

لجنة الميكانيك
تقدم لكم..

[المكتبة التخصصية]



<http://www.Mech.MuslimEngineer.Net>



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0789434018



MechFet

Types of Line:

1- Continues line (out line) (visible line) :

خط غامق مرئي مستمر بـ قلم HB

(_____)

2- Invisible line (Hidden line) :

خط غامق مقطع ب قلم HB

(_____)

3- Center line :

يستخدم في الدوائر

قلم 2H

(_____)

4- Section line :

خطوط التهشير ، ، فعندما نقص مجسم بشكل طولى تظهر خطوط

التهشير عند منطقة القطع ،

خطوط مائلة بزاوية 45 ترسم بـ قلم 2H

5- Phantom line :

خط القطع الذي نقطع به المجسم

قلم HB حقیقی

6- Construction lines :

خطوط وهمية تساعد في الرسم

قلم 2H

1- Ø 2- Drill 3- Dia 4- Diameter

<<<<<<<<<< كلها تعنى (القطر)

* تنصيف الخط المستقيم :

المعلوم : المستقيم AB .

1. من النقطتين A & B ارسم قوسين بنصف قطر R (اكبر من نصف طول المستقيم AB بمقدار مناسب) ليتقاطعا عند C & D
2. أوصل CD لتحصل على الخط المنصف.

* تقسيم المستقيم الى أي عدد متساوي من الاجزاء المتساوية

المعلوم : المستقيم AB .

1. ارسم خط مساعد , مثل BC بزاوية مناسبة مع المستقيم.
2. حدد على الخط BC خمسة أجزاء متساوية (عدد القط المطلوبة) بأي مقاس مناسب .
3. أوصل AC .
4. ارسم خطوط تقسيم موازية لـ AC .

* رسم خط مستقيم موازي لخط آخر :

المعلوم : خط مستقيم , المسافة AB .

1. من أية نقطتين على الخط المعلوم , وبتباعد كاف بينهما , ارسم قوسين بنصف قطر مساو للمسافة المعلوم (المسافة بين المستقيمين)
2. ارسم خط مماس للقوسين .

* رسم مستقيم مواز لمستقيم آخر باستعمال المثلث ومسطرة T SQUARE :

- المعلوم :خط مستقيم , مسافة معينة .
1. ضع المثلث بحيث يتطابق مع الخط المعلوم.
 2. ضع مسطرة T SQUARE بجانب المثلث. امسك المسطرة باحكام وحرك المثلث الى الموقع المطلوب ثم ارسم الخط الموازي.

* رسم الاقواس :

أولاً : لتحديد المركز ،،
قد يكون القوس المطلوب رسمه بين مستقيمين أو مستقيم وقوس أو قوسين ،،

*المستقيم << نرسم مستقيم موازي له يبعد عنه مسافة R .
R هي مسافة نصف قطر القوس المطلوب رسمه ،،

*القوس << نقوم بحساب نصف قطر القوس المعطى ثم قد نجمع مسافتي انصاف الاقطار أو نطرحها وذلك اعتماداً على ما يلي :

CONCAVE.1

اتجاه التقعر لدى القوسين مختلف (متعاكس) << نجمع .

CONVEX.2

اتجاه التقعر لدى القوسين نفسه (نفس اتجاه التقعر) << نطرح .

<<<<<<<

نفتح الفرجار بالمسافة التي حصلنا عليها (بالجمع أو الطرح) ومن مركز القوس المعطى نرسم قوس موازي ،،

*الان نقطة التقاطع بين القوسين أو القوس والمستقيم والمستقيمين هو مركز القوس المطلوب رسمه ..

ثانياً : تحديد نقاط التماس :

* المستقيم < < نرسم عمود من المركز الذي وجدناه على المستقيم فتكون نقطة التقاطع هي نقطة التماس .

* القوس < < نوصل بين مركزي القوسين المعطى والمطلوب رسمه فتكون نقطة التقاطع مع القوس المعطى هي نقطة التماس ،،

ثالثاً : رسم القوس المطلوب :

نفتح الفرجار بمقدار المسافة بين المركز ونقطتي التماس ونرسم القوس المطلوب ،،

* لرسم السداسي داخل دائرة <<<

http://upload.wikimedia.org/wikipedia/commons/a/ab/Regular_Hexagon_Inscribed_in_a_Circle_240px.gif

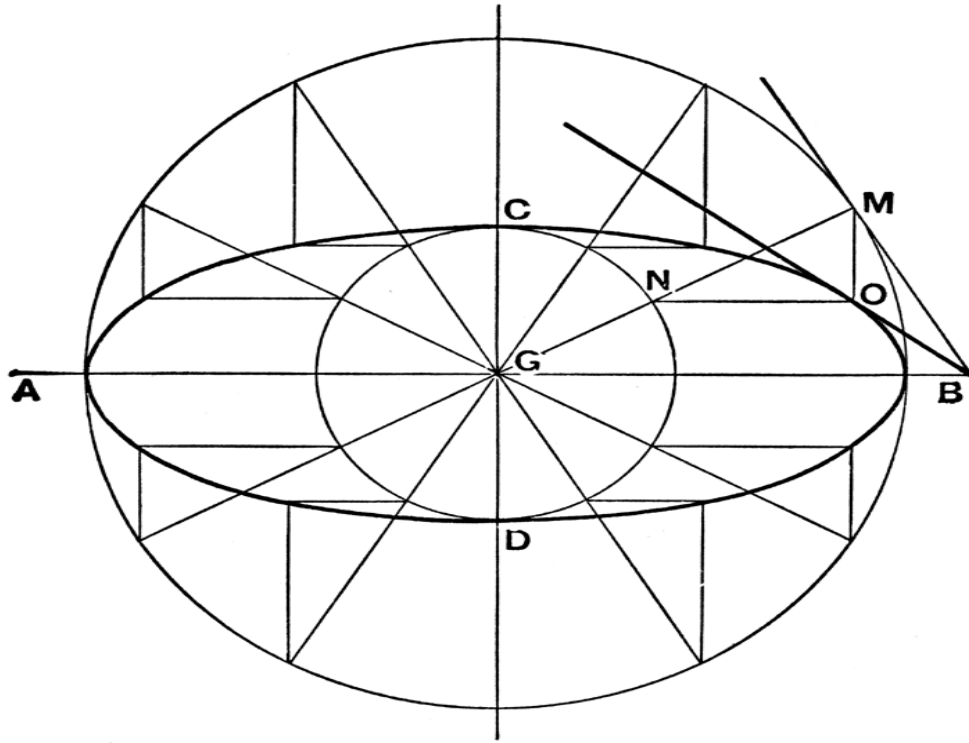
* لرسم مثلث متساوي الاضلاع داخل دائرة <<<

http://upload.wikimedia.org/wikipedia/commons/8/8b/Equilateral_Triangle_Inscribed_in_a_Circle.gif

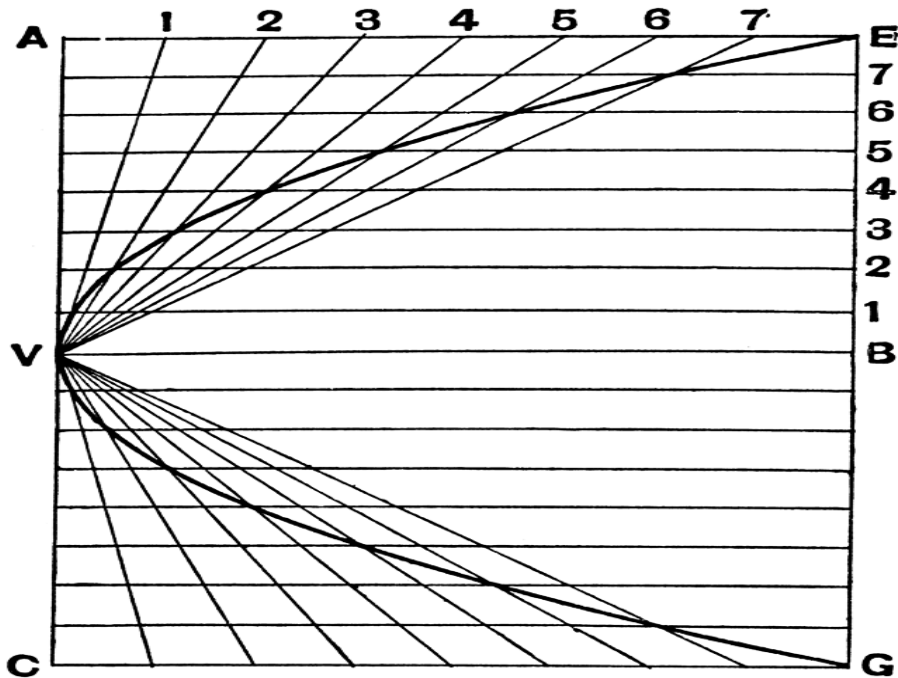
* لرسم مربع داخل دائرة <<<

http://en.wikipedia.org/wiki/File:Straight_Square_Inscribed_in_a_Circle_240px.gif

* رسم القطع الناقص :

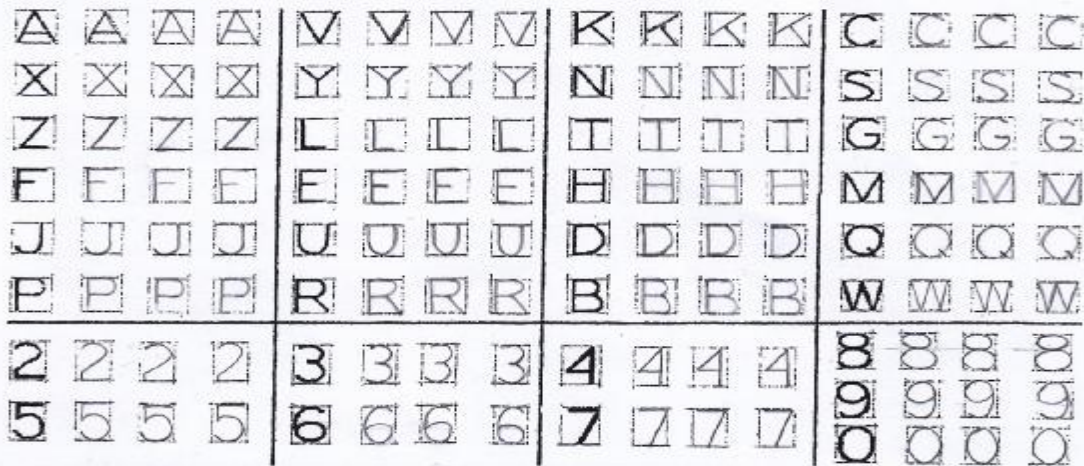


* رسم القطع المكافئ :



Vertical Letters (Upper Case)

USING LEAD HB, REPEAT EACH LETTER AND NUMBER BETWEEN THE GUIDELINES PROVIDED BELOW.

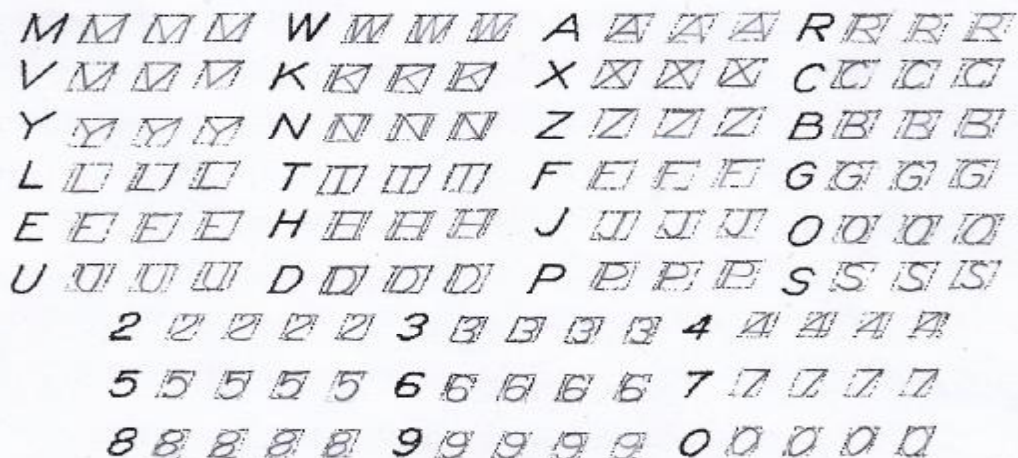


NOTE: THE LETTER I AND THE NUMBER 1 ARE THE SAME: I

LETTERING ON AN ENGINEERING DRAWING OR SKETCH SHOULD CONVEY THE REQUIRED INFORMATION CLEARLY AND EFFICIENTLY. THE BASIS OF GOOD LETTERING IS THE SINGLE STROKE GOTHIC ALPHABET.

LETTERING ON AN ENGINEERING DRAWING OR SKETCH SHOULD CONVEY THE REQUIRED INFORMATION CLEARLY AND EFFICIENTLY. THE BASIS OF GOOD LETTERING IS THE SINGLE STROKE GOTHIC ALPHABET.

Inclined Letters (Upper Case)

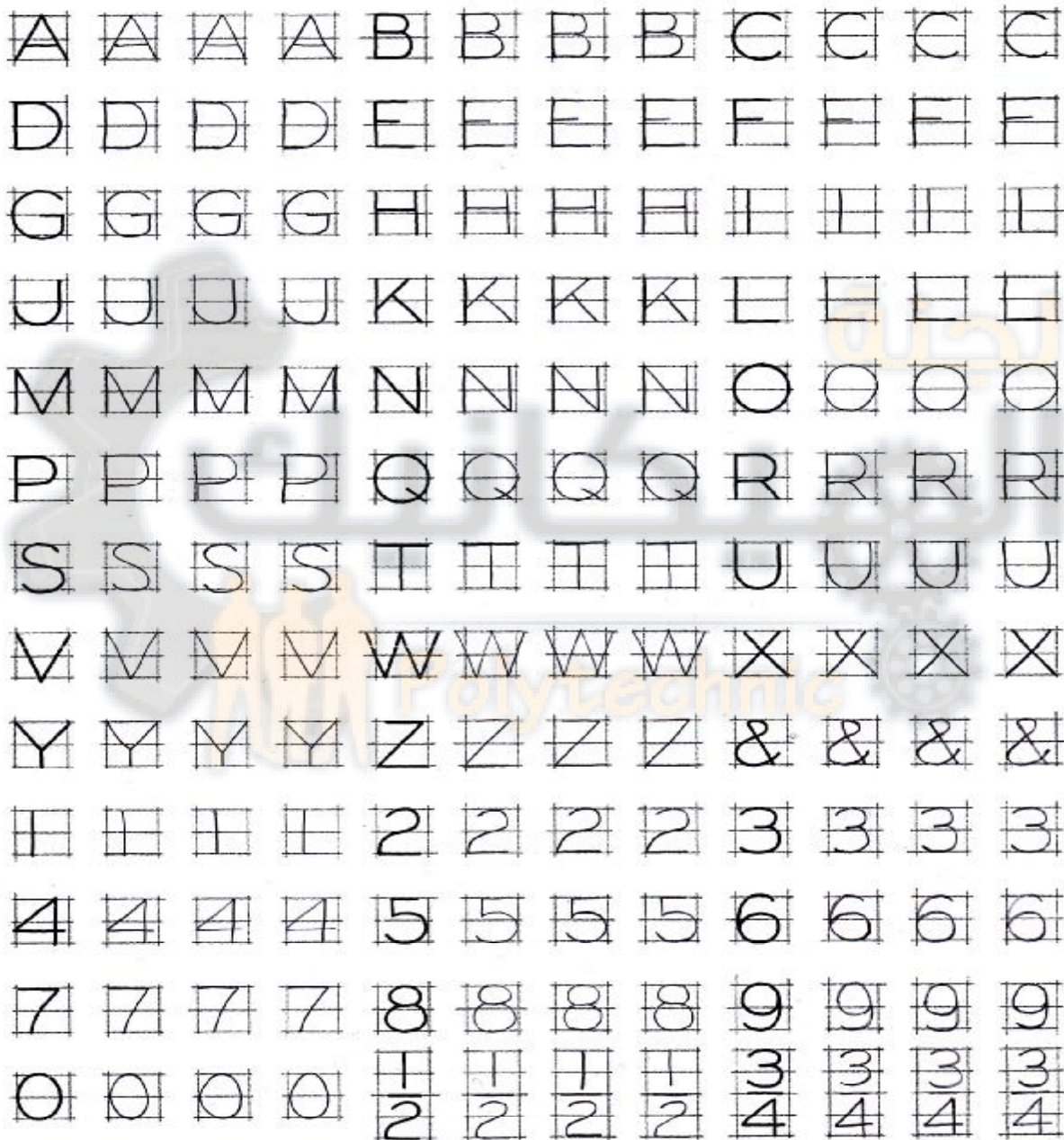


LETTERING ON AN ENGINEERING DRAWING OR SKETCH SHOULD CONVEY THE REQUIRED INFORMATION CLEARLY AND EFFICIENTLY. THE BASIS OF GOOD LETTERING IS THE SINGLE STROKE GOTHIC ALPHABET.

LETTERING	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	1
	FILE NO. <u>23</u> SECTION <u>7</u>		

USING AN F OR HB PENCIL WITH A SLIGHTLY ROUNDED POINT,
CONSTRUCT EACH LETTER IN THE SPACES PROVIDED. OBSERVE
THE FORM AND PROPORTION OF EACH LETTER IN ORDER FOR
YOU TO IMPROVE YOUR LETTERING WHEN DONE SMALLER.

LETTERING



LETTERING

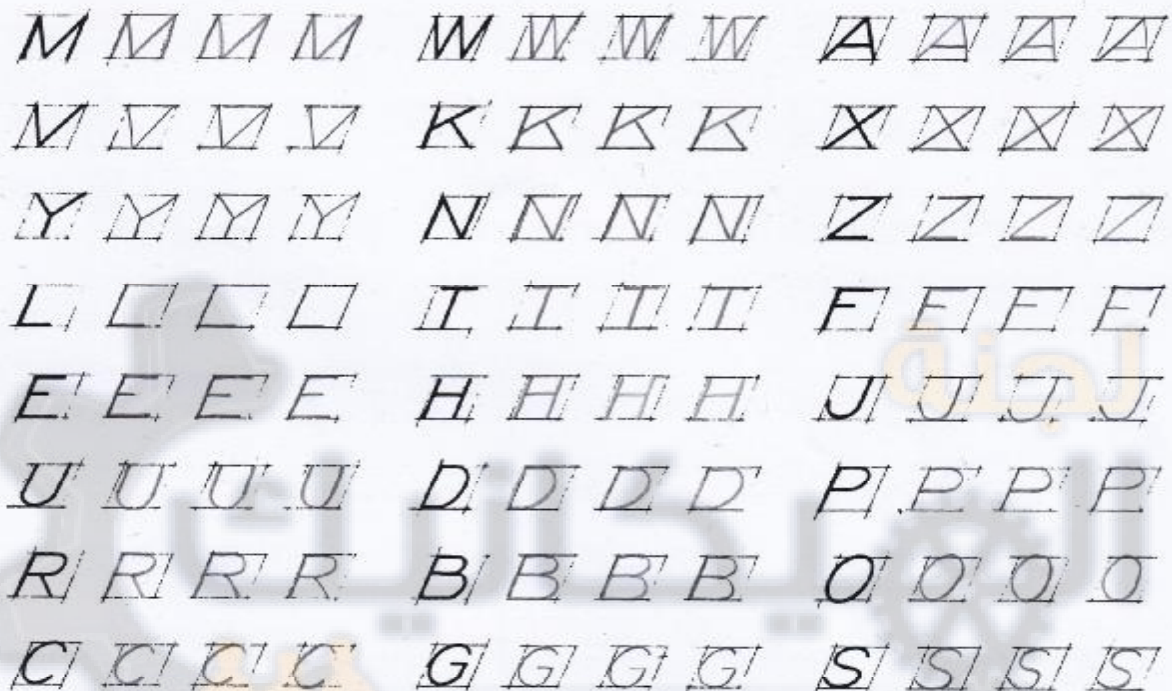
NAME MOSTAFA ZAHLAN
FILE NO 23

SECTION 7

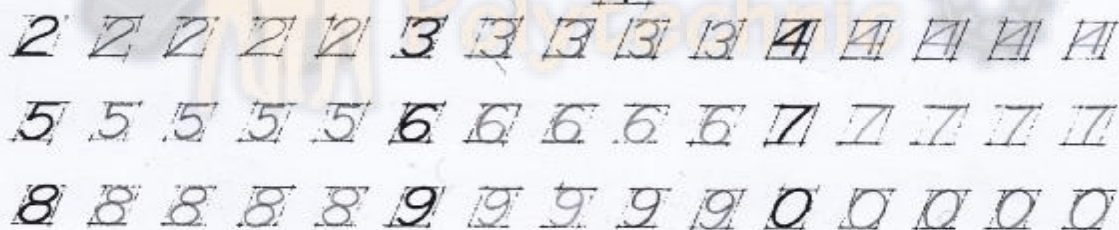
GRADE

2

REPEAT EACH LETTER AND NUMBER USING THE GUIDELINES PROVIDED. USE A SOFT LEAD (F OR HB) FOR LETTERING. A CONICAL POINT WITH A SLIGHTLY ROUNDED TIP IS THE MOST PREFERRED SHAPE OF POINT. ROTATE THE PENCIL BETWEEN THE THUMB AND INDEX FINGER AFTER EVERY FEW LETTERS TO KEEP THE STROKES UNIFORM.



NOTE: THE LETTER I AND THE NUMBER ONE ARE THE SAME.



OBSERVE THE FORM AND PROPORTION OF THE ABOVE LETTERS AND REPEAT THE FOLLOWING SENTENCES IN THE GUIDELINES PROVIDED:

LETTERING ON AN ENGINEERING DRAWING OR SKETCH SHOULD CONVEY THE REQUIRED INFORMATION CLEARLY AND EFFICIENTLY. THE BASIS OF GOOD LETTERING IS THE SINGLE STROKE GOTHIC ALPHABET.

- LETTERING ON AN ENGINEERING DRAWING OR SKETCH SHOULD CONVEY THE
- REQUIRED INFORMATION CLEARLY AND EFFICIENTLY. THE BASIS OF GOOD
- LETTERING IS THE SINGLE STROKE GOTHIC ALPHABET
-
-
-

LETTERING

NAME MOSTAFA ZAHLAN

FILE NO. 23

SECTION 7

GRADE

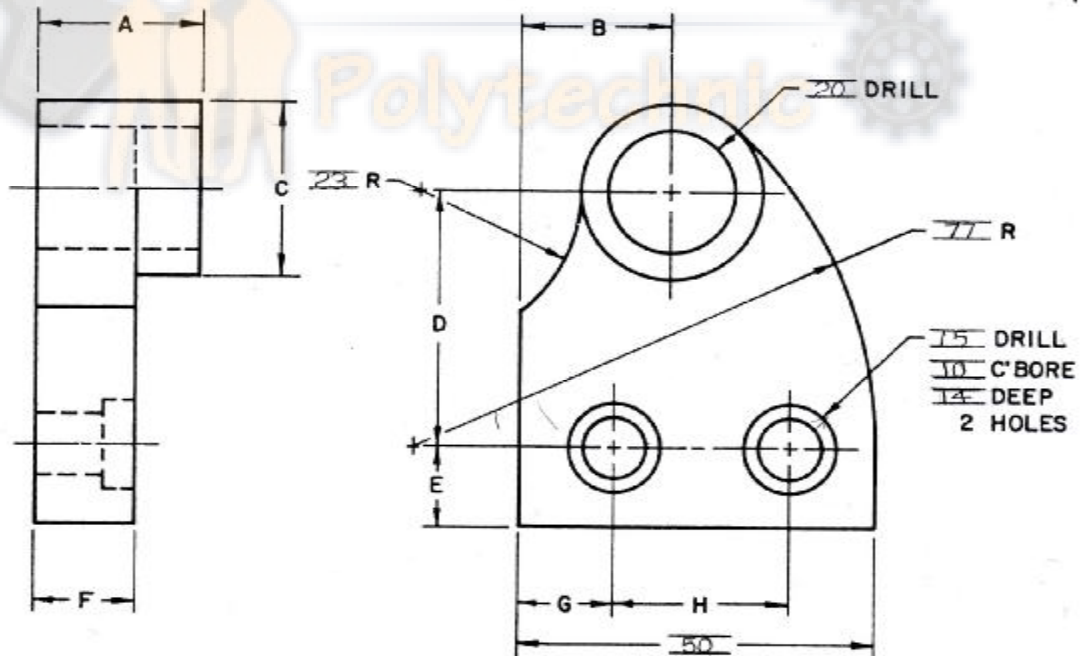
3

USE THE METRIC SCALE(S) AND MEASURE THE DIMENSION LINES A THROUGH H IN THE TWO-VIEW DRAWING BELOW. LETTER THE ANSWERS IN THE GUIDELINES PROVIDED FOR THE UNITS INDICATED.

NOTE: A FEW ANSWERS ARE PROVIDED AS EXAMPLES.

	A(mm)	B(mm)	C(mm)	D(cm)	E(cm)	F(cm)	G(m)	H(m)
1 1:1	<u>23</u>	<u>21</u>	<u>29</u>	<u>4.2</u>	<u>1.3</u>	<u>1.4</u>	<u>0.013</u>	<u>0.025</u>
2 1:5	<u>115</u>	<u>105</u>	<u>145</u>	<u>21</u>	<u>6.5</u>	<u>7</u>	<u>0.065</u>	<u>0.14</u>
3 1:20	<u>460</u>	<u>420</u>	<u>580</u>	<u>84</u>	<u>26</u>	<u>28</u>	<u>0.26</u>	<u>0.5</u>
4 1:10	<u>230</u>	<u>210</u>	<u>290</u>	<u>42</u>	<u>13</u>	<u>14</u>	<u>0.13</u>	<u>0.25</u>
5 1:500	<u>11500</u>	<u>10500</u>	<u>14500</u>	<u>2100</u>	<u>650</u>	<u>700</u>	<u>6.5</u>	<u>12.5</u>
6 1:2	<u>46</u>	<u>42</u>	<u>58</u>	<u>8.4</u>	<u>2.6</u>	<u>2.8</u>	<u>0.026</u>	<u>0.05</u>
7 1:100	<u>2600</u>	<u>2100</u>	<u>2900</u>	<u>420</u>	<u>130</u>	<u>140</u>	<u>1.5</u>	<u>2.5</u>
8 1:50	<u>1150</u>	<u>1050</u>	<u>1450</u>	<u>210</u>	<u>65</u>	<u>70</u>	<u>0.65</u>	<u>1.25</u>
9 1:200	<u>4600</u>	<u>4200</u>	<u>5800</u>	<u>840</u>	<u>260</u>	<u>280</u>	<u>2.6</u>	<u>5</u>
10 1:1000	<u>23000</u>	<u>21000</u>	<u>29000</u>	<u>4200</u>	<u>1300</u>	<u>1400</u>	<u>13</u>	<u>28</u>

SCALE THE VIEWS BELOW AND SUPPLY THE MISSING MEASUREMENTS IN MILLIMETERS. MEASURE TO THE NEAREST WHOLE MILLIMETER.



SCALING

NAME MOSTAFA ZAHLAN

GRADE

4

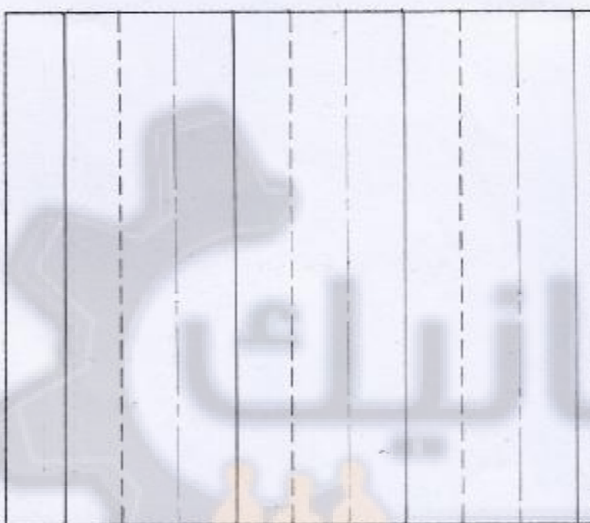
1- Draw vertical lines 8mm apart in the following order: object (visible) , hidden , and center. Start at the left and repeat until the square is filled

2- Draw horizontal lines 8mm apart as directed above. Start at top and repeat until the square is filled.

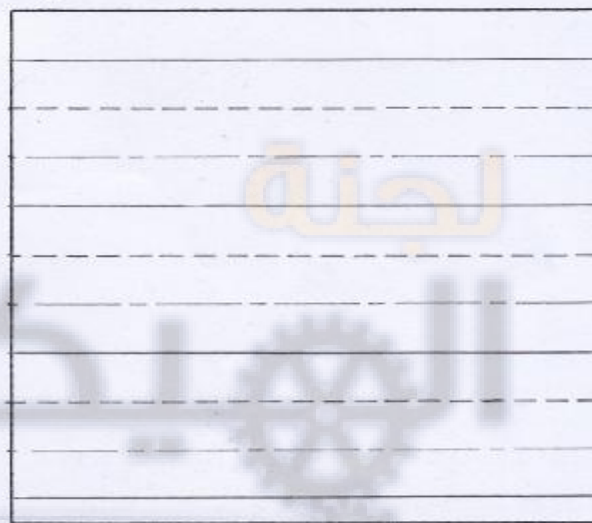
3- Divide the given square into 9 squares.

4- Divide the given square into 16 squares.

1



2



3



4



BASIC DRAWING SKILLS

NAME MOSTAFA ZAHLAN

GRADE

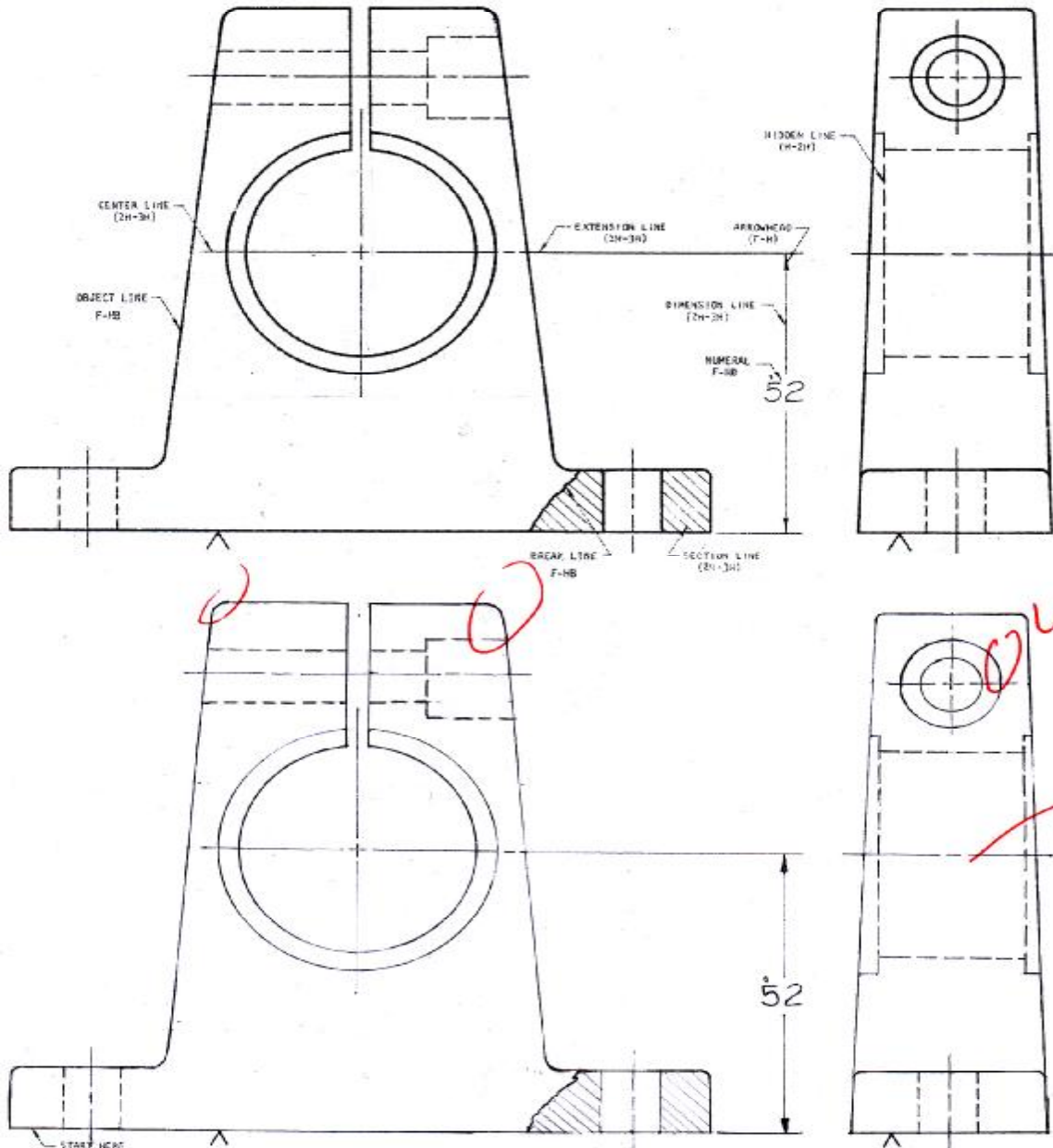
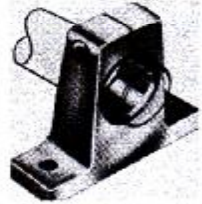
5

LINE STANDARDS

USING THE SUGGESTED PENCIL GRADES, MAKE A COPY OF THE SHAFT SUPPORT. OMIT INSTRUCTIONAL NOTES.

1. MAKE A FULL-SIZE COPY BEGINNING AT THE GIVEN CORNER.
2. OVERLAY THIS DRAWING WITH AN 8-1/2" X 11" SHEET OF VELLUM FROM THE BACK OF THE BOOK AND MAKE A TRACING THAT CAN BE REPRODUCED BY THE DIAZO PROCESS.

COURTESY OF THOMSON INDUSTRIES, INC.



Graphics for Engineers

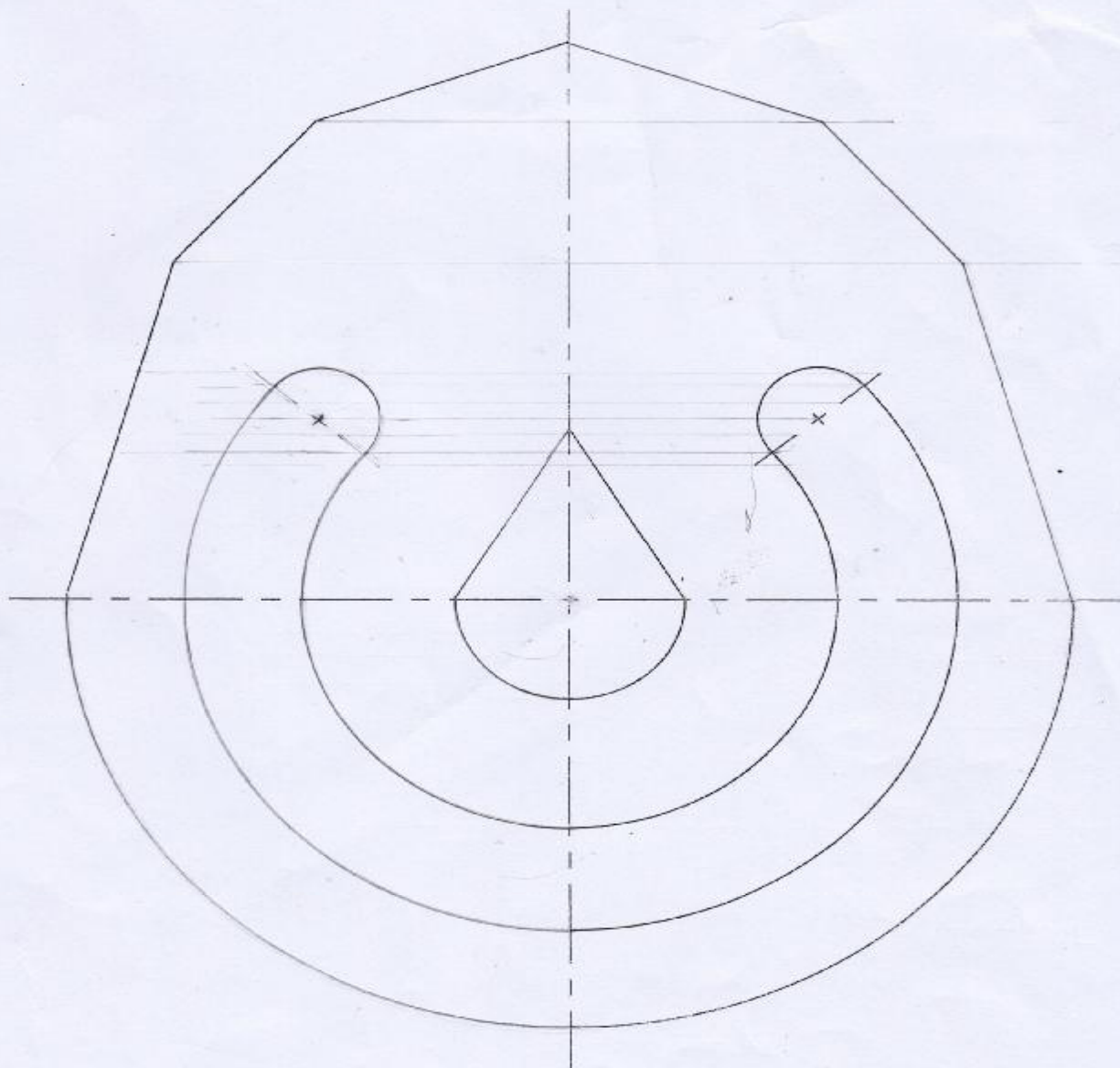
NAME MUSTAFA ZAWLAN
FILE NO 72

SECTION 7

GRADE

6

Complete the casket drawing. Work accurately, show all construction and mark all tangent points.
This problem is selected to provide skill in the use of triangles, compass, divider, and scales.



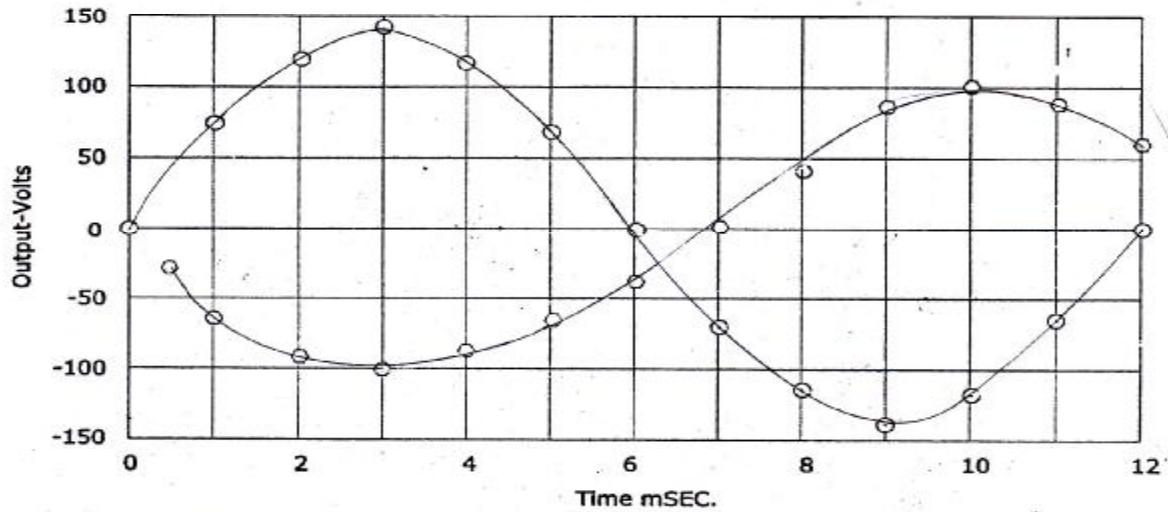
BASIC DRAWING SKILLS

NAME MOSTAFA ZAHLAN
FILE NO. 23

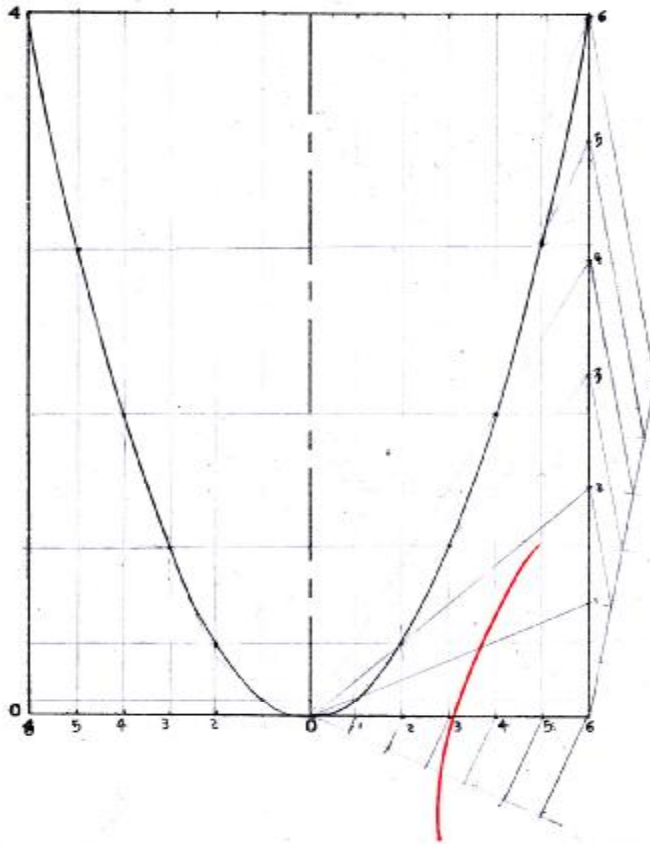
SECTION 7

GRADE

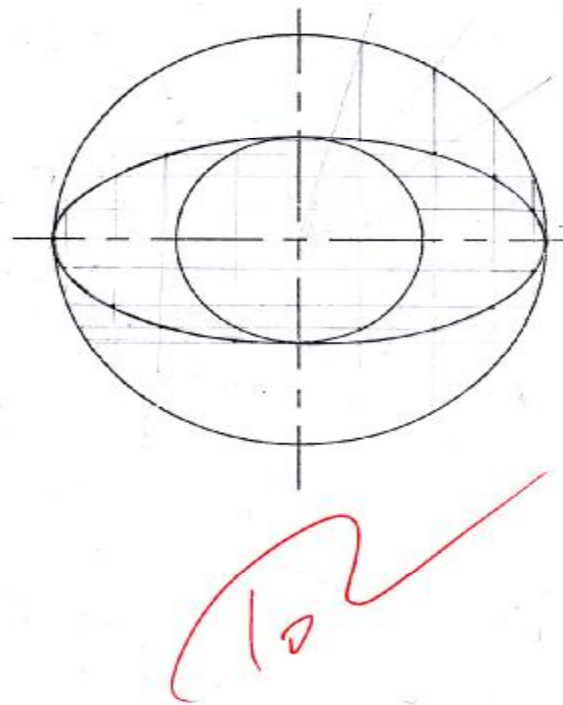
7



Using the parallelogram method construct a parabola within the lines below and number the points.



Using the circle method construct an ellipse where the large circle is the major diameter and the small circle is the minor diameter.



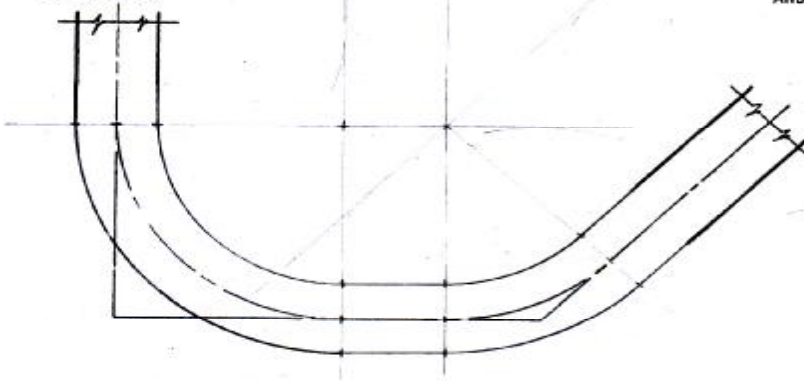
CONICAL SECTIONS

NAME MOSTAFA ZAHLAN
FILE NO 23 SECTION 7

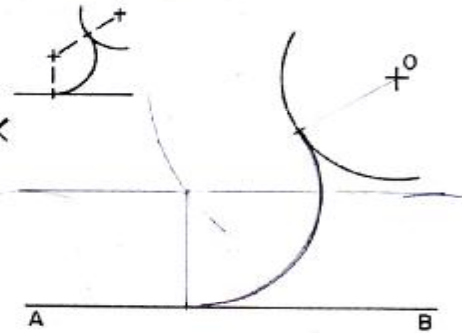
GRADE

8

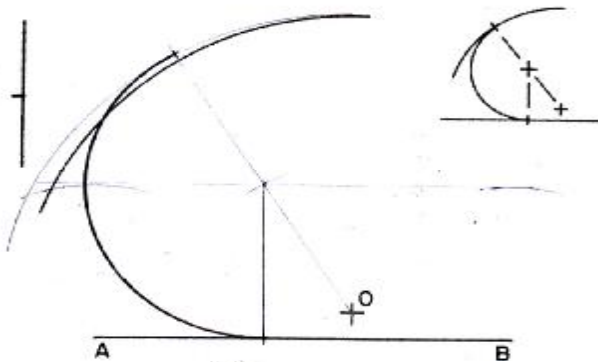
1 CONSTRUCT TWO ARCS OF 1.25 INCHES CENTERLINE RADIUS TANGENT TO EACH ANGLE IN THE ROADWAY. MARK TANGENT POINTS AND COMPLETE THE SIDES OF THE ROADWAY.



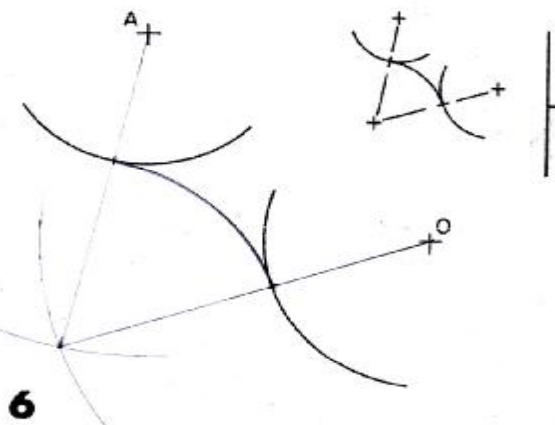
2 DRAW AN ARC OF 0.75 INCHES RADIUS TANGENT TO THE GIVEN ARC WITH ITS CENTER AT O AND THE STRAIGHT LINE AB. MARK POINTS OF TANGENCY AND SHOW CONSTRUCTION.



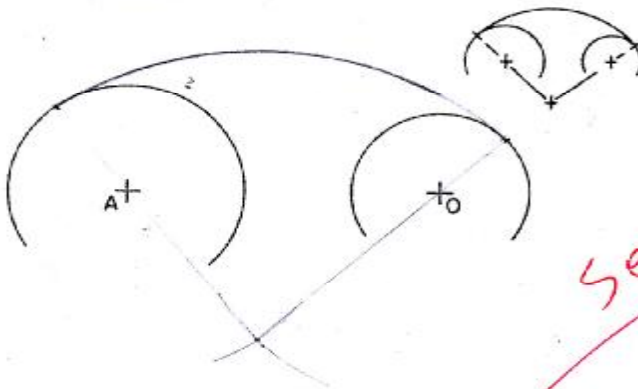
3 DRAW AN ARC OF 1.0 INCHES (25 MM) RADIUS TANGENT TO THE GIVEN ARC WITH ITS CENTER AT O AND THE LINE AB. MARK TANGENT POINTS AND SHOW CONSTRUCTION.



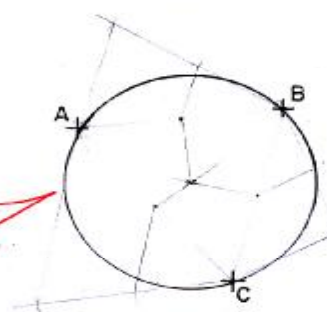
4 DRAW A CIRCULAR ARC OF 32 MM RADIUS TANGENT TO THE TWO GIVEN ARCS WITH CENTERS AT A AND O. MARK TANGENT POINTS AND SHOW CONSTRUCTION.



5 DRAW AN ARC OF 1.9 INCHES RADIUS THAT IS TANGENT TO THE GIVEN ARCS WITH CENTERS AT A AND O. MARK TANGENT POINTS AND SHOW CONSTRUCTION.



6 CONSTRUCT A CIRCLE THAT WILL PASS THROUGH POINTS A, B AND C. SHOW CONSTRUCTION.

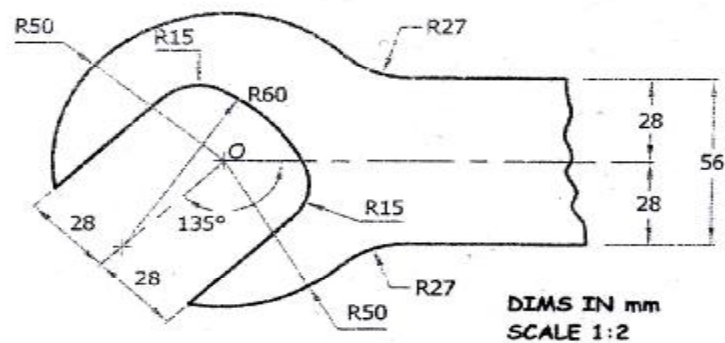


DRAWING GEOMETRY

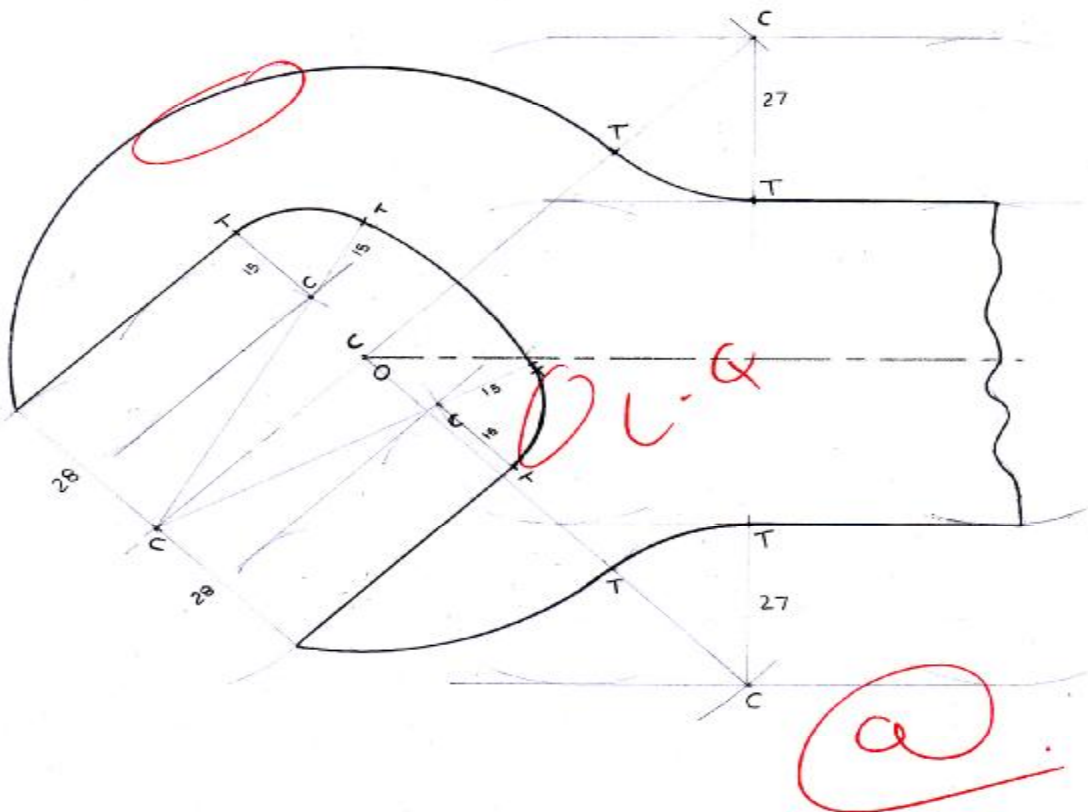
NAME MOSTAFA ZAHLAN
FILE NO 22 SECTION 7

GRADE

9



Draw below the OPEN-END WRENCH shown above to full scale (1:1).
Construction lines should be light & thin in 2H and outlines in HB. Show all calculations on the sheet. Mark every tangent point by T & every center point by C. Don't erase construction lines

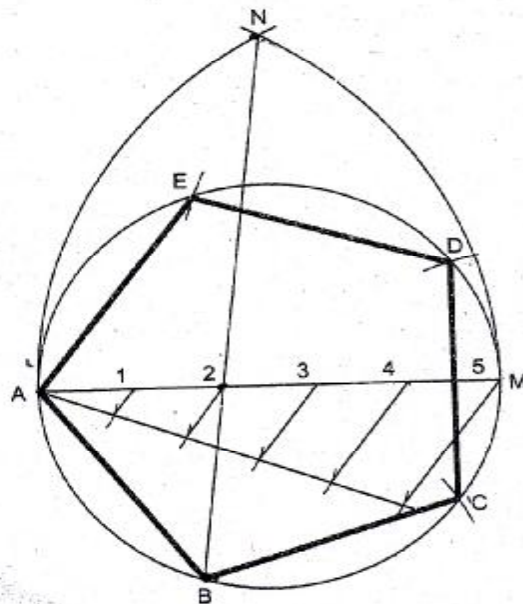


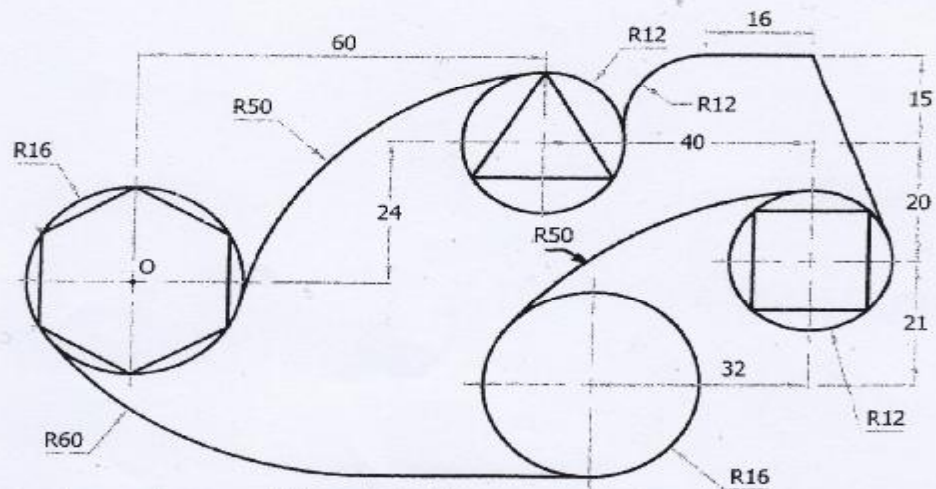
TANGENCY	NAME <u>MOSTAFA ZAHLAN</u>	GRADE
	FILE NO. <u>23</u> SECTION <u>7</u>	10

To construct a regular polygon given a diagonal, i.e. within a given circle (Fig. 2.34).

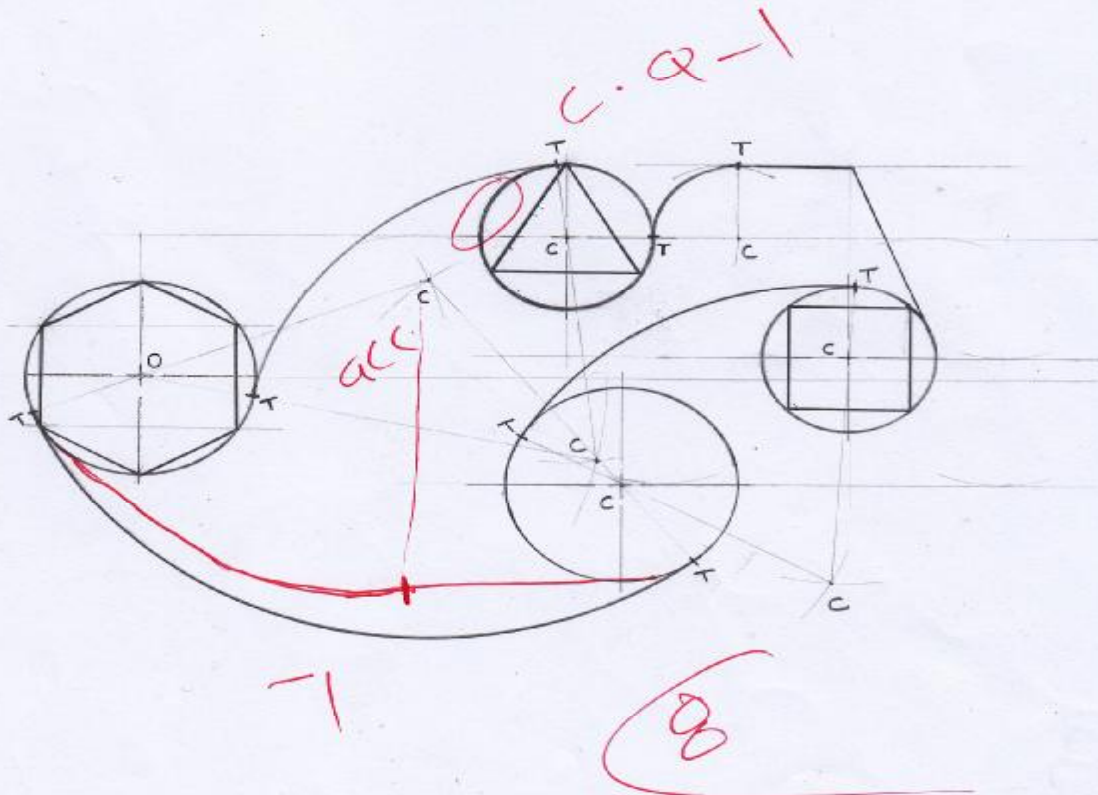
1. Draw the given circle and insert a diameter AM.
2. Divide the diameter into the same number of divisions as the polygon has sides.
3. With centre M draw an arc radius MA. With centre A draw another arc of the same radius to intersect the first arc in N.
4. Draw N_2 and produce to intersect the circle in B (for any polygon).
5. AB is the first side of the polygon. Step out the other sides BC, CD, etc.

ABCDE is the required polygon.



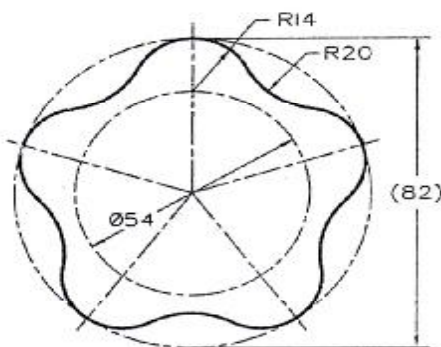


Draw the figure shown above to full scale(1:1). Construction lines should be light & thin in 2H and outlines in HB. Write all required calculations on the sheet. Mark all tangent points by T and all center points by C. Do not erase the construction lines.

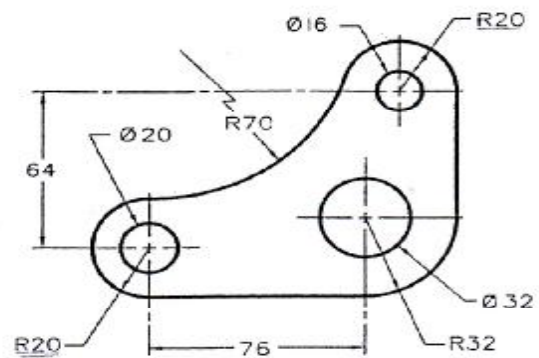


TANGENCY	NAME MOSTAFA ZAHLAN	GRADE	11
	FILE NO. 73	SECTION 7	

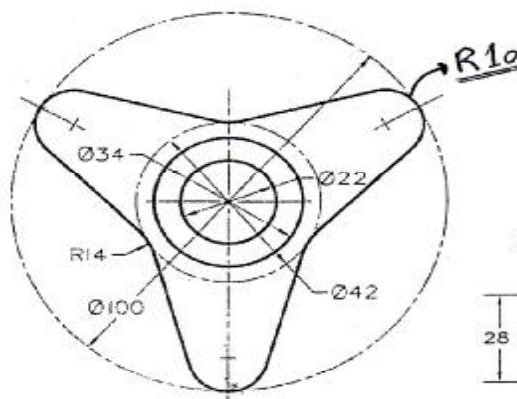
Construct the given shapes on A4, one problem per sheet.
Mark all points of tangency.



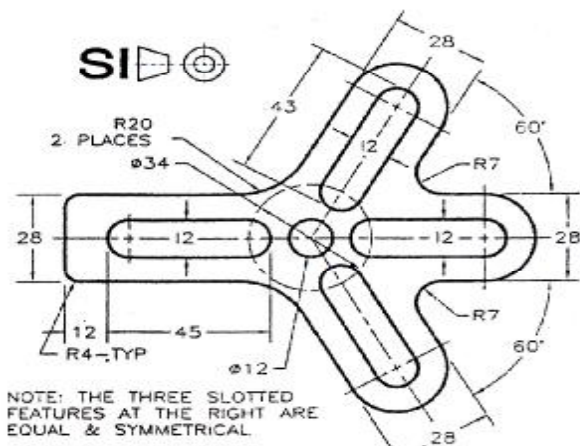
FIVE-LOBE KNOB



LEVER CRANK
CAST IRON

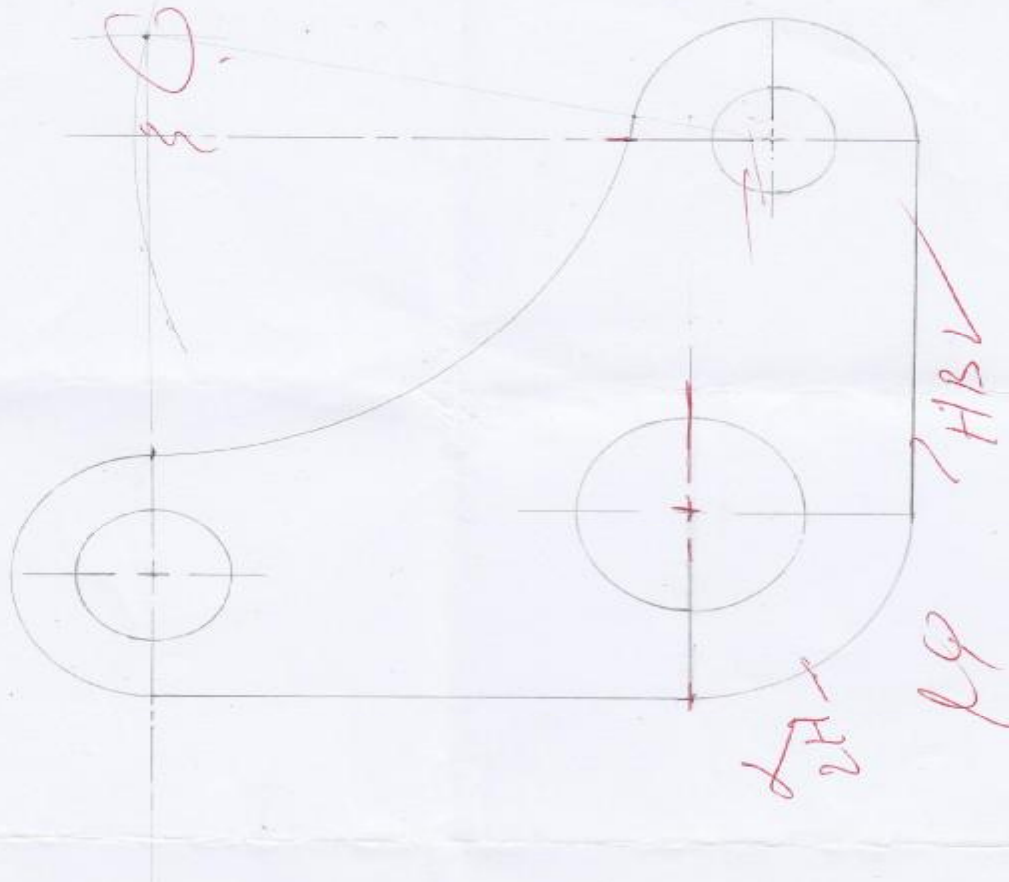


THREE-LOBE KNOB
POLYAMID PLASTIC



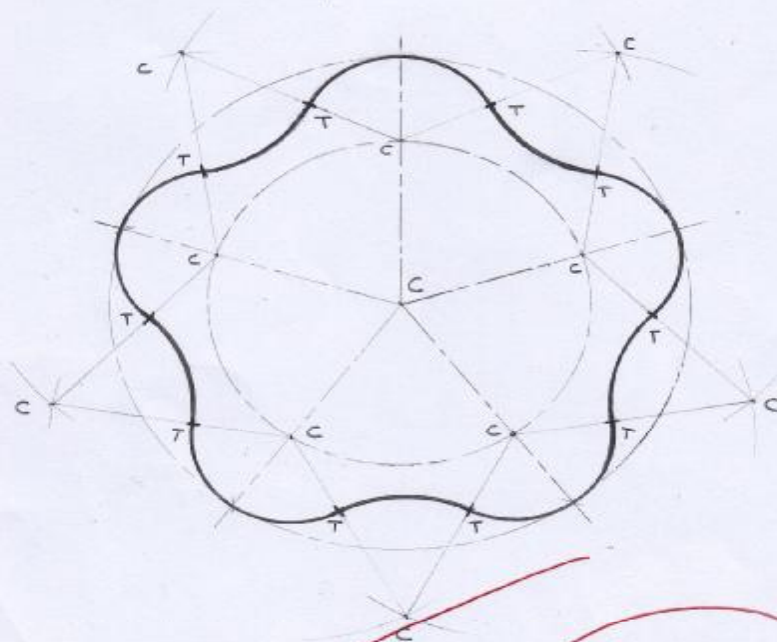
TANGENCY	NAME _____ FILE NO. _____	SECTION _____	GRADE _____ 12
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Chosen by Dr. Hassem Alkhalidi, University of Jordan



NAME MOSTAFA ZAHLAN
 FILE NO. 73 SECTION

GRADE

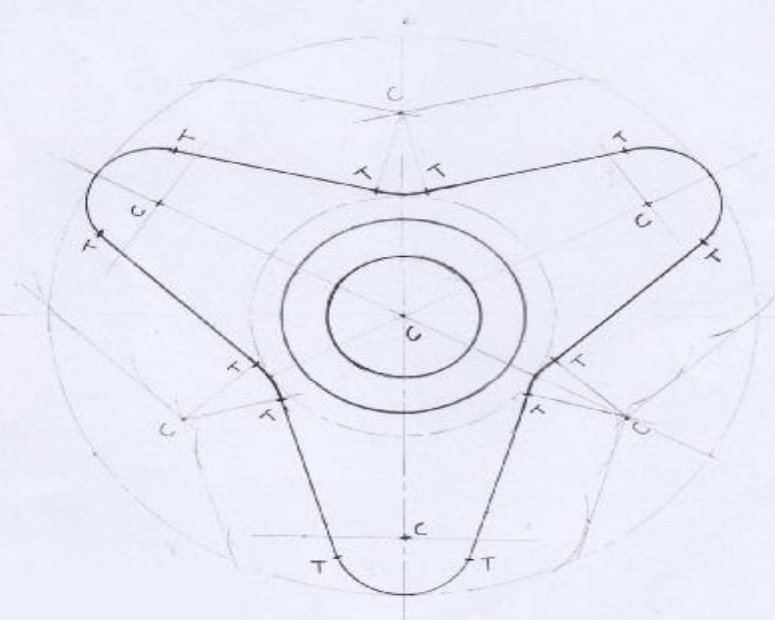


✓

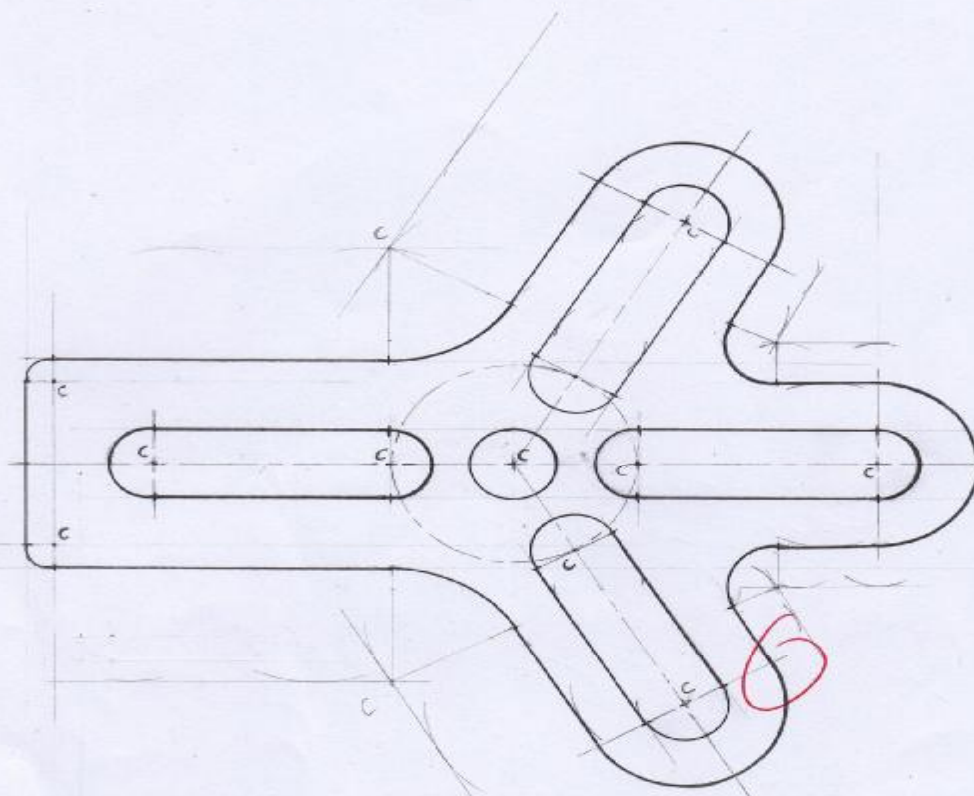
10
10

Eng. Nabeel
Zuf
17/11/2011

	NAME <u>MOSTAFA ZAHLAN</u>	GRADE
	FILE NO. <u>23</u> SECTION <u>7</u>	

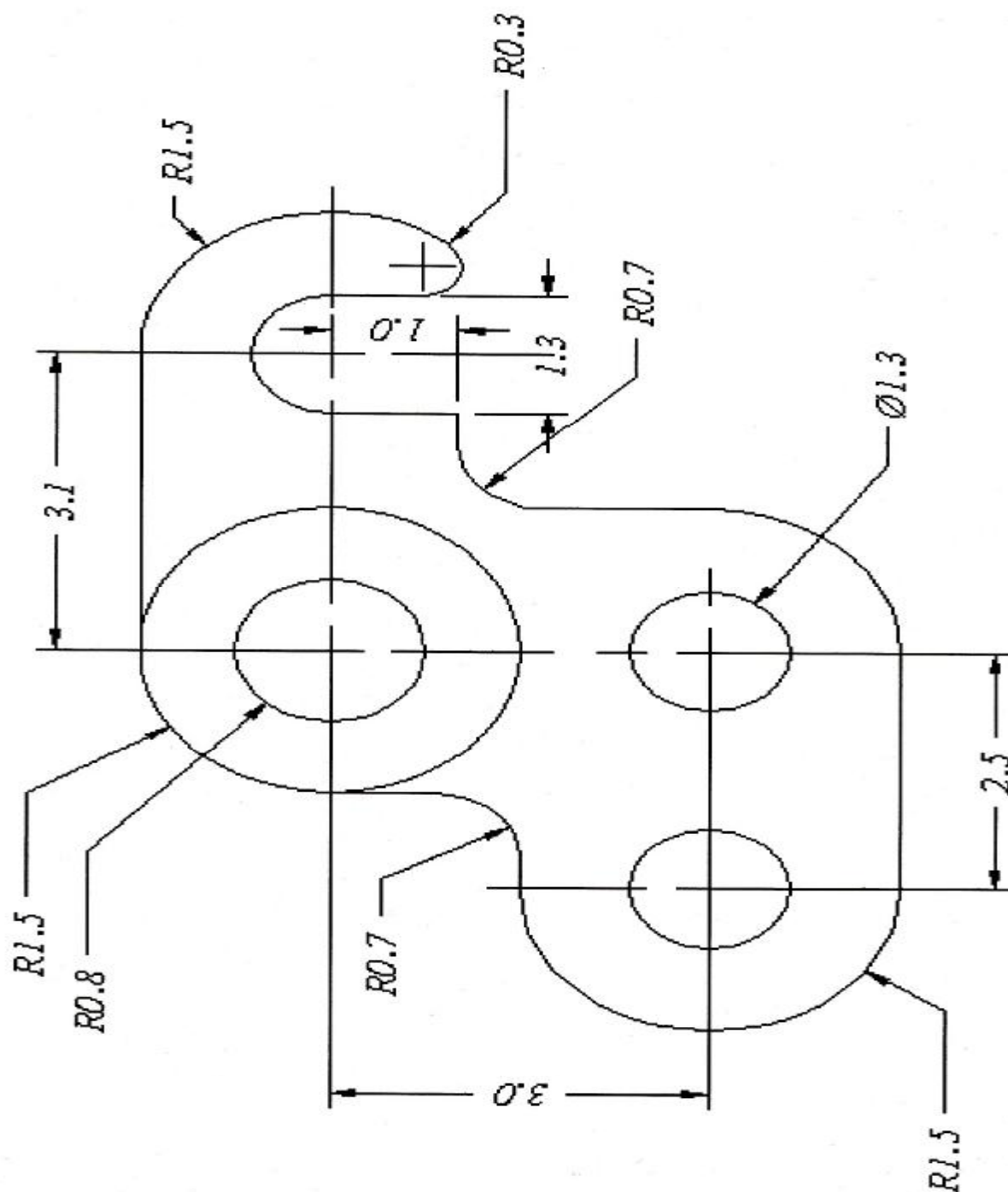


NAME	MOSTAFA ZAHLAN	GRADE	
FILE NO.	23	SECTION	7

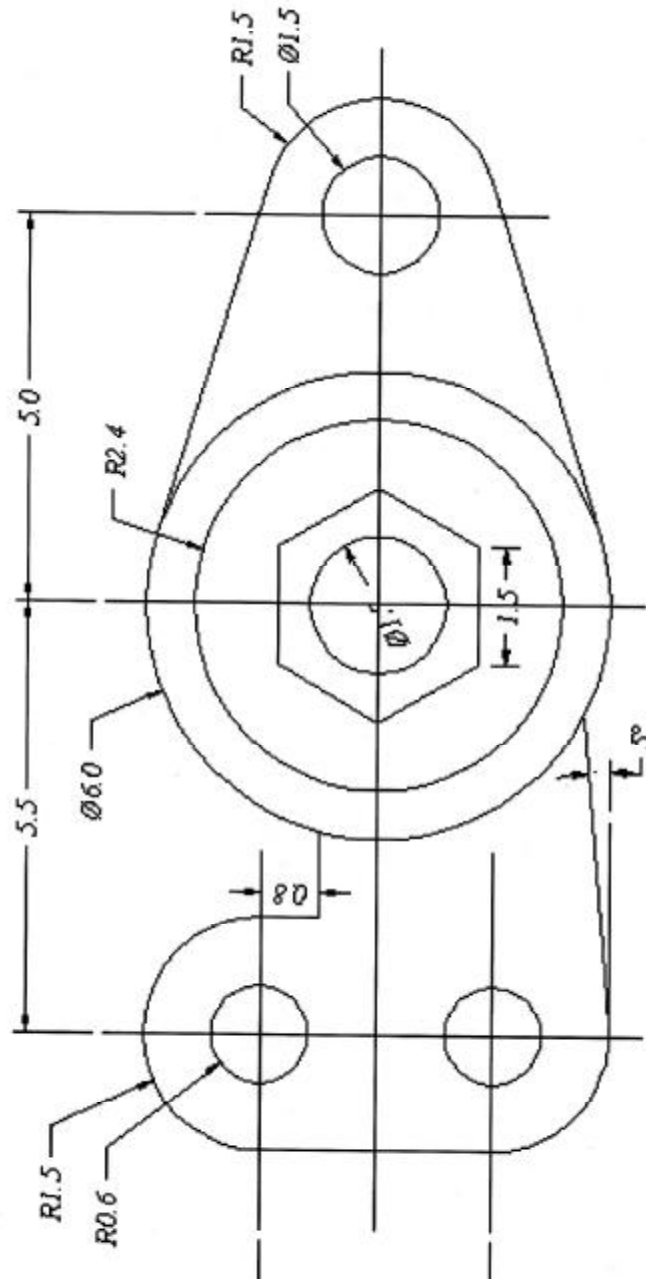


	NAME	MOSTAFA ZAHLAN	GRADE	
	FILE NO.	23		

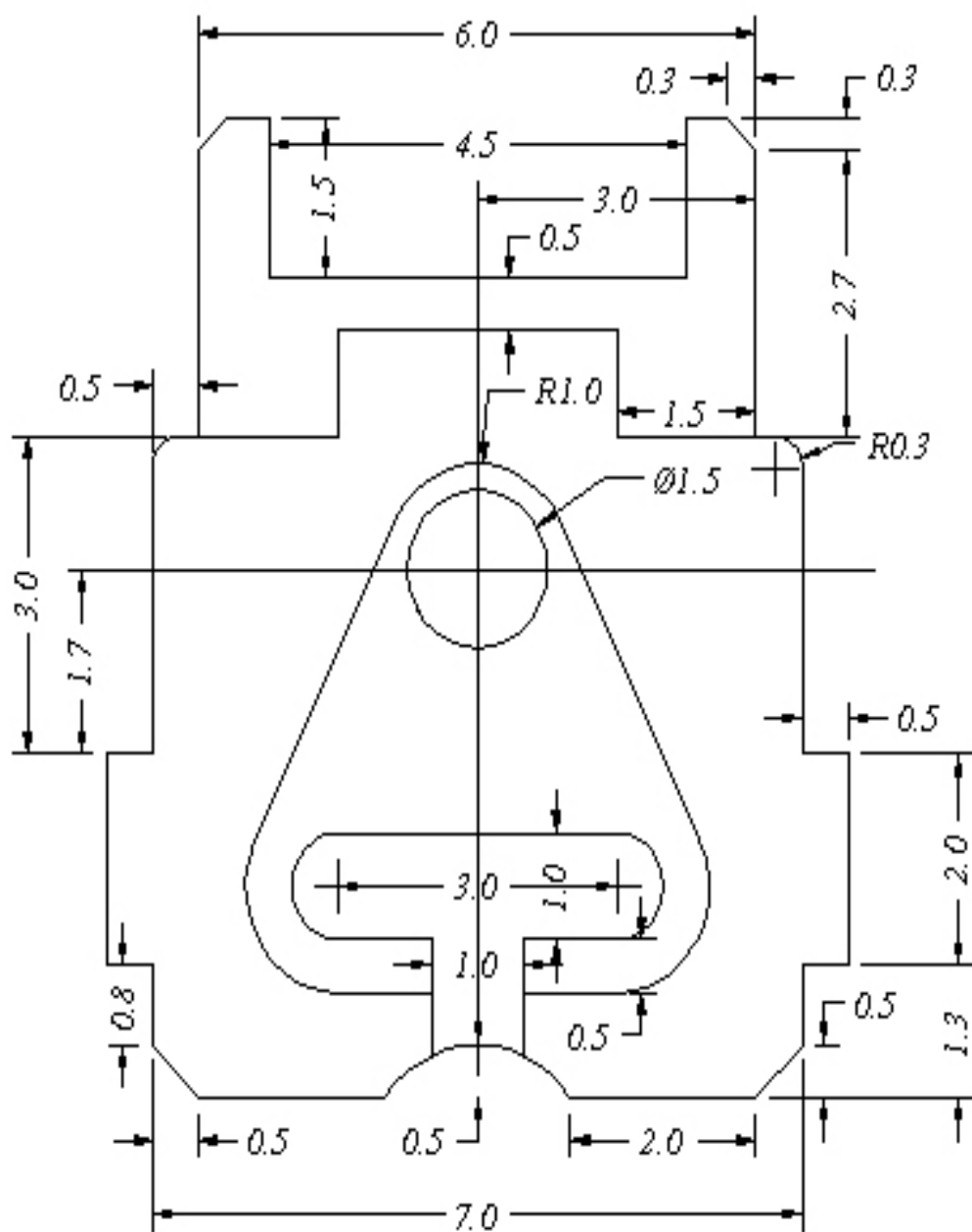
تدریب 1 :



تدریب 2 :



تدریب 3 :



(Orthographic Projection)

نقوم عادة برسم ثلاث مساقط ،، الأمامي والعلوي والجانبى (اليمين أو الأيسر) .

في البداية فأننا نقوم بإيجاد مجموع الأبعاد الثلاث الخاصة بالمجسم ،،
ثم نحدد المساقط التي سنختارها ،، فإذا حدد السؤال أحد المساقط
(الامامي مثلاً) نلتزم بذلك وإلا :

<<<<

نختار الجهة الاعرض لتكون المسقط الامامي ونختار الجانب
(اليمين / الایسر) الذي يحتوي على أكثر تفاصيل من الآخر ،،

ملاحظة ::

دائماً نرسم المسقط العلوي فوق المسقط الامامي ونرسم خط بزاوية 45
(لنقل الأبعاد) فوق المسقط الجانبى ،،

خطة الحل :

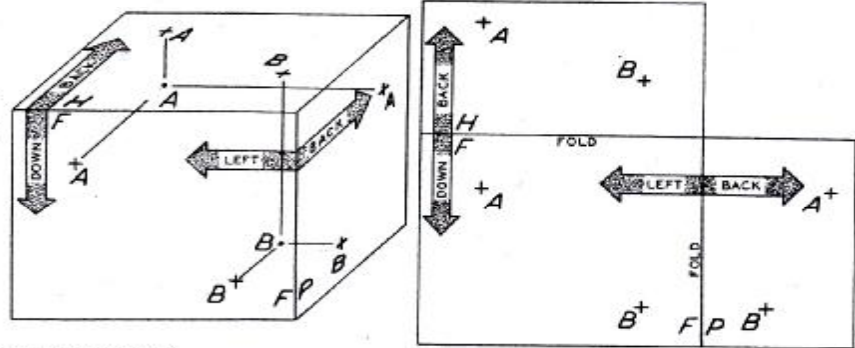
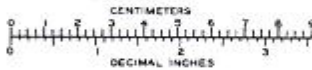
بعد حساب الأبعاد ،، نرسم اطار لكل مسقط (مستطيل بخط الـ 2H) تبعاً
للأبعاد الخاصة لكل مسقط ،،

ثم نرسم ما نشاهده عندما ننظر للجسم من ذلك المسقط ،،

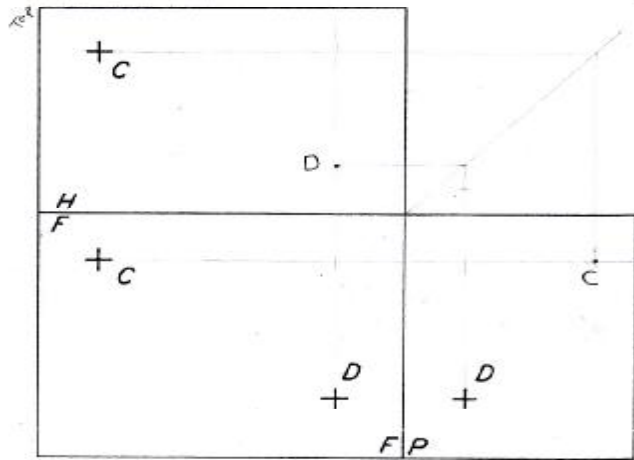
الخطوط المخفية نرسمها بخط **Invisible line (Hidden line)**
ولكن إذا وجد خط مخفي خلف خط مرئي نرسم المرئي فقط
(_____)

POINT PROJECTION

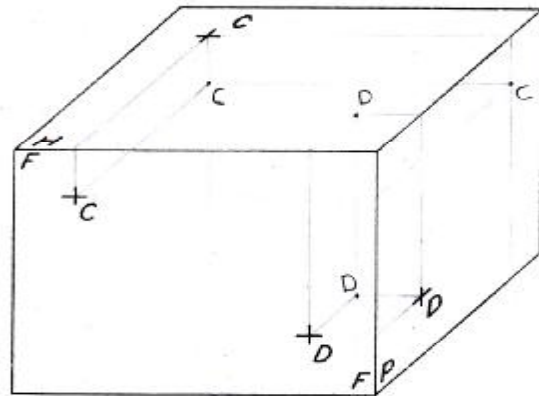
THE EXAMPLES AT THE RIGHT SHOW THE OBLIQUE AND ORTHOGRAPHIC PROJECTIONS OF POINTS A AND B. ALSO SHOWN ARE THE DIRECTIONAL RELATIONSHIPS. CUT OUT THE ORTHOGRAPHIC DRAWING AND FOLD AS INDICATED TO PRODUCE A MODEL.



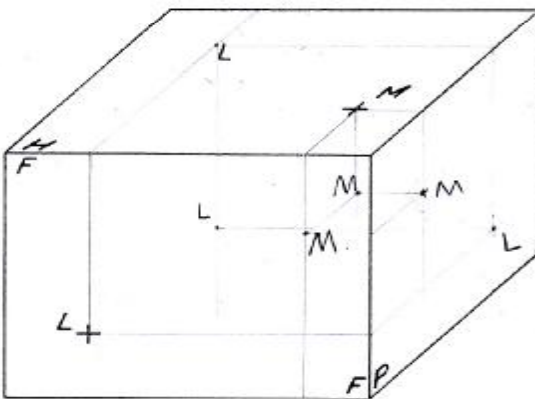
1. DRAW THE MISSING ORTHOGRAPHIC PROJECTIONS OF POINTS C AND D.



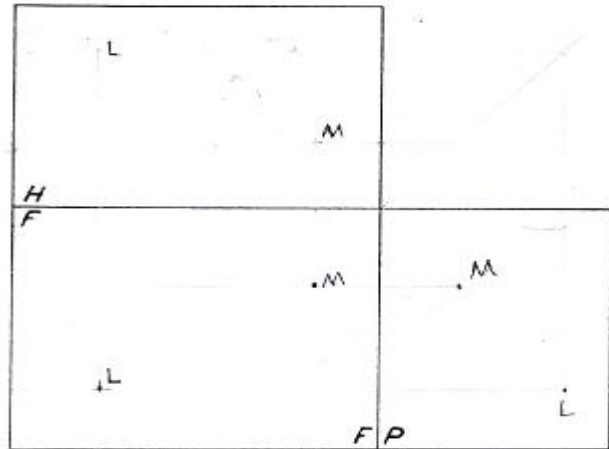
2. DRAW THE OBLIQUE PROJECTIONS OF POINTS C AND D, AND DRAW THE POSITIONS OF THESE POINTS IN SPACE.



3. POINT L IS 1 INCH BEHIND THE FRONTAL PLANE AND POINT M IS 1/2 INCH BELOW THE HORIZONTAL PLANE. DRAW THE OBLIQUE PROJECTIONS OF POINTS M AND L AND THEIR POSITIONS IN SPACE.



4. DRAW THE ORTHOGRAPHIC PROJECTIONS OF POINTS L AND M AS LOCATED IN PROBLEM NUMBER THREE.



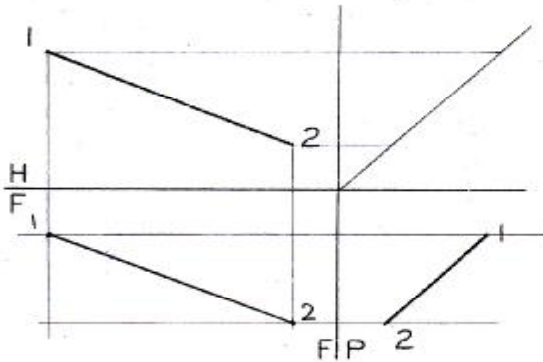
POINT PROJECTION	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	13
	FILE NO. <u>23</u> SECTION <u>7</u>		

Chosen by Dr. Hashem Alkhalidi, University of Jordan

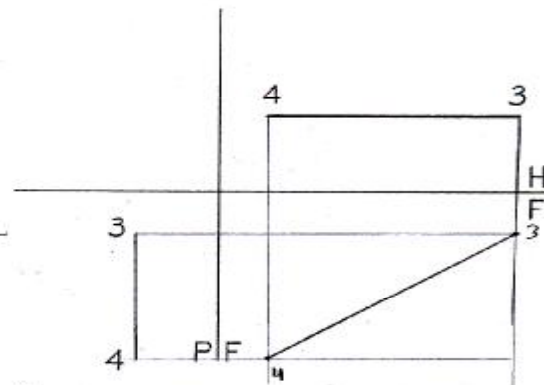
DRAW THE MISSING VIEWS OF EACH LINE AND INDICATE WHAT TYPE OF LINE EACH IS. LABEL TRUE LENGTH LINES TL.

LINES

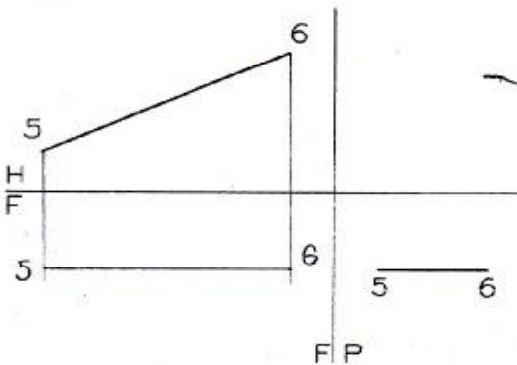
1 TYPE: O.L



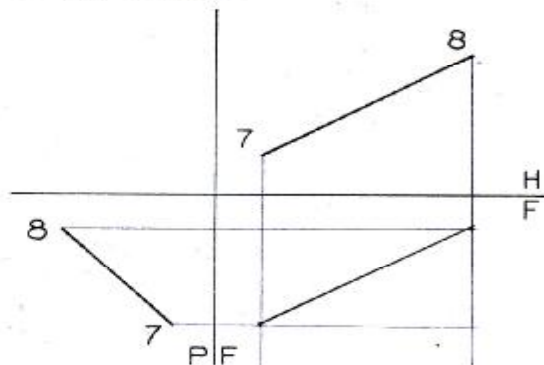
2 TYPE: E.L



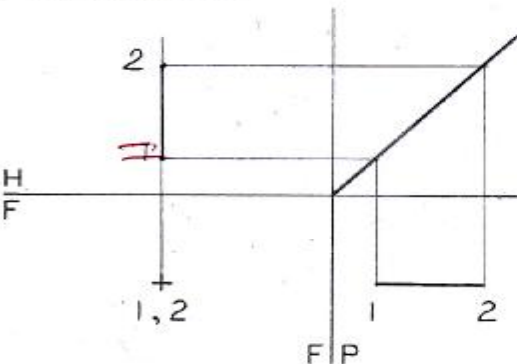
3 TYPE: H.L



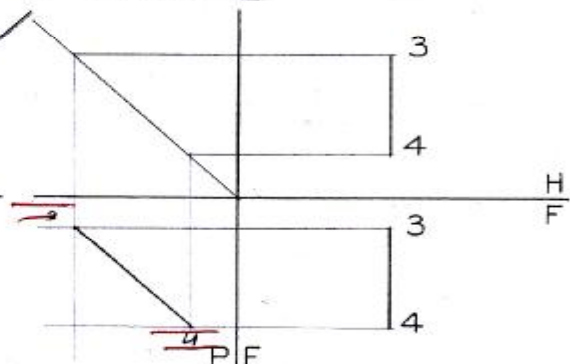
4 TYPE: O.L



5 TYPE: H.P.L



6 TYPE: P.L



LINE PROJECTION

NAME: SAEED MANSOUR
FILE NO: 36 SECTION: 6

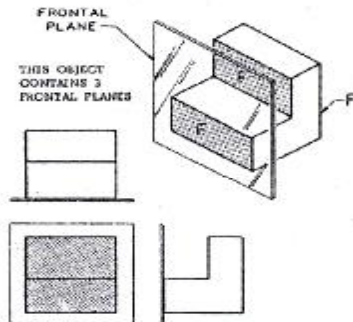
GRADE

14

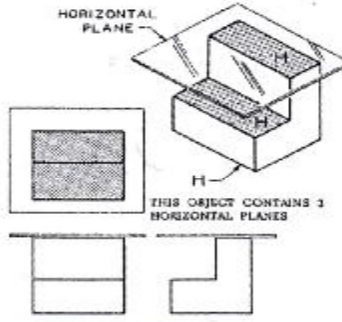
Chosen by Dr. Hashem Alkhalidi, University of Jordan

PRINCIPAL PLANES

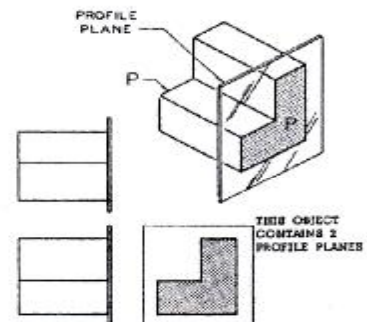
THE THREE PRINCIPAL PLANES ARE (1) FRONTAL, (2) HORIZONTAL, AND (3) PROFILE.



FRONTAL PLANES ARE PLANES THAT ARE PARALLEL TO THE ONE ILLUSTRATED ABOVE. FRONTAL PLANES APPEAR AS HORIZONTAL EDGES IN THE TOP VIEW, VERTICAL EDGES IN THE SIDE VIEW AND TRUE SIZE IN THE FRONT VIEW.



HORIZONTAL PLANES APPEAR AS HORIZONTAL EDGES IN THE FRONT AND SIDE VIEWS AND TRUE SIZE IN THE TOP VIEW.

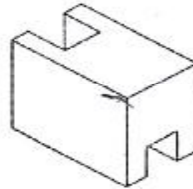
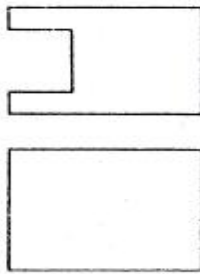


PROFILE PLANES APPEAR AS VERTICAL EDGES IN THE TOP AND FRONT VIEWS AND TRUE SIZE IN THE SIDE VIEW. PLANES INCLINED TO EITHER THE FRONTAL, HORIZONTAL OR PROFILE PLANES ARE NOT PRINCIPAL PLANES AND APPEAR FORESHORTENED OR AS EDGES IN THE PRINCIPAL VIEWS.

1. RIDER

COMPLETE THE GIVEN VIEWS. INDICATE HOW MANY PRINCIPAL PLANES THE OBJECT CONTAINS.

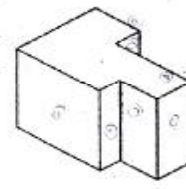
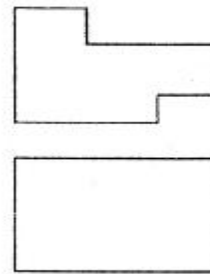
HORIZONTAL PLANES 3
FRONTAL PLANES 3
PROFILE PLANES 4



2. DIE BLOCK

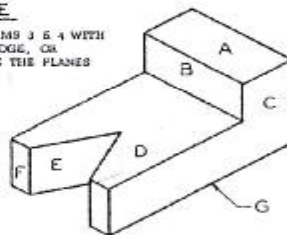
COMPLETE THE GIVEN VIEWS. INDICATE HOW MANY PRINCIPAL PLANES THE OBJECT CONTAINS.

HORIZONTAL PLANES 2
FRONTAL PLANES 4
PROFILE PLANES 4

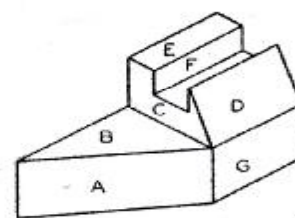


3. CENTERING PIECE

COMPLETE THE TABLES IN PROBLEMS 3 & 4 WITH THE WORDS (A) TRUE SIZE, (B) EDGE, OR (C) FORESHORTENED TO DESCRIBE THE PLANES OF THE TWO PARTS.



4. SLOT GUIDE



PLANE	TOP	FRONT	PROFILE	PLANE	TOP	FRONT	PROFILE
A	TRUE SIZE	EDGE	EDGE	A	EDGE	F'SHORTENED	F'SHORTENED
B	EDGE	TRUE SIZE	EDGE	B	TRUE SIZE	EDGE	EDGE
C	EDGE	EDGE	TRUE SIZE	C	EDGE	TRUE SIZE	EDGE
D	TRUE SIZE	EDGE	EDGE	D	F'SHORTENED	EDGE	F'SHORTENED
E	EDGE	F'SHORTENED	F'SHORTENED	E	TRUE SIZE	EDGE	EDGE
F	EDGE	TRUE SIZE	EDGE	F	EDGE	EDGE	TRUE SIZE
G	TRUE SIZE	EDGE	EDGE	G	EDGE	EDGE	TRUE SIZE

PLANES

NAME MOSTATA ZAHLAN
FILE NO. 23 SECTION 7

GRADE

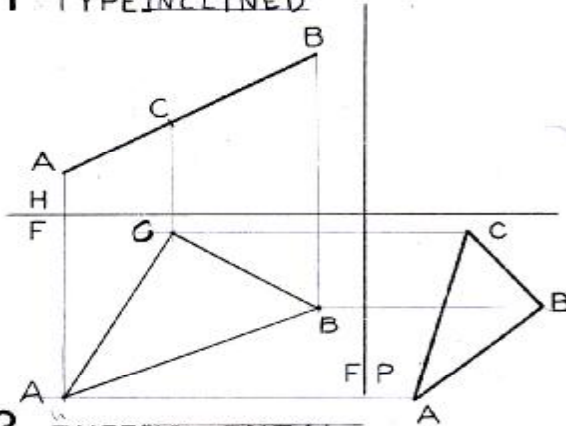
15

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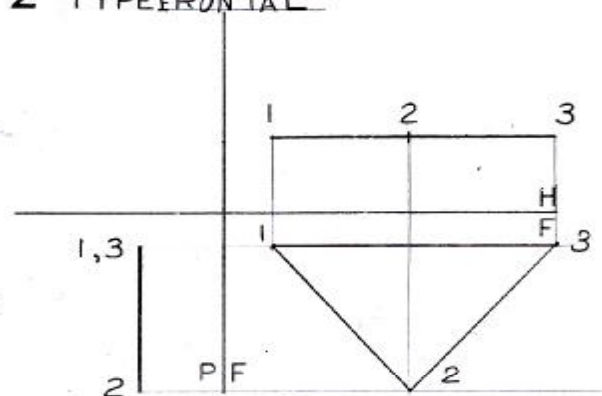
IN EACH PROBLEM DRAW THE MISSING VIEW OR VIEWS OF THE PLANE SHOWN. SPECIFY THE TYPE OF PLANE AND, WHERE THE PLANE APPEARS TRUE SHAPE, LABEL THAT VIEW TS.

PLANES

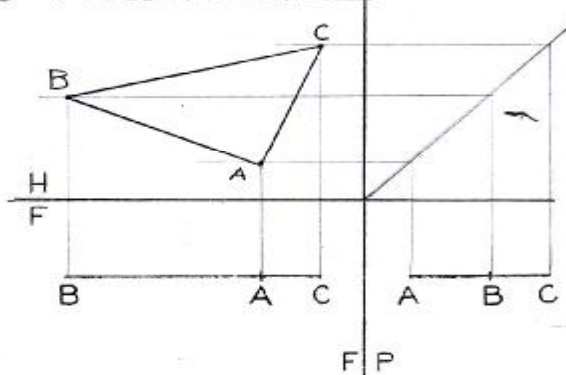
1 TYPE INCLINED



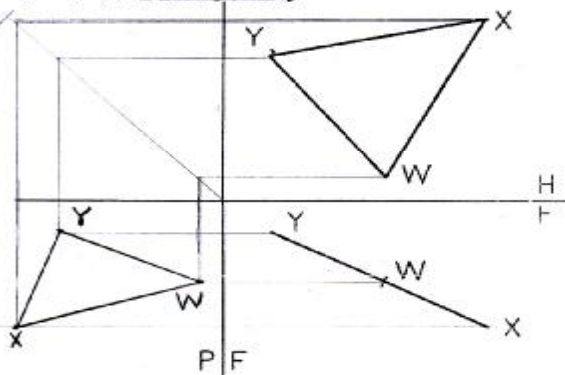
2 TYPE FRONTAL



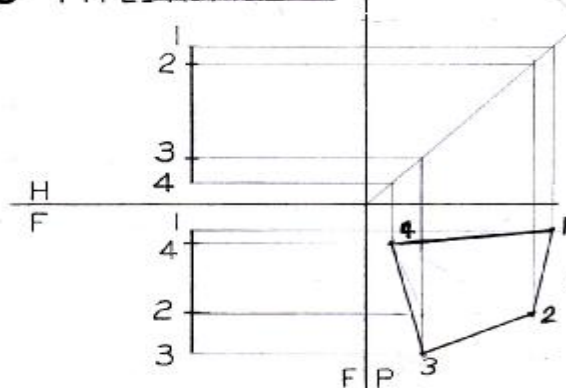
3 TYPE HORIZONTAL



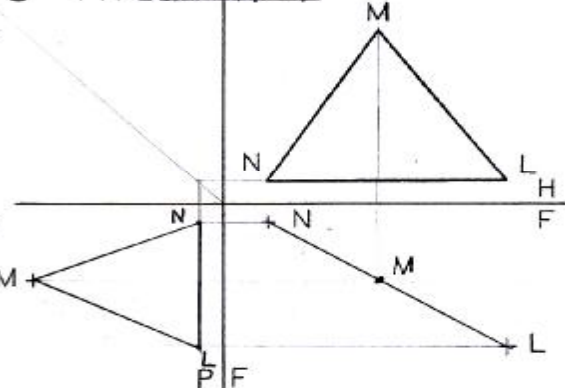
4 TYPE INCLINED



5 TYPE PROFILE



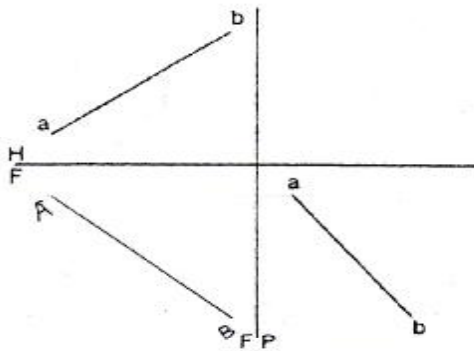
6 TYPE INCLINED



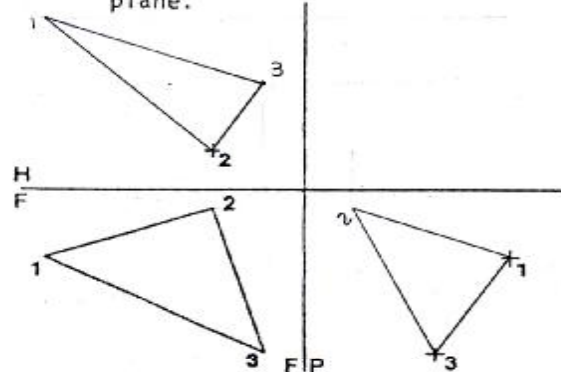
PLANE PROJECTION	NAME <u>SAEED MAN SOUR</u>	GRADE
	FILE NO <u>36</u>	SECTION <u>6</u>
		16

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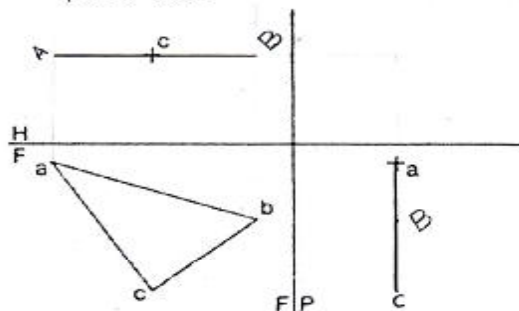
- Q1. Draw front view of line AB.
Line AB is OBLIC line.



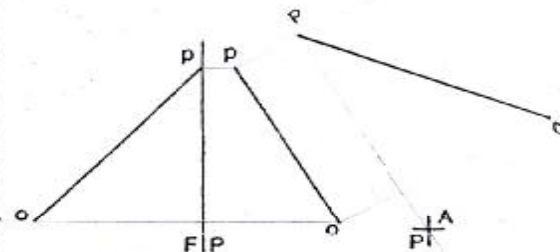
- Q2. Draw horizontal and profile views of plane 123. Plane 123 is OBLIC plane.



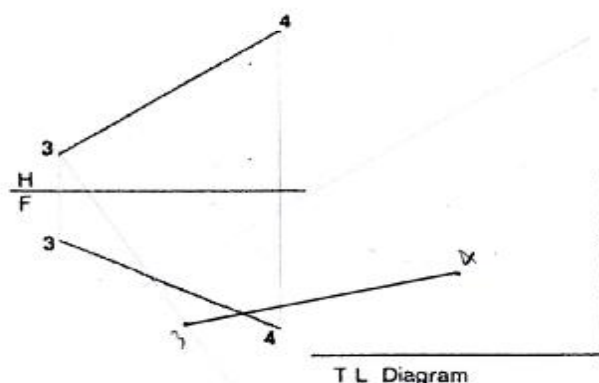
- Q3. Plane ABC is true size and shape in the front view. Draw the horizontal and profile views of plane ABC.



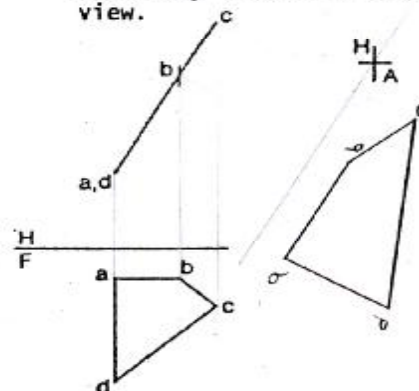
- Q4. Find the true length of line OP by using an auxiliary view projected from the profile view.



- Q5. Construct a True Length Diagram of line 34 showing line 34 true length.



- Q6. Find the true size and shape of plane ABCD by projecting to an auxiliary view from the horizontal view.



LINE & PLANE

NAME MOSTAFA ZAHLAN

FILE NO. 23 SECTION 7

GRADE

17

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REFER TO THE PICTORIALS IN COMPLETING THESE PROBLEMS.

LOCATE THE MISSING LINES AND COMPLETE THE GIVEN VIEWS USING INSTRUMENTS.

<p>1</p>	<p>2</p>	<p>3</p>
<p>4</p>	<p>5</p>	<p>6</p>
<p>7</p>	<p>8</p>	<p>9</p>

MISSING LINES	NAME _____	SECTION _____	GRADE _____	18
	FILE NO. _____			

Chosen by Dr. Hashem Alkhalidi, University of Jordan

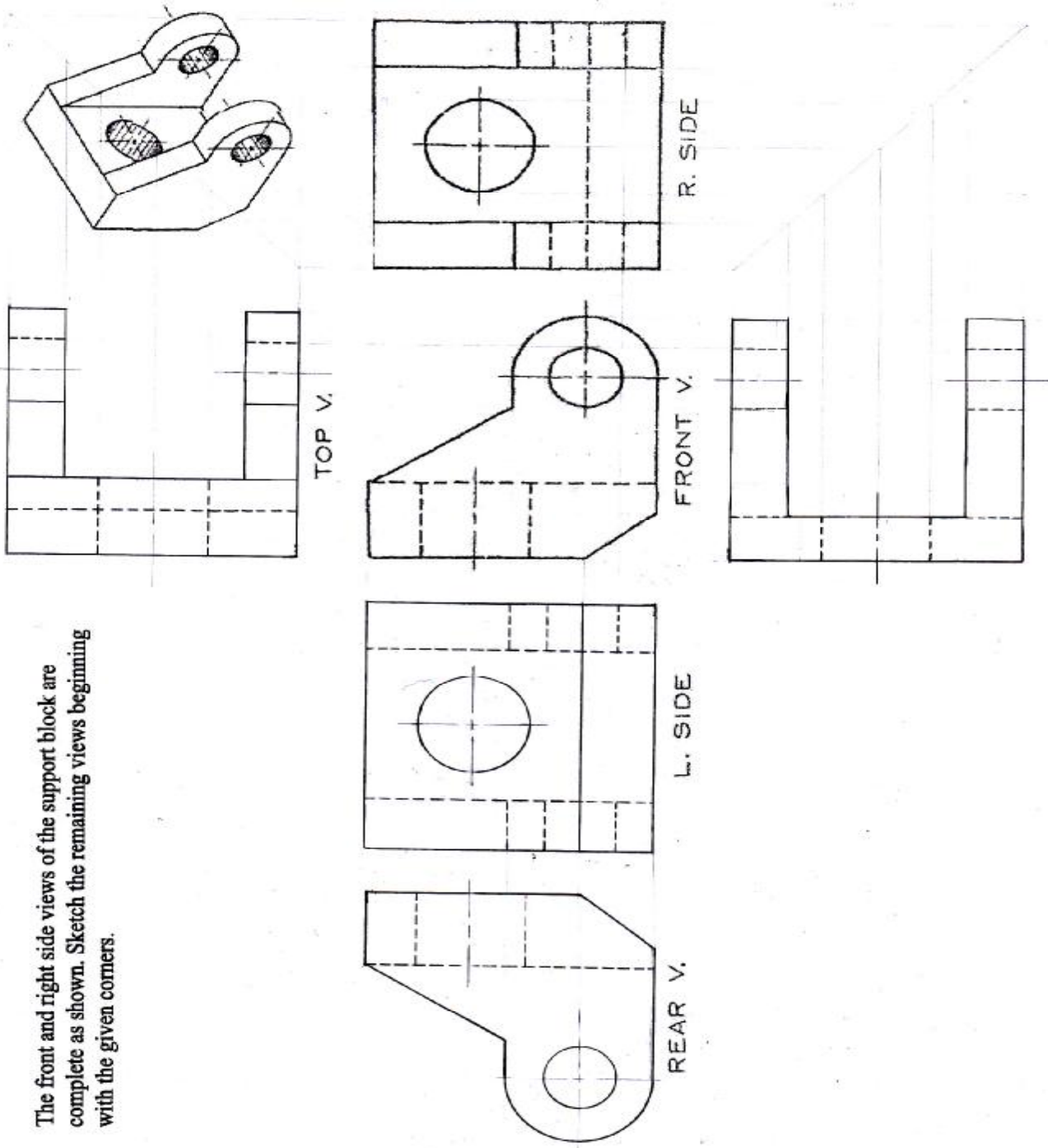
LOCATE THE MISSING LINES AND COMPLETE THE GIVEN VIEWS USING INSTRUMENTS. REFER TO THE PICTORIALS IN COMPLETING THESE PROBLEMS.

<p>3</p>	<p>6</p>	<p>9</p>
<p>2</p>	<p>5</p>	<p>8</p>
<p>1</p>	<p>4</p>	<p>7</p>

MISSING LINES	NAME _____	SECTION _____	GRADE _____	19
	FILE NO. _____			

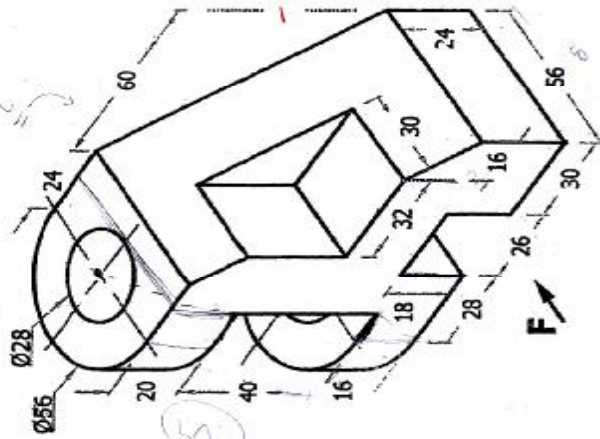
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The front and right side views of the support block are complete as shown. Sketch the remaining views beginning with the given corners.

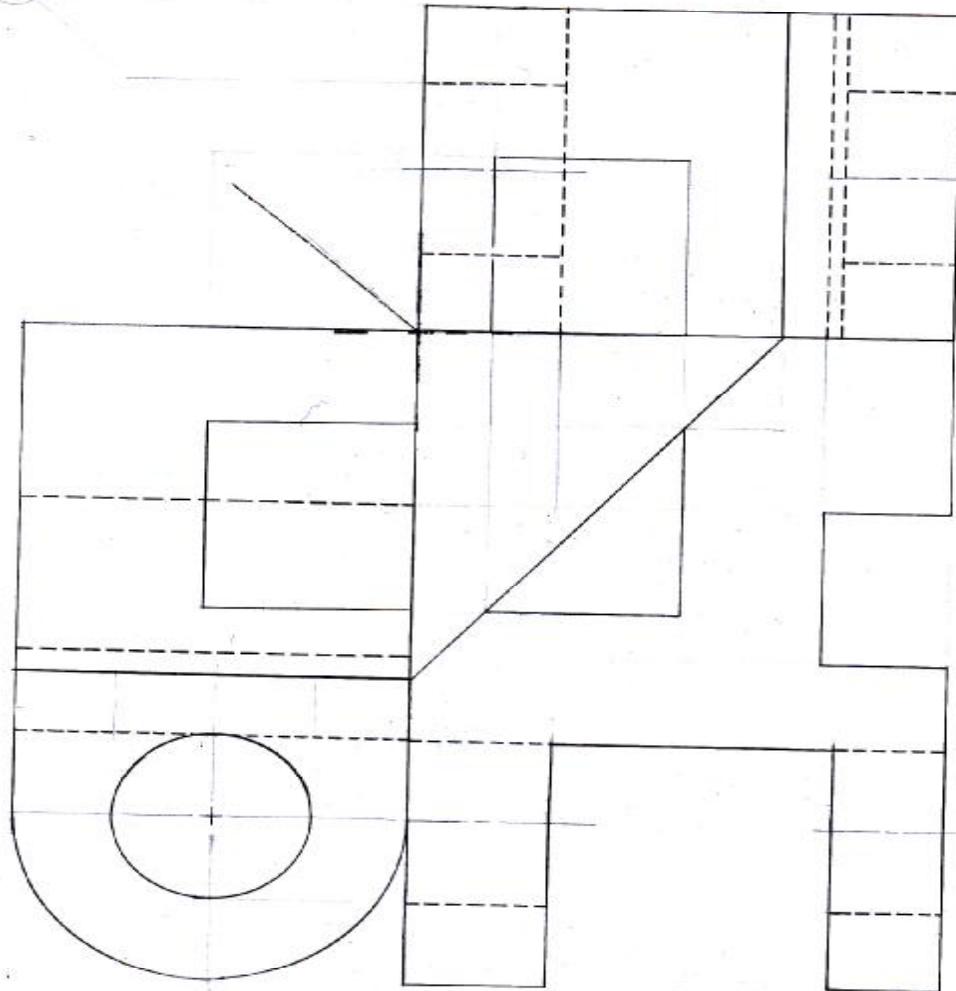


ORTHOGRAPHIC PROJECTION	NAME _____	SECTION _____	GRADE _____	20
	FILE NO. _____			

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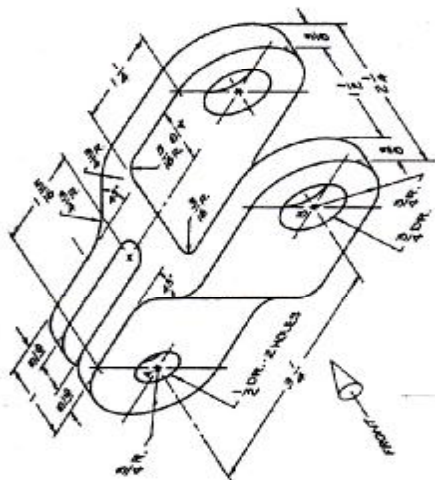


Draw
 - FRONT VIEW
 - TOP VIEW
 - R SIDE VIEW

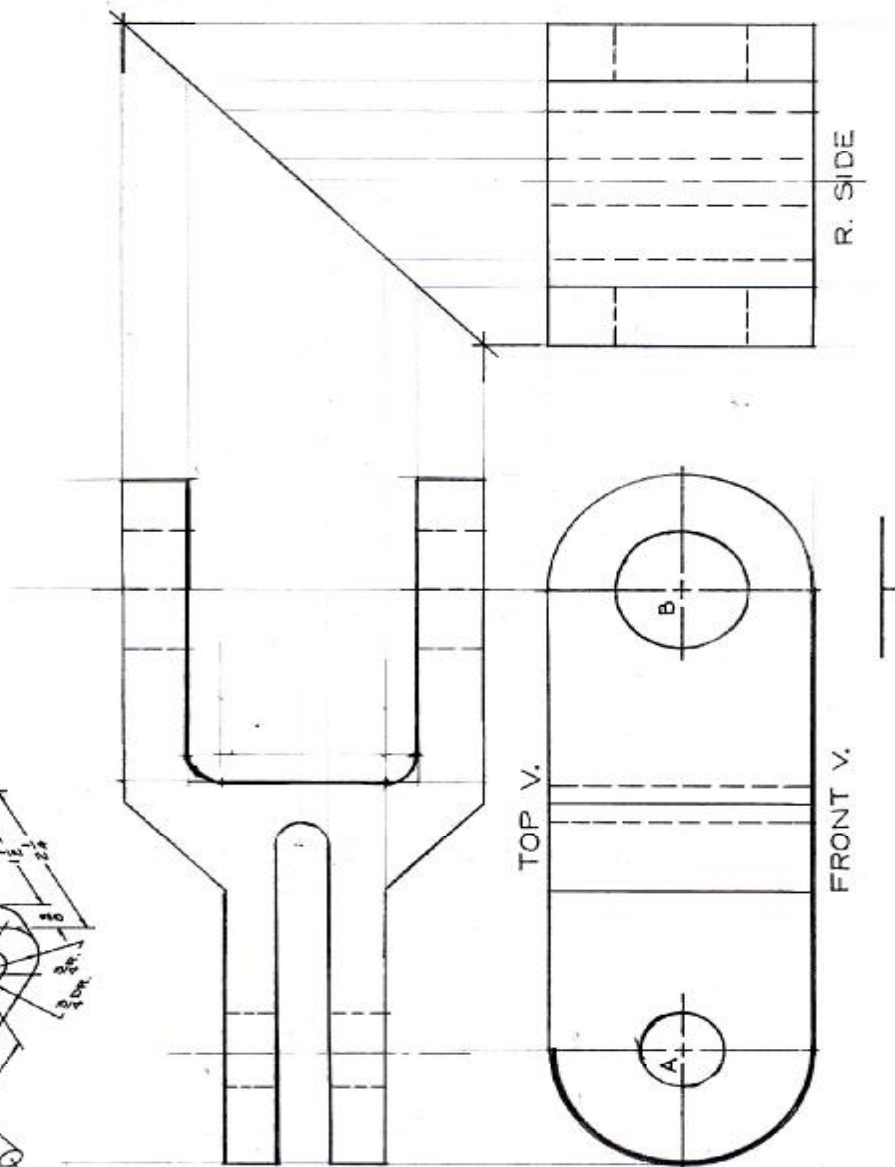


ORTHOGRAPHIC PROJECTION	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	21
	FILE NO. <u>23</u> SECTION <u>7</u>		

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USING INSTRUMENTS, DRAW THE FRONT, TOP AND RIGHT-SIDE VIEWS
OF THE CONNECTOR LINK IN THE ALLOTTED SPACES.
BEGIN WITH THE GIVEN CENTERS A AND B.
SHOW HIDDEN LINES AND CENTER LINES.
SCALE: FULL SIZE



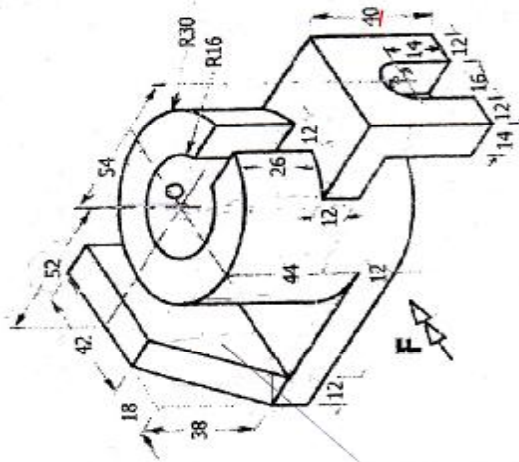
ORTHOGRAPHIC PROJECTION

NAME: SAIED MANSOUR
FILE NO: 36
SECTION: 6

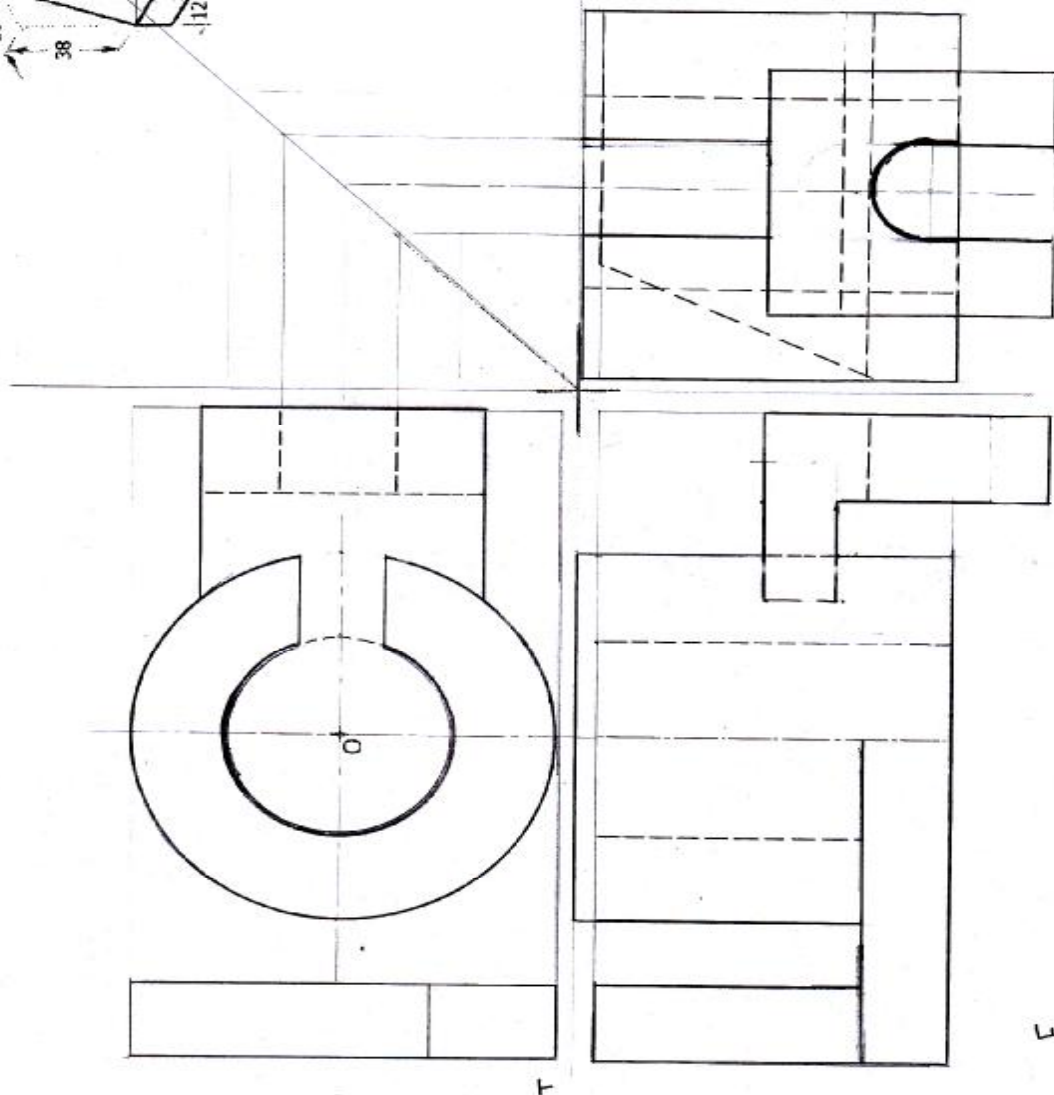
GRADE

22

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Draw
 - FRONT VIEW
 - TOP VIEW
 - R SIDE VIEW



R.S

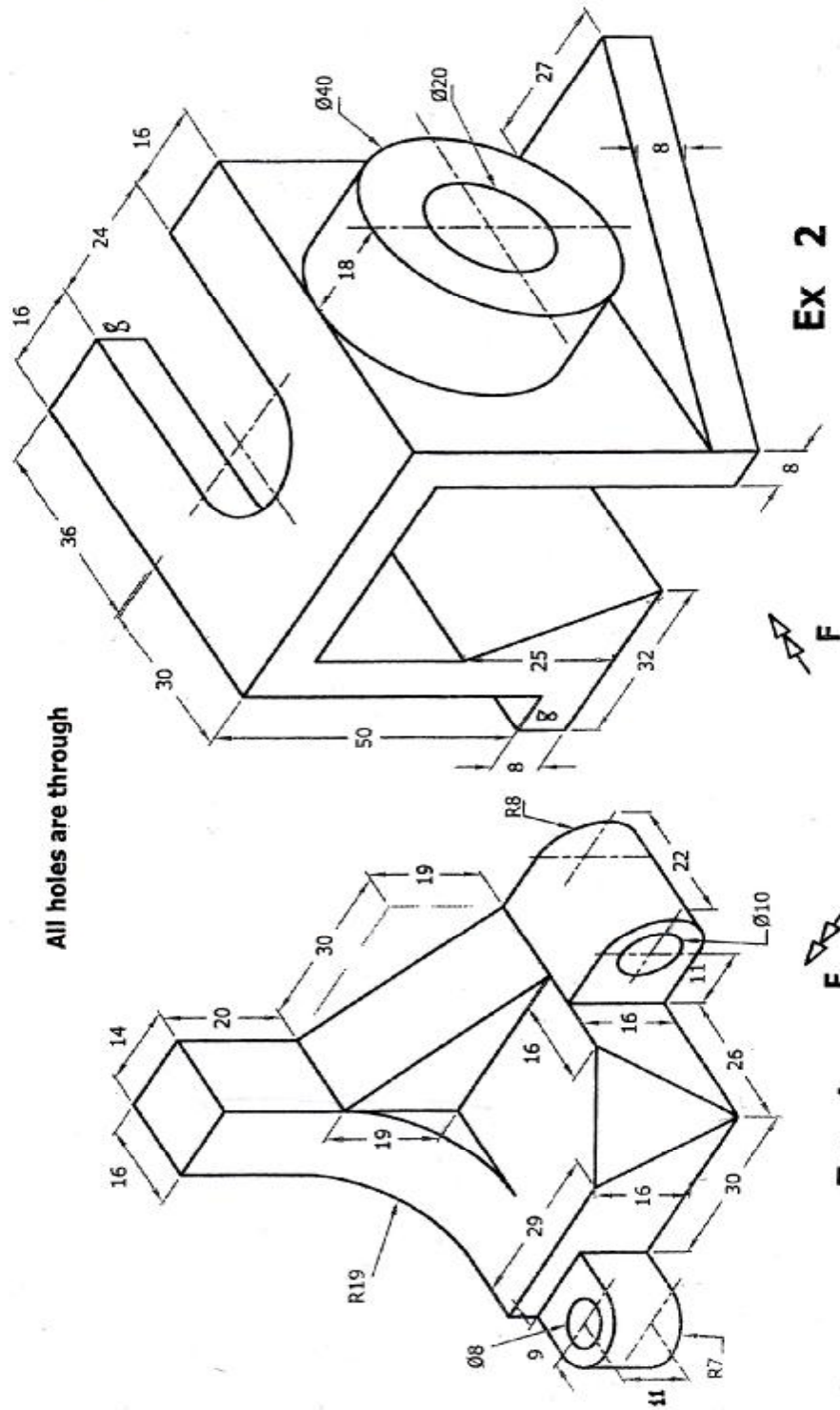
ORTHOGRAPHIC PROJECTION	NAME SAIED MANSOUR FILE NO. 36 SECTION 6	GRADE	23
-------------------------	---	-------	----

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2

Draw each one on its separate attached paper

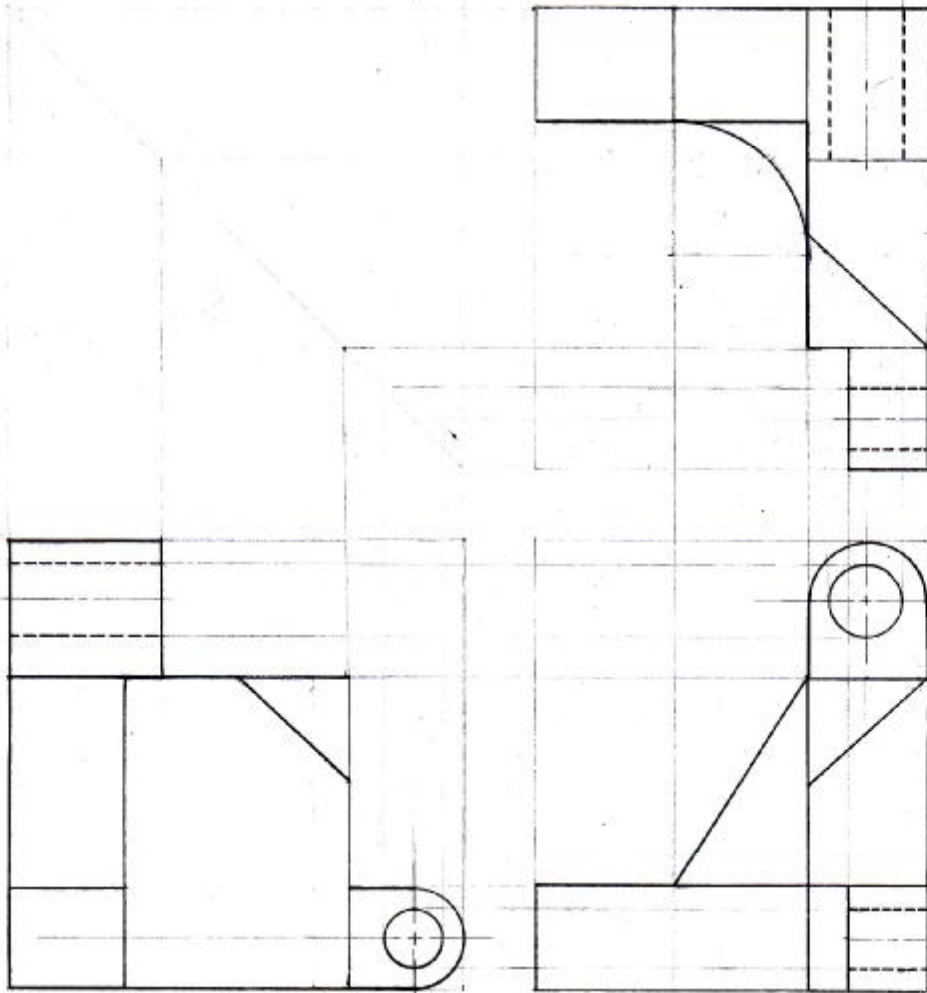
All holes are through



Ex 2

Ex 1

MULTI VIEWS	NAME _____	GRADE _____	24
	FILE NO. _____ SECTION _____		

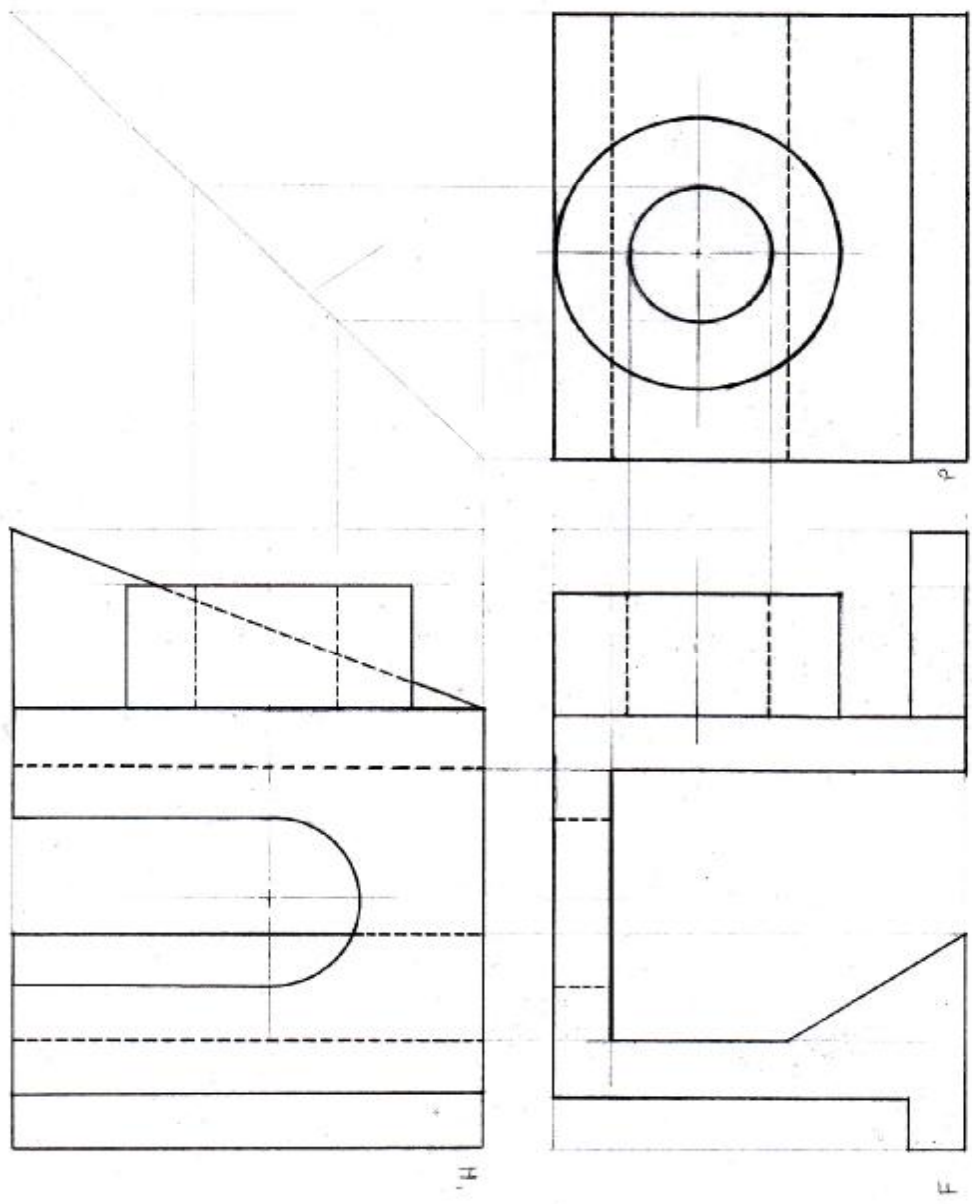


SHEET NO 24.E.1

NAME MOSTAFA ZAHILAN

SECTION 7

FILE NO 23



SHEET 24 EX2

SECTION 7

NAME MOSTAFA ZAHILAN

FILE NO 23

تدريبات :

Sketch 3-view orthographic projection.

ORTHOGRAPHIC WRITING

22

تدريبات :

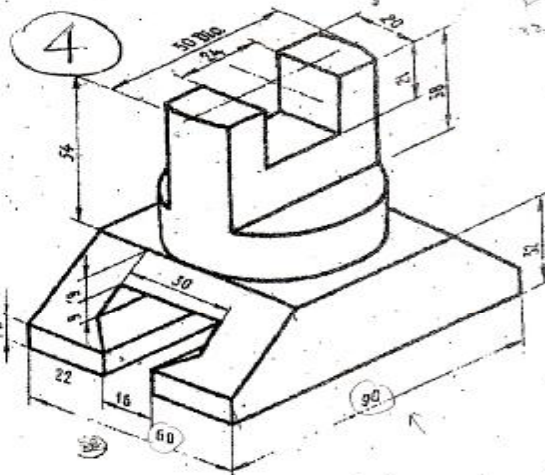
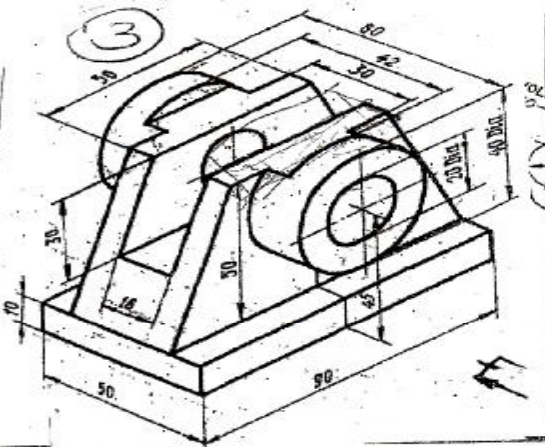
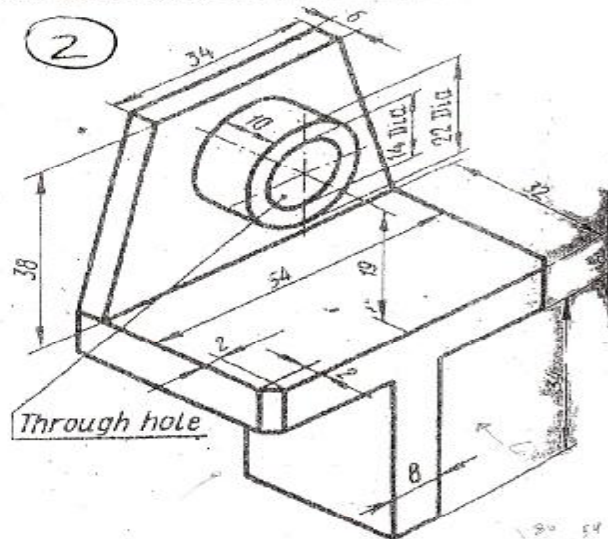
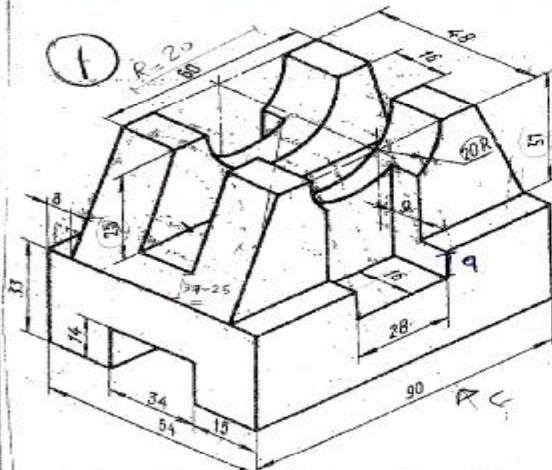


Course name: Engineering drawing

Sheet no: 10

The University of Jordan
Faculty of Engineering & Technology
Mechanical Engineering Department

Draw the following Exercises



تدريبات :

7 marks

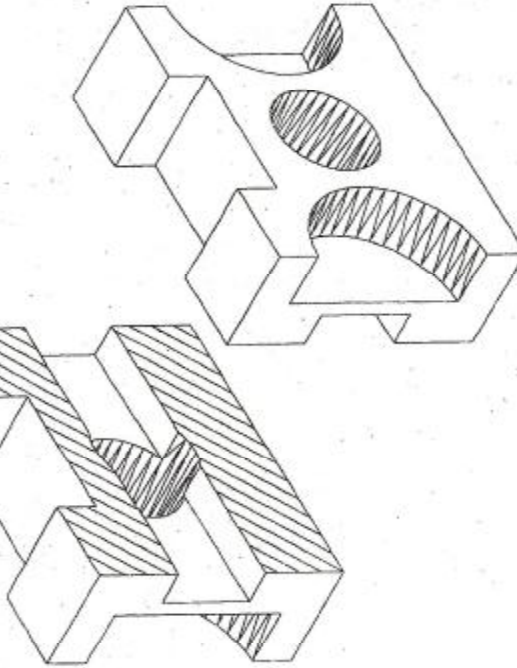
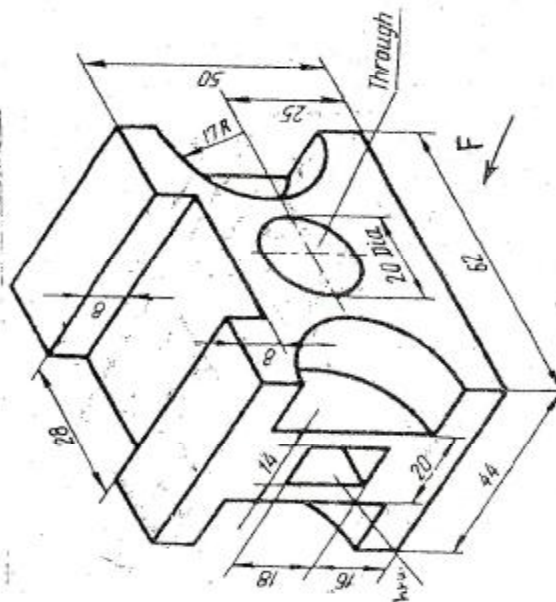
2) Draw the following orthographic projection views in third angle projection.

a: Frontal view

b: side view

c: top view

Scale: 1:1



: امتحان الـ Mid



UNIVERSITY OF JORDAN
FACULTY OF ENGINEERING & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT

Engineering Drawing & Descriptive Geometry (0904131)
Fall Semester, 2011/2012

Mid Term Exam, Dec. /3rd/2011

Student Name: _____

Registration No.: _____

Serial No.: _____

36

Question	1 (24 points)	2 (18 points)	3 (18 points)	Grade Out of 60	Grade Out of 15
Grade	20	7	6	33	8.25

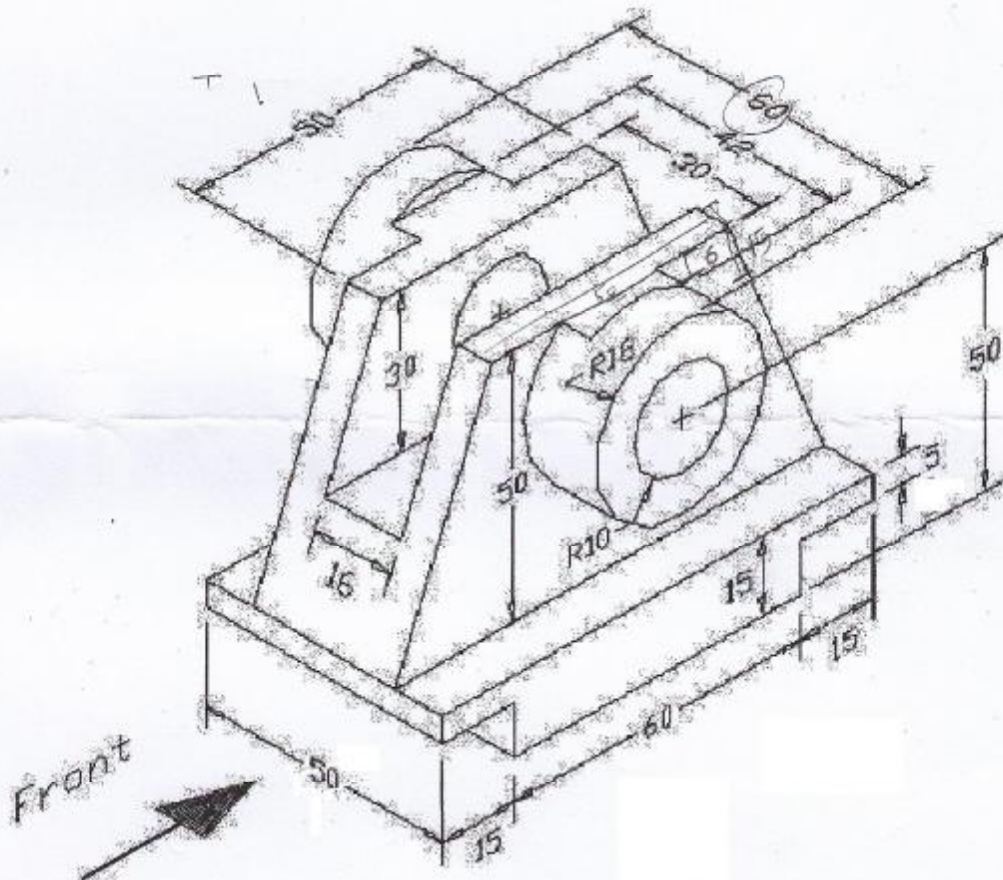
9

Q1) (24 points)

On a separate A4-paper (the given Answer Sheet), draw the three orthographic projections of the object shown below:

- 1- Front view. 2- Top view. 3- Right-side view.

Note: Be careful, the direction of the Front View is indicated by the labeled arrow head.



Student Name:

Section:

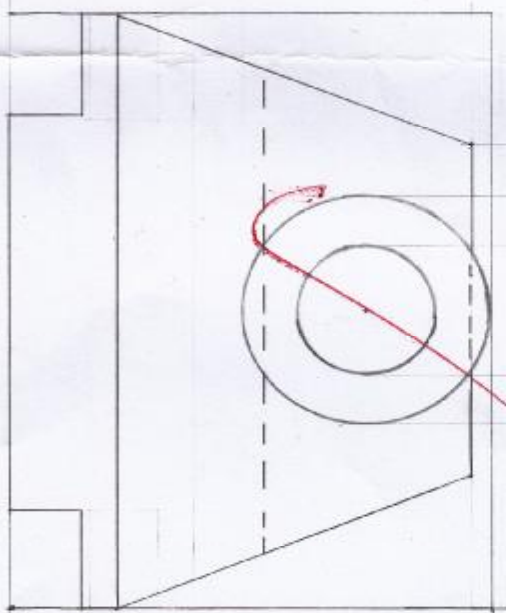
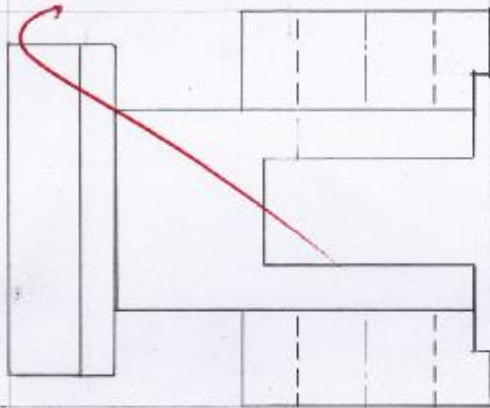
Mid Term Exam
Dec. /3rd/2011

Reg. No.:

Serial No.:

Answer Sheet for Question 1

(24 points)



Student Name:

Section:

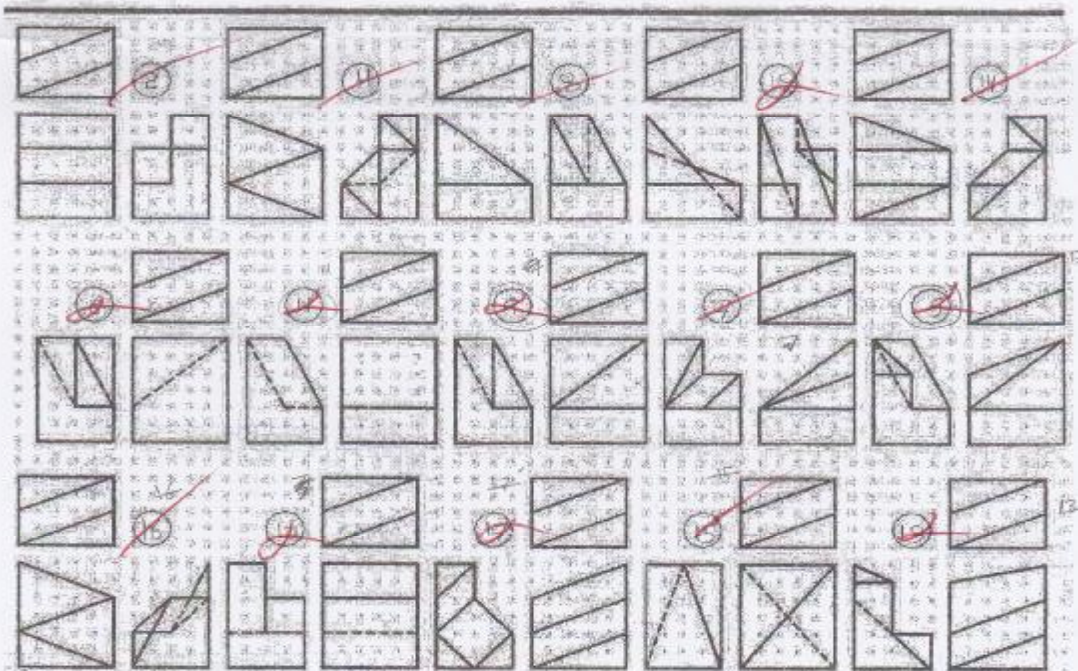
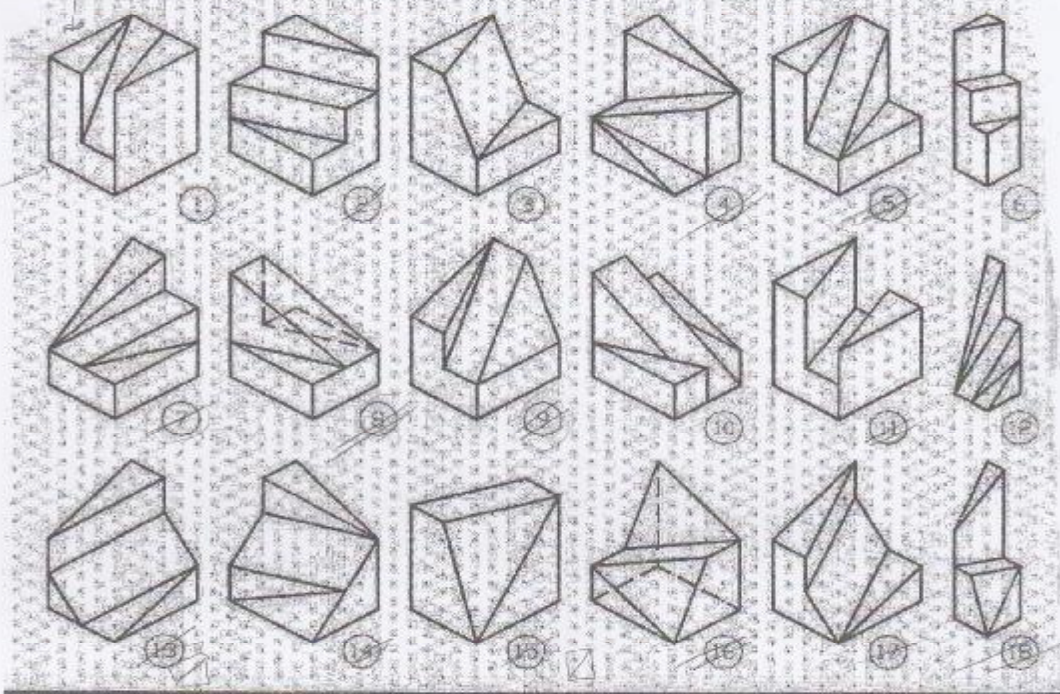
Mid Term Exam
Dec. /3rd/2011

Reg. No.:

Serial No.:

Q2) (18 points)

Match the isometric drawing with its correct orthographic views.



Student Name:

Section:

Mid Term Exam

Reg. No.:

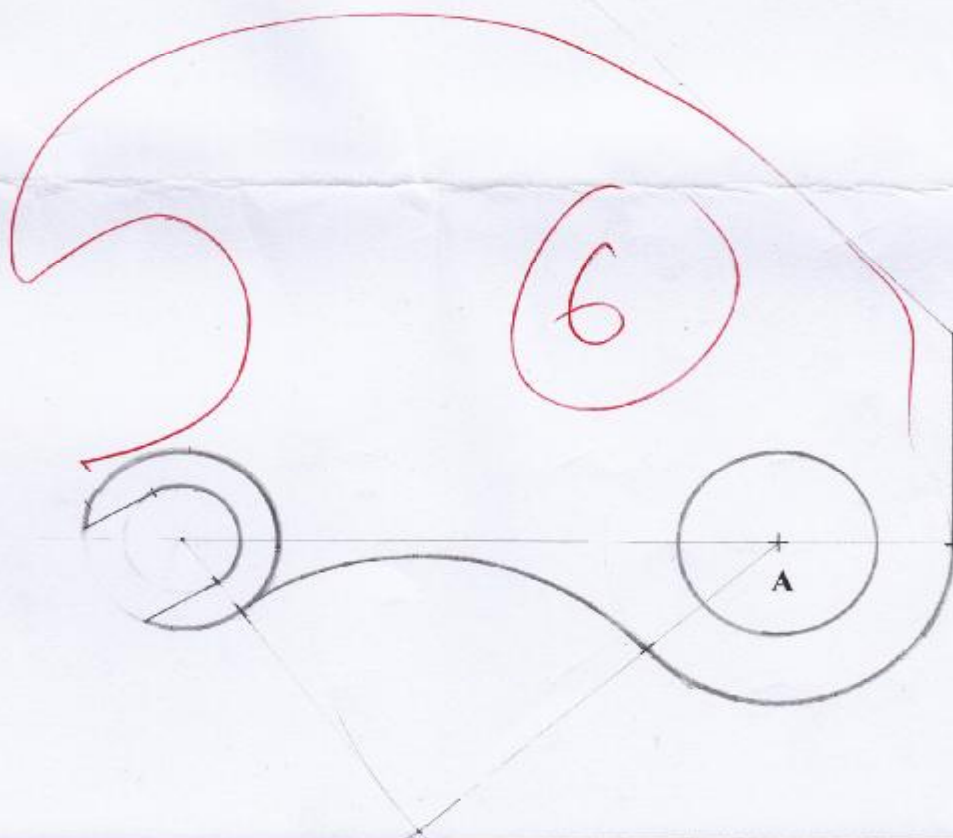
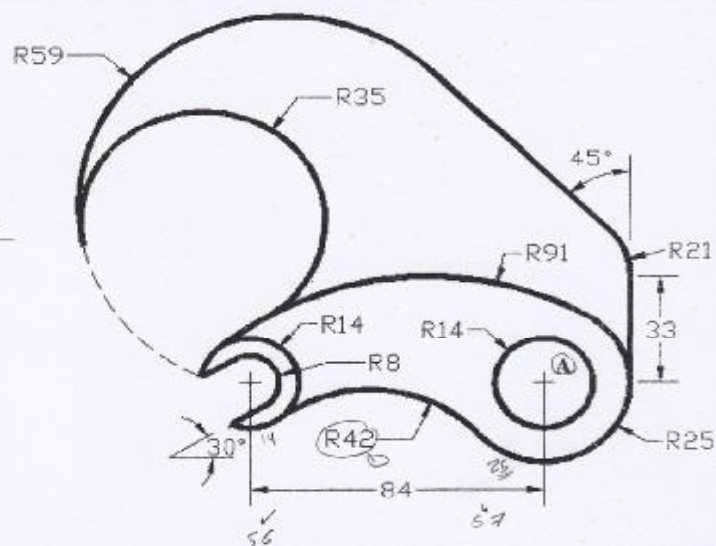
Serial No.:

Dec. /3rd/2011

Q3) (18 points)

Starting from point A, prepare an instrumental drawing for the figure shown. Show clearly all centers of circles and arcs. Locate all points of tangency.

All dimensions are in millimeters.



Student Name:

Section:

Reg. No.:

Serial No.:

Mid Term Exam
Dec. /3rd/2011

Section

نقوم بقطع الجسم من خلال سطح عمودي على المسقط الامامي وذلك لتوضيح معالم الجسم وللتخلص من الـ (Hidden line) ،،

Types of section:

1. Full section >>>> 50%

يستخدم في الاجسام المتماثلة

2. Half section >>>> 25%

يستخدم في الاجسام المتماثلة بشكل رباعي

3. Offset section

قطع متعرج

* ملاحظة :

عادة في ال section نرسم المسقط الامامي والعلوي فقط ،، ولا نرسم المسقط الجانبي الا اذا طلب السؤال ذلك .

* خطة الحل :

1. (Orthographic Projection) .
2. نرسم خط القطع في المسقط العلوي .
3. نهشر في المسقط الامامي المنطقة التي لامسها خط القطع .

* قاعدة :

لا يجوز لخطوط التهشير في المسقط الامامي أن تلمس خط visible أو hidden .

الاشياء التي لا نهشرها :

1. أي جزء داخل الجسم مر عليه خط القطع دون أن يلمسه (مر من خلاله) .

مثل : Through Hole

2. الـ Web ،،

قطعة مثلثية تستخدم لربط الجسم ليست جزءاً منه لا نهشرها .

* المعيار الذي نختار لأجله نوع التهشير :

<<<<<<<

التمائل في الجسم ،، ونختار خط القطع بحيث نتخلص من خطوط

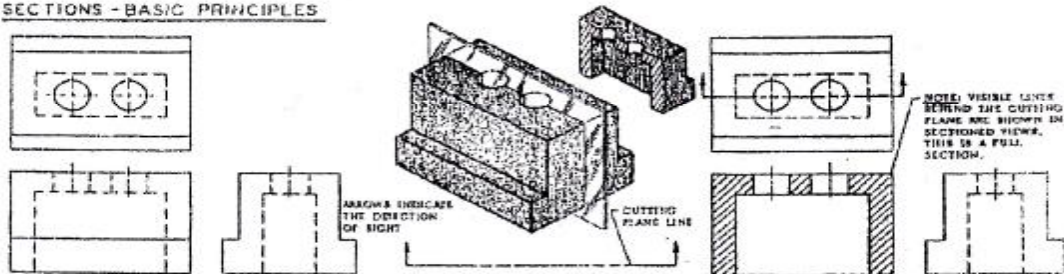
الـ (Hidden line) .

Full-Sectional Views

Full Section

This is the normal way of cutting a section. The cutting plane lies on a single plane and passes through the entire object. Half of the object is removed to show the internal detail. The foregoing example is a full section.

SECTIONS - BASIC PRINCIPLES

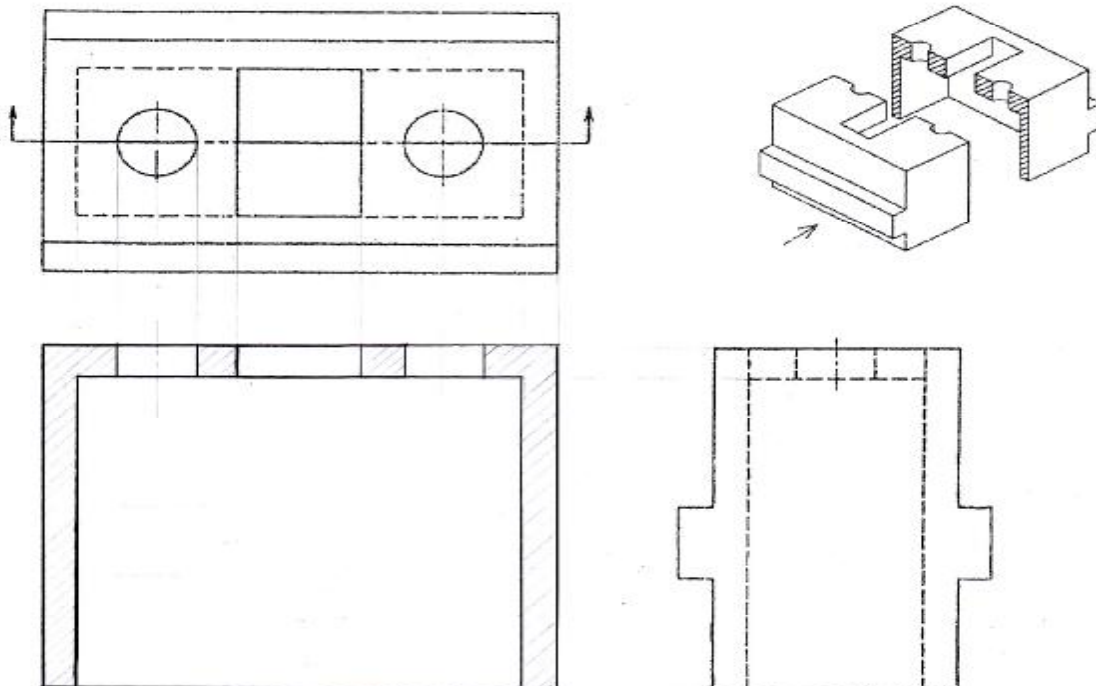


CONVENTIONAL VIEWS DO NOT ALWAYS CLEARLY SHOW A COMPLETE PICTURE OF AN OBJECT. SECTIONAL VIEWS MAY BE USED TO IMPROVE CLARITY AND TO REVEAL INTERNAL FEATURES NOT SEEN IN A REGULAR VIEW.

A CUTTING PLANE IS SHOWN IN THE PICTORIAL ABOVE. THE CUTTING PLANE IS INDICATED IN VIEWS WHERE IT APPEARS AS AN EDGE BY THE HEAVY LINE SHOWN ABOVE. THE PORTION OF THE OBJECT IN FRONT OF THE CUTTING PLANE IS REMOVED AS SHOWN ABOVE.

THE SECTIONAL VIEW IS SHOWN ABOVE. THE PORTION CUT BY THE IMAGINARY CUTTING PLANE IS SECTION LINED WITH THIN OR FINE LINES. HIDDEN LINES ARE OMITTED IN SECTIONAL VIEW UNLESS ABSOLUTELY NECESSARY TO DESCRIBE THE PART.

PROBLEM: COMPLETE THE FULL SECTION BELOW.



FULL SECTION

SECTIONAL VIEWS

NAME MOSTAFA ZAHLAN

FILE NO. 23 SECTION 7

GRADE

25

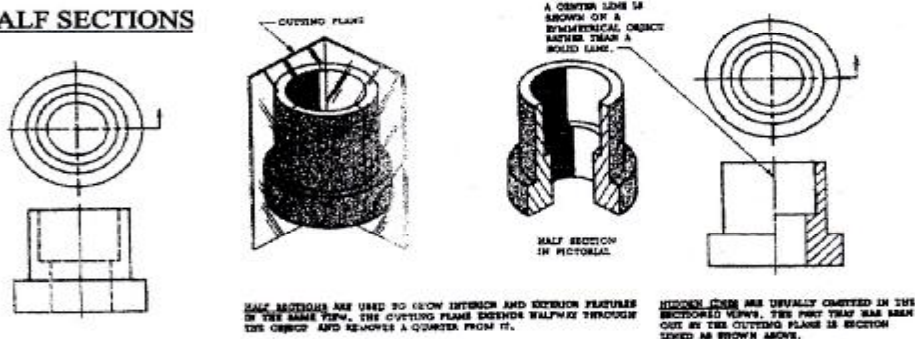
Chosen by Dr. Hashem Alkhalidi, University of Jordan

Half-Sectional Views

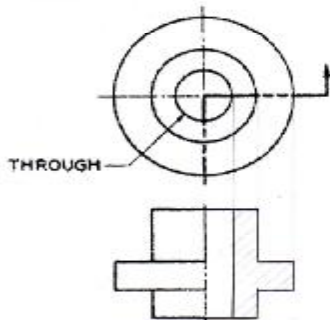
Half Section

This technique is used to show the exterior and interior of a symmetrical object in a single projection view. The cutting plane cuts halfway to the axis or center of the object. A quarter of the object is imagined to be removed. The resulting drawing view is a half outside and half section view.

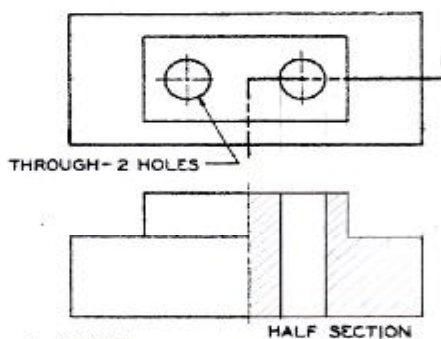
HALF SECTIONS



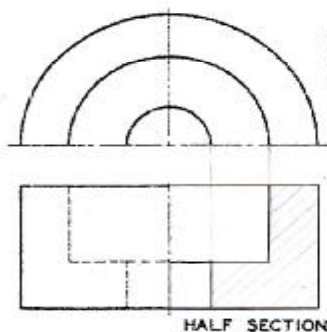
1. COLLAR COMPLETE THE HALF SECTION.



2. COLUMN BASE COMPLETE THE HALF SECTION

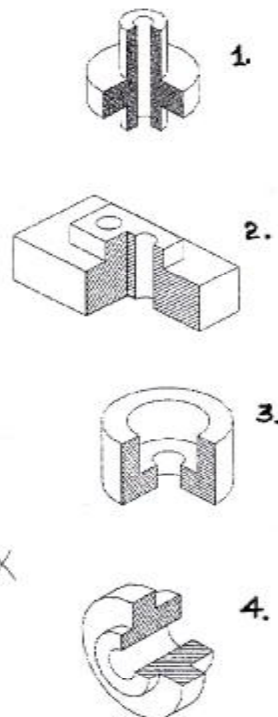
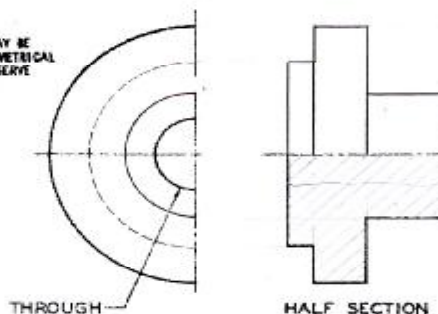


3. SOCKET COMPLETE THE HALF SECTION.



HALF VIEWS MAY BE USED FOR SYMMETRICAL VIEWS TO CONSERVE SPACE.

4. PULLEY COMPLETE BOTH VIEWS.



SECTIONAL VIEWS

NAME MOSTAFA ZAHLAN
FILE NO. 23 SECTION 7

GRADE

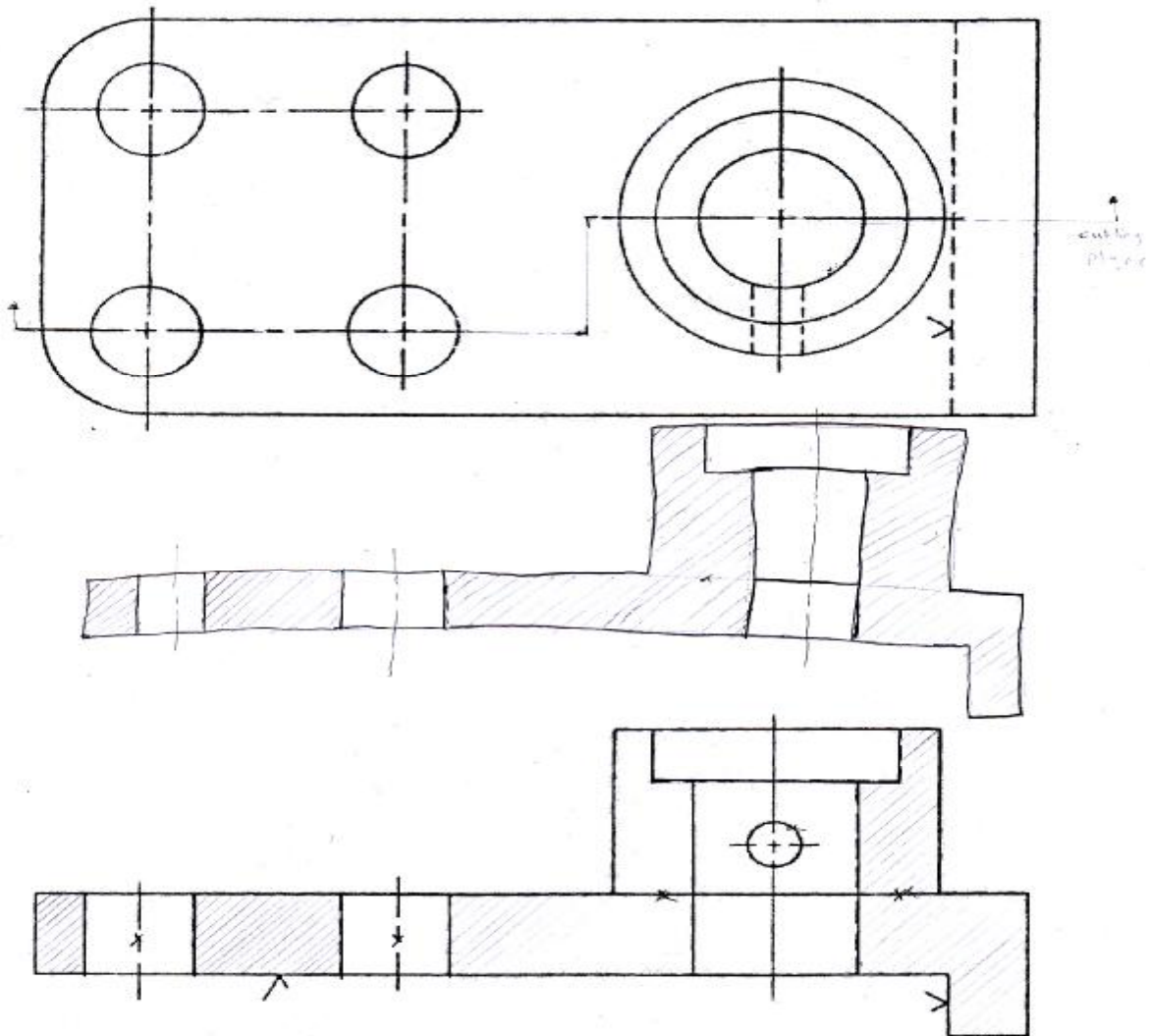
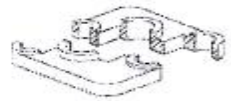
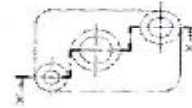
26

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Offset-Sectional Views

Offset Section

If the important internal features of an object are not lying on a single plane, a full section may not be able to show all the details. Offset section is a technique whereby the cutting plane offsets to pass through various features that would otherwise be missed by a full section. Thick lines should be used at the change of direction of the cutting plane.



SECTIONAL VIEWS

NAME MOSTAFA ZAHLAN

FILE NO. 23

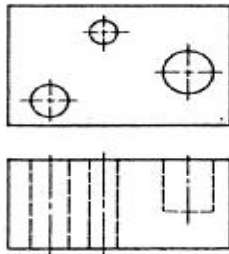
SECTION 7

GRADE

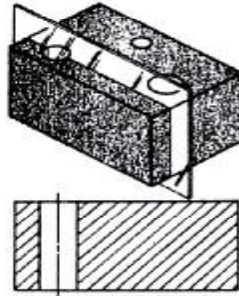
27

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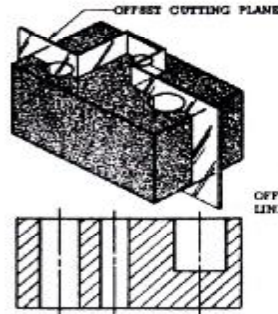
OFFSET SECTIONS



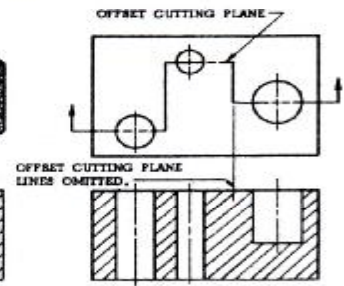
PROBLEM: SECTION THE OBJECT ABOVE TO SHOW ITS CHARACTERISTIC FEATURES BEST.



A FULL SECTION CANNOT BE DRAWN TO PASS THROUGH ALL OF THE HOLES -- ONLY ONE.

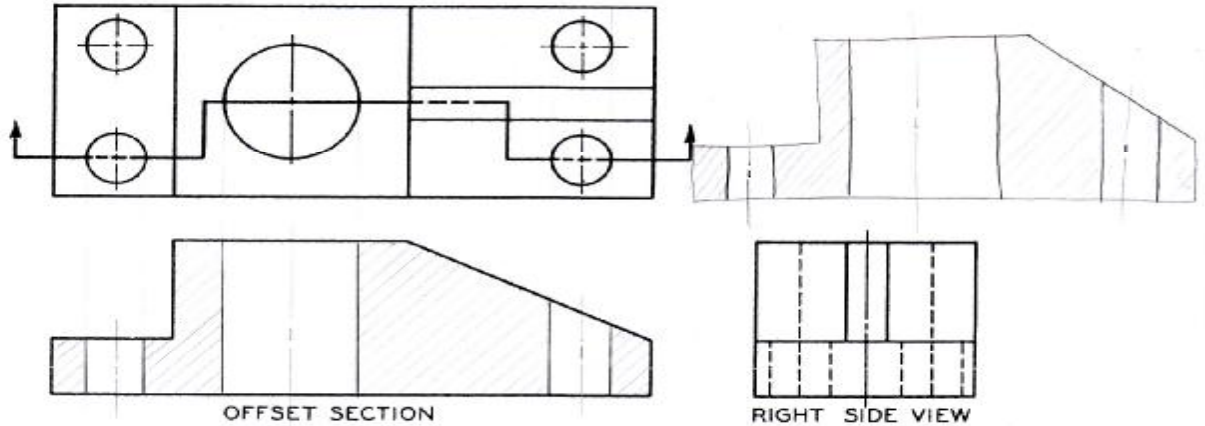


AN OFFSET SECTION MAY BE DRAWN TO PASS THROUGH THE THREE HOLES WHICH GIVES A MORE CHARACTERISTIC VIEW OF THE OBJECT.

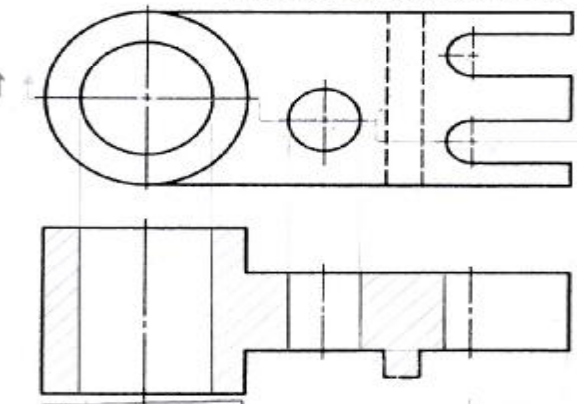
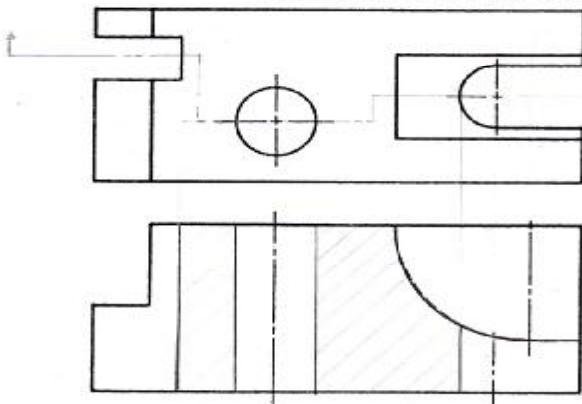


NORMAL POSITION FOR AN OFFSET SECTION IS SHOWN ABOVE. NOTE THAT THERE ARE NO LINES IN THE SECTIONED VIEW TO INDICATE THAT THE CUTTING PLANE WAS OFFSET.

1. MOUNT COMPLETE THE VIEWS.



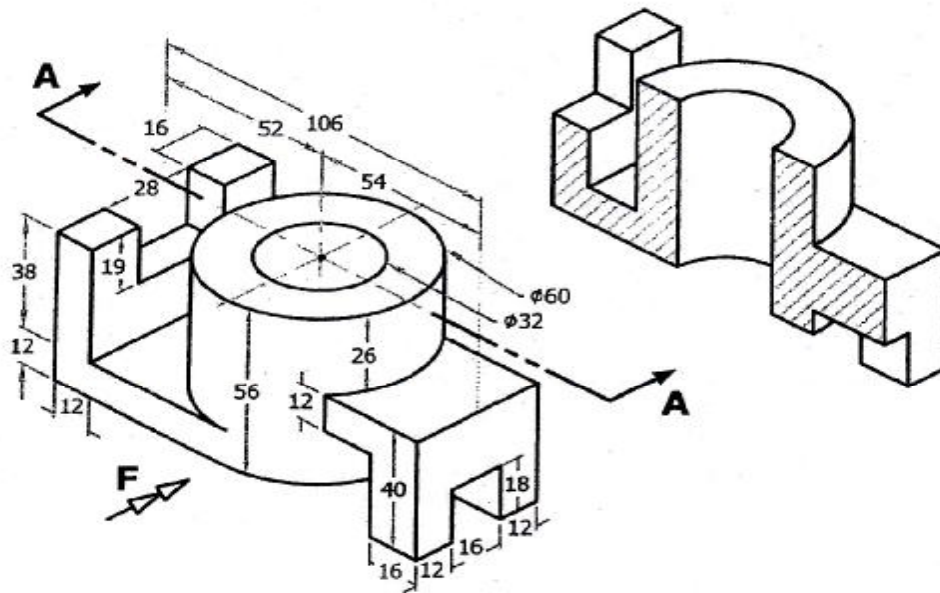
2. CRANK SLOT CONVERT THE FRONT VIEW INTO AN OFFSET SECTION. SHOW CUTTING PLANE.



OFFSET SECTION	NAME <u>MUSTAFA ZALAN</u>	GRADE <u>28</u>
	FILE NO. <u>23</u> SECTION <u>7</u>	

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Manual Drawing: 3rd Angle Projection - SECTIONS

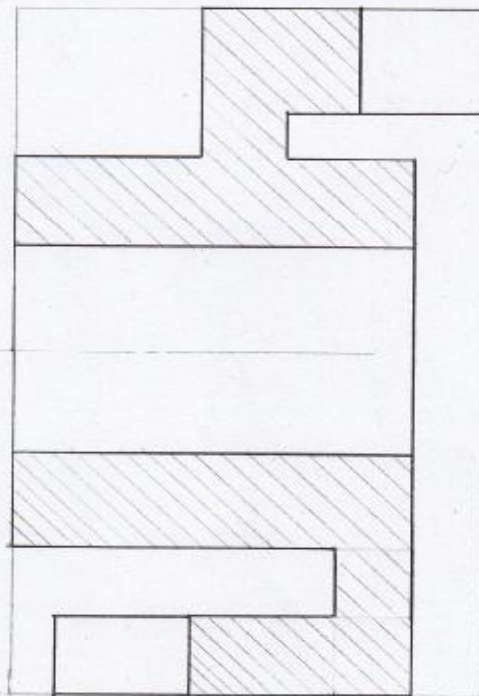


DRAW BELOW FULL FRONT SECTION A-A [SCALE 1:1]

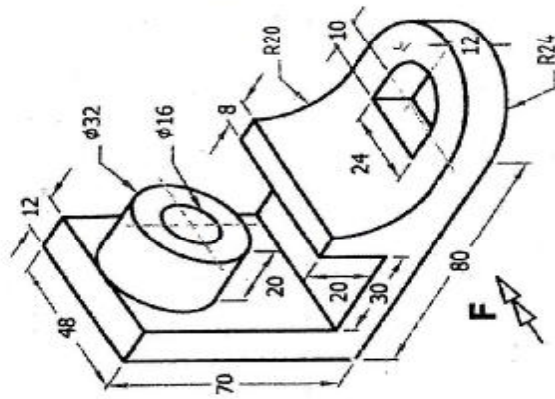
SECTIONAL VIEWS	NAME _____	SECTION _____	GRADE _____	29
	FILE NO. _____			

Chosen by Dr. Hashem Alkhalidi, University of Jordan

Slab 29



Manual Drawing: 3rd Angle Projection - SECTIONS

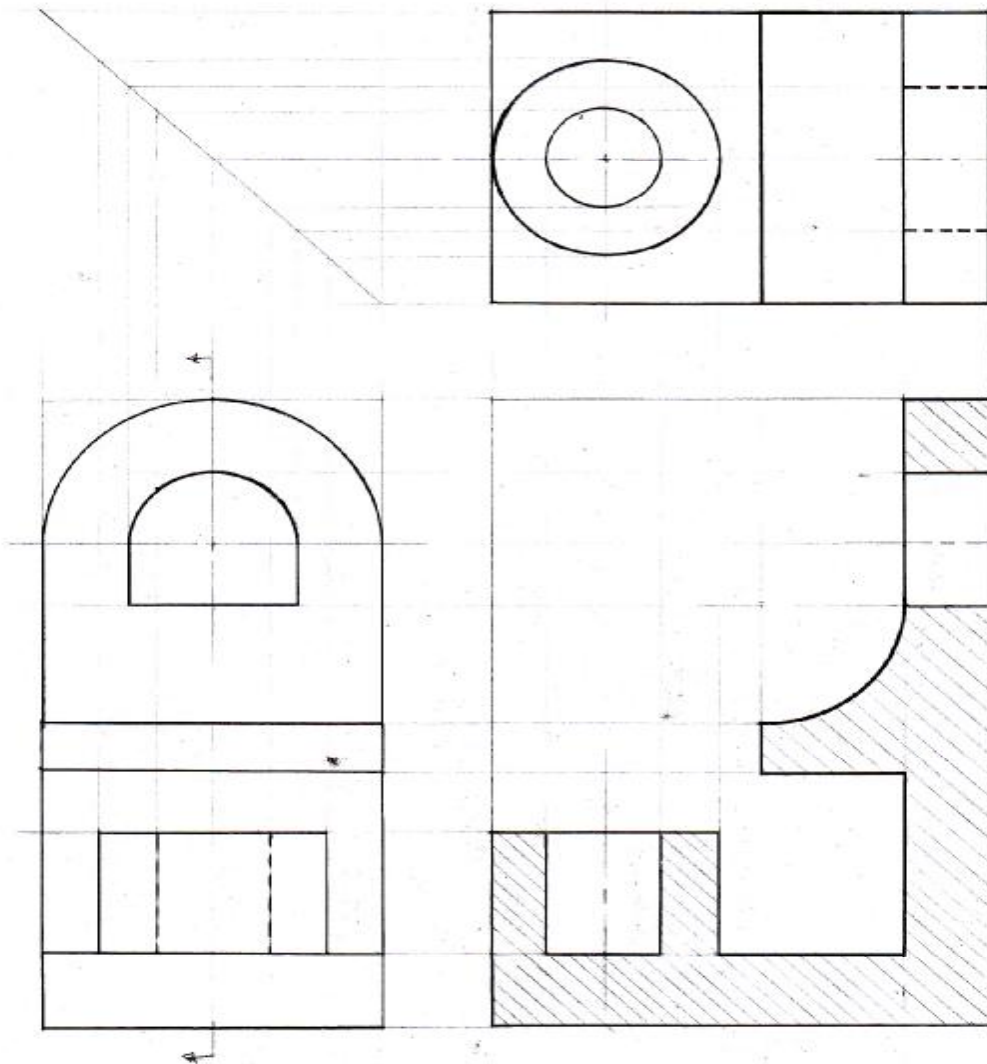


DRAW AT SCALE 1:1
 - FULL FRONT SECTION
 - TOP VIEW
 - RIGHT SIDE VIEW

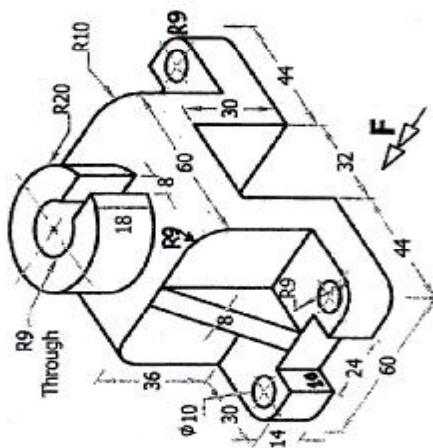
SECTIONAL VIEWS	NAME <input type="text"/>	SECTION <input type="text"/>	GRADE	30
	FILE NO. <input type="text"/>			

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Sheet 30
Done

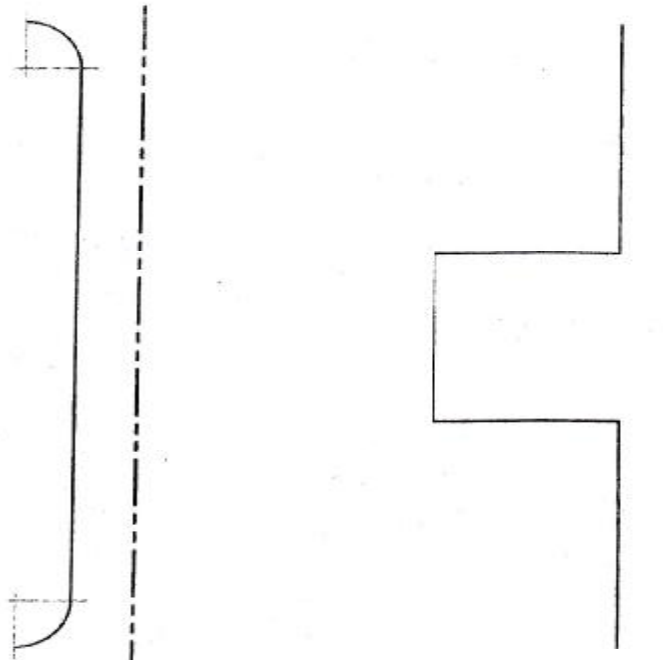


Manual Drawing: 3rd Angle Projection - SECTIONS



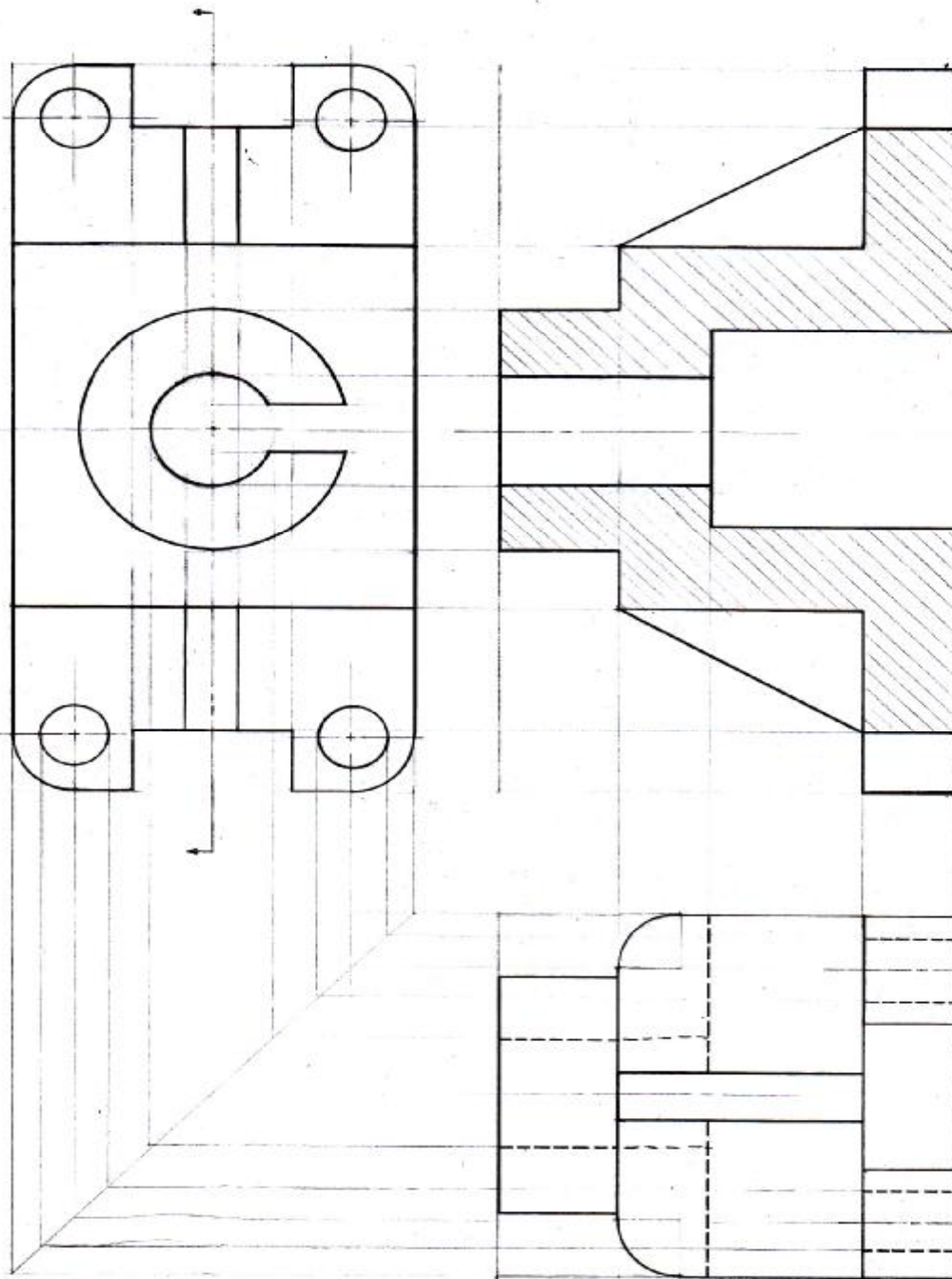
DRAW SCALE 1:1

- FRONT FULL SECTION
- TOP VIEW
- LEFT SIDE VIEW



SECTIONAL VIEWS	NAME _____	SECTION _____	GRADE _____	31
	FILE NO. _____			

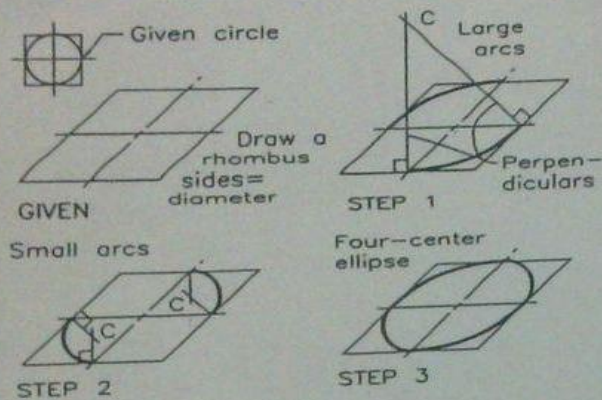
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NAME: MOSTAFA ZAHLAN FILE NUMBER: 23

Sheet → 31 SECTION: 7

Oblique Drawing



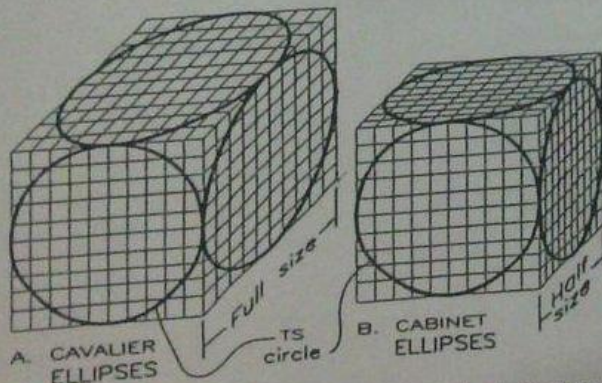
Constructing a four-center ellipse in oblique.

Given Block in the circle to be drawn in oblique with a square tangent to the circle. This square becomes a rhombus on the oblique plane.

Step 1 Draw construction lines perpendicular to the points of tangency to locate the centers for drawing two segments of the ellipse.

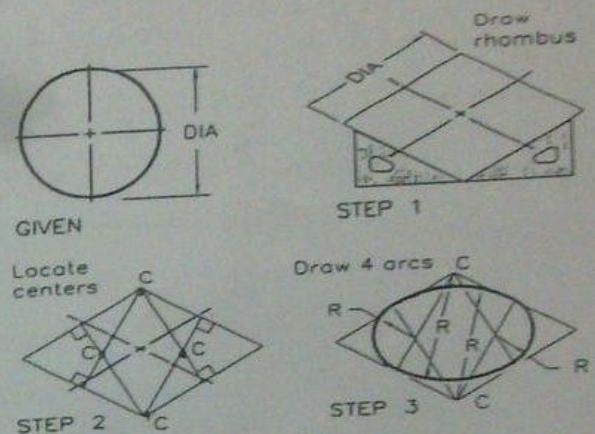
Step 2 Locate the centers for the two remaining arcs with perpendiculars drawn from adjacent tangent points.

Step 3 Draw the four arcs, which yield an approximate ellipse.



Circular features on the faces of cavalier and cabinet obliques are compared here. Ellipses on the receding planes of cabinet obliques must be plotted by coordinates. The spacing of the coordinates along the receding axis of cabinet obliques is half size.

Isometric Drawing

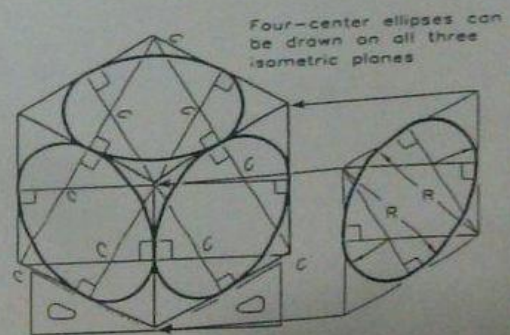


The four-center ellipse method.

Step 1 Use the diameter of the given circle to draw an isometric rhombus and the centerlines.

Step 2 Draw light construction lines perpendicularly from the midpoints of each side to locate four centers.

Step 3 Draw four arcs from the centers to represent an ellipse tangent to the rhombus.



Four-center ellipses may be drawn on all three surfaces of an isometric drawing.

رسم المنظور الثلاثي

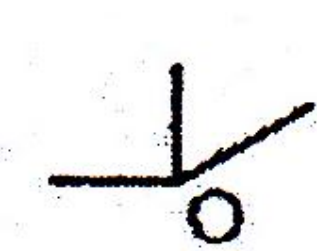
المعطى : المساقط الثلاث .
المطلوب : رسم الجسم ثلاثي الابعاد .

الرسم إما أن يكون Oblique أو Isometric وقد تم توضيح الاختلاف بينهم .

خطة الحل :

1. نحسب مقدار طول الابعاد الثلاث .
2. نرسم المكعب Oblique أو Isometric بالابعاد الثلاث .
3. نبدأ بالرسم من الجهة التي لا تحتوي على حافة Edge في المساقط فنرسمها في الوجه الخاص بها .
4. نقوم برسم خطوط البعد الثالث من كل زاوية في الوجه الذي رسمناه .

حيث ان كل الرسم يعتمد على 3 خطوط بزواياها وأي خط مساعد نريد رسمه نرسمه باستخدام هذه الخطوط .



Oblique



Isometric

* لرسم القطع الناقص :

نرسم اولاً المعين ثم نتبع طريقة الرسم السابقة لرسمه ، ، أما لرسم الـ fillet في الجسم نجد مركزه ثم نرسمه في الوجه الاول ، ، ثم نجد مركزه في الوجه الخلفي ونرسمه في الوجه الخلفي ايضاً ..

* في حالة رسم الـ Oblique وفي الـ front <<<
نظهر الدائرة كما هي وليست قطع ناقص (البيضوي) .

* مصطلحات :

1. Cavalier <<< نضاعف الابعاد الثلاث في الرسم .
2. Cabinet <<< نضاعف بعدين فقط فلا نضاعف الـ depth .

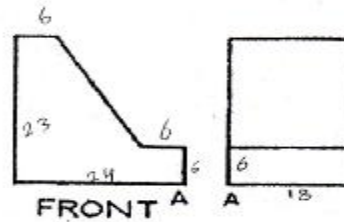
Oblique Drawings - Cavalier and Cabinet

Part A

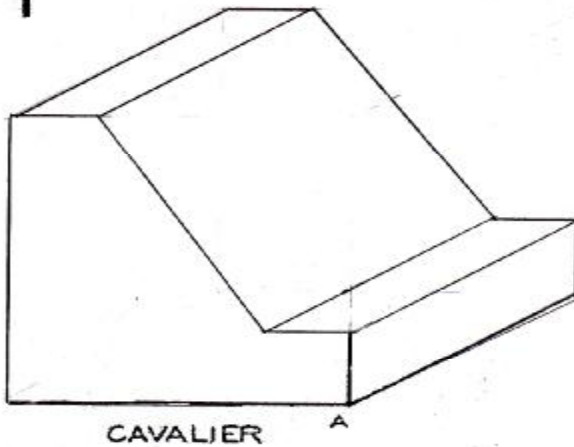
Note: Cavalier is the full depth and Cabinet is the half depth.

DRAW CAVALIER AND CABINET OBLIQUE PICTORIALS OF EACH PROBLEM USING INSTRUMENTS.

DOUBLE THE DIMENSIONS OF EACH PROBLEM USING THE DIVIDERS.



1

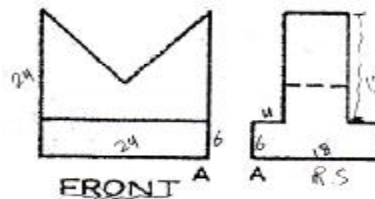


2

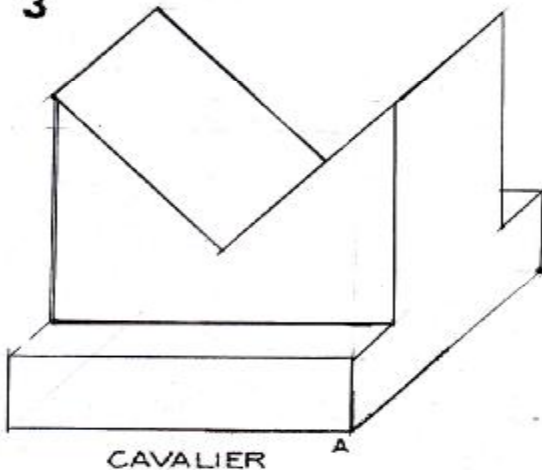


DRAW CAVALIER AND CABINET OBLIQUE PICTORIALS OF EACH PROBLEM USING INSTRUMENTS.

DOUBLE THE DIMENSIONS OF EACH PROBLEM USING THE DIVIDERS.



3



4



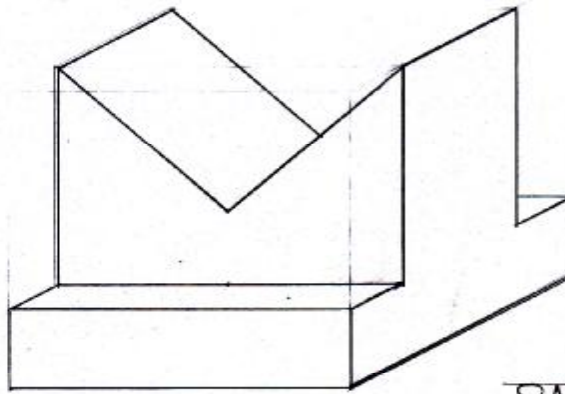
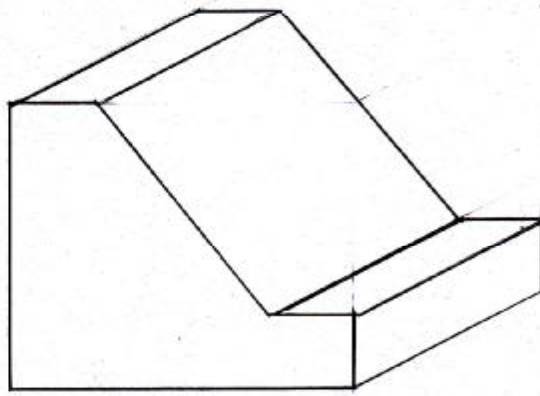
OBLIQUE DRAWINGS

NAME: SAIED MANSOUR
FILE NO. 36 SECTION 6

GRADE

32

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SAEED MANSOUR

	NAME	SECTION	GRADE	32
	FILE NO.			

Chosen by Dr. Hasbem Alkhalidi, University of Jordan

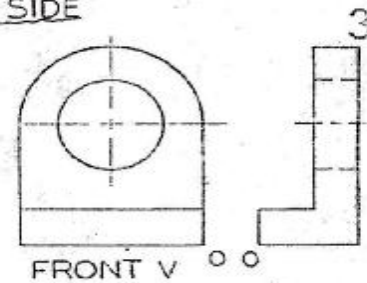
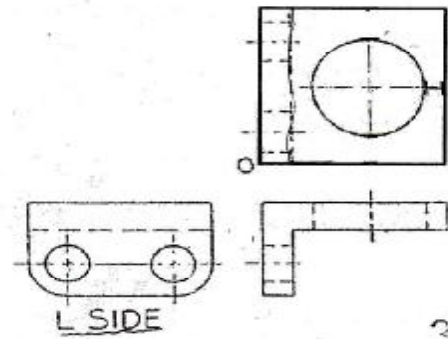
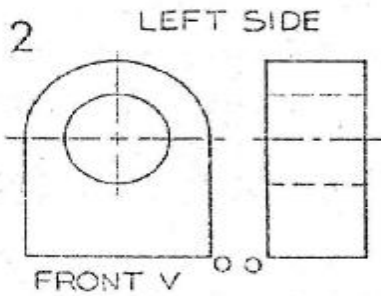
Oblique Drawings - Cavalier and Cabinet

Part B

Note: Cavalier is the full depth and Cabinet is the half depth.

1

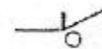
DOUBLE THE DIMENSIONS OF THE ORTHOGRAPHIC VIEWS AND DRAW CAVALIER OBLIQUES OF 1 AND 2, AND A CABINET OBLIQUE OF 3.



FRONT VIEW

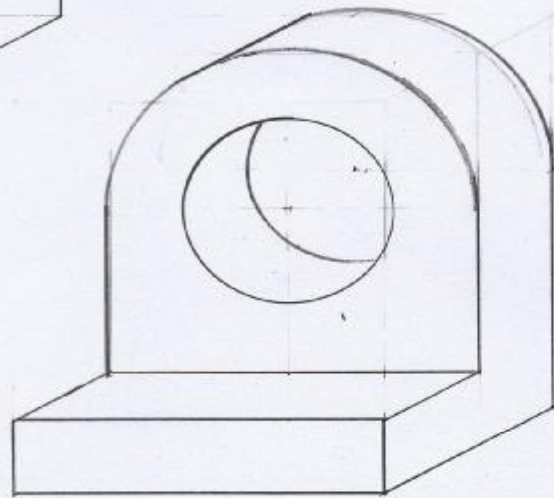
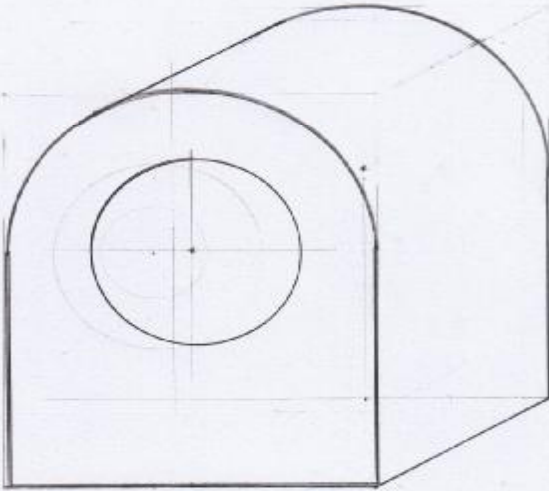
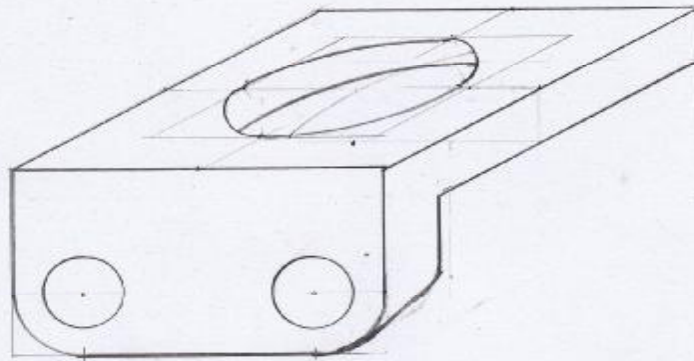


FRONT VIEW



OBLIQUE DRAWINGS	NAME _____	SECTION _____	GRADE _____	33
	FILE NO. _____			

Chosen by Dr. Hassem Alkhalidi, University of Jordan



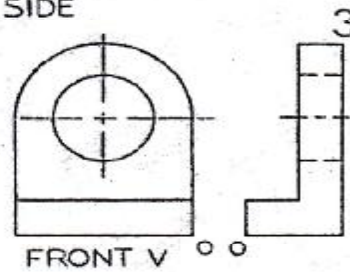
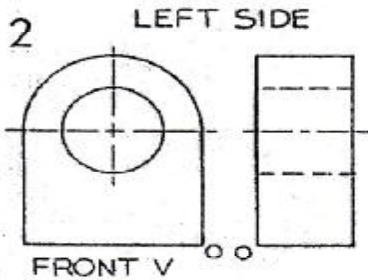
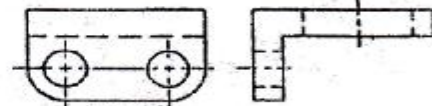
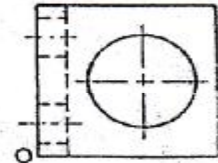
	NAME	SAEED MANSOUR	GRADE	33
	FILE NO.	36	SECTION	

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Isometric Drawings - Part A

1

DOUBLE THE DIMENSIONS OF THE ORTHOGRAPHIC VIEWS AND DRAW CAVALIER OBLIQUES OF 1 AND 2, AND A CABINET OBLIQUE OF 3.



CONNECT THE CORNER POINTS BELOW WITH LIGHT CONSTRUCTION LINES USING INSTRUMENTS. USING THE DIVIDERS TO TRANSFER MEASUREMENTS, CONSTRUCT AN ISOMETRIC PICTORIAL OF

FRONT VIEW



FRONT VIEW



ISOMETRIC DRAWINGS

NAME

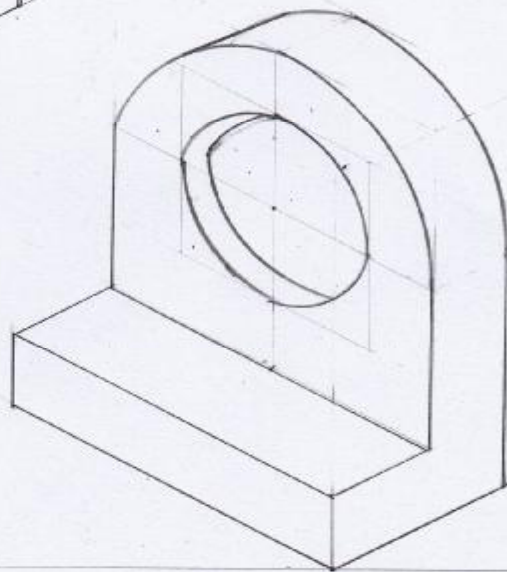
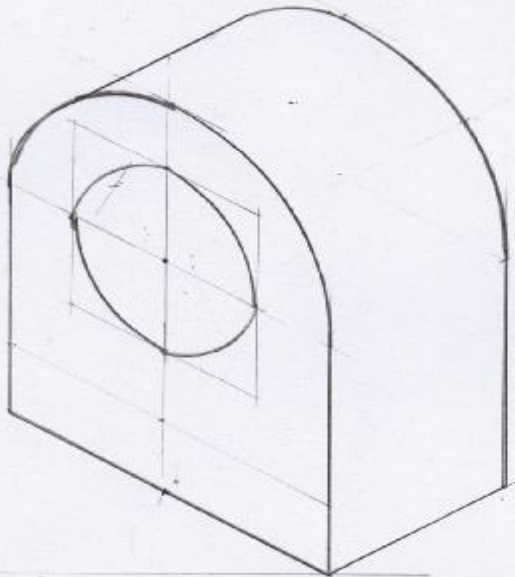
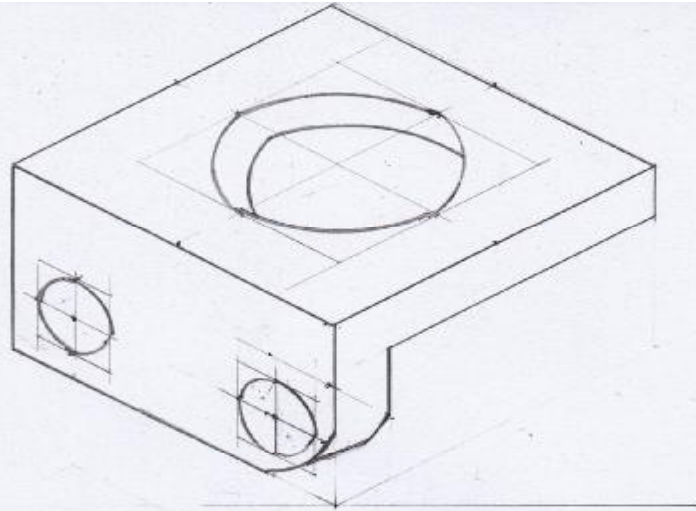
FILE NO.

SECTION

GRADE

34

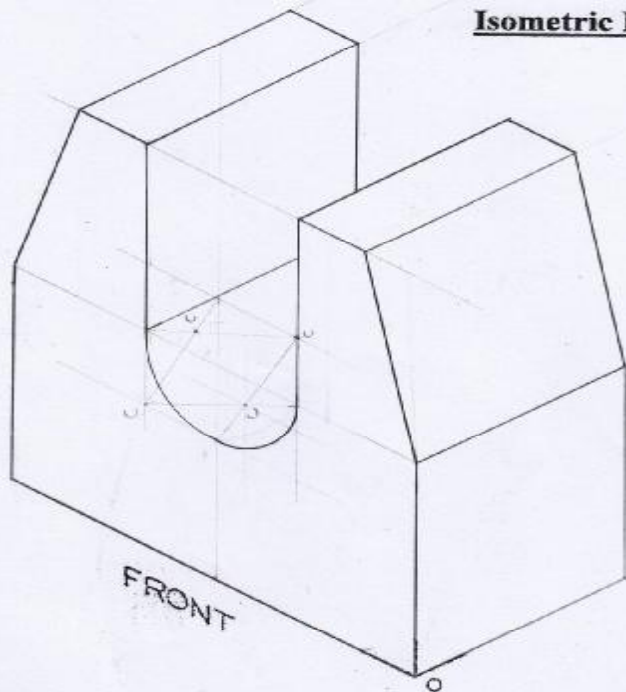
Chosen by Dr. Hashem Alkhalidi, University of Jordan



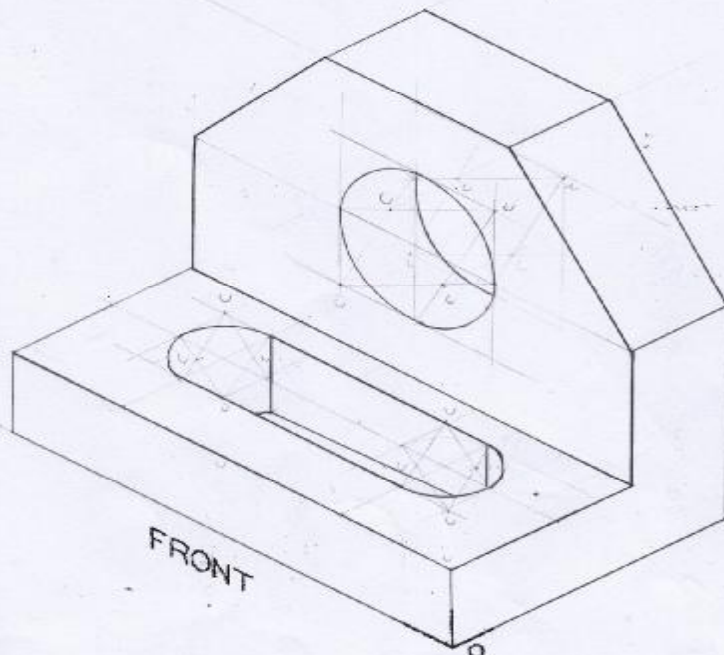
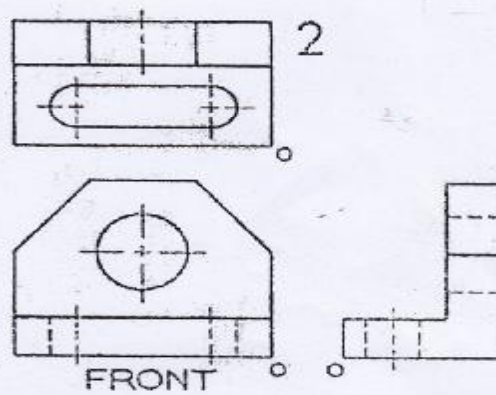
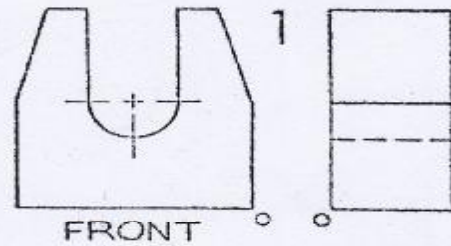
	NAME	SAEED MANSOUR	GRADE	34
	FILE NO	36	SECTION	

Chosen by Dr. Hashem Alkhalidi, University of Jordan

Isometric Drawings - Part B



USING YOUR DIVIDERS, DOUBLE THE DIMENSIONS OF THE ORTHOGRAPHIC VIEWS AND CONSTRUCT AN ISOMETRIC DRAWING OF THE PARTS.



ISOMETRIC DRAWINGS

NAME MOSTAFA ZAHLAN

FILE NO. 23

SECTION 7

GRADE

35

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Dimensions

الأبعاد في الرسومات الهندسية

ينتهي من كل طرف من طرفيه سهم دقيق حاد تلامس رأسه خط تحديد البعد ويوضع عند منتصف هذا الخط وفوقه بقليل الرقم الدال على البعد بحيث يقرأ في اتجاه متعامد عليه كما في شكل (١) .

ومن القواعد المتبعة في وضع الأبعاد على الرسومات الهندسية ما يلي :

١ - لا تستخدم خطوط المسقط الأساسية أو خطوط المحاور كخطوط أبعاد ولكن يجوز استخدامها كخطوط تحديد للأبعاد كما في شكل (٢) .

٢ - يراعى اختيار خطوط تحديد الأبعاد وخطوط الأبعاد بحيث لا تتقاطع مع بعضها أو مع خطوط أخرى إلا عند الضرورة كما في شكل (٣) .

٣ - ترسم أسهم خطوط الأبعاد ببنائية ودقة بحيث يتناسب حجم السهم مع سمك خط البعد وبحيث تلامس رأسه خط تحديد البعد دون أن تخترقه أو تبعده عنه .

٤ - ترسم رؤوس الأسهم خارج خطى تحديد البعد إذا لم يسمح الحيز برسمها داخل البعد نفسه كما في شكل (٣) بالنسبة للشق الصغير .

٥ - عند تحديد نصف القطر لقوس دائري يكتفى برسم سهم واحد رأسه عند القوس واتجاهه يمر بمركز القوس كما في شكل (٣) .

٦ - يجب تجنب وضع الأبعاد على التفاصيل الخفيفة والتي تظهر في المسقط بخطوط متقطعة إلا عند الضرورة .

٢ كتابة الأبعاد

وتختص كتابة الأبعاد نفسها على الأخرى للقواعد الآتية :

١ - يختار الحجم المناسب للحروف والأرقام وتكتب على خطوط الأبعاد بحيث تقرأ بسهولة من أسفل الرسم أو من يمينه

تتطلب عملية تحديد الأبعاد للأجزاء الهندسية خبرة كافية وإلماماً كاملاً بوظائف الأجزاء المرسومة واستخداماتها من جهة وخطوات تصنيعها وإنتاجها والتفتيش عليها من جهة أخرى ولا تتوفر هذه الخبرة إلا بالدراسة المتعمقة والممارسة الطويلة في مجال تصميم هذه الأجزاء . ولذا فسوف نركز في هذا الباب على طريقة وضع الأبعاد على الرسومات والقواعد المختلفة المتبعة في ذلك دون التعرض لأسباب اختيار البعد عند قيمة محددة دون غيرها أو لوضعه في مكان معين دون غيره .

والتفصلة الرئيسية في طريقة وضع الأبعاد على الرسومات هي أن تعطى التحديد الصحيح للتكوينات المختلفة في الجسم بسهولة ووضوح بحيث لا يضطر العامل أثناء مراحل التصنيع أو التفتيش إلى استنتاج أبعاد يحتاجها بعمليات حسابية أو بقياسات على الرسم وإنما يجب أن تكون جميع الأبعاد التي تنشأ الحاجة إليها مكتوبة على الرسم مباشرة .

١ وضع الأبعاد

توضع الأبعاد بوضوح على المسقط الذي يبين الطابع الأساسي للجسم ويراعى أن تكون وحدة القياس بالنسبة لجميع أبعاد الجسم موحدة كالمليمتر مثلاً كما يراعى عدم تكرار أى بعد أكثر من مرة على الرسم .

ولا توضع الأبعاد داخل المساقط الهندسية وإنما توضع خارجها كلما أمكن ذلك محافظة على وضوح المسقط والأبعاد معاً . وتنقل مسافة البعد إلى خارج المسقط بواسطة خطين متوازيين رفيعين مستمرين يبدأ كل منهما بعد نهاية خط المسقط بقليل ويستمر على امتداده إلى خارج المسقط بمسافة مناسبة كما هو موضح في شكل (١) ويسمى هذان الخطان خطا تحديد البعد .

ويرسم خارج المسقط بين خطى تحديد البعد وقبل نهايتها بقليل خط البعد الهندسى وهو خط رفيع مستمر متعامد عليها

بتدوير لوحة الرسم في اتجاه عقارب الساعة ويوضح شكل (٤) زوايا ميل خطوط الأبعاد كما يوضح شكل (٥) طرق كتابة الأبعاد الزاوية ويراعى تجنب استخدام المنطقة المهيثة في كل منها .

٢ - يفضل كتابة الأرقام عند منتصف خط البعد وفوقه بقليل مع مراعاة عدم اختراقها أو فصلها بأي خط من خطوط الرسم حتى لا تبدو كالمشطية ويجوز قطع خط البعد وكتابة الرقم في الفراغ الناتج عن هذا القطع كما يلاحظ أنه إذا دعت الحاجة لكتابة الرقم في منطقة تشير فيجب أن يلغى التشهير حول الرقم لايضاحه كما هو مبين في شكل (٦) .

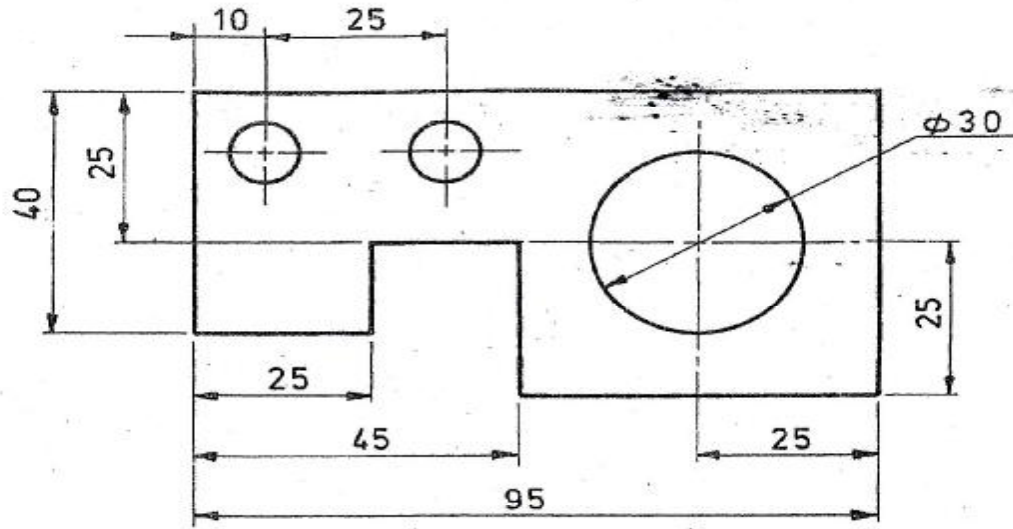
٣ - تكتب الأبعاد في بعض الحالات على جانبي خطوط البعد بطريقة تبادلية تلافياً لإزدحامها فوق بعضها حول محور التماثل كما في شكل (٧) .

٤ - إذا لم يسمح الأخير بكتابة الرقم فوق خط البعد يكتب خارجه على امتداده ويفضل أن يكون ذلك من جهة اليمين كما في شكل (١٠) .

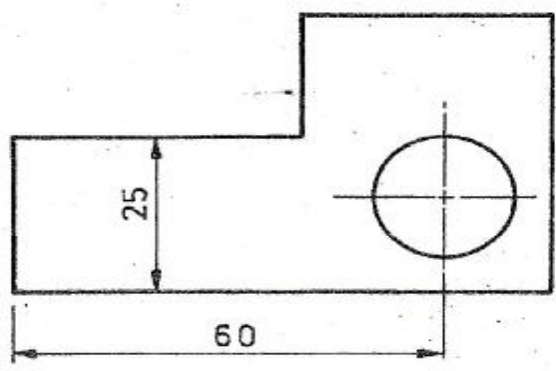
٥ - توضع الأبعاد تسلياً كما في شكل (٨) إذا لم يكن هناك خطر على المهمة الوظيفية للجسم من احتمال تراكم التفاوتات في الأبعاد المذكورة . أما إذا كانت الأبعاد لها مرتبط قياسي مشترك فيجب أن تحدد كلها بالقياس من هذا المرتبط كما في شكل (٩) .

٦ - توضع أبعاد الشطوف بالطريقة المبينة في شكل (١٠) .

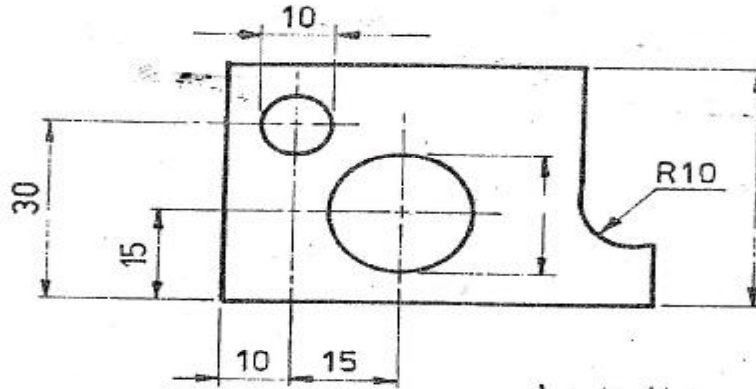
٧ - يوضح شكل (١١) عدداً من الإصطلاحات المتفق عليها لنصف القطر والقطر والمربع وحالات التماثل والأبعاد التي لا تتفق مع مقياس الرسم .



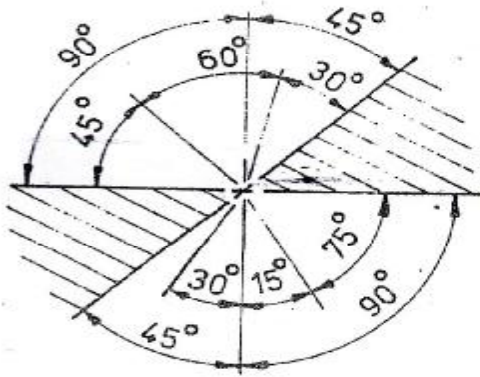
شكل (ا) خطوط تحديد الأبعاد وخطوط الأبعاد .



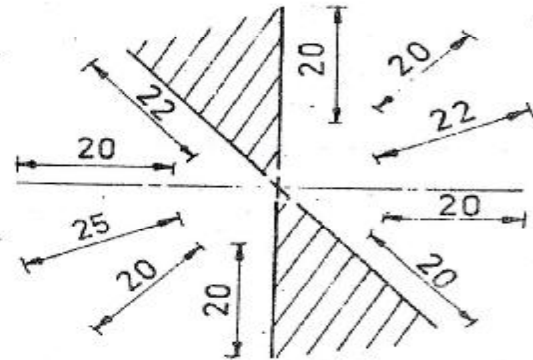
شكل (ب) استخدام خطوط المسقط والمحاوِر خطوط تحديد أبعاد



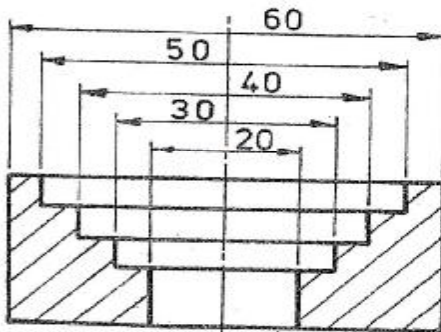
شكل (٣) عدم تقاطع خطوط الأبعاد



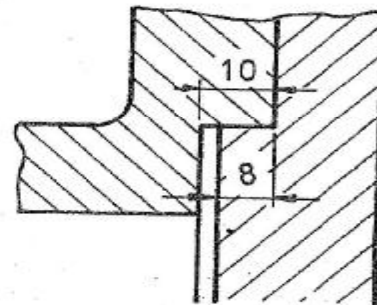
شكل (٥) تحديد قيم الزوايا



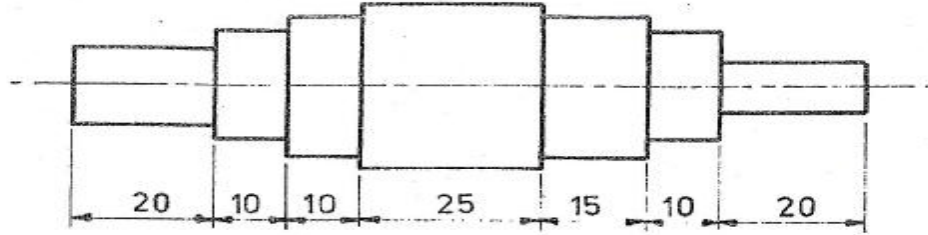
شكل (٤) زوايا ميل خطوط الأبعاد



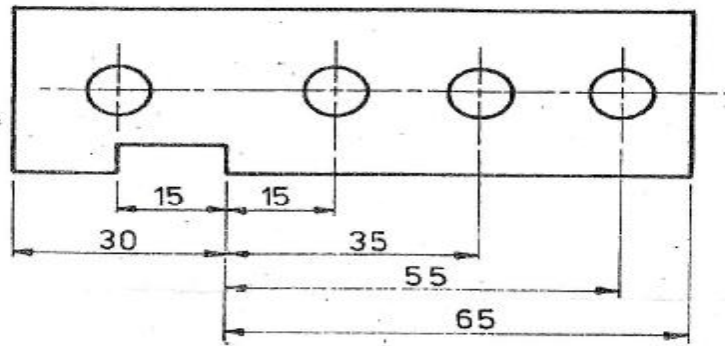
شكل (٧) كتابة الأبعاد بطريقة تبادلية



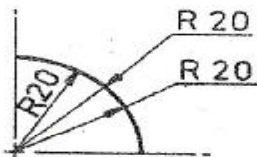
شكل (٦) تلتصق خطوط التوضيح في ميزانها البعد



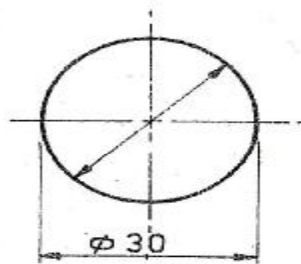
شكل (٨) وضع الأبعاد بالطريقة التسلسلية



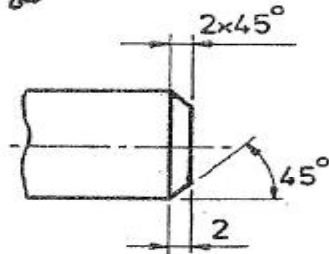
شكل (٩) وضع أبعاد مقاسة من مرجع مشترك



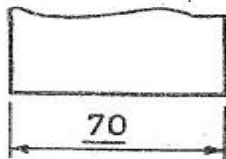
نصف القطر



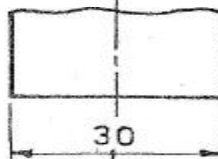
القطر



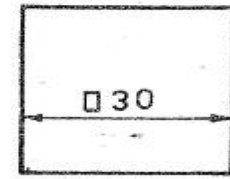
شكل ١٠ أبعاد الشطوف



مربع



مستطيل



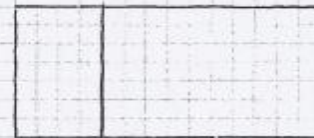
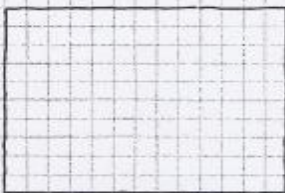
خارج مقياس الرسم

شكل (١١) بعض الإسطوانات في وضع الأبعاد

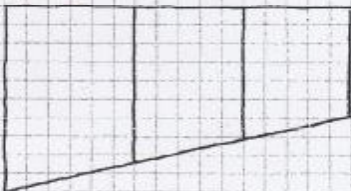
BASIC DIMENSIONING FREEHAND

- A. DIMENSION COMPLETELY OMITTING NUMERALS
- B. DIMENSION COMPLETELY WITH NUMERALS

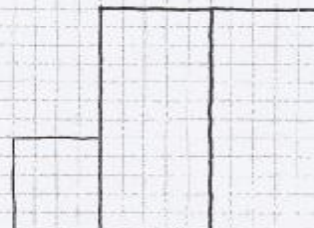
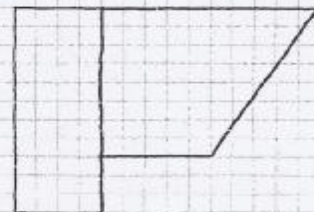
1 GAUGE



3 LOCK



4 MOUNT



BASIC DIMENSIONING

NAME

FILE NO.

SECTION

GRADE

36

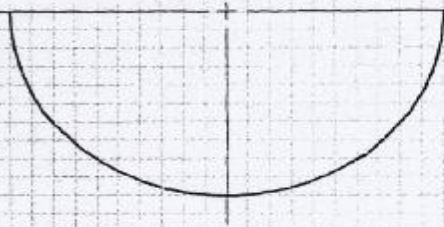
Chosen by Dr. Hassem Alkhalidi, University of Jordan

BASIC DIMENSIONING

DIMENSION FREEHAND. FOLLOW INSTRUCTIONS A OR B AS ASSIGNED. COUNT THE 1/8" GRID TO DETERMINE DIMENSIONS. SCALE: FULL SIZE.

- A. DIMENSION COMPLETELY WITHOUT NUMERALS.
- B. DIMENSION COMPLETELY USING NUMERALS.

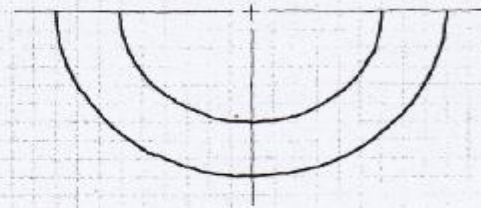
1 SPACER



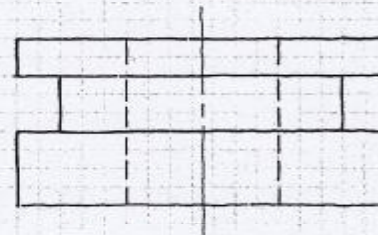
3 DUST GUARD



2 PULLEY BLANK



4 SLEEVE



BASIC DIMENSIONING

NAME

FILE NO.

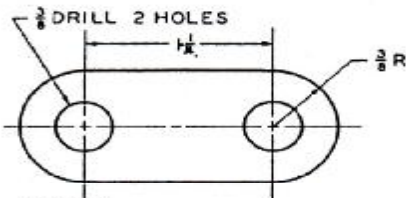
SECTION

GRADE

37

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DIMENSIONING- NOTES FOR HOLES



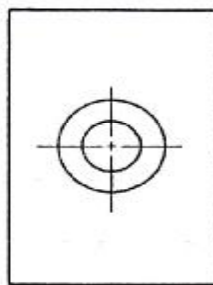
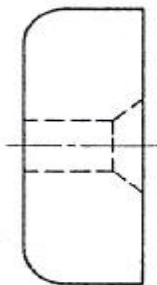
HOLE NOTES:

CYLINDRICAL HOLES ARE USUALLY DIMENSIONED BY NOTES SPECIFYING THE MACHINE OPERATION WITH A LEADER IN THE CIRCULAR VIEW.

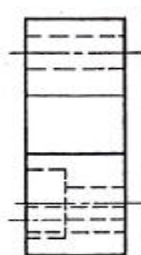
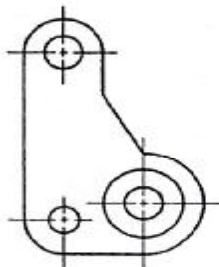
NOTE: THE LINK ABOVE NEEDS NO OVERALL DIMENSION SINCE THE OBJECT HAS CIRCULAR ENDS.

DIMENSION THE OBJECTS BELOW.
SCALE: FULL SIZE.

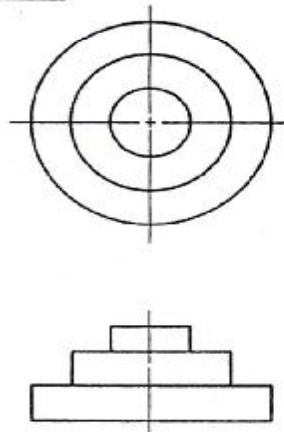
1. CLAMP



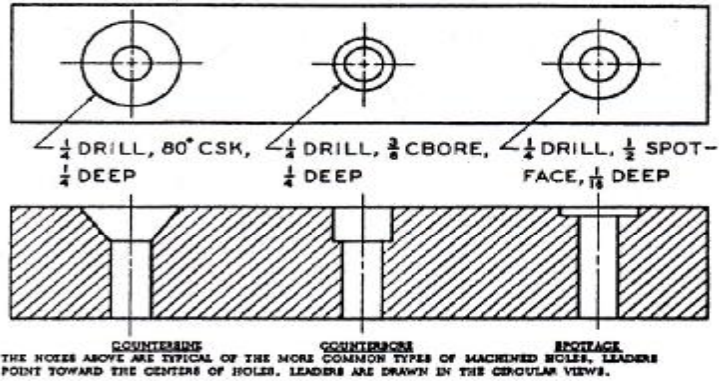
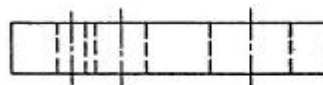
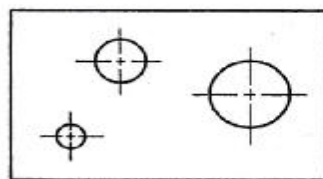
3. LEVER LINK



2. PULLEY



4. DRILL FIXTURE



DIMENSIONING	NAME _____	SECTION _____	GRADE _____	38
	FILE NO. _____			

Chosen by Dr. Hashem Alkhalidi, University of Jordan

الهندسة الوصفية

*** لإيجاد خط مستقيم بطوله الحقيقي :**

(نرسم موازي لأي خط (لأي مسقط) ونرفع منه أعمده على الخط الجديد ونحدد الابعاد من قبل ياللي قبله) ,

*** لإيجاد الخط المستقيم عل شكل نقطه :**

(لازم يكون أول شي بطوله الحقيقي وإزا ما كان حقيقي بنوجده مما سبق ,, نرسم عمودي على الخط ياللي طوله حقيقي ونحدد الابعاد من قبل ياللي قبله) ,

*** لإيجاد plane بطوله الحقيقي :**

(أول شي لازم يكون في خط من الخطوط بطوله الحقيقي ,, بنرسم عليه عامودي وبنمده مع باقي الخطوط بتطلع الرسمه (edge) ,, بعدين بنرسم موازي للـ (edge) وبنمد خطوط عموديه عليه ,, ونحدد الابعاد من قبل ياللي قبله ,, فنتج لنا الابعاد الحقيقية) ,

*** الزاوية الزوجية (DIHEDRAL ANGLE) :**

لايجاد قياس الزاوية بين مستويين نتبع خطة الحل التالية :

1. نجد خط تقاطع المستويين بطوله الحقيقي .
2. نسقط باقي النقاط الموجودة الى منطة خط التقاطع .
3. نوجد خط التقاطع كنقطة (Point View) ونسقط باقي النقاط الى تلك المنطقة .
4. نحسب الزاوية المحصورة بين المستقيمين .

المقصود بـ المنطقة :

أي الموقع المحصور بين مرجعين Two Reference Lines .

* الزاوية بين خط ومستوى : Angle between Line and Plane

خطة الحل :

1. نجد المستوى كـ True Size .
2. نسقط الخط المستقيم في منطقة الـ True Size للمستوى .
3. نرسم الخط المستقيم الموجود في المنطقة المذكورة كـ True Length .
4. نرسم خط على الـ True Length بحيث يكون موازي لآخر Reference تم رسمه .

<<<

نحسب الزاوية بين الـ True Length و الموازي الذي قمنا برسمه وهو المطلوب ..

* نقطة التقاطع بين المستقيم والمستوى (Piercing Point) : خطة الحل :

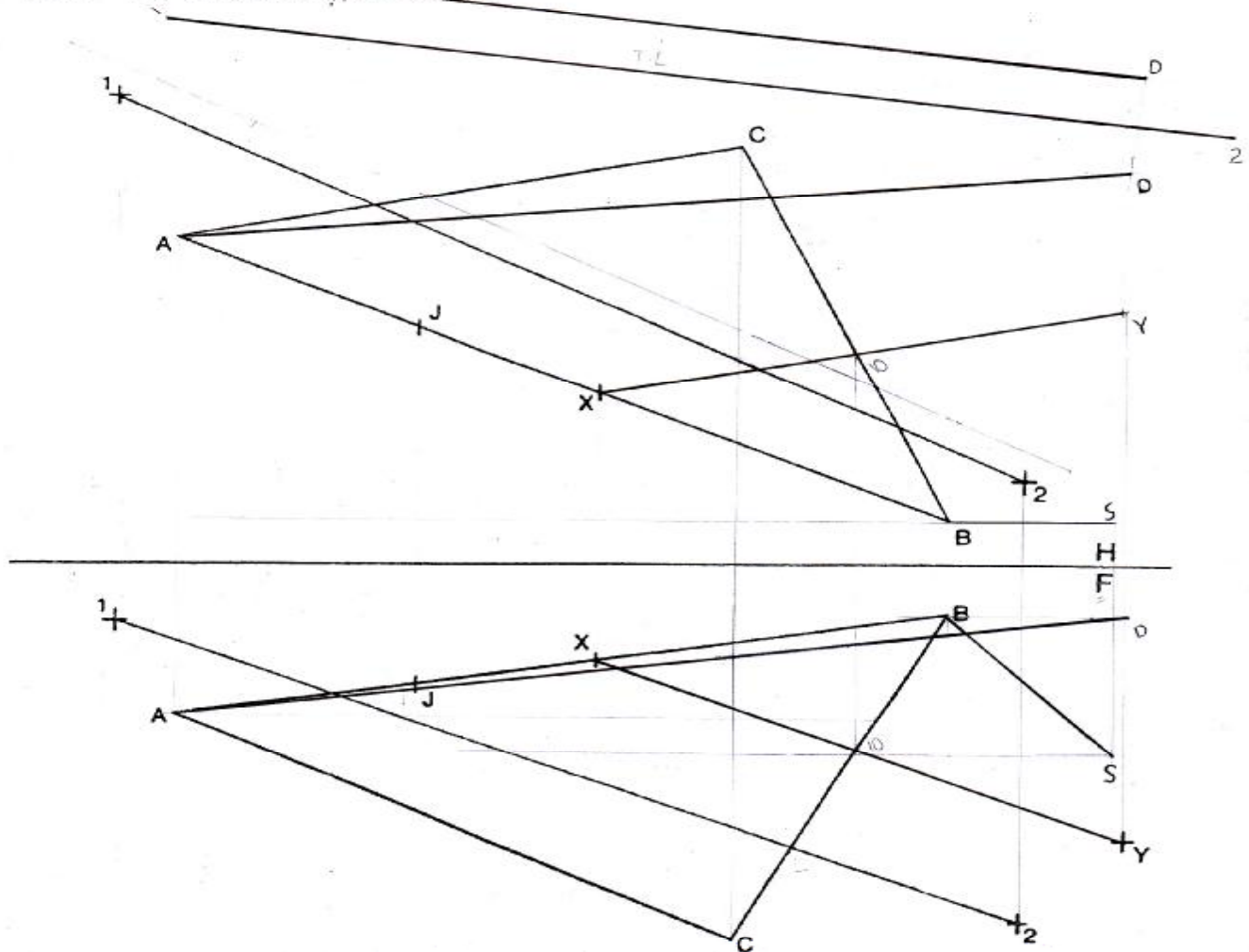
1. يكون المستوى متقاطع مع الخط المستقيم دون ان يكون المستوى True Size ولنسمي هذه المنطقة بـ (المنطقة A) .
2. نجد المستوى كـ Edge View .
3. نسقط المستقيم في منطقة الـ Edge View بحيث يتقاطعا .
4. نرسم اعمدة من المنطقة A على الـ Reference (من الخط المستقيم على الـ Reference) .

بحيث :

- << اذا اصطدم العمود بـ Edge View اولاً يكون (Hidden) .
- << اذا اصطدم العمود بـ الخط المستقيم اولاً يكون (visible) .

- Line X Y is in the plane ABC. Locate point Y in the horizontal view and draw the line XY in both views.
- Point J is given. Draw the line J K perpendicular to the plane ABC with point K in the frontal plane.
- Draw line A D parallel to line 1 2 in both views. Point D is 70 mm behind the frontal plane.
- Draw a frontal line B S which is 35 mm long. Point S is to the right of point B and 25 mm below point B.

Note: The drawing is full scale.

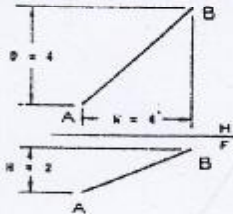


DESCRIPTIVE	NAME <u>MOSTAFA ZAHLAN</u> FILE NO. <u>23</u> SECTION <u>7</u>	GRADE <u>39</u>
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TRUE LENGTH OF A LINE

MATHEMATICAL EXAMPLE: (PYTHAGOREAN THEOREM)



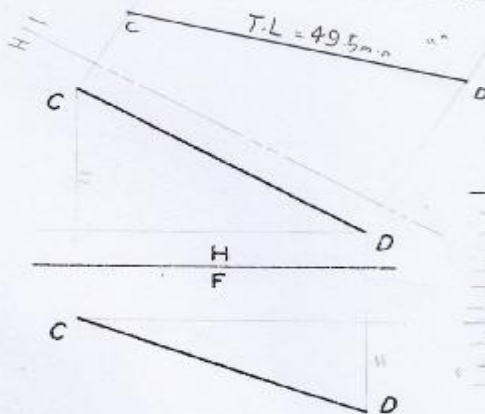
$$TL = \sqrt{W^2 + D^2 + H^2} \text{ WHEN}$$

W = WIDTH
D = DEPTH
H = HEIGHT
 $W^2 = 16$
 $D^2 = 16$
 $H^2 = 9$
 $TL^2 = 36$
 $TL = 6$



1 DETERMINE THE TRUE LENGTHS OF EACH LINE BY THE FORMULA

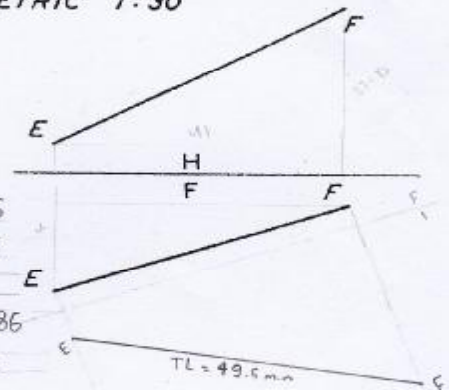
SCALE: 1 = 5.0' METRIC 1: 60



2

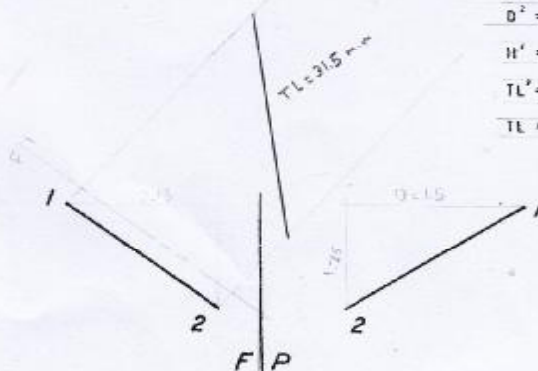
SCALE: 1 = 2.0' METRIC 1: 30

CD	EF
$W^2 = 271128.5$	$W^2 = 43380.56$
$D^2 = 85322.41$	$D^2 = 13651.586$
$H^2 = 36290.25$	$H^2 = 5806.44$
$TL^2 = 392741.19$	$TL^2 = 62838.586$
$TL = 626.69$	$TL = 250.6762$



3

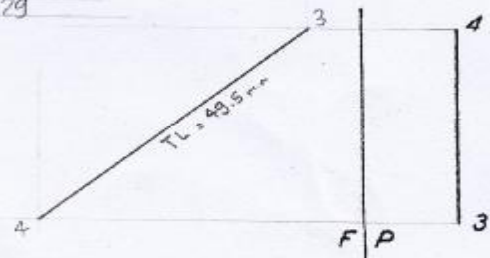
SCALE: 1 = 3.0' METRIC 1: 40



4

SCALE: 1 = 50.0' METRIC 1: 600

1-2	3-4
$W^2 = 26840.25$	$W^2 = 23290276$
$D^2 = 13064.5$	$D^2 = 0$
$H^2 = 17782.2$	$H^2 = 16516096$
$TL^2 = 57686.97$	$TL^2 = 39806372$
$TL = 240.18$	$TL = 6309.229$



TRUE LENGTH

NAME MOSTAFA ZAHLAN

FILE NO. 23

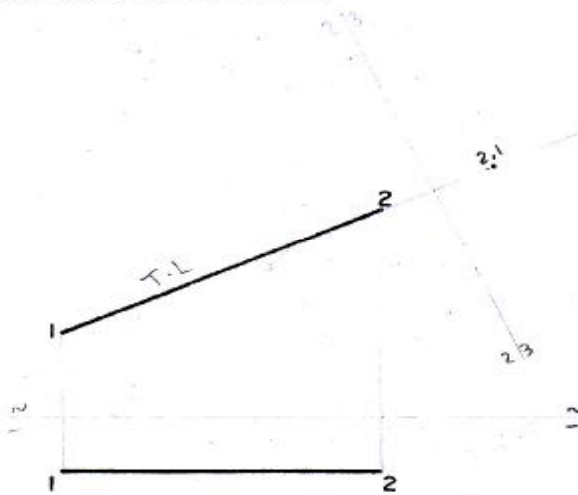
SECTION 7

GRADE

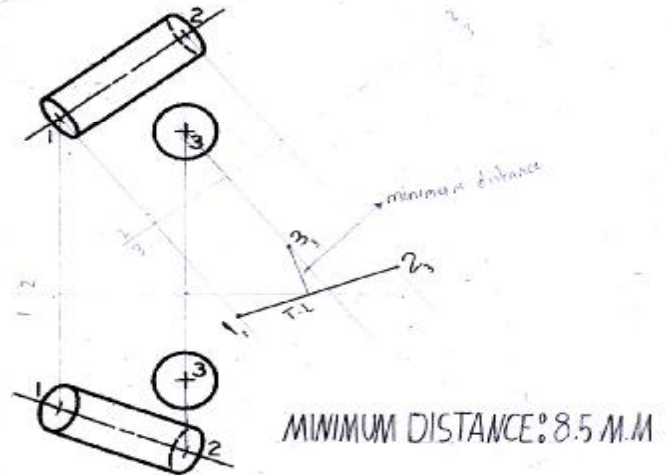
40

Chosen by Dr. Hassem Alkhalidi, University of Jordan

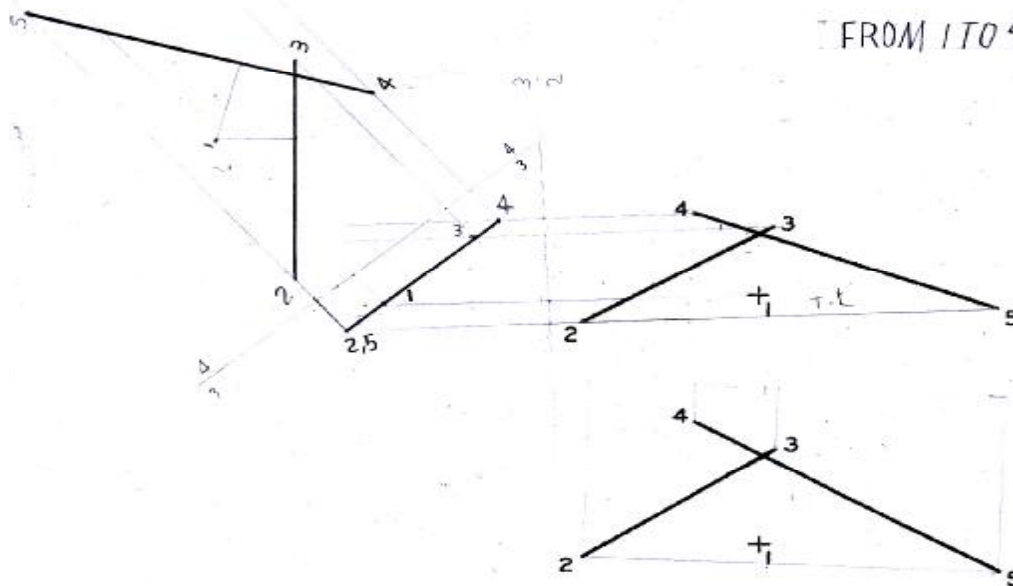
① Obtain a point view of line 1-2.



② Determine the clearance (minimum distance) between cylinder 1-2 and spherical tank 3. Scale: $1'' = 20'$.



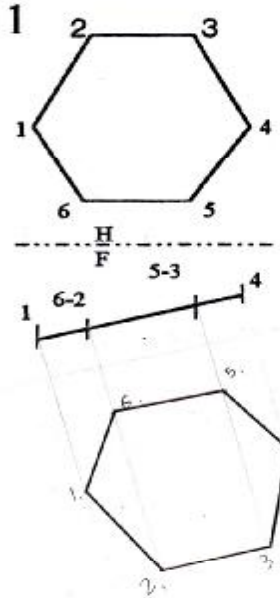
③ Is point 1 nearer to line 2-3 or to line 4-5? Measure the true distances.



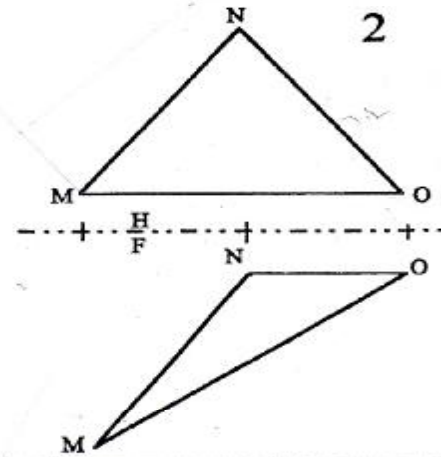
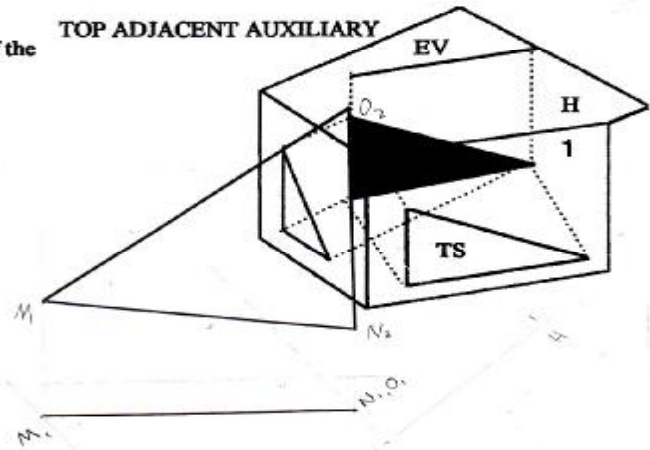
POINT VIEW	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	41
	FILE NO. <u>23</u> SECTION <u>7</u>		

Chosen by Dr. Hashem Alkhalidi, University of Jordan

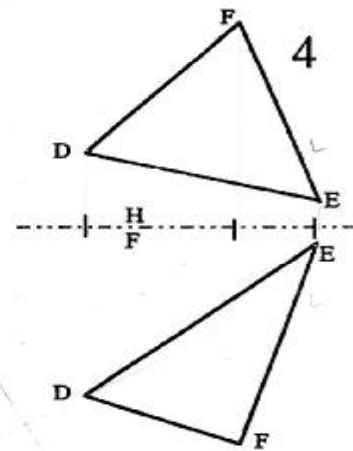
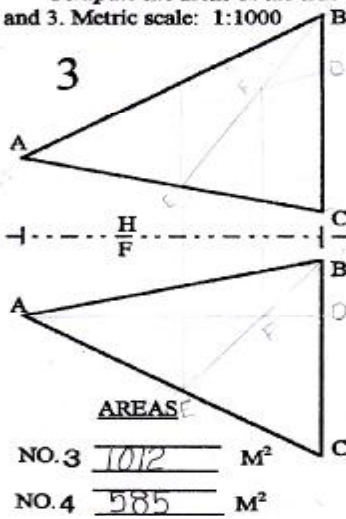
Draw the true size views of the planes for all of the problems shown below.



TOP ADJACENT AUXILIARY



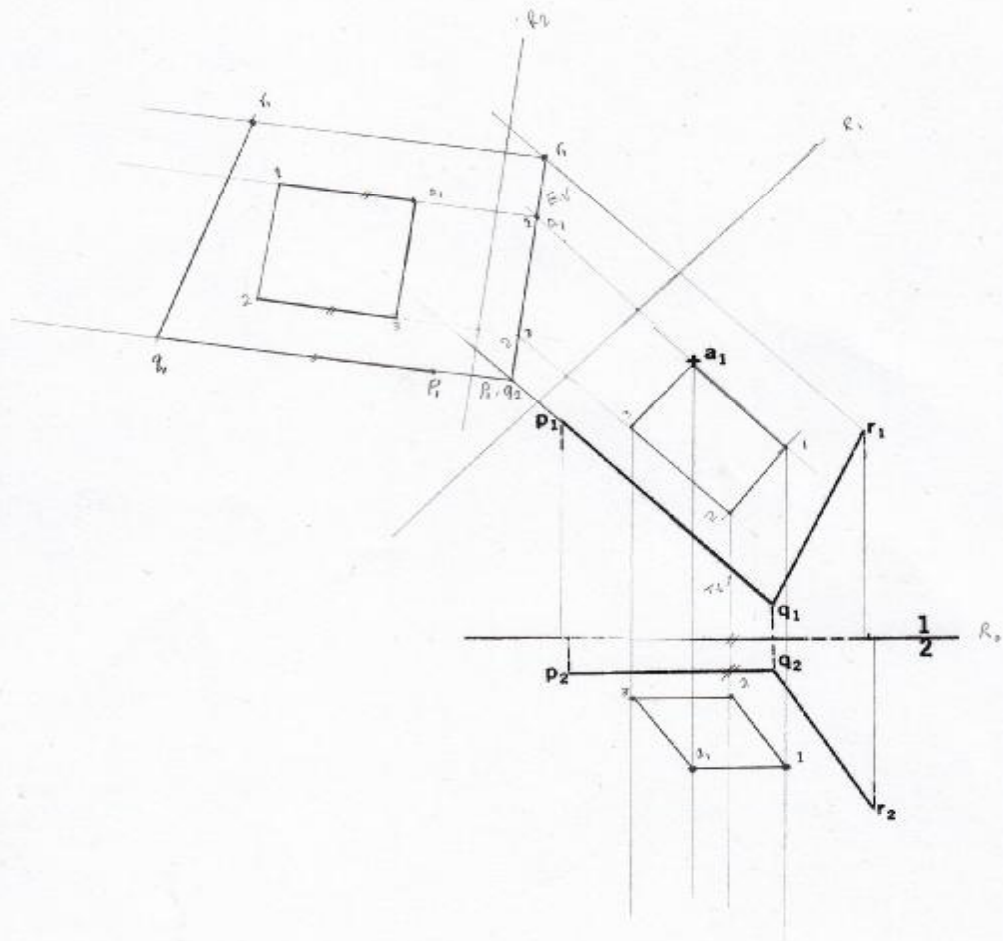
Compute the areas of the true - size planes for problems 2 and 3. Metric scale: 1:1000



TRUE SIZE	NAME <u>MOSTAFA ZAHLAN</u>	GRADE <u>42</u>
	FILE NO. <u>23</u>	SECTION <u>7</u>

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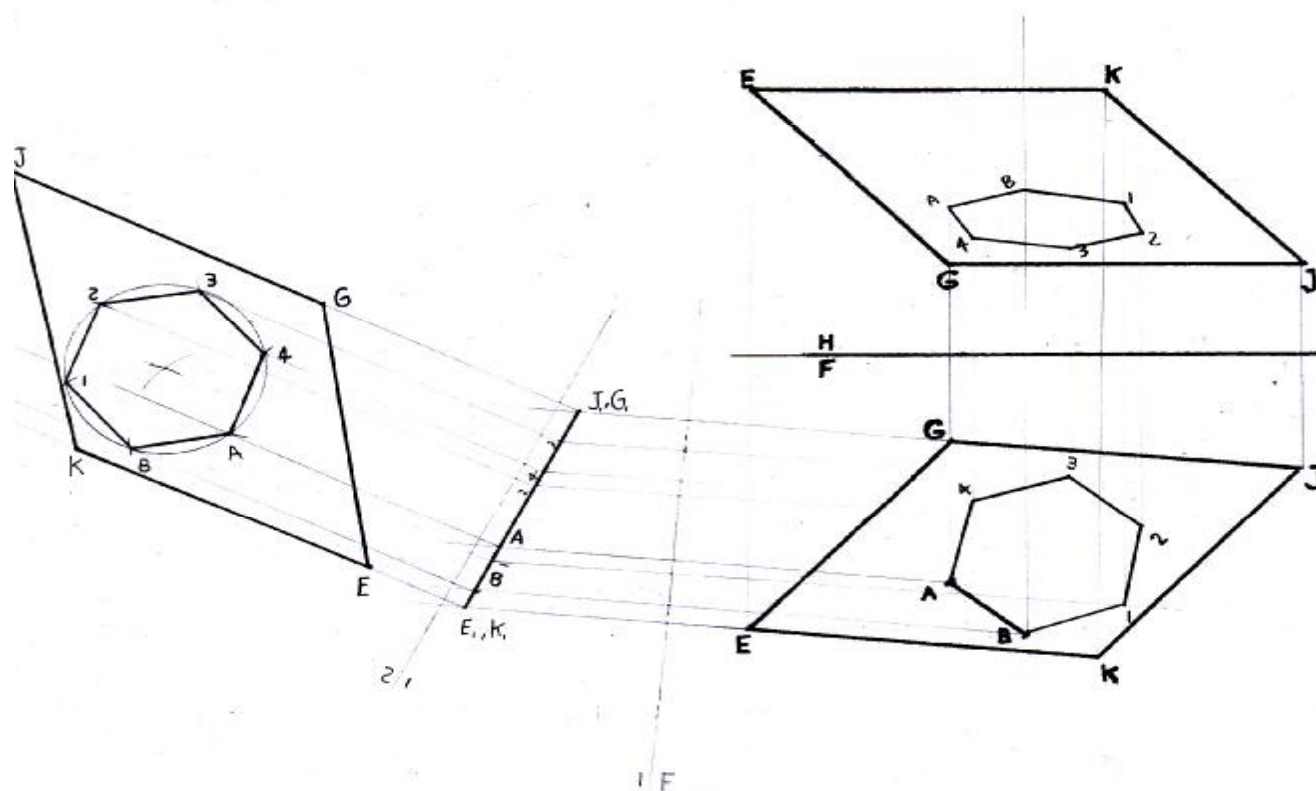
Point A is the back corner of a 19mm Square lying in plane PQR. Two sides of the square are parallel to line PQ. Show the complete square in both given views. Label all points.



DESCRIPTIVE GEOMETRY	NAME: <u>SAEED MANSOUR</u>	GRADE	43
	FILE NO: <u>36</u>	SECTION: <u>6</u>	

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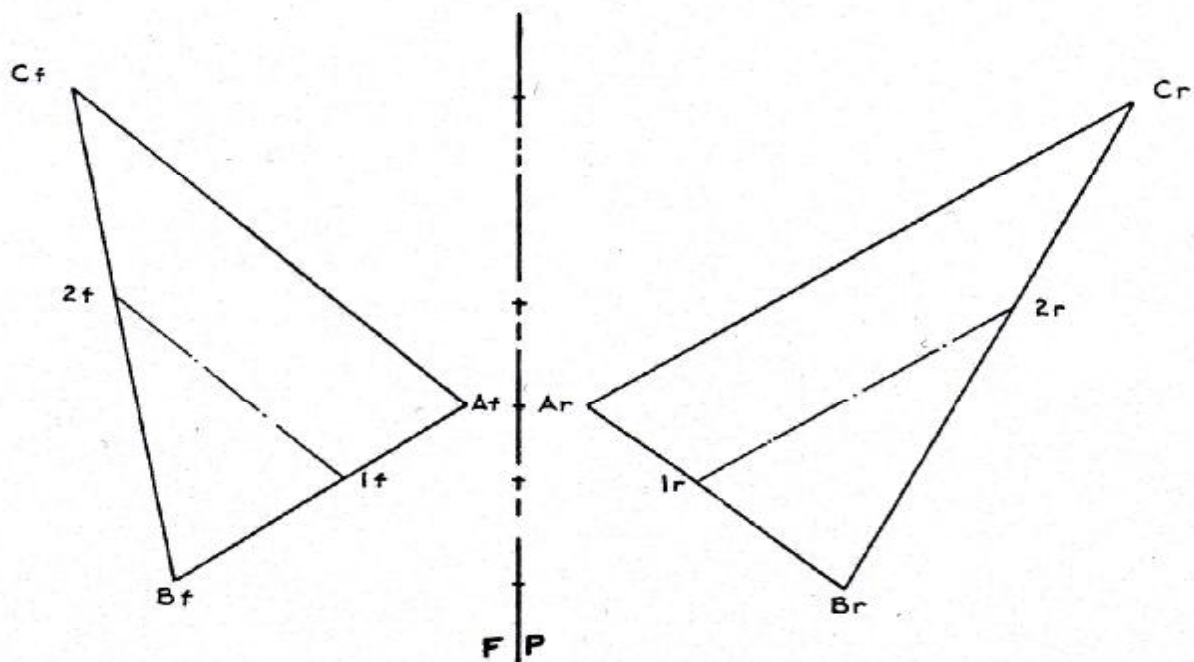
Line AB is one side of a regular hexagon lying in plane EGJK. Complete the hexagon in all views.



DESCRIPTIVE GEOMETRY	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	44
	FILE NO. <u>23</u> SECTION <u>7</u>		

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A circular Hole is to be cut in surface ABC. The center of the hole lies on line 1-2 and is 48 mm from A. Complete Front and Right side views of Hole. (Hole Dia. is 38 mm).



DESCRIPTIVE	NAME	SECTION	GRADE	45
	FILE NO.			

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ANGLE = 70

ANGLE = 104

3 IN ORDER TO BUILD A DIFFUSER SECTION SIMILAR TO THE ONE IN THE PHOTOGRAPH, THE DIEDRAL ANGLE MUST BE KNOWN. USE AB AS THE LINE OF INTERSECTION IN QUESTION.

3



عشر مقاصد
الحزب العلوي

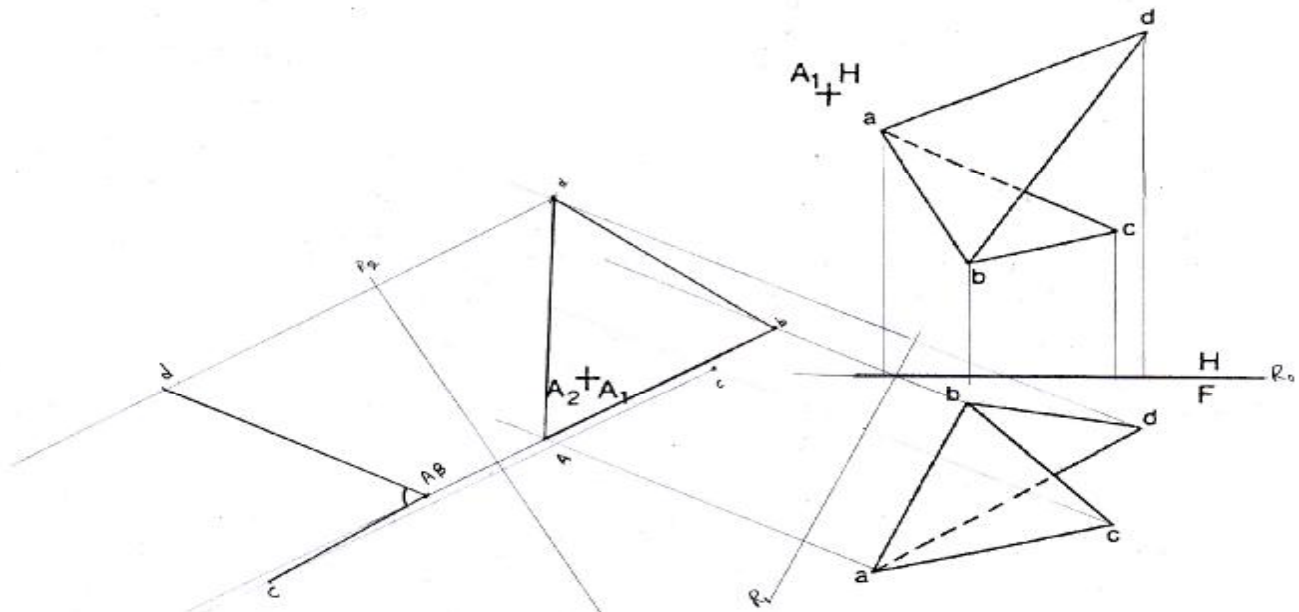
NAME	SAEED	MANSOOR
FILE NO.	36	SECTION 5

[illegible]

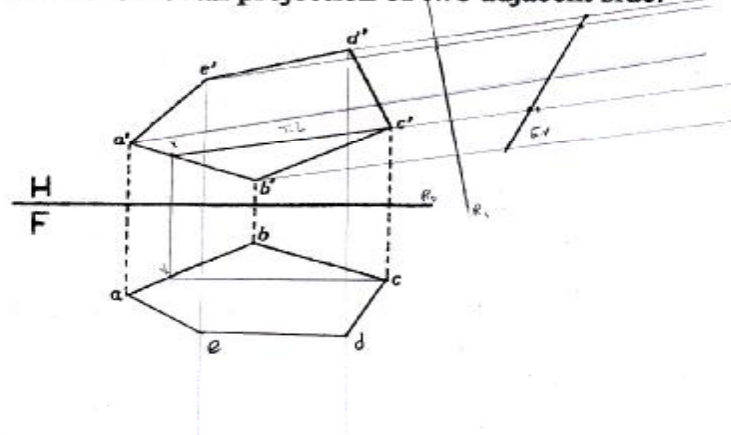
46

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Determine the angle between planes ABC and ABD. Show all construction.
The angle between planes ABC and ABD is ≈ 60



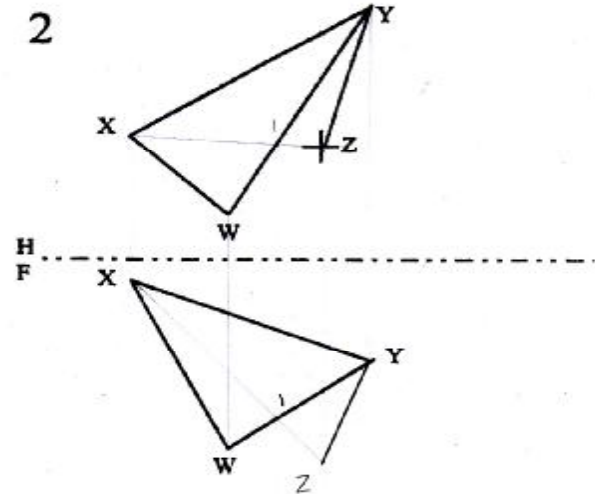
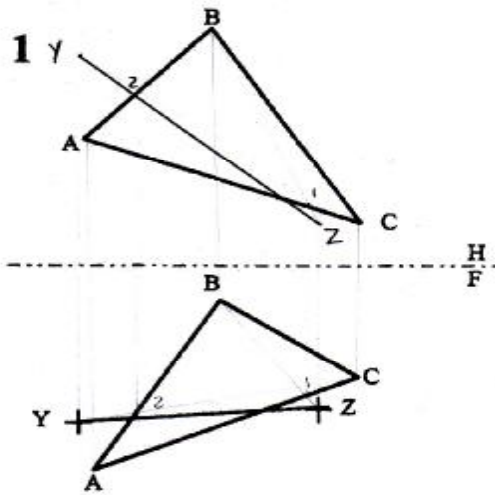
Determine the frontal projection of the plane pentagon ABCDE, given its horizontal projection and the frontal projection of two adjacent side.



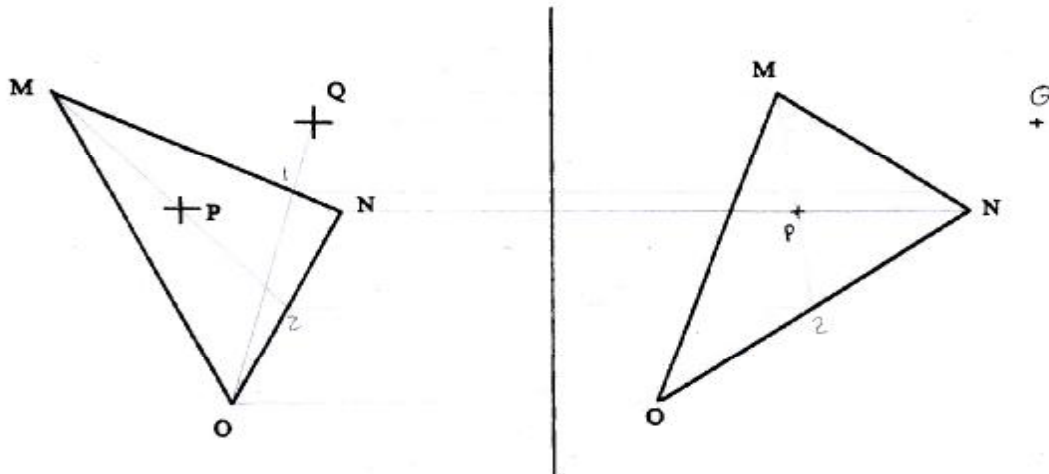
DESCRIPTIVE	NAME SAIED MANSOUR	GRADE	47
	FILE NO 36	SECTION 6	

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In problems 1 and 2 draw the missing projection of the line YZ. In each problem, the line lies in the plane.



Draw the RS projections of points P & Q both of which lie in the plane below.

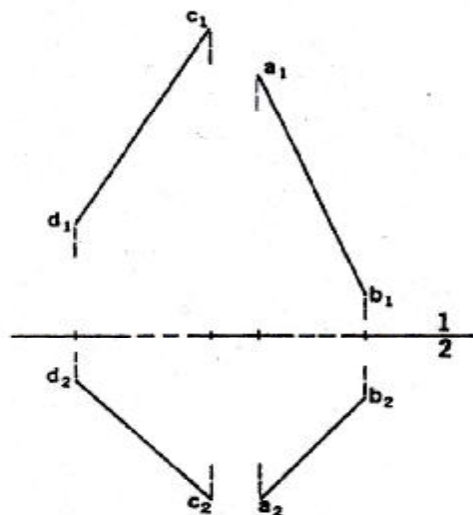


LINE IN PLANE	NAME <u>MOSTAFA ZAHLAN</u> FILE NO. <u>23</u> SECTION <u>7</u>	GRADE 48
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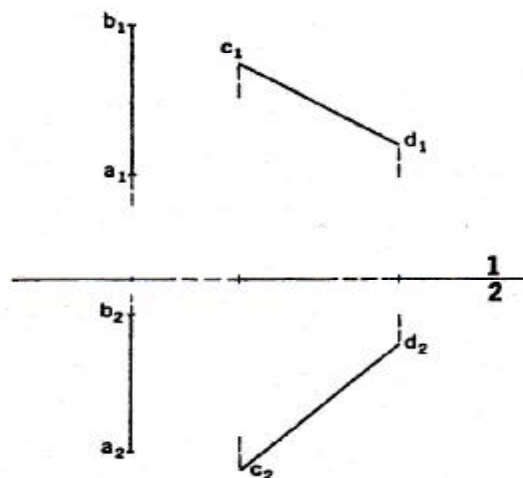
Chosen by Dr. Hashem Alkhalidi, University of Jordan

In both problems, construct a plane in the horizontal and frontal views that contains AB and is parallel to CD . Check by drawing an edge view of the plane and the corresponding view of CD .

A.



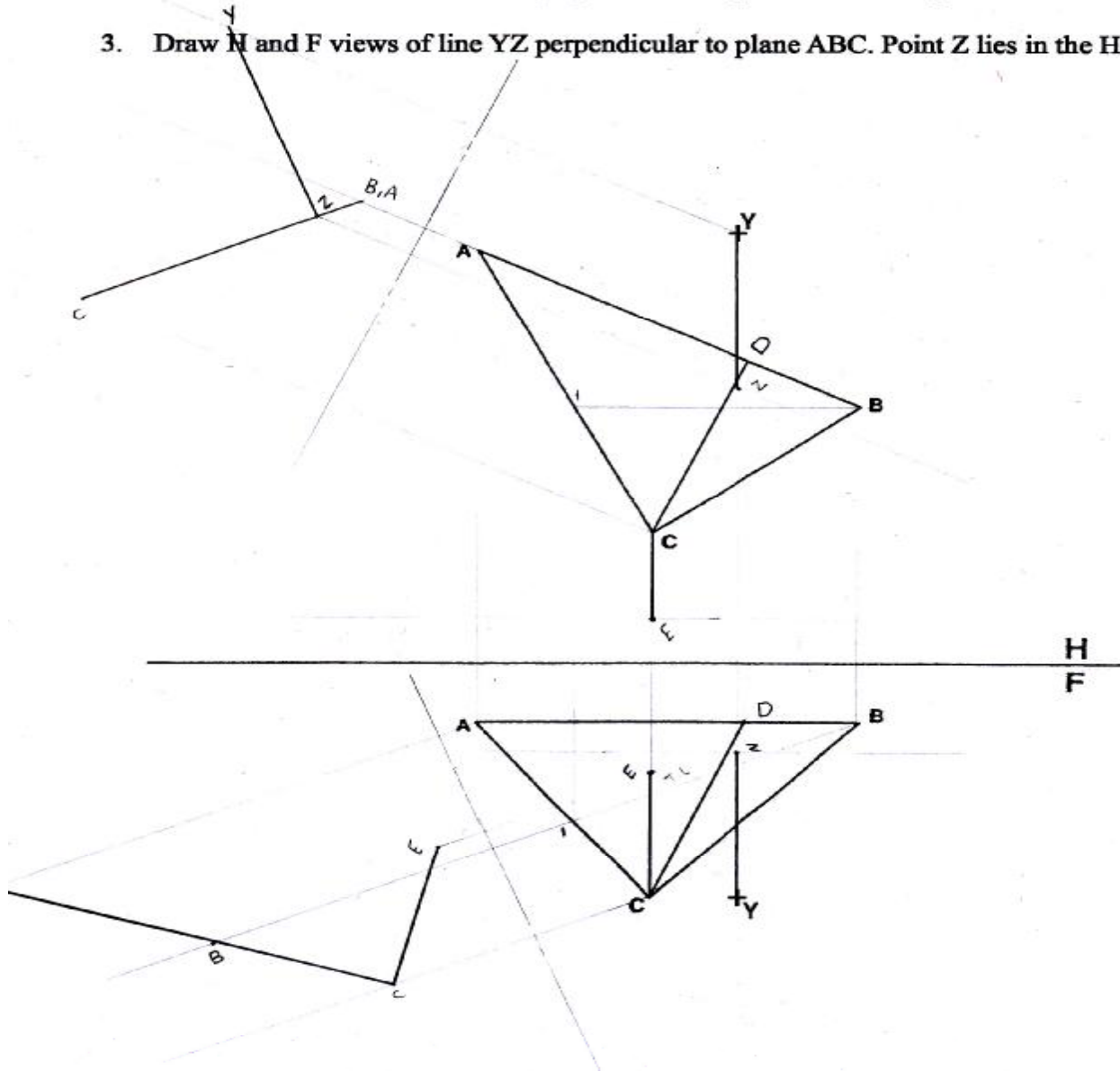
B.



PLANE CONTAINING ONE LINE PARALLEL TO ANOTHER LINE	NAME <input type="text"/>	SECTION <input type="text"/>	GRADE <input type="text"/>	49
	FILE NO. <input type="text"/>			

Chosen by Dr. Hassem Alkhalidi, University of Jordan

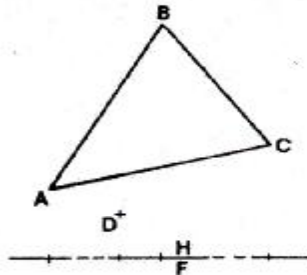
1. Draw H and F views of line CD perpendicular to AB and intersecting AB at point D.
2. Draw H and F views of line CE perpendicular to plane ABC with point E in the F plane.
3. Draw H and F views of line YZ perpendicular to plane ABC. Point Z lies in the H plane.



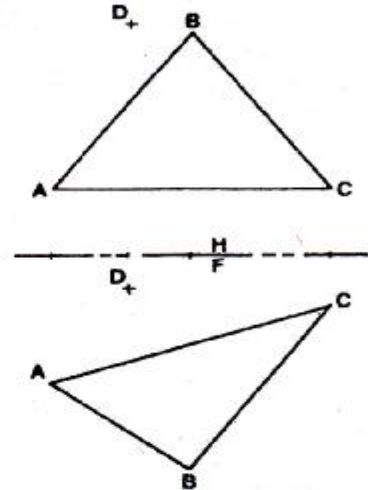
PERPENDICULARITY	NAME <u>MOSTAFA ZAHLAN</u>	GRADE	50
	FILE NO. <u>23</u> SECTION <u>7</u>		

Chosen by Dr. Hashem Alkhalidi, University of Jordan

1 DRAW AND MEASURE THE TRUE LENGTH OF THE SHORTEST LINE FROM POINT D TO THE PLANE A-B-C FOR PROBLEMS 1 AND 2. DRAW THE LINE IN ALL OF THE VIEWS. METRIC SCALE: 1:2 2

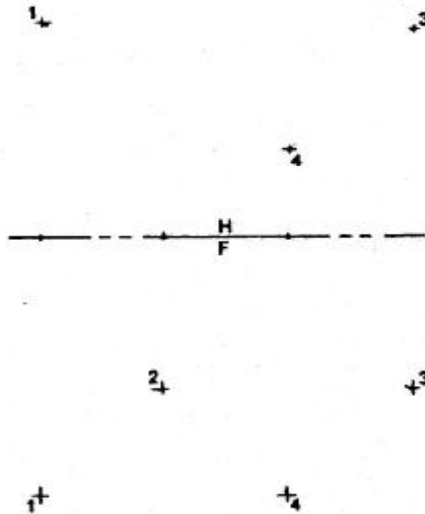


PROB.1 - TL= _____
PROB.2 - TL= _____



3 THE PLANE FORMED BY THE POINTS 1-2-3-4 IS THE BASE OF A RIGHT PYRAMID WITH VERTEX V AT AN ALTITUDE OF 1.5" ABOVE THE BASE AT ITS MIDPOINT. DRAW THE PYRAMID IN ALL VIEWS SHOWING THE CORRECT VISIBILITY. ANSWER THE QUESTIONS LISTED BELOW. SCALE: 1"= 1"

$$V = \frac{1}{3} A_B H \quad A_B = \text{AREA OF THE BASE}$$

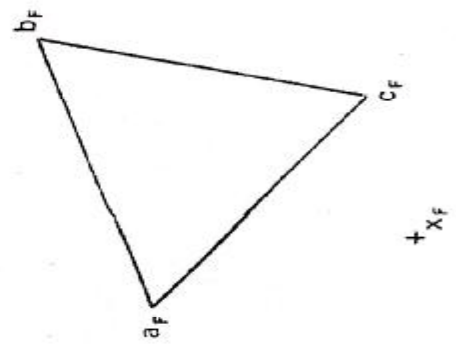
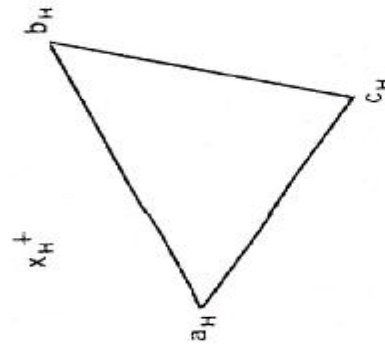


1. IS THE BASE RECTANGULAR? _____
2. WHAT IS ITS AREA? _____
3. WHAT IS THE VOLUME OF THE PYRAMID? _____

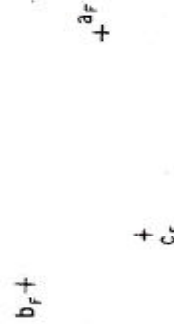
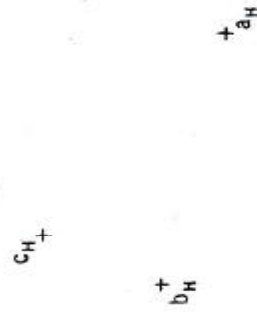
PERPENDICULARITY	NAME _____	GRADE _____	51
	FILE NO. _____ SECTION _____		

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A line is perpendicular to a plane if its H-view is perpendicular to the H-view of a horizontal line of the plane, and its F-view is perpendicular to the F-view of a frontal line of the plane. Using the two given views only, construct a perpendicular from point X to plane ABC. Determine the exact point of intersection, and determine correct visibility of the line and the plane.



Using the two given views, construct the H and F views of a right pyramid, the base of which is a parallelogram ABCD, and whose axis is 50 mm long. The axis extends downward and to the right.



PERPENDICULARITY

NAME _____

FILE NO. _____

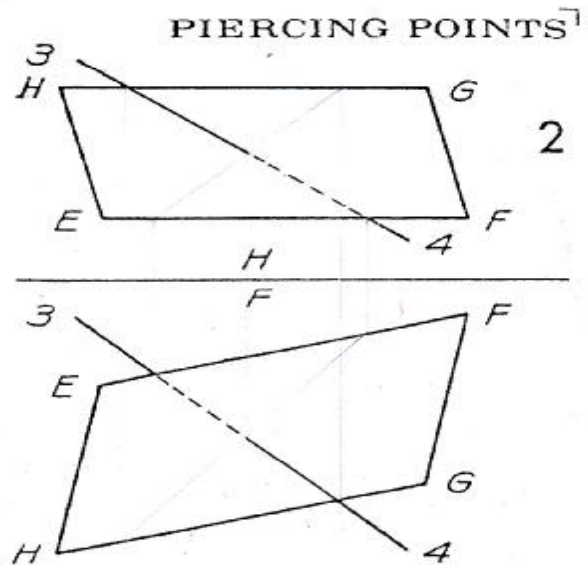
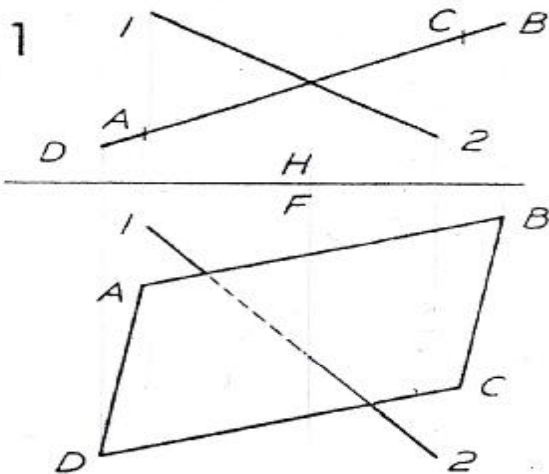
SECTION _____

GRADE _____

52

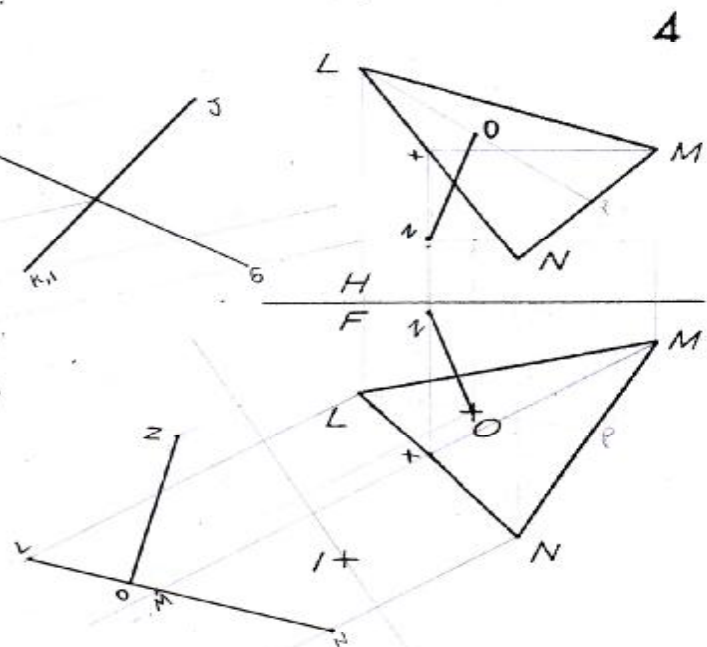
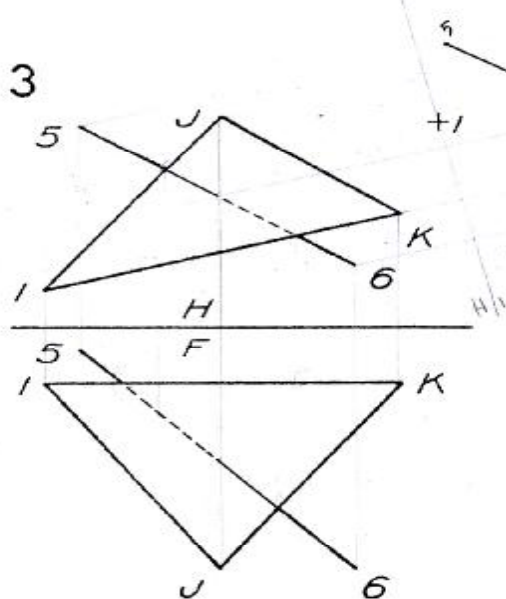
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PROBLEMS 1 & 2: FIND THE PIERCING POINTS BY THE CUTTING-PLANE METHOD AND SHOW THE VISIBILITY IN ALL VIEWS.



PROBLEM 3: FIND THE PIERCING POINT BY THE AUXILIARY-VIEW METHOD AND SHOW VISIBILITY.

PROBLEM 4: DRAW A 1 INCH LINE FROM POINT O ON THE PLANE THAT IS PERPENDICULAR TO THE PLANE IN BOTH VIEWS. SHOW VISIBILITY.



PIERCING POINT OF
LINE AND PLANE

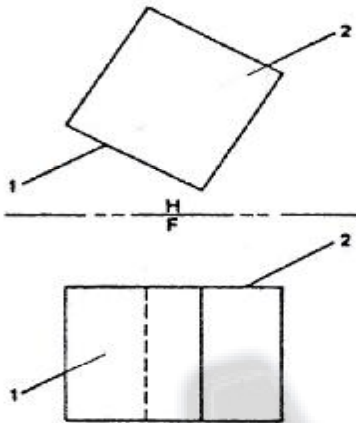
NAME MOSTAFA ZAHLAN
FILE NO. 23 SECTION 7

GRADE

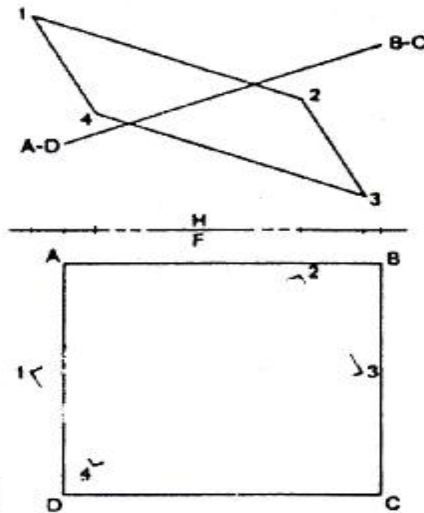
53

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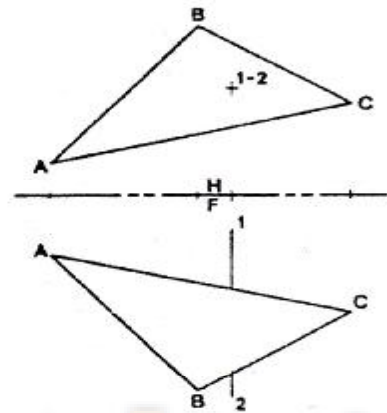
1 DETERMINE WHERE LINE 1-2 INTERSECTS THE SURFACES OF THE BLOCK. COMPLETE THE VIEWS.



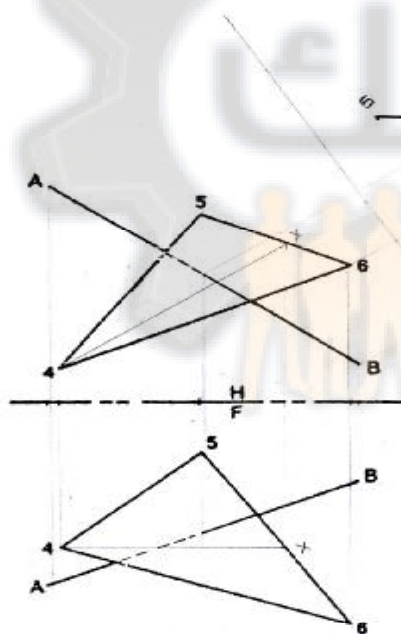
2 DETERMINE THE INTERSECTION BETWEEN THE TWO PLANES AND SHOW COMPLETE VISIBILITY.



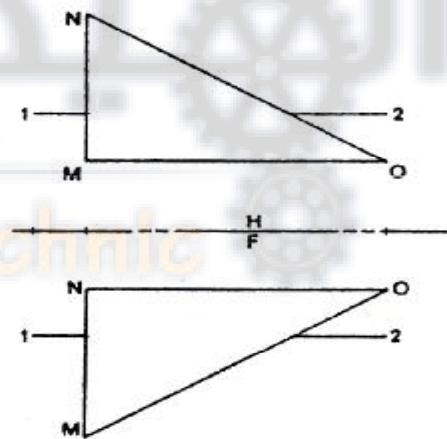
3 DETERMINE WHERE LINE 1-2 PIERCES PLANE A-B-C AND SHOW COMPLETE VISIBILITY.



4 DETERMINE THE PIERCING POINT OF THE LINE AND PLANE BY THE AUXILIARY-VIEW METHOD. SHOW COMPLETE VISIBILITY.



5 DETERMINE THE PIERCING POINT OF THE LINE AND PLANE BY THE AUXILIARY-VIEW METHOD. SHOW COMPLETE VISIBILITY.



PIERCING POINT OF
LINE AND PLANE

NAME _____

FILE NO. _____

SECTION _____

GRADE _____

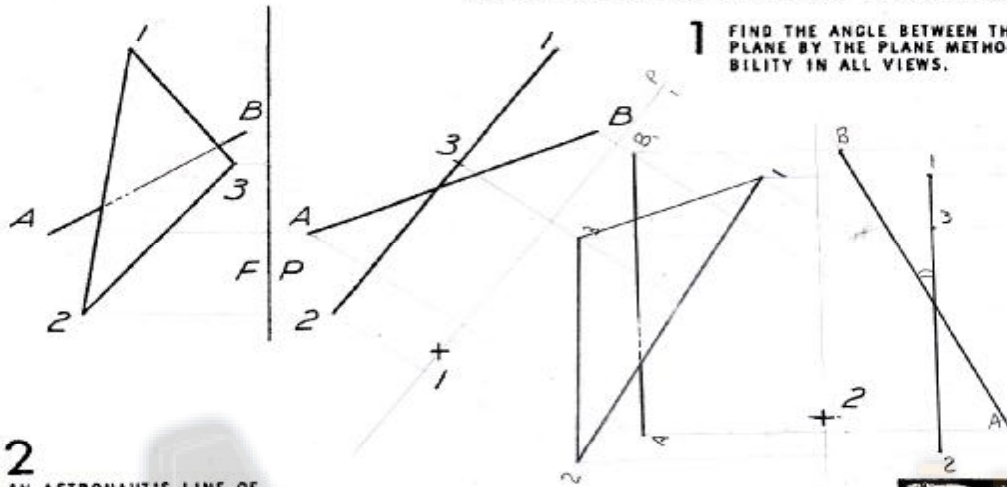
54

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ANGLE : 26°

ANGLE BETWEEN LINE & PLANE

1 FIND THE ANGLE BETWEEN THE LINE AND THE PLANE BY THE PLANE METHOD. SHOW VISIBILITY IN ALL VIEWS.



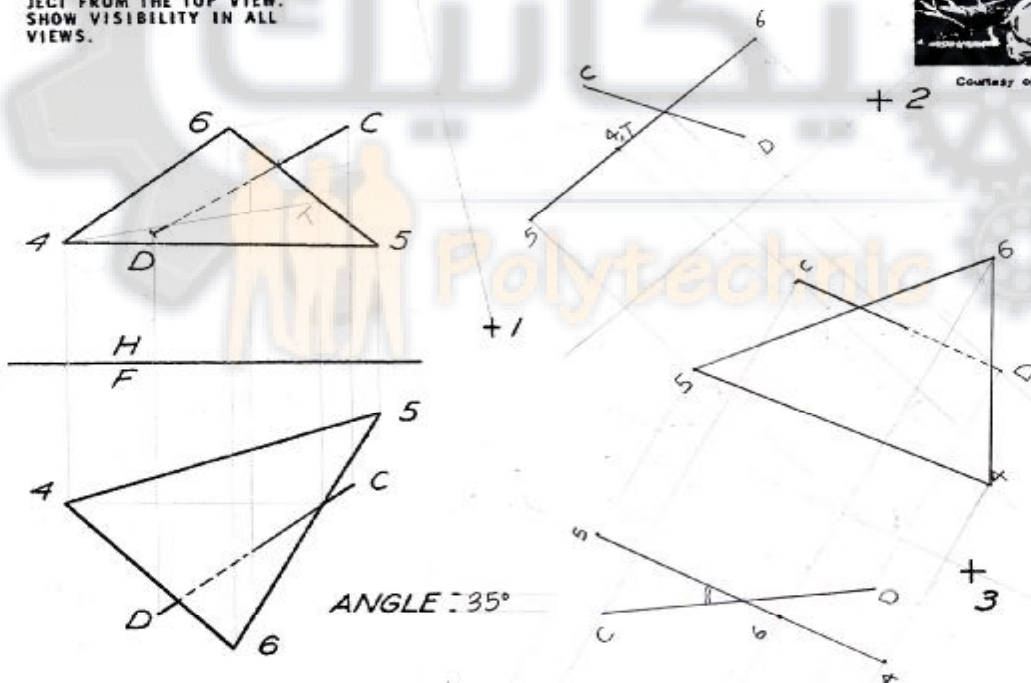
2

AN ASTRONAUT'S LINE OF SIGHT IS ALONG LINE DC WHICH INTERSECTS THE TRIANGULAR WINDOW OF A SPACECRAFT.

DETERMINE THE ANGLE BETWEEN THE LINE AND PLANE BY THE PLANE METHOD. PROJECT FROM THE TOP VIEW. SHOW VISIBILITY IN ALL VIEWS.



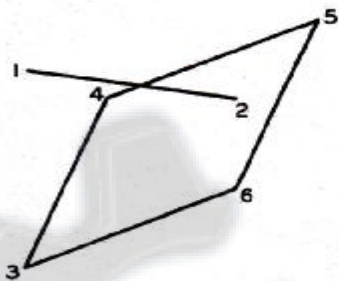
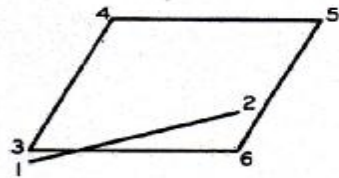
Courtesy of Ryan Aeronautical Co.



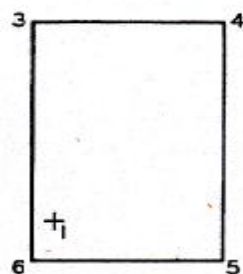
ANGLE BETWEEN LINE AND PLANE	NAME <u>MOSTAFA ZAHLAN</u>	GRADE
	FILE NO. <u>23</u> SECTION <u>7</u>	55

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- ① Find the angle between control cable 1-2 and bulkhead 3-4-5-6.



- ② Establish the views of 1.50" line 1-2 such that the line 1-2 forms an angle of 25° with the given surface.

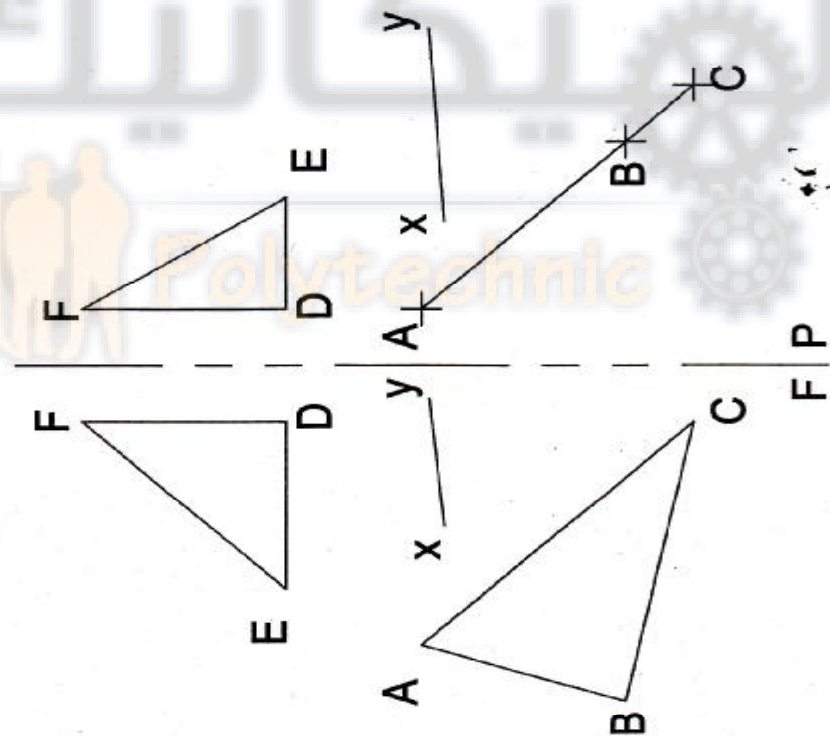


ANGLE BETWEEN LINE AND PLANE	NAME _____ FILE NO. _____	GRADE _____ SECTION _____
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56

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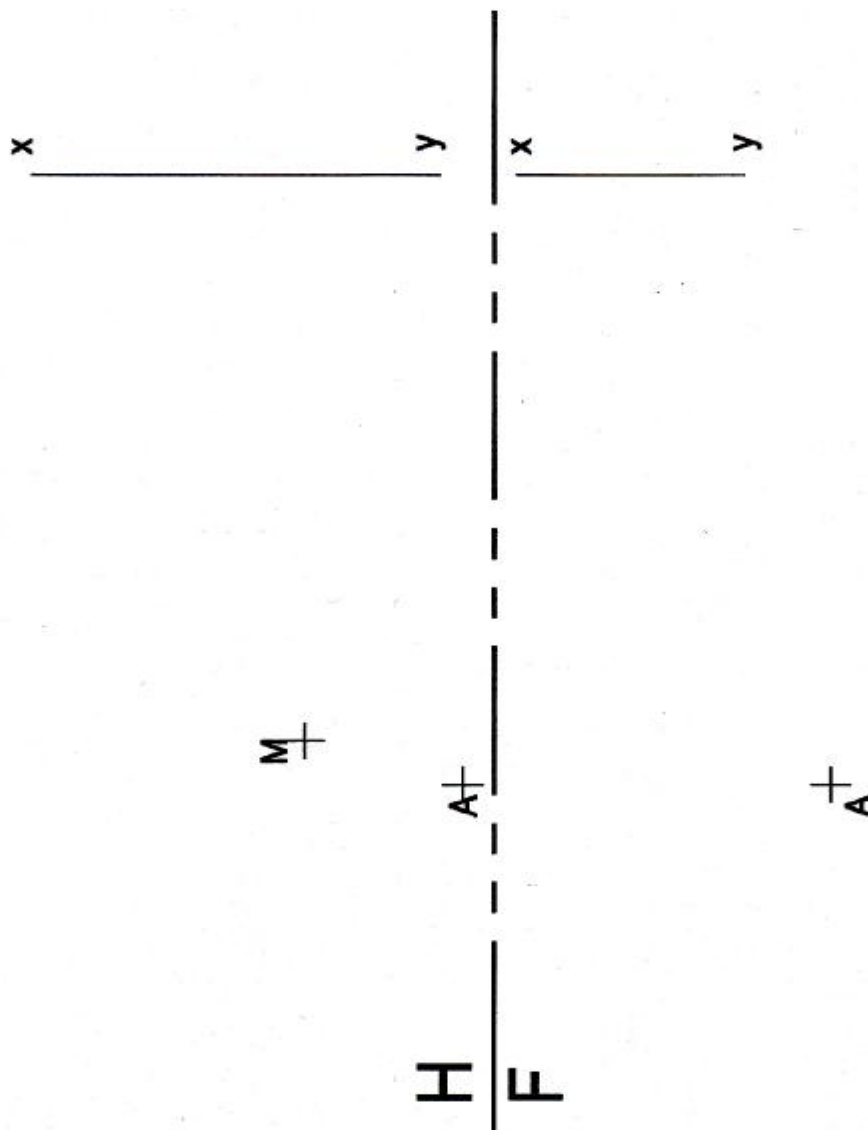
Draw the sphere that is tangent to the both planes ABC and DEF and of center lies somewhere on line xy.



SPHERE TANGENCY	NAME _____	SECTION _____	GRADE _____	57
	FILE NO. _____			

Chosen by Dr. Hasbem Alkhalidi, University of Jordan

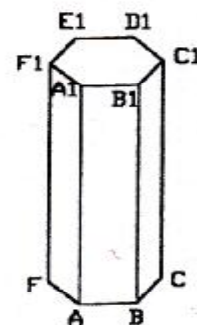
Construct the oblique hexagonal pyramid of base ABCDEF lies in the horizontal plane with center at M. The vertex V of the pyramid lies on line xy. Show correct visibility. The pyramid height= 39 mm.



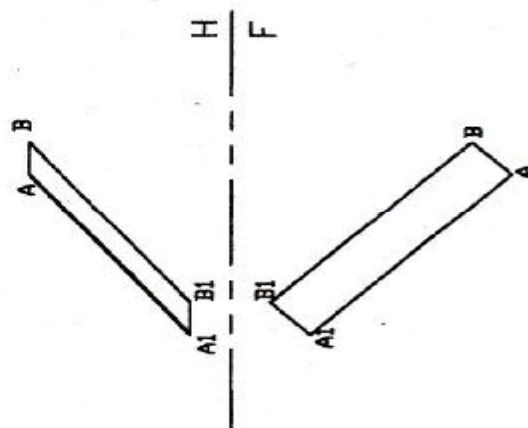
OBLIQUE PYRIMD	NAME	SECTION	GRADE	58
	FILE NO.			

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**Given the lateral face A, A1, B1, B
of a regular right hexagonal prism.
Complete this prism in both plan and
elevation views. Show visibility.**



1+



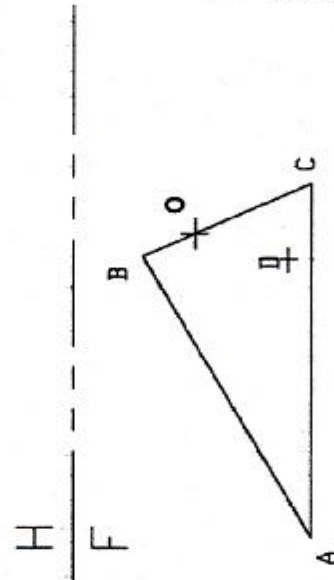
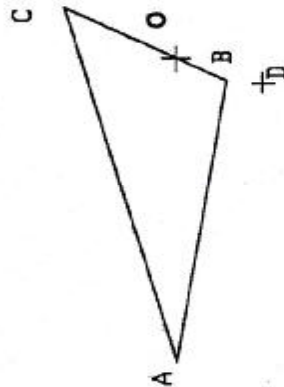
2+

RIGHT PRISM	NAME	GRADE	59
	FILE NO.	SECTION	

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H
1

1
2



Draw the right cone of the following specifications:

- 1) Its base lies in the plane ABC with base center at o.
- 2) Point D is on its lateral surface.
- 3) Its height= 35 mm.

• Show the correct visibility.

RIGHT CONE	NAME _____	SECTION _____	GRADE _____	60
	FILE NO. _____			

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