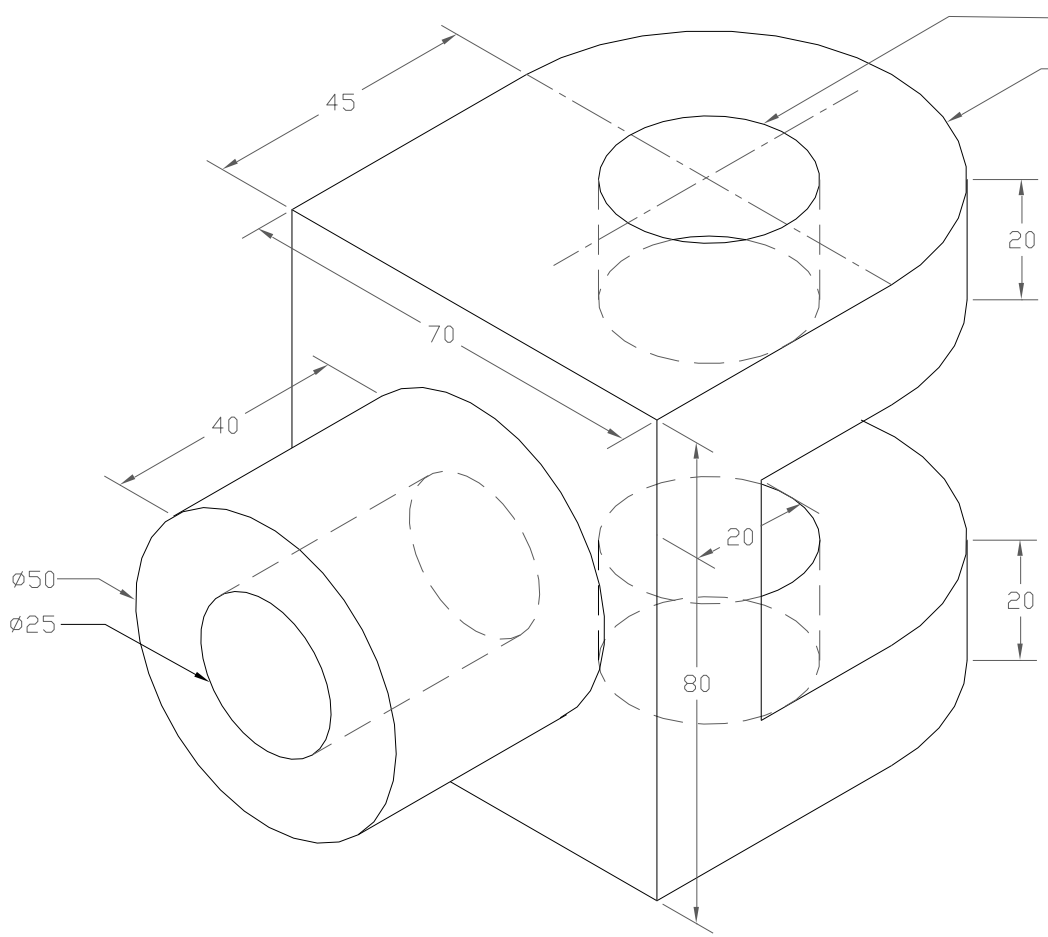
EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

⑥



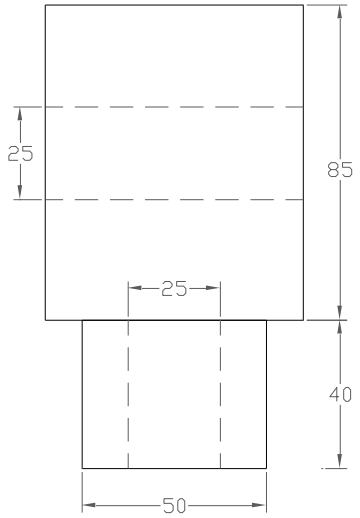
Hint:
1. Erase centre line
2. Hatch with ANSI31` pattern on left most rectangle
3. Hatch with ANSI 31 with 90 deg rotation pattern on longer rectangle
4. Hatch Solid on the two squares
5. Dimension

EXERCISE 5	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

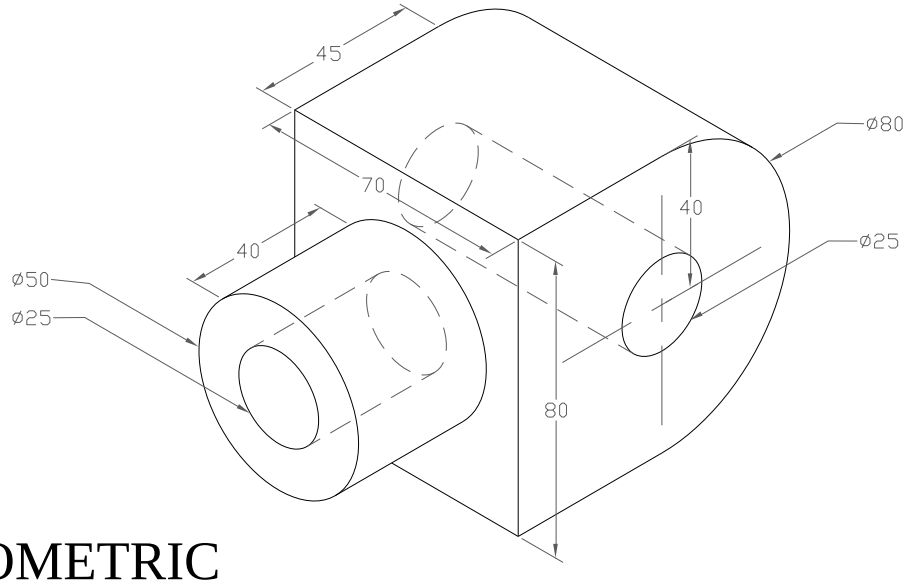


STEPS:
1. SET LIMITS=240,180
2. ZOOM, ALL
3. OPTIONS, DRG AIDS,
4. SET GRID & SNAP SPACING
5. ISOMETRIC, ON, TOP
6. DRAW OBJECT FROM TOP USING LINE, ISOCIRCLE.
7. COPY TO 3 LEVELS
8. JOIN LEVELS USING LINES
9. USE TRIM, ERASE, MODIFY PROPERTIES TO CHANGE LTYPE & COLOURS, LTSCALE.
10. DRAW CYLINDER USING ISOMETRIC LEFT.
11. DIM, DIMSCALE, DIMALIGNED, LEADER.
12. ATTACH THIS DRG TO A3 LAYOUT.

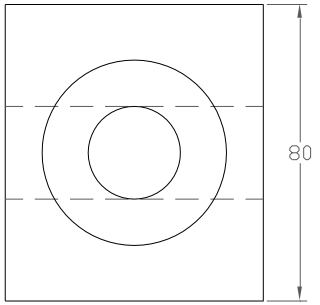
DRAWING: ISOMETRIC EX 1	NAME: TAN AH KOW (P1234567)	CLASS: DEEE/FT/1B01	SCALE 1: 1



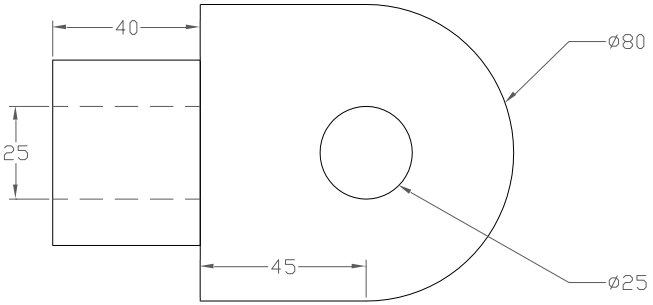
PLAN



ISOMETRIC

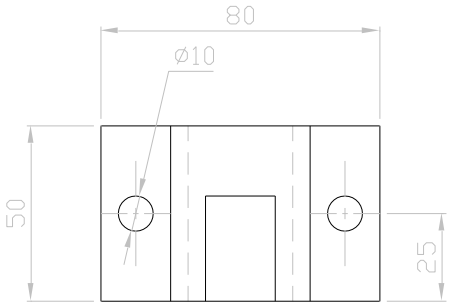


FRONT

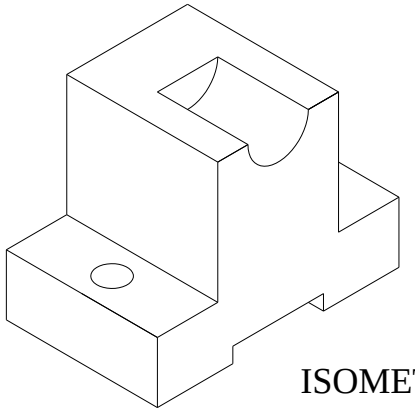


SIDE

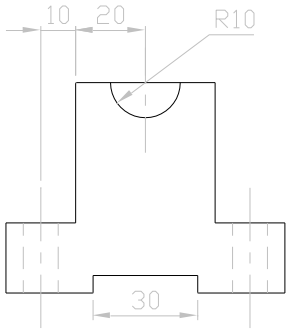
DRAWING: ORTHOGRAPHIC EX 1	NAME: TAN AH KOW (P1234567)	CLASS: DEEE/FT/1B/01	SCALE 1 : 1



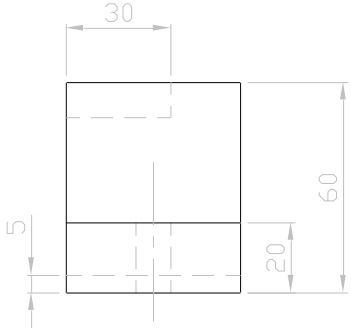
PLAN



ISOMETRIC VIEW

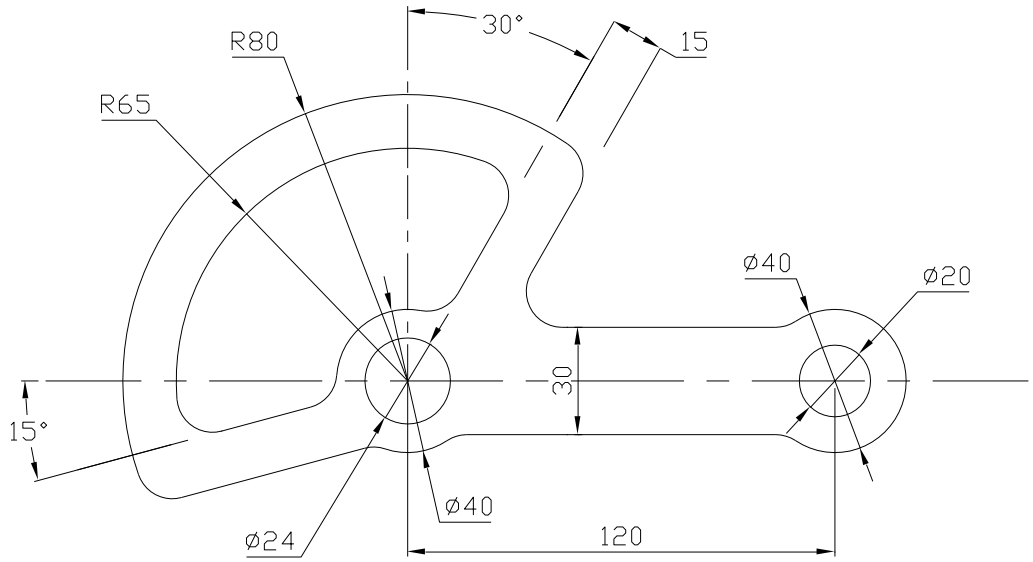


FRONT VIEW



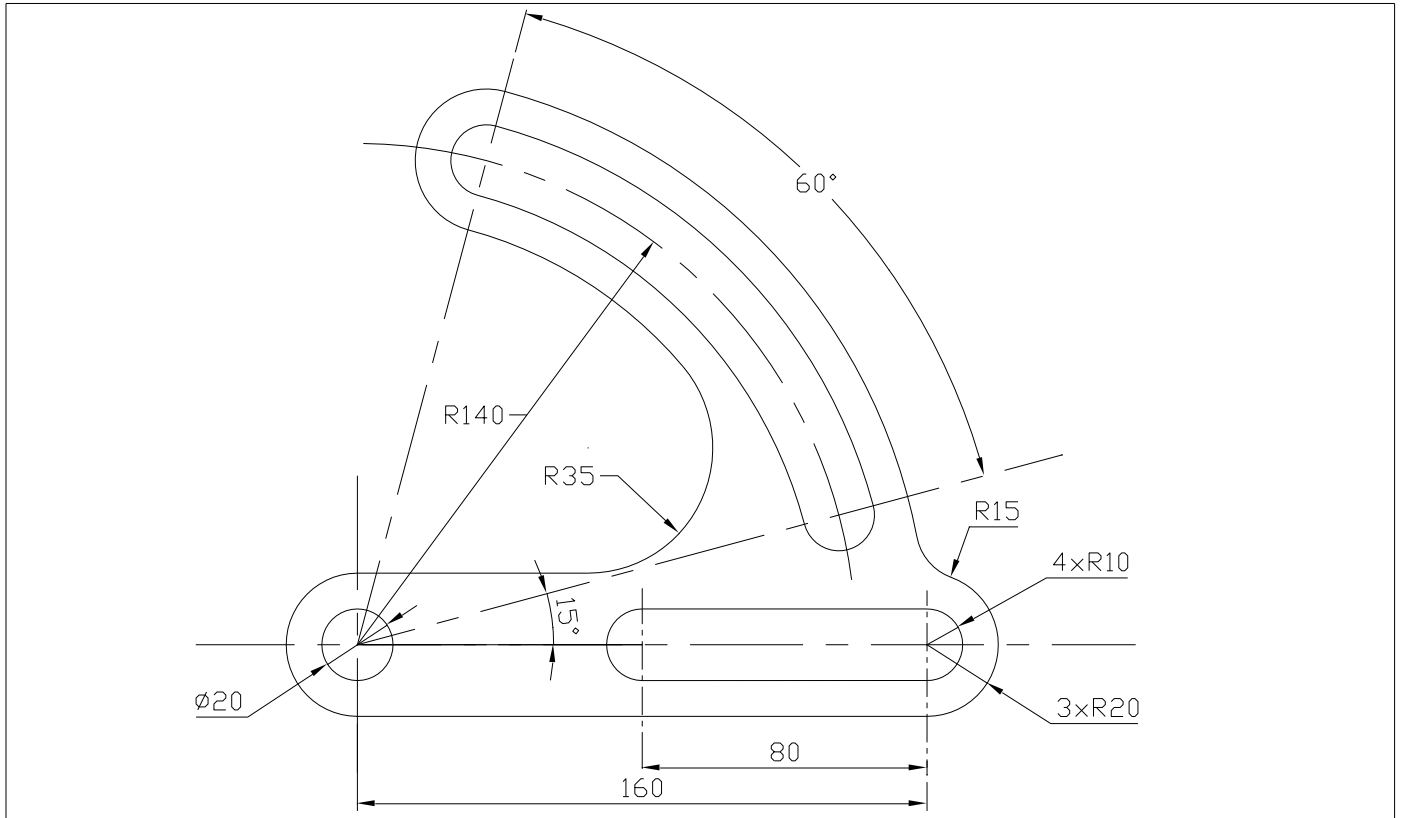
SIDE VIEW

Drawing: Orthographic Ex 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1

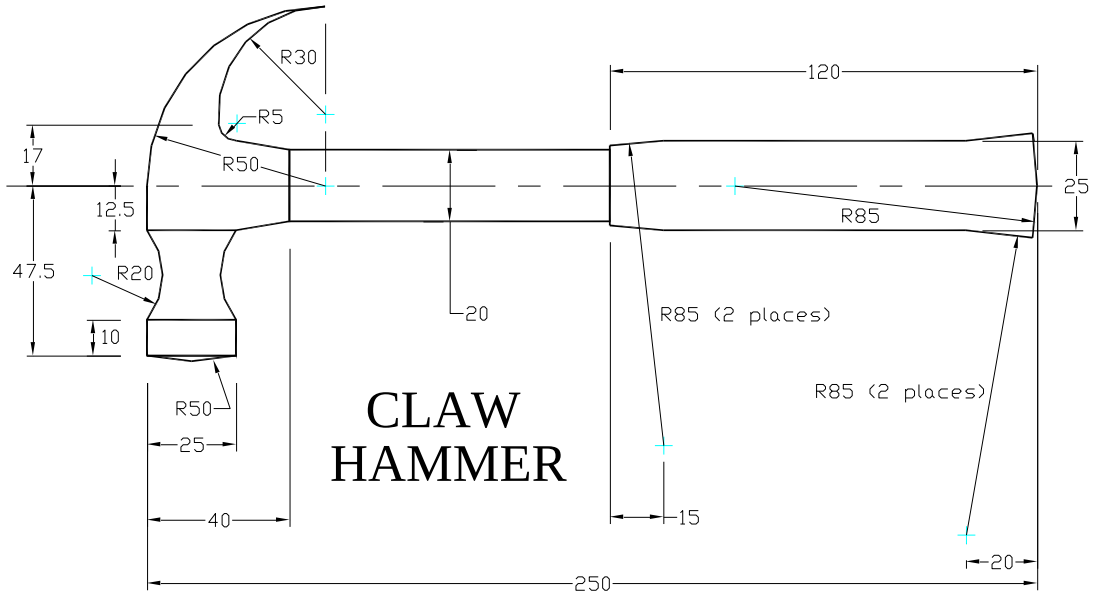


11 FILLETS: Radius = 10mm

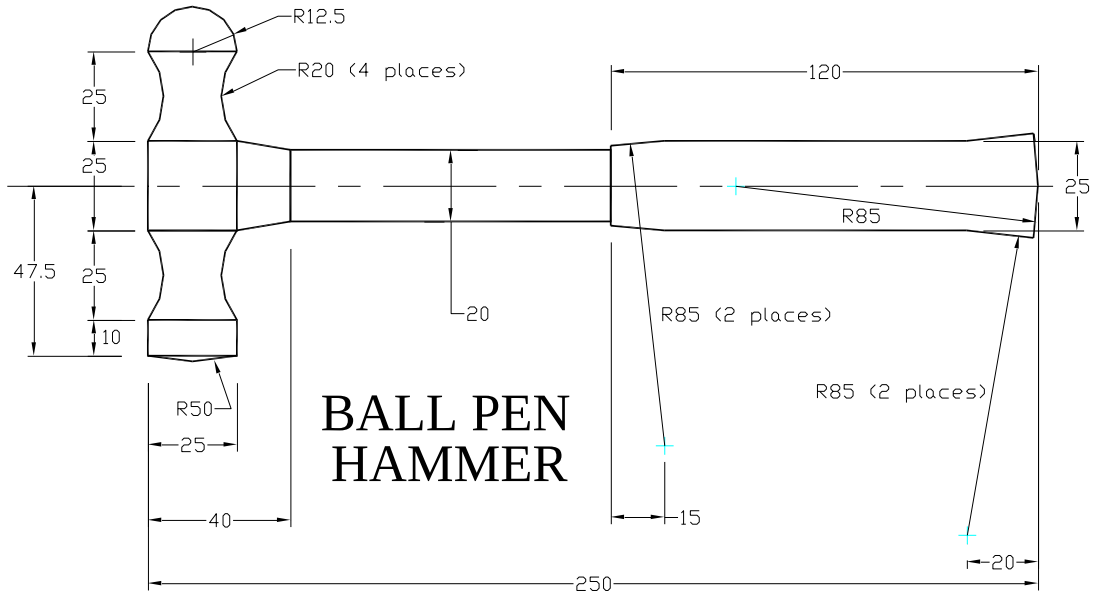
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 1		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



TITLE	DRAWN	CLASS
EXERCISE FOR TEST 1	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1

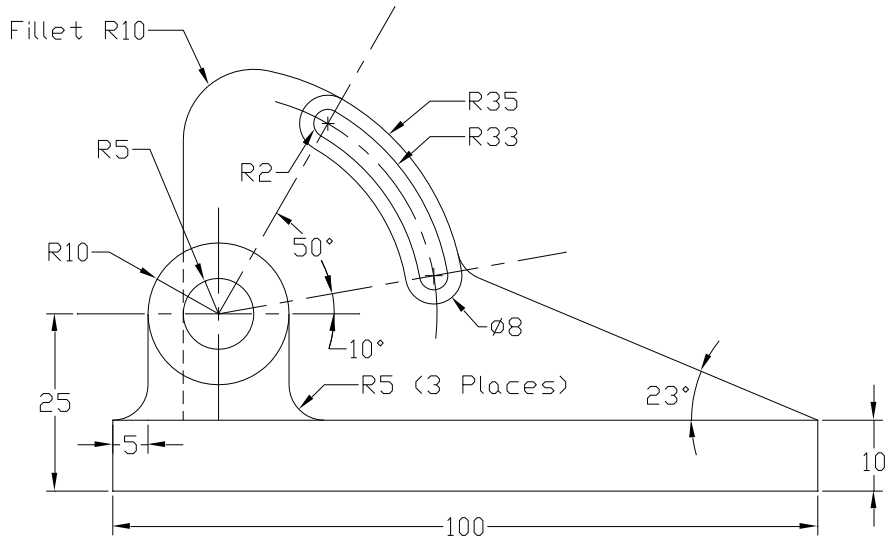


TITLE	DRAWN	CLASS
EXERCISE FOR TEST 1	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1

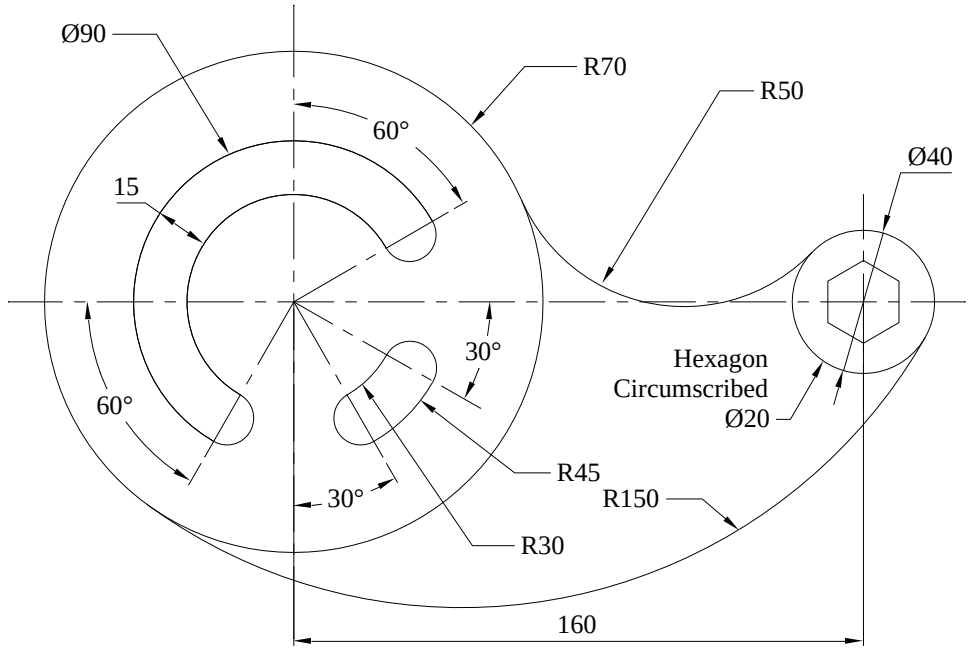


TITLE	DRAWN	CLASS
EXERCISE FOR TEST 1		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1

IDLER PULLEY BRACKET

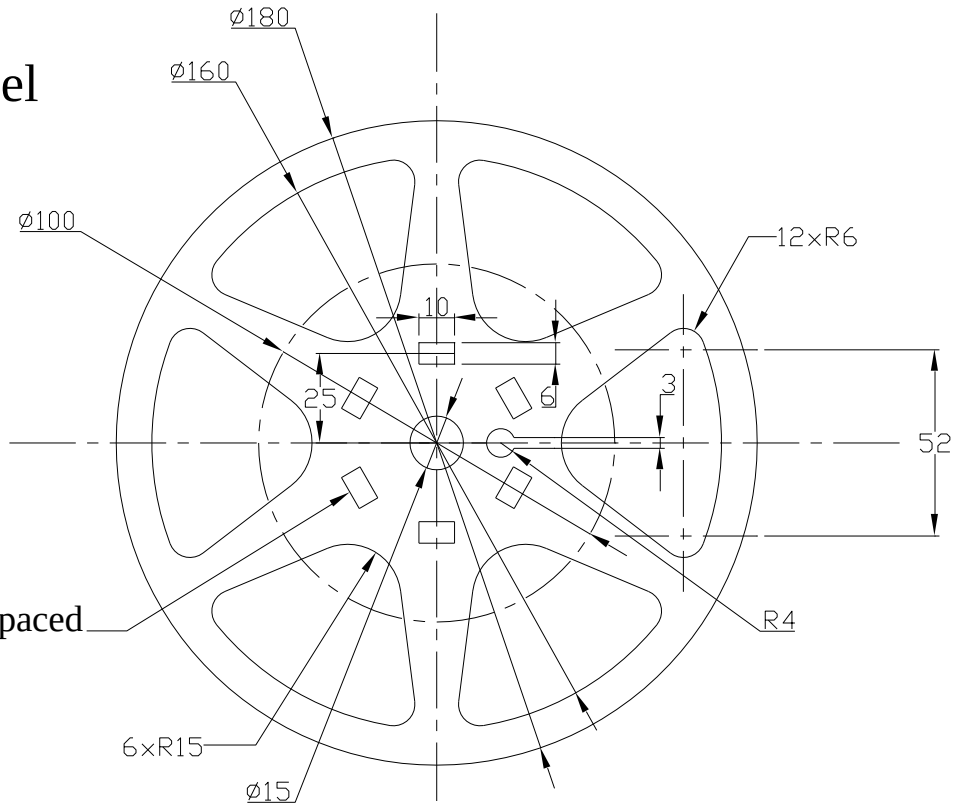


EXERCISE FOR TEST 1		Scale: 1:1
Name:	Adm No: P1234567	Class: DASE/FT/1B/24

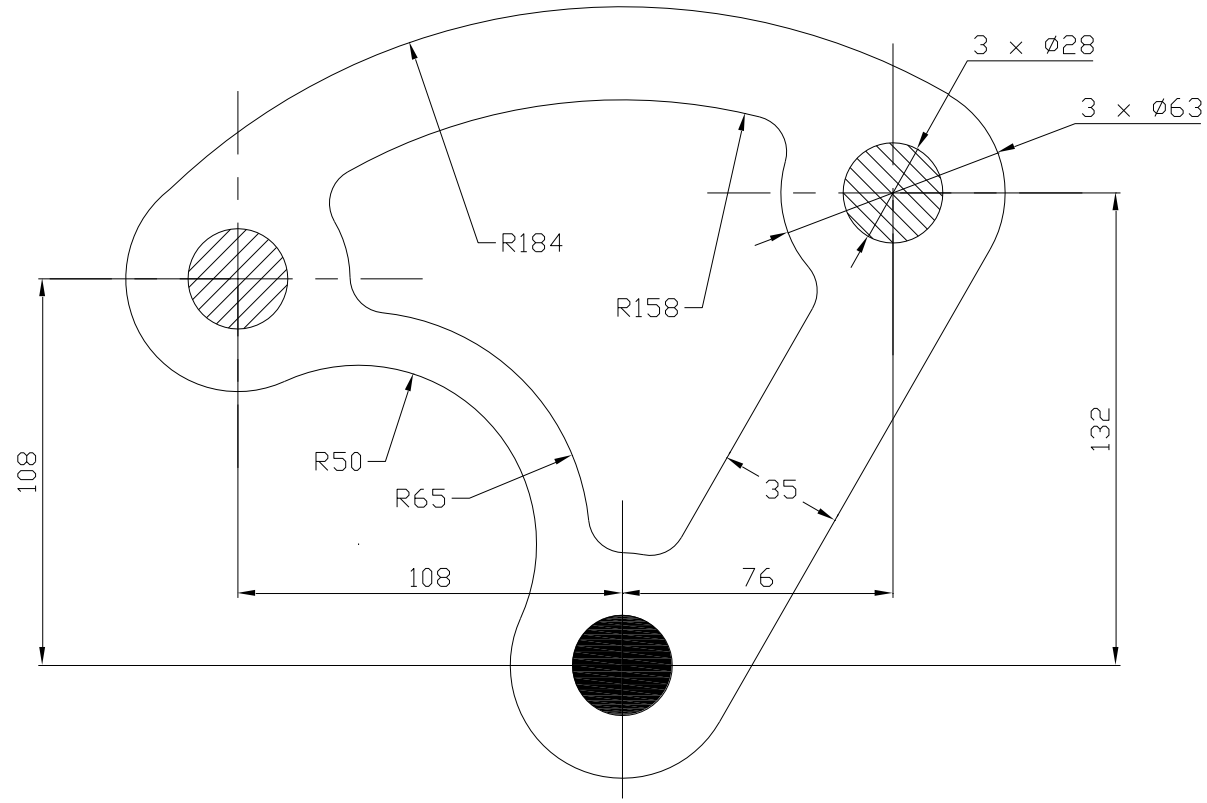


TITLE	DRAWN	CLASS
EXERCISE FOR TEST 1	All Dimensions are in mm	SCALE 1:1

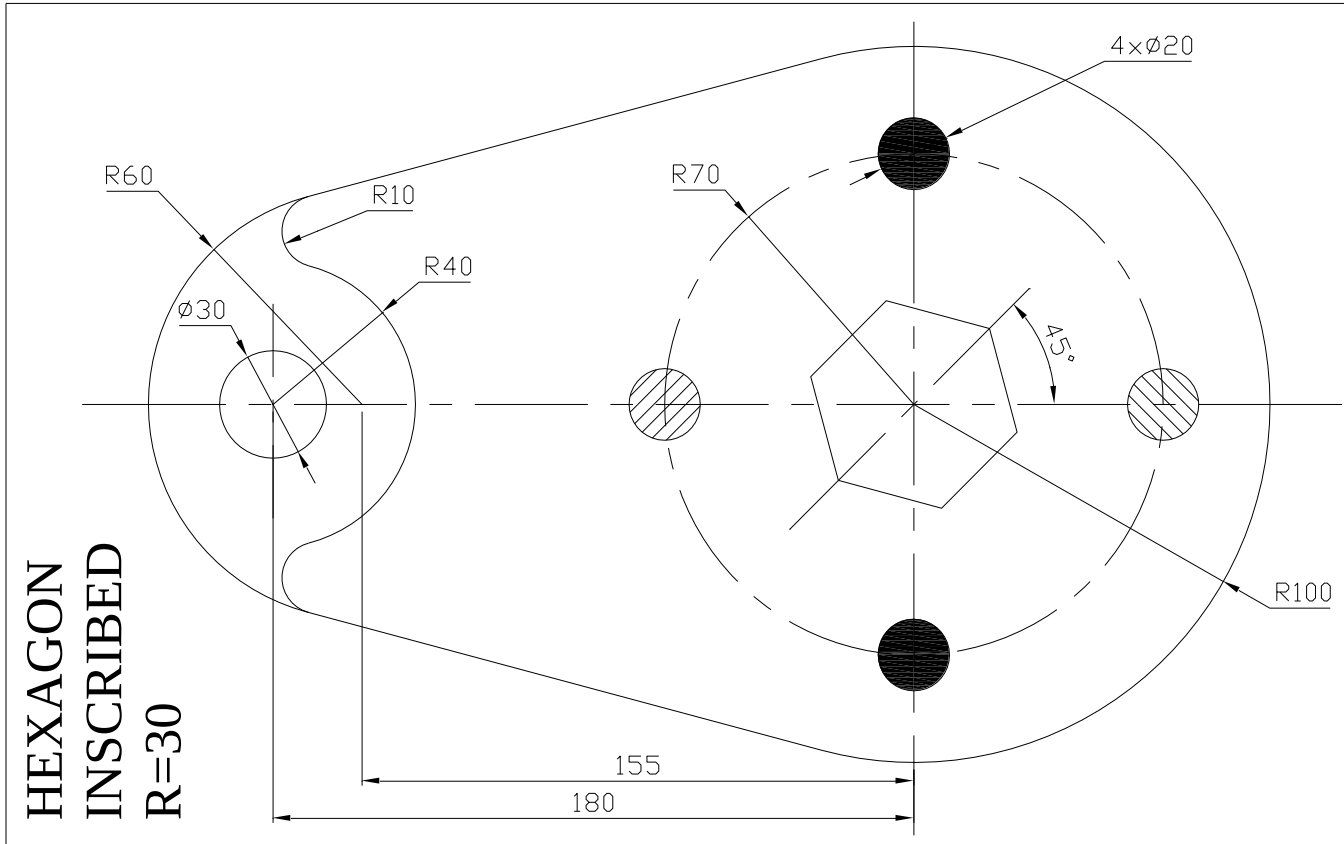
Film Reel



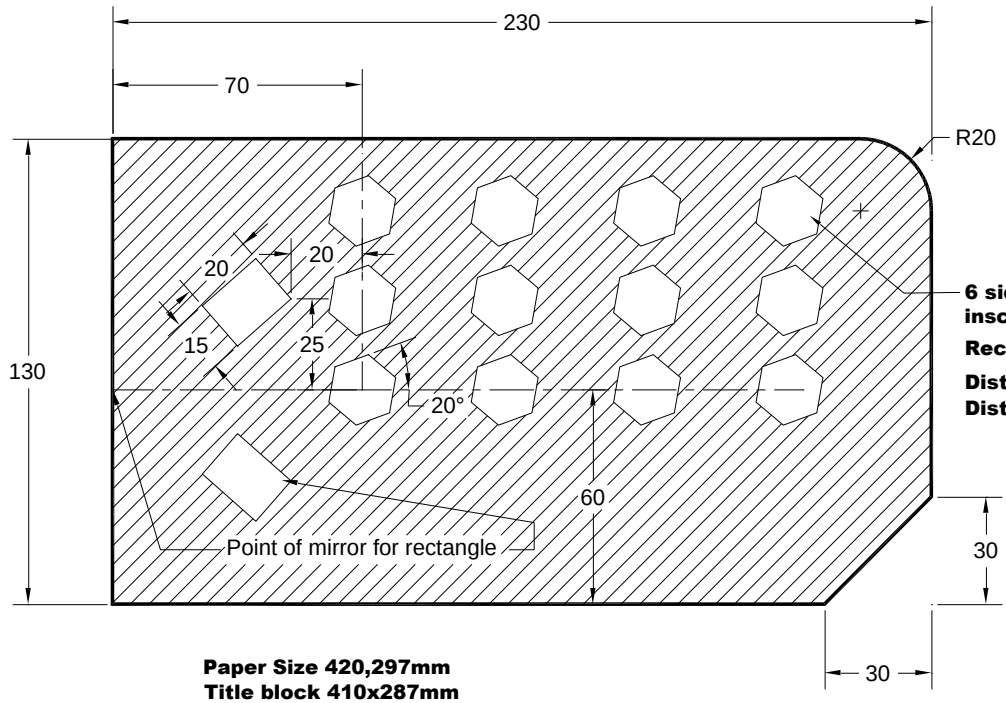
EXERCISE FOR TEST 1	Name: TAN AH KOW	Class: DEEE/FT/1B03
	ADM NO: P1234567	Scale = 1 : 1



TITLE	DRAWN	CLASS
EXERCISE FOR TEST 2		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1

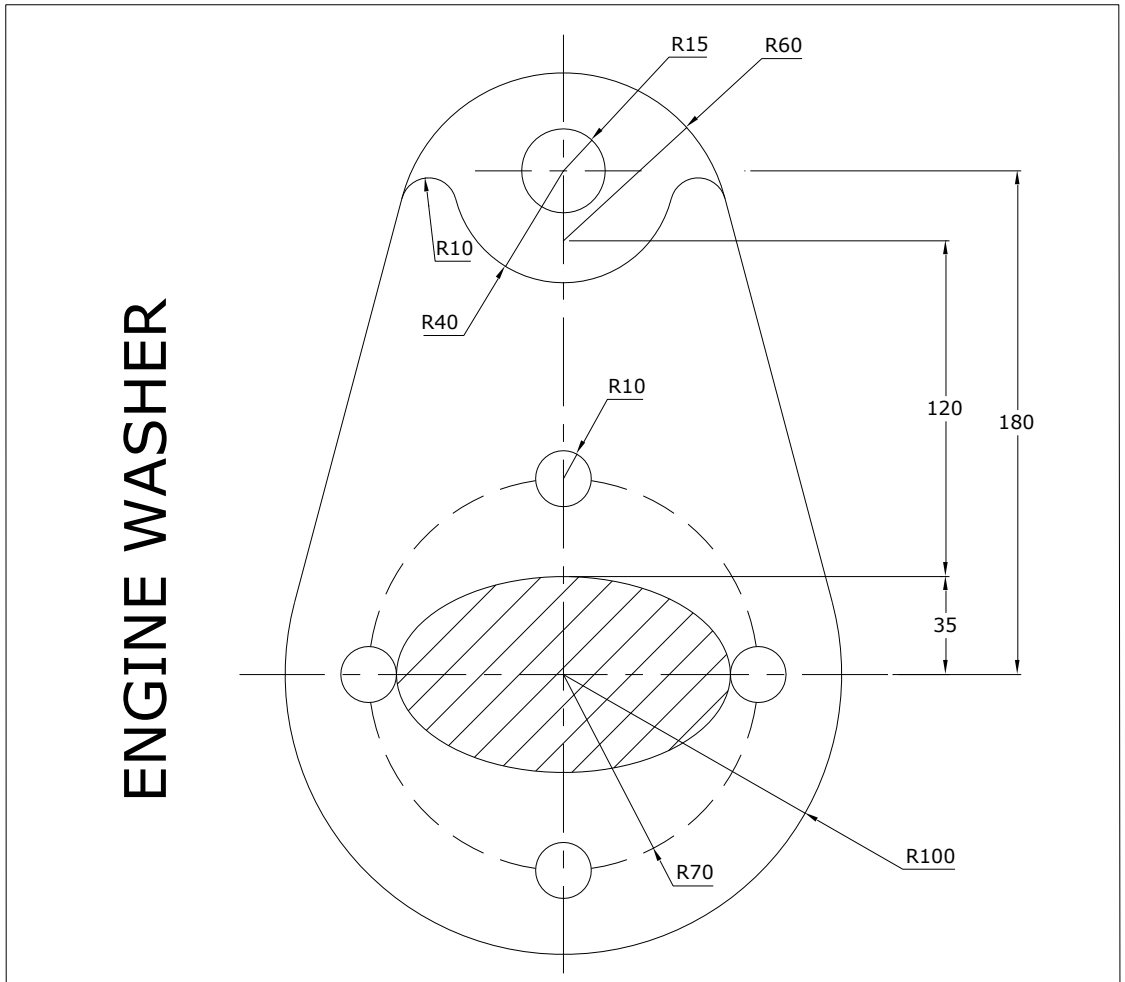


TITLE	DRAWN	CLASS
EXERCISE FOR TEST 2		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1

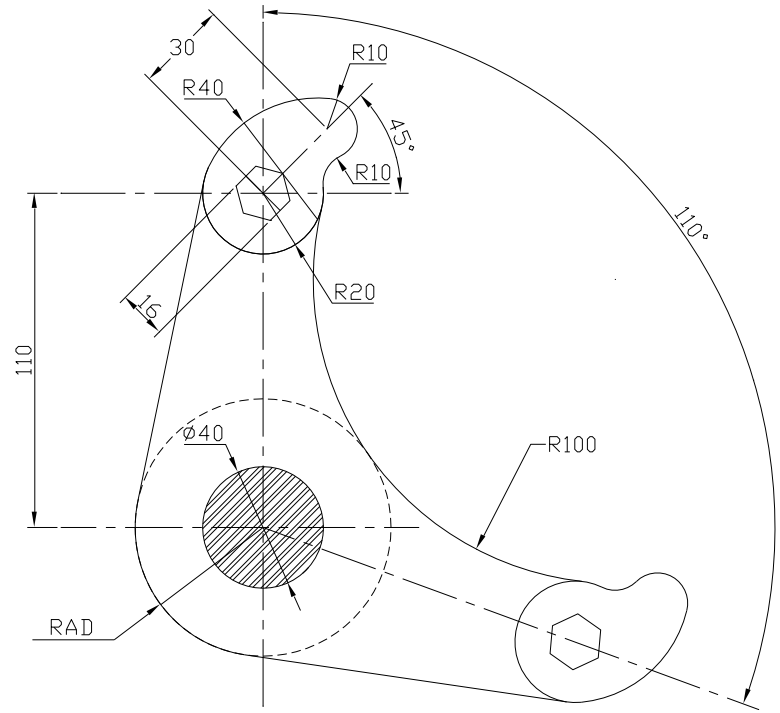


Paper Size 420,297mm
Title block 410x287mm
Text Style Arial Black 4mm
Dimension Scale 25
Polyline width 1mm

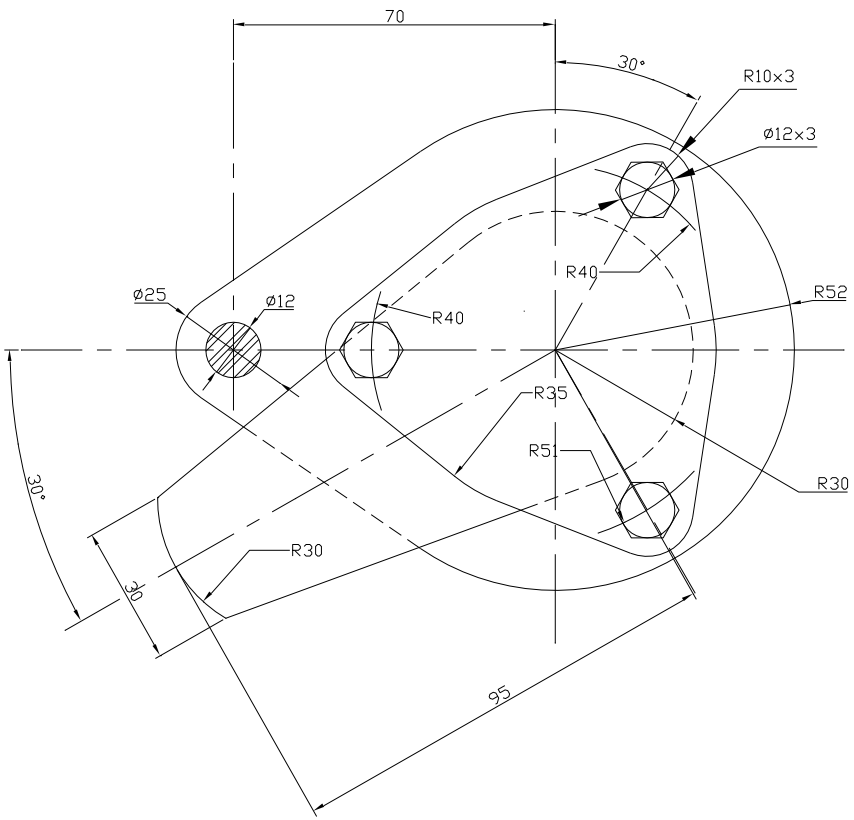
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 2	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



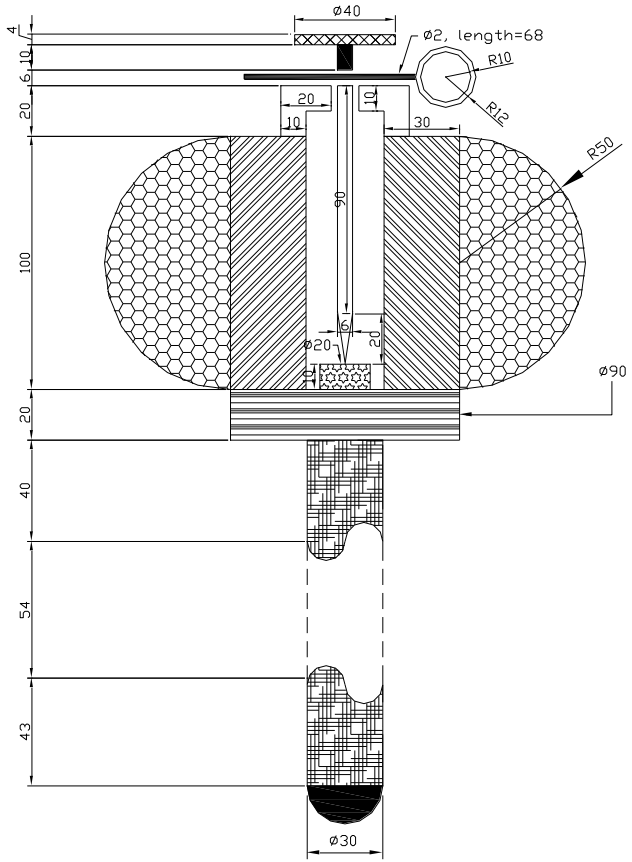
EXERCISE FOR TEST 2	Name:	Class:
	All dimensions are in mm.	Scale = 1 : 1



EX. FOR TEST 2	JAMES ONG	DEEE/FT/1A/00
	ALL DIMENSIONS ARE IN mm	SCALE = 1 : 1



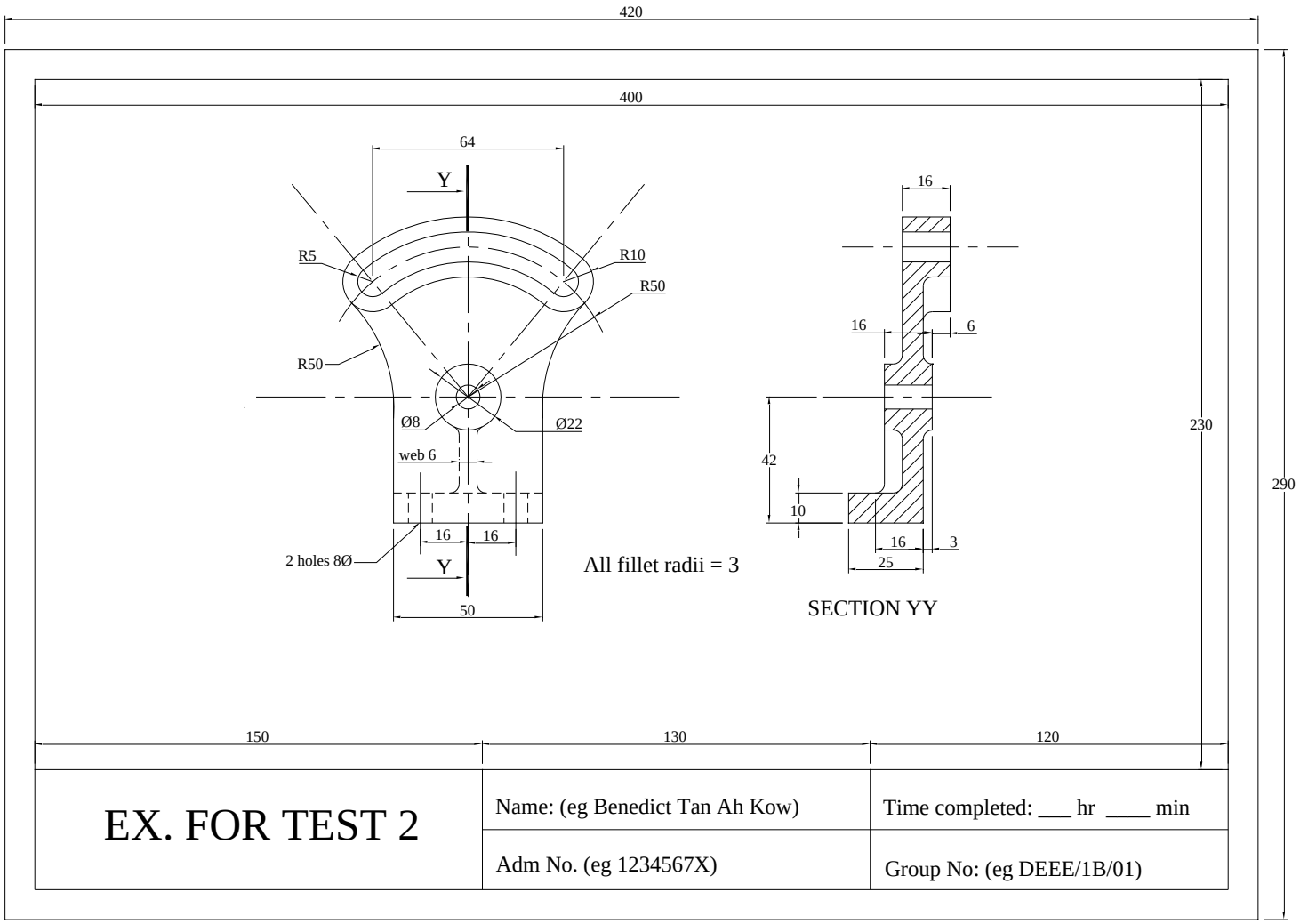
EX. FOR TEST 2	JAMES ONG	DEEE/FT/1A/00
	ALL DIMENSIONS ARE IN mm	SCALE = 1 : 1



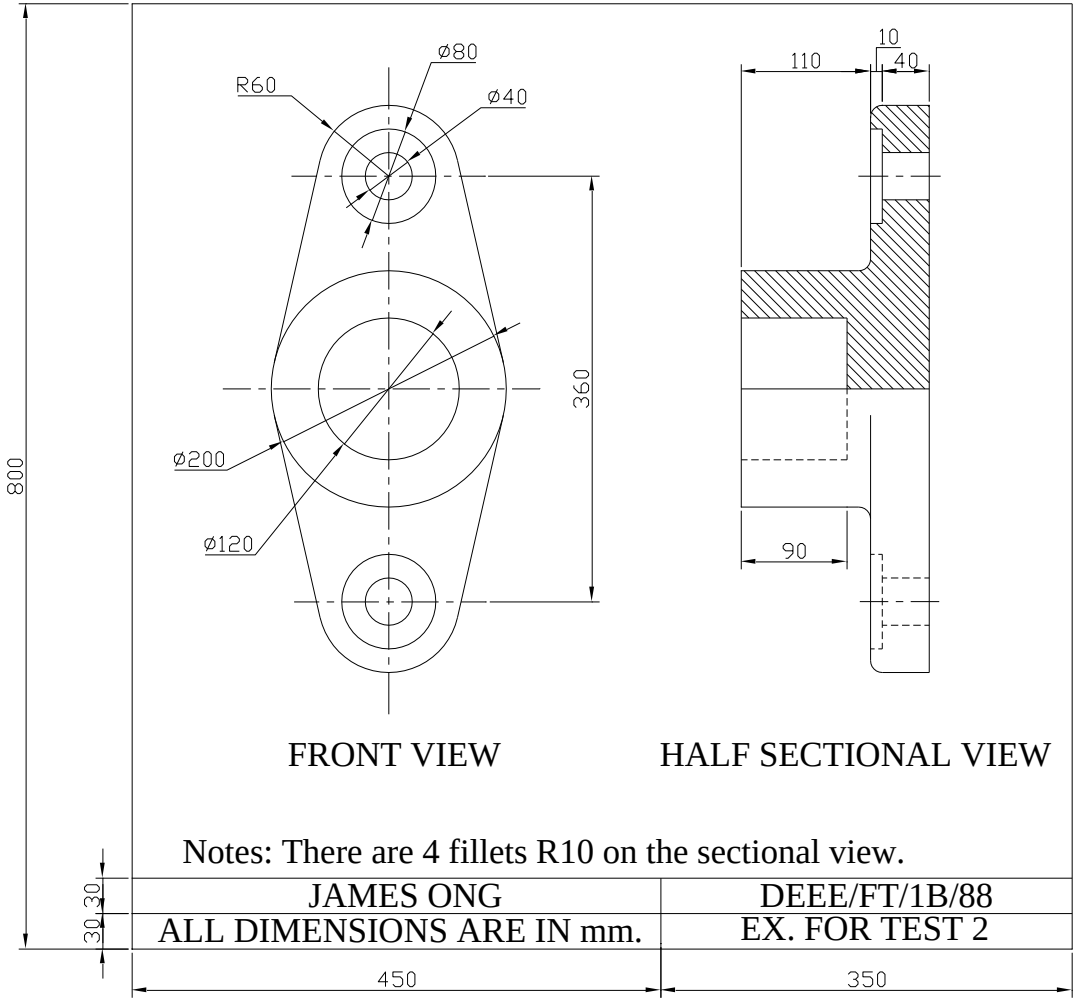
EX. FOR TEST 2 - Cross Sectional View of a Rifle Grenade

Name: Chao Choo Kang	Class: DECE/FT/1A/21
Scale: 1 : 1	Adm. No.: 12345678

EXERCISE FOR TEST 2	Name: James Bonk	Class: DEEE/FT/1A/21
	Scale: NTS	Adm. No.: 12345678

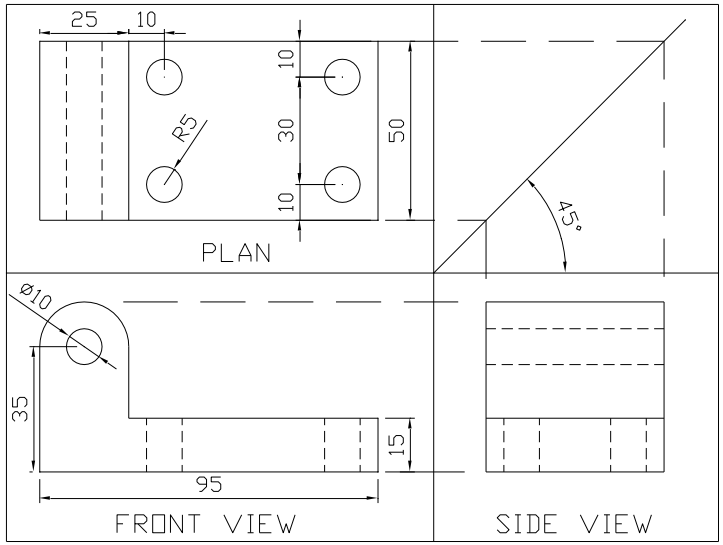


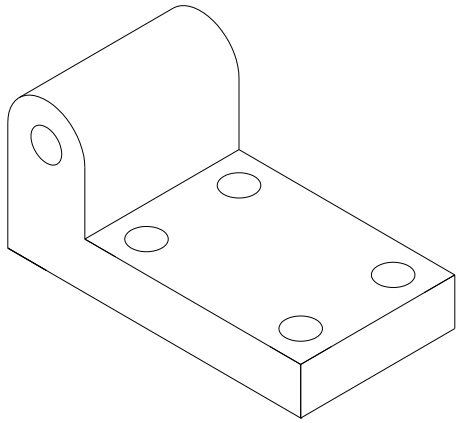
EX. FOR TEST 2	Name: (eg Benedict Tan Ah Kow)	Time completed: ___ hr ____ min
	Adm No. (eg 1234567X)	Group No: (eg DEEE/1B/01)


ø80
R60
ø40
360
ø200
ø120
800
110
10
40
90
FRONT VIEW
HALF SECTIONAL VIEW
Notes: There are 4 fillets R10 on the sectional view.
JAMES ONG
DEEE/FT/1B/88
ALL DIMENSIONS ARE IN mm.
EX. FOR TEST 2
30
30
450
350

Rectangle -- x -- @200,150
Explode - touch the rectangle & click (select)
Offset - 120
- 75
Line -- x -- @100<45
Rec -- x -- @95,50

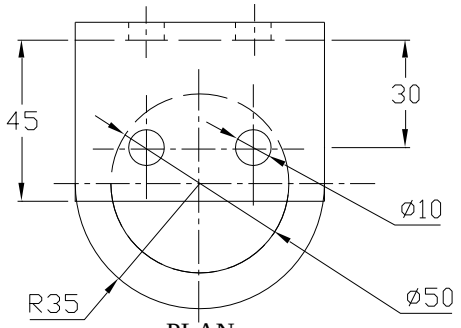
Trim - ent, ent (all)
Format - Linetype - Load - Hidden
Select - Right click - Properties
Ltscale = 0.5



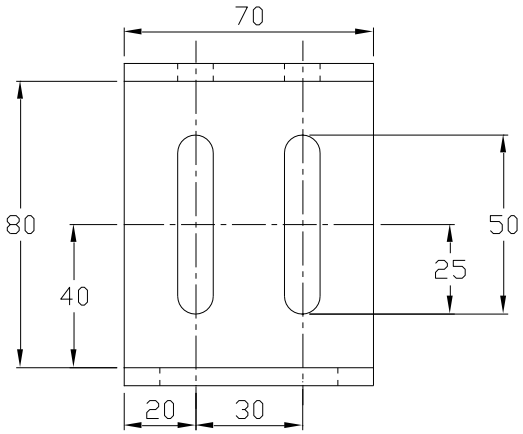


ISOMETRIC VIEW

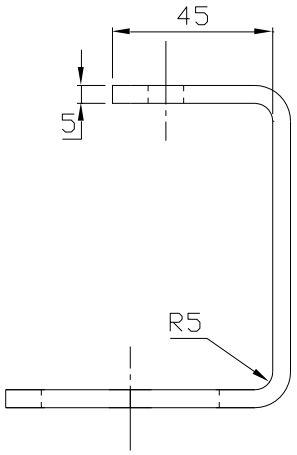
TITLE	DRAWN	CLASS
EXERCISE 6		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



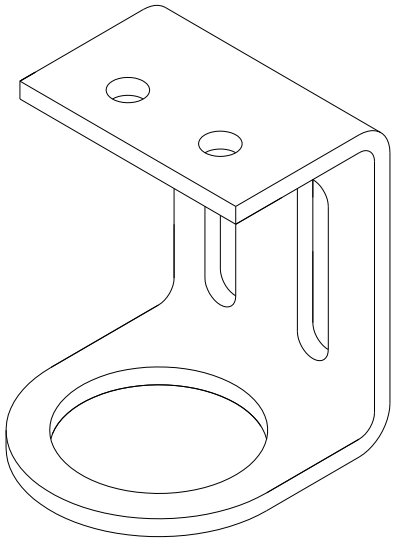
PLAN



FRONT VIEW

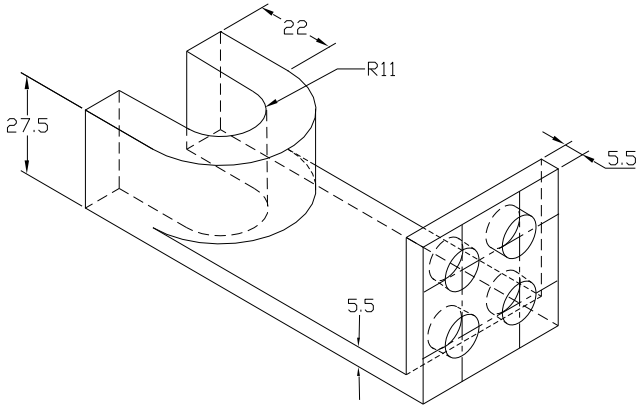


SIDE VIEW

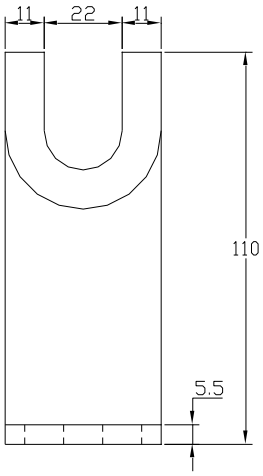


ISOMETRIC VIEW

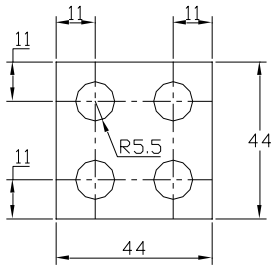
TITLE	DRAWN	CLASS
EXERCISE 8		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



ISOMETRIC VIEW

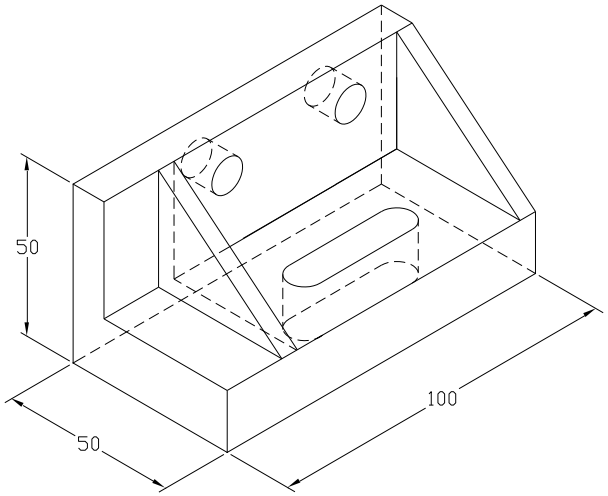


TOP VIEW

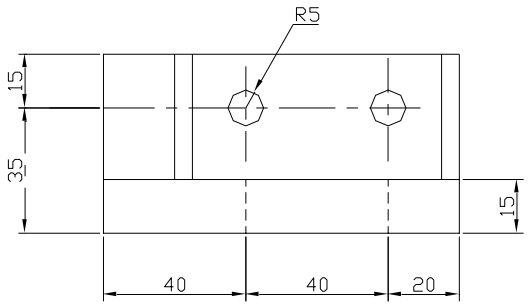


FRONT VIEW

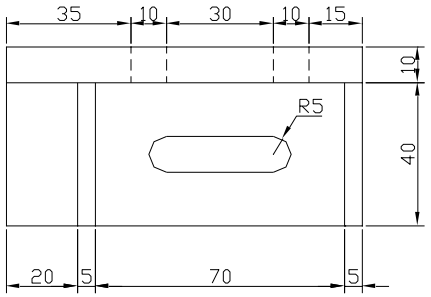
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 3		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



ISOMETRIC VIEW

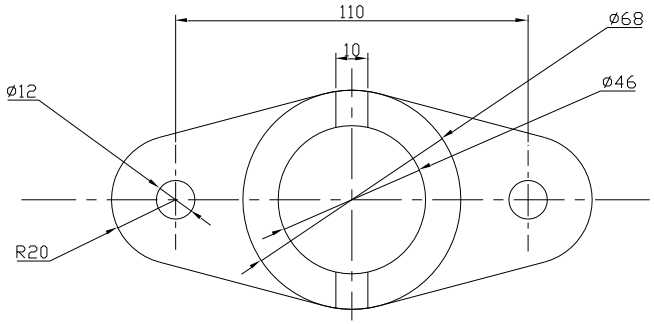


FRONT VIEW

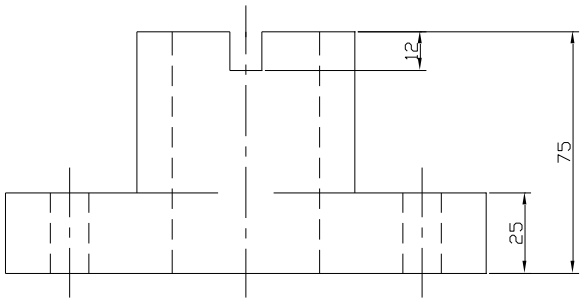


TOP VIEW

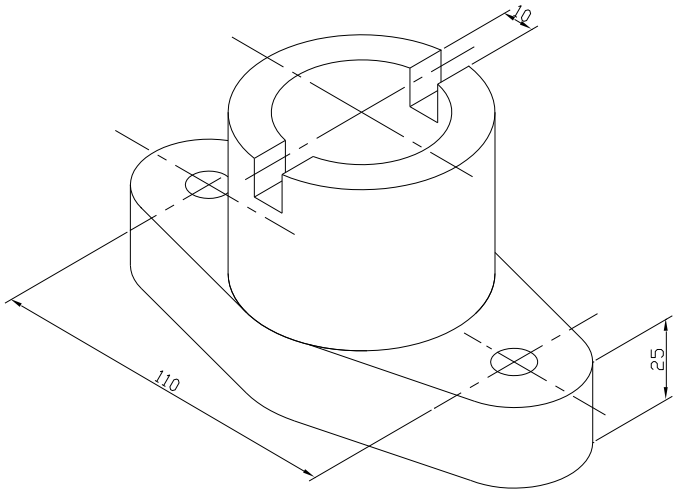
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 3		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



PLAN

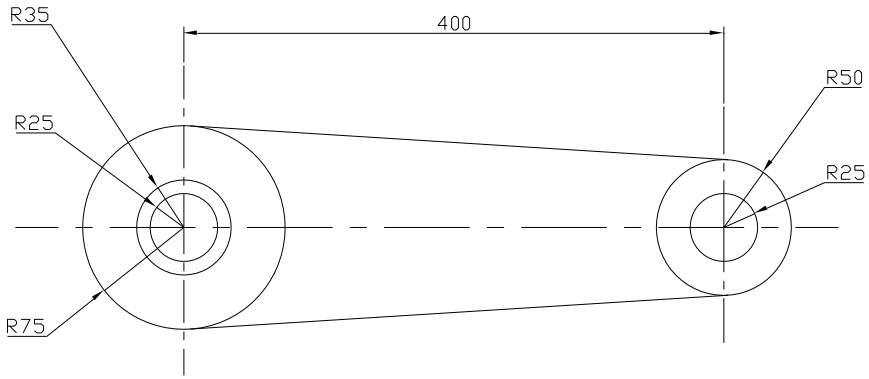


FRONT VIEW

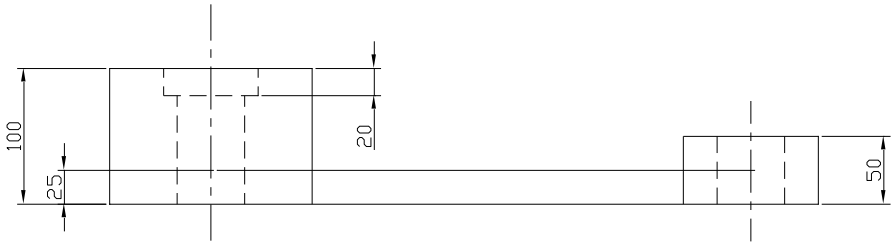


ISOMETRIC VIEW

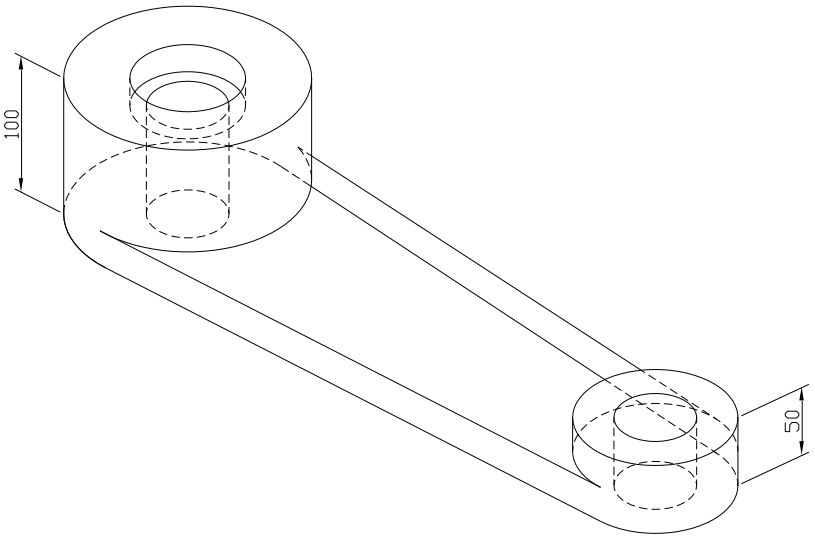
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 3		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



PLAN

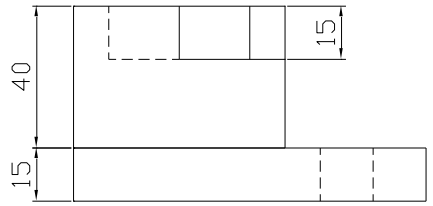


FRONT VIEW

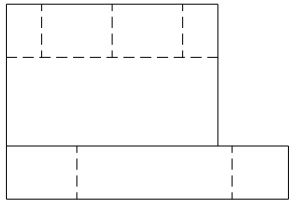


ISOMETRIC VIEW

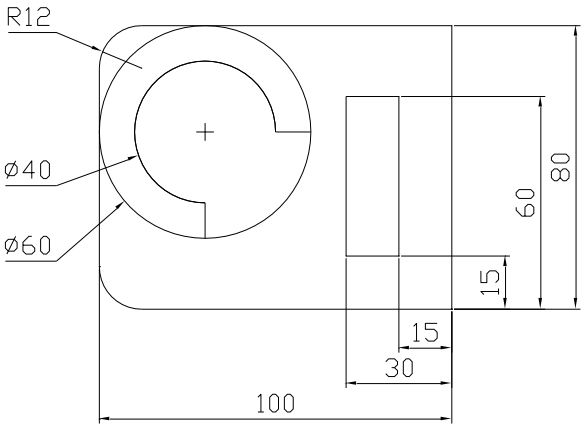
TITLE	DRAWN	CLASS
EXERCISE FOR TEST 3		
	ALL DIMENSIONS ARE IN mm.	SCALE 1 : 1



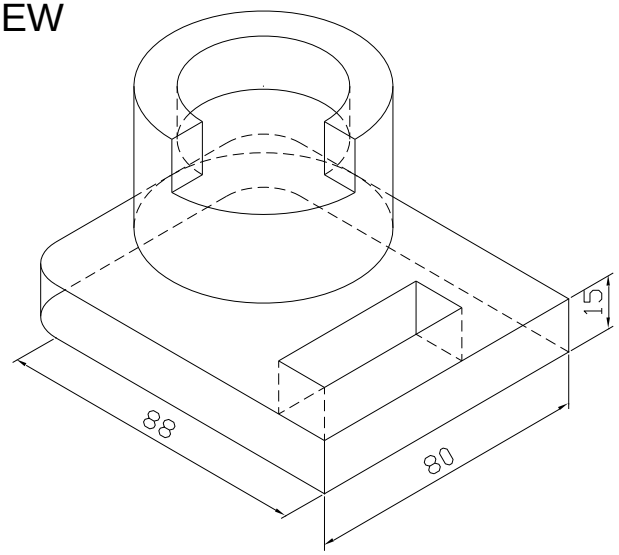
FRONT VIEW



SIDE VIEW

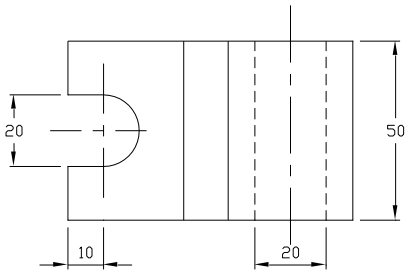


PLAN

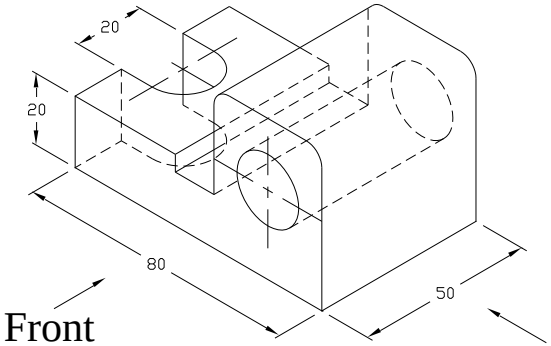


ISOMETRIC VIEW

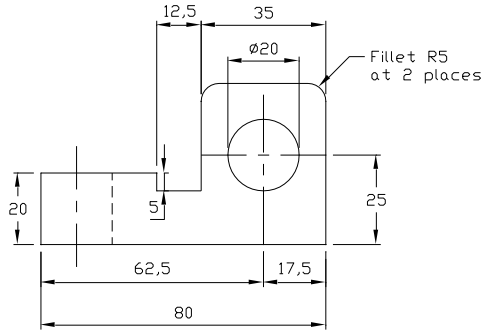
EX. FOR TEST 3	Name: Andy Chua	Adm No: 0612345
	Class: DEEE/FT/1B/01	Scale: 1:1



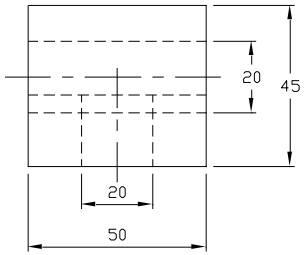
Plan



Isometric View

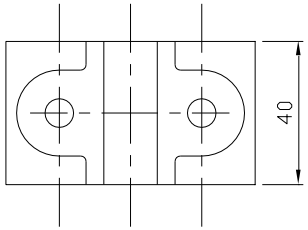


Front

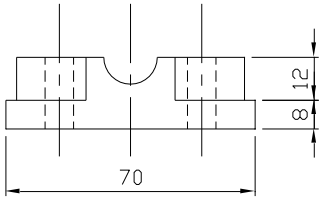


End

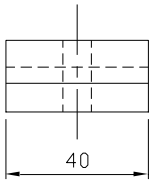
EXERCISE FOR TEST 3	Name:	Class:
	All dimension are in mm.	Scale:



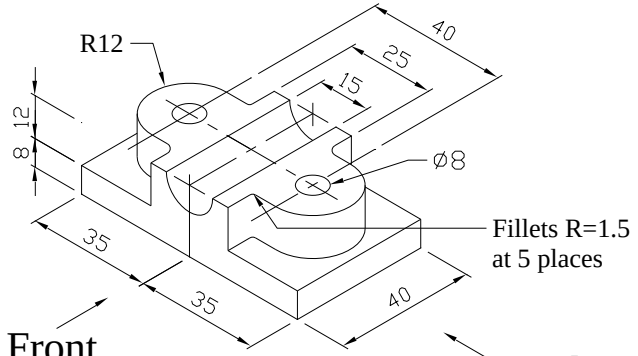
Plan



Front

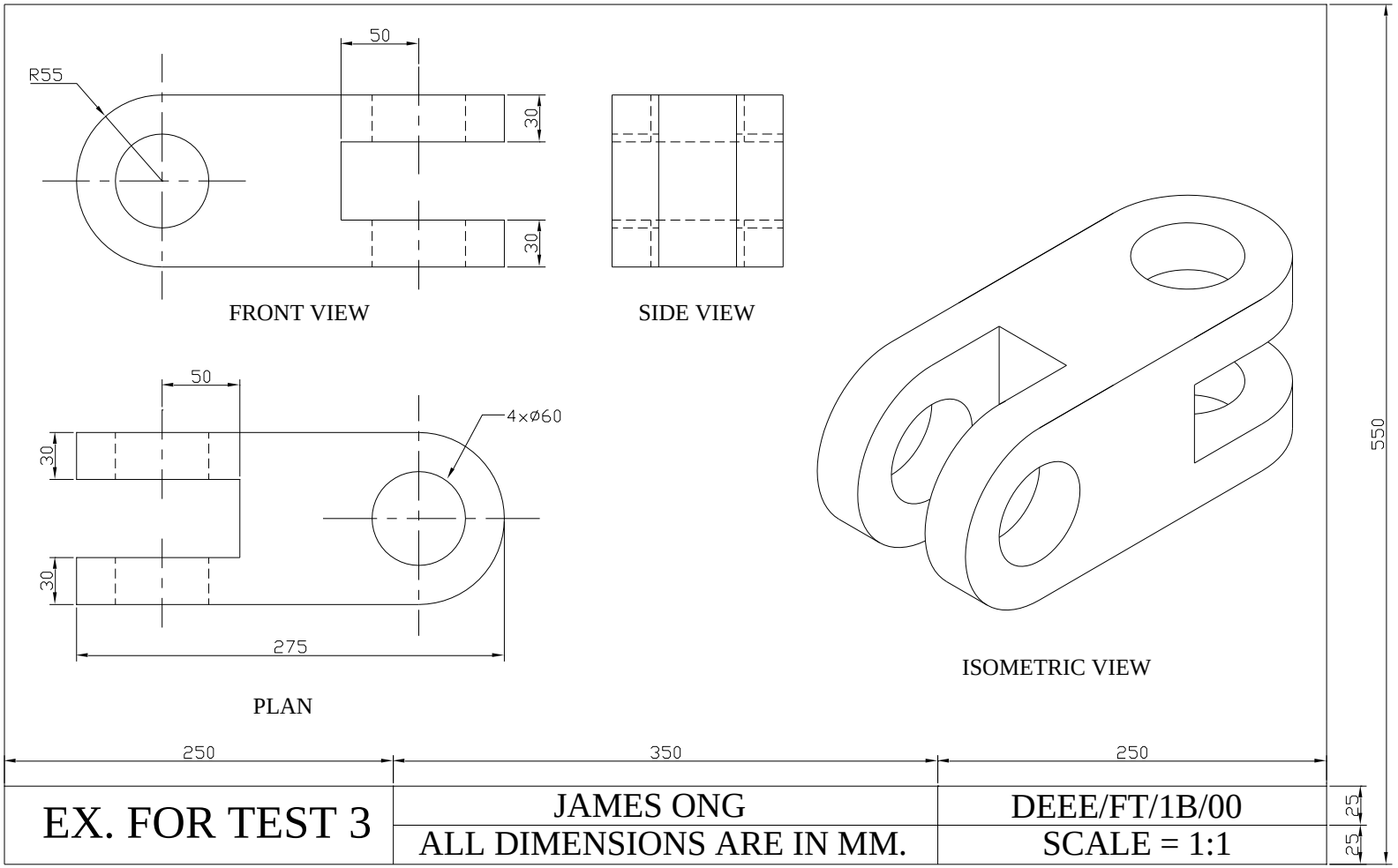


End



Isometric View

EXERCISE FOR TEST 3	Name:	Class:
	All dimension are in mm.	Scale = 1 : 1



EX. FOR TEST 3	JAMES ONG	DEEE/FT/1B/00
	ALL DIMENSIONS ARE IN MM.	SCALE = 1:1