

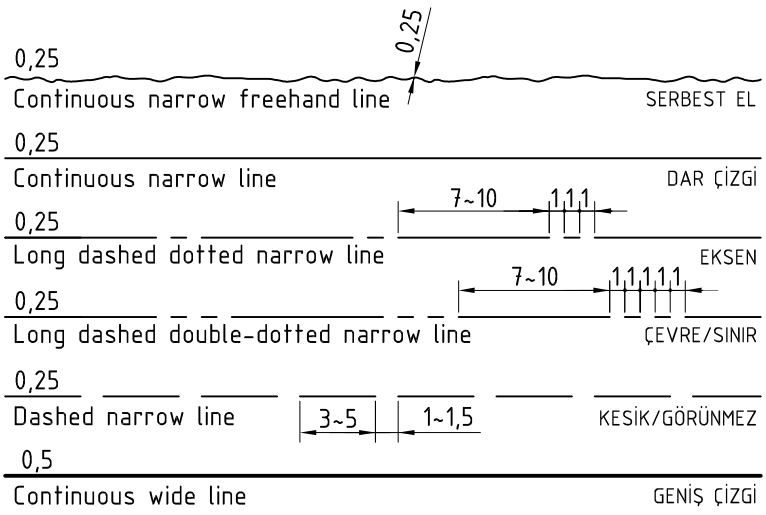
Computer Aided Technical Drawing
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0 (mm) 10 20 30 40 50

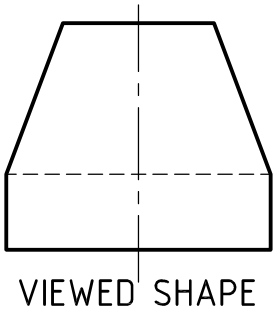
STUDENT NO	DRAWN by	SIGN ...../...../20.....	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
PART/PROJECT TITLE Technical Lettering (TS EN ISO 3098)			MATERIAL -	SCALE -	GROUP/DRAWING NO	TD 101

LINE TYPES (0,5mm LINE GROUP)

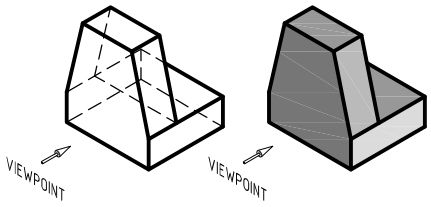
TS 88-20 ISO 128-20



Example usage:



VIEWED SHAPE



PRACTICE: Draw Standard Line Types according to the examples with the start points given below.

STANDARD LINE TYPES

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PART/PROJECT TITLE LINE TYPES (TS 88-20 ISO 128-20)		MATERIAL -	SCALE -	GROUP/DRAWING NO TD 102

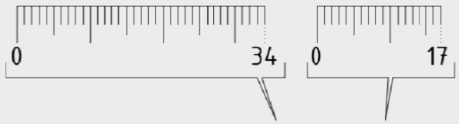
GEOMETRIC CONSTRUCTIONS and SCALE

Twice enlarged view (Scale= 2:1)



Real Size
(Scale= 1:1)

Scale is the ratio between the real size of something and a representation of it. This value must be shown in the title block.

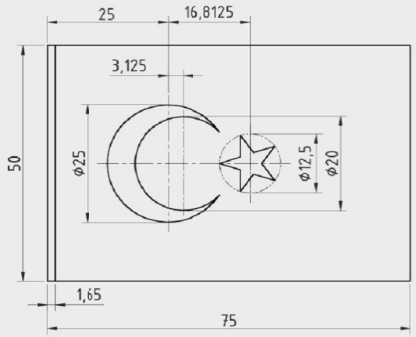


Scale 2 : 1

NOTE!
The dimensional measures used in the drawings are always given at 1:1 scale (in real size)!

PRACTICE:

The STANDARD FLAG of TURKEY (TS 1: 2002/T1: Kasım 2006)



A technical drawing of the flag of Turkey is given above. Dimensions are obtained by parametric calculations according to the relevant standard (TS 1:2002) for the nominal size G=50 mm. Using the given dimensions above, create the drawing at scale of 2:1 (Show the dimensions as seen above).

NOTE: Pay attention to the line widths and line types!

STUDENT NO	DRAWN by	SIGN 17/2/2019	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
X	X			

PART/PROJECT TITLE		MATERIAL	SCALE	GROUP/DRAWING NO	TD 103
X		X	X:X	GX/X	

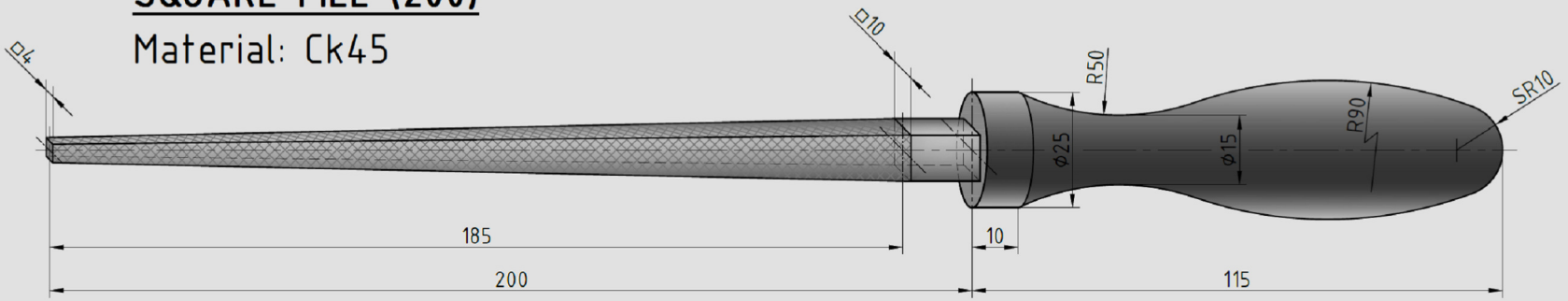
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0 (mm) 10 20 30 40 50

5505120 | S:2/17/2019 1:17:44
P:2/17/2019 1:17:44

SQUARE FILE (200)

Material: Ck45



QUESTION:

Prepare the technical drawing of the part named SQUARE FILE at the scale of 1:1 in the following A4 sheet according to the standards.

Use the corresponding Autocad commands to create exactly the same dimensions on the left.

PRACTICE: SPECIAL VIEWS; Interrupted views, Square ends and flat, Surface pattern (TS 88-34 ISO 128-34)

STUDENT NO	DRAWN by	SIGN 17/2/2019	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
X	X			
PART/PROJECT TITLE			MATERIAL / SCALE / GROUP/DRAWING NO	TD 104
X			X / X:X / GX/X	

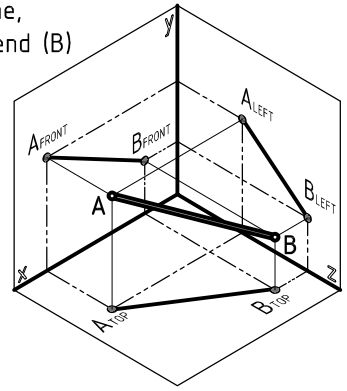
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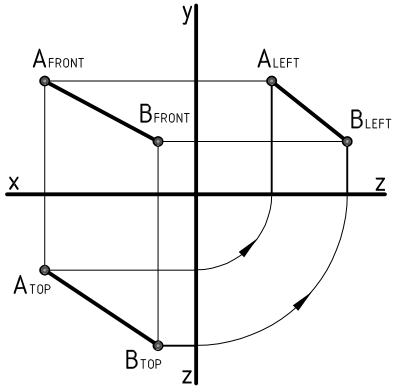
TD105

BPROJECTION OF LINES:

To define a straight line, the start (A) and the end (B) points must be known. The position of both points in space is determined separately and then the line AB is drawn.

	x	y	z
A	20	15	10
B	5	7	20

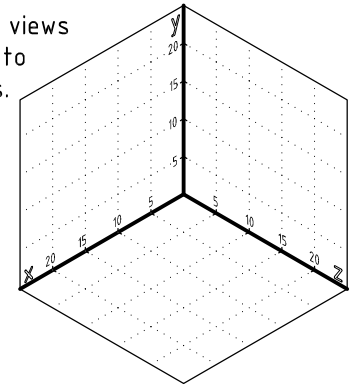


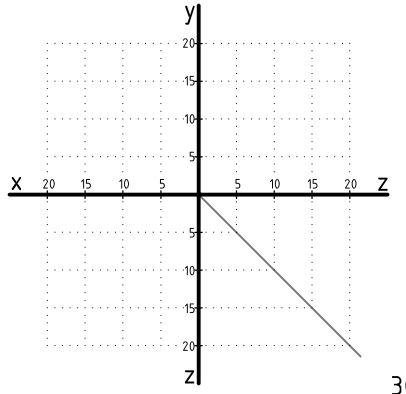


PRACTICE-1:

Draw projections and views of AB-line according to the given coordinates.

	x	y	z
A	13	15	7
B	13	15	20



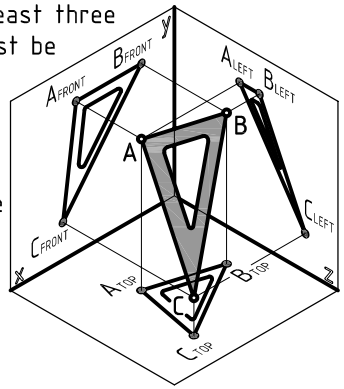


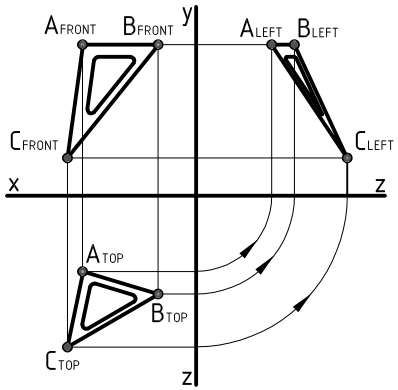
30p

PROJECTION OF PLANES:

To define a plane, at least three points on the plane must be known. The position of each of the three points in space is determined separately and then the ABC plane is drawn.

	x	y	z
A	15	20	10
B	5	20	13
C	17	5	20

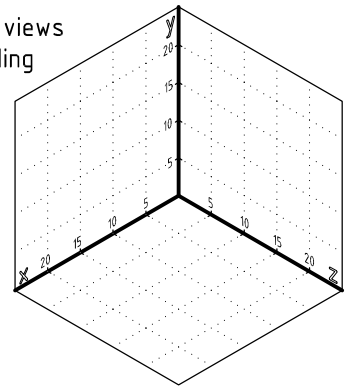


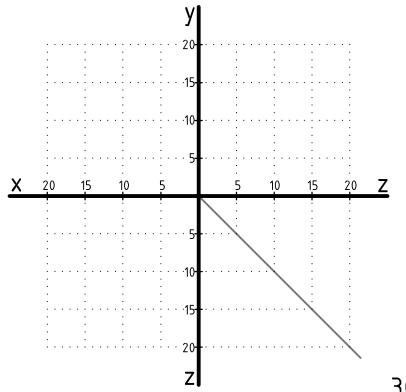


PRACTICE-2:

Draw projections and views of ABCD-plane according to the given coordinates.

	x	y	z
A	15	5	10
B	15	20	10
C	5	20	10
D	5	5	10





30p

By examining the examples and explanations given above, do the exercises on the right hand side **by hand/ruler**. All measured and drawn dimensions must be counted in mm (millimeter) unit and pay attention to **standard technical lettering**.

The lines indicating the boundaries of an object are always drawn in **bold** style and wide (0.5 mm). Almost all other line types are drawn as thinner and narrower (0,25 mm) than the boundary lines.

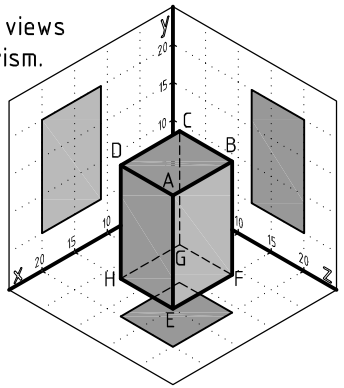
In pencil drawings, in order to get correct line style the pencil should be adjusted by pressing the pencil onto the paper more or less.

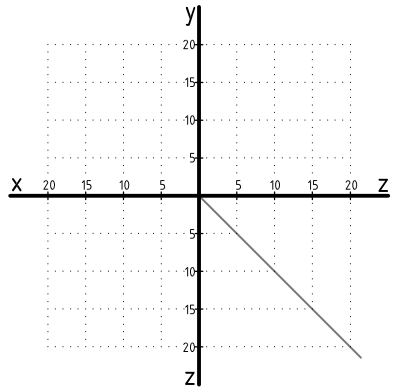
PRACTICE-3:

Draw projections and views of the rectangular prism.

Determine the missing coordinates.

	x	y	z
A			
B	11		
C	11	20	12
D			12
E			
F	11		
G	11	5	12
H			12



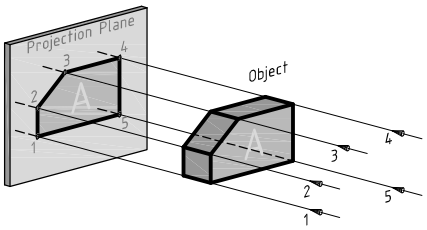


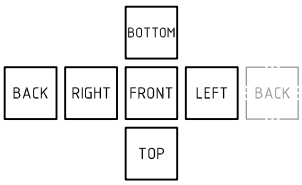
40p

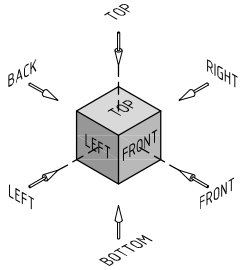
STUDENT NO	DRAWN by	DATE / SIGN	SCALE		TD 105

FIRST ANGLE PROJECTION METHOD

TS EN ISO 5456-2



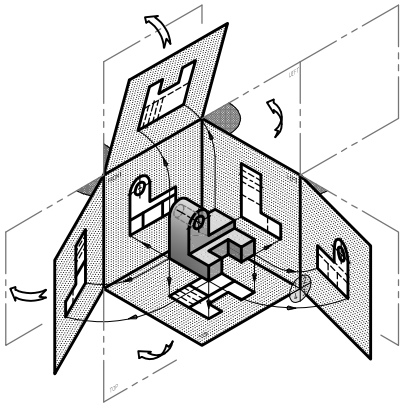




When determining the positions of the views of an object, the FRONT Plane which contains the PRINCIPAL VIEW (Front View) is fixed and the other planes are paralleled relative to it. Therefore;

- top view is located below the front view (FV),
- bottom view is located above the FV,
- left view; on the right side of the FV,
- right view; on the left side of the FV
- back view; on the right side of the left view or on the left side of the right view

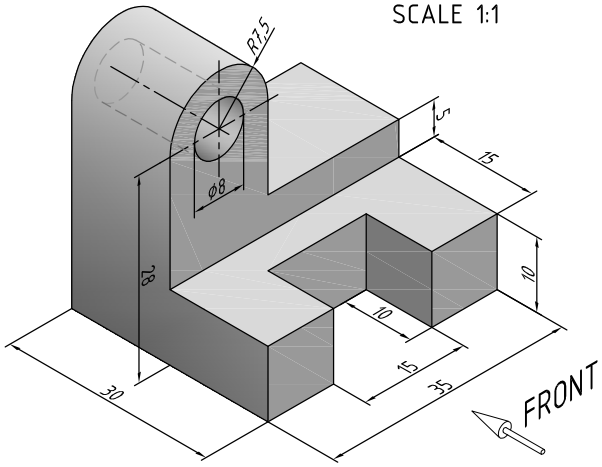
NOTE: One of the projected views was given deliberately wrong. Carefully find it and correct!

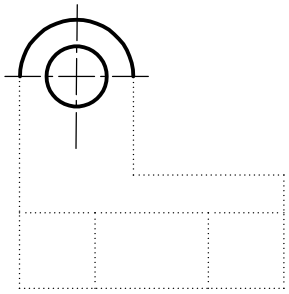


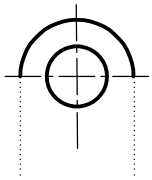
PRACTICE:

The isometric view and dimensions of a part is given on the right hand side. Draw the six views according to the FIRST ANGLE PROJECTION METHOD.
(Start with the partially given FRONT View and use the reference lines given for the location of the other views!)

SCALE 1:1

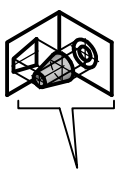


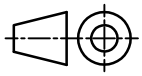




The identifying graphical symbol of FIRST ANGLE PROJECTION METHOD

Technical drawings prepared according to the First Angle Projection Method must be indicated by this symbol. The symbol is usually shown in the title block (see it below!).





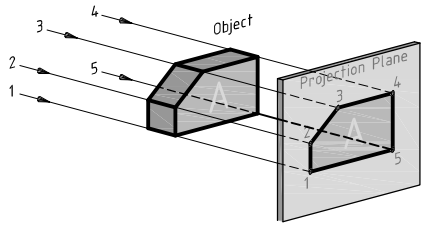
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PART/PROJECT TITLE			MATERIAL / SCALE / GROUP/DRAWING NO	TD 106

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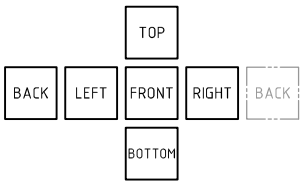
0 (mm) 10 20 30 40 50

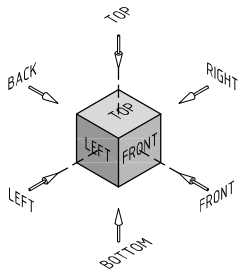
THIRD ANGLE PROJECTION METHOD

TS EN ISO 5456-2



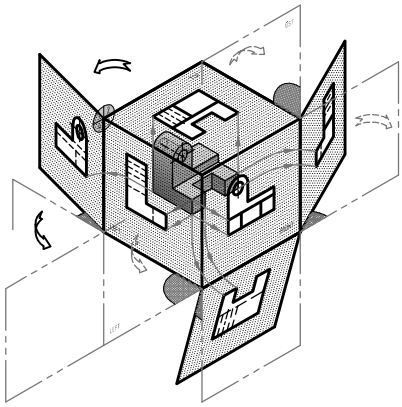
In this method, the Projection Plane is assumed as transparent and the object is located behind the plane. Therefore it is also called Glass Box Method.





When determining the positions of the views of an object, the FRONT Plane which contains the PRINCIPAL VIEW (Front View) is fixed and the other planes are paralleled relative to it. Therefore;

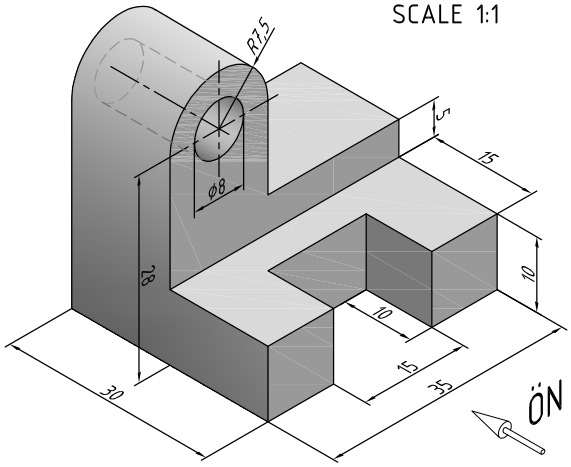
- top view is located above the front view (FV),
- bottom view is located below the FV,
- left view; on the left side of the FV,
- right view; on the right side of the FV
- back view; on the left side of the left view or on the right side of the right view.

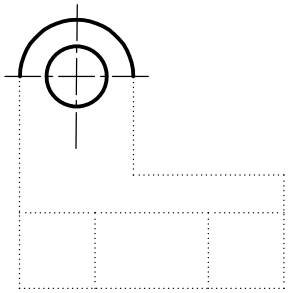


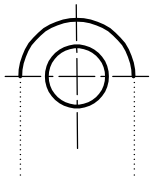
PRACTICE:

The isometric view and dimensions of a part is given on the right hand side. Draw the six views according to the THIRD ANGLE PROJECTION METHOD.
(Start with the partially given FRONT View and use the reference lines given for the location of the other views!)

SCALE 1:1

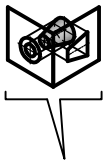


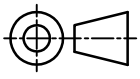




The identifying graphical symbol of THIRD ANGLE PROJECTION METHOD

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STUDENT NO	DRAWN by	SIGN ...../...../20.....	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
PART/PROJECT TITLE			MATERIAL / SCALE / GROUP/DRAWING NO	TD 107

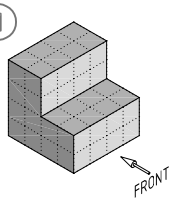
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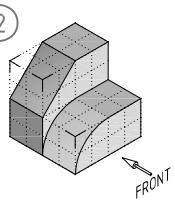
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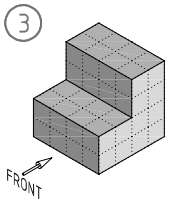
PRACTICE:

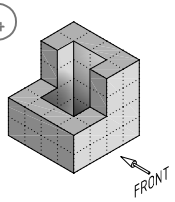
Draw the required views of the parts which are given as isometric views (perspective) below. Use the FIRST ANGLE PROJECTION METHOD and draw in correct measure on the given template areas by hand/ruler. Each single square represents 5x5 mm dimensions.

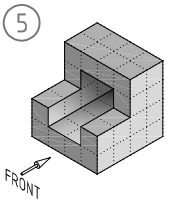
- The principal (front) view direction of the parts are indicated by arrow. The FRONT VIEW must be selected in the direction of the arrow!
- Draw the parts from 1 to 12 in sequence

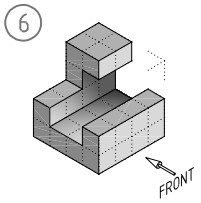
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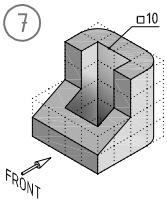
2 

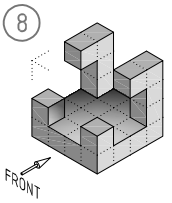
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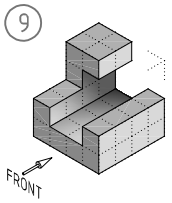
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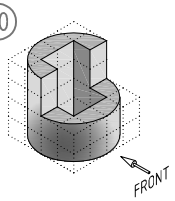
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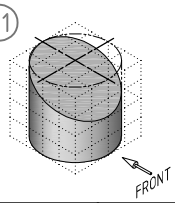
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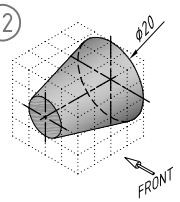
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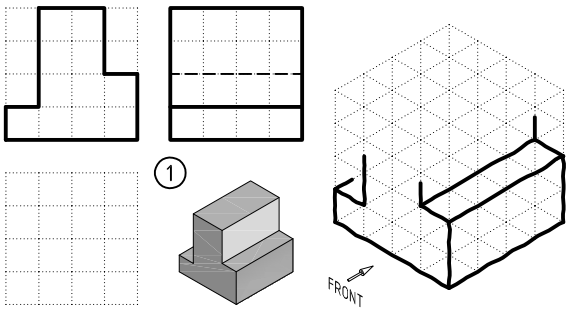
STUDENT NO	DRAWN by	SIGN ...../...../20.....	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
PART/PROJECT TITLE			MATERIAL / SCALE / GROUP/DRAWING NO	TD 108

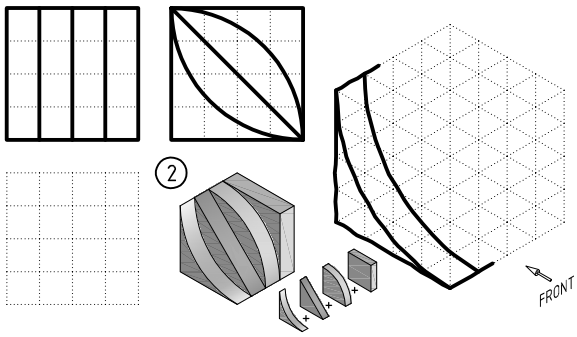
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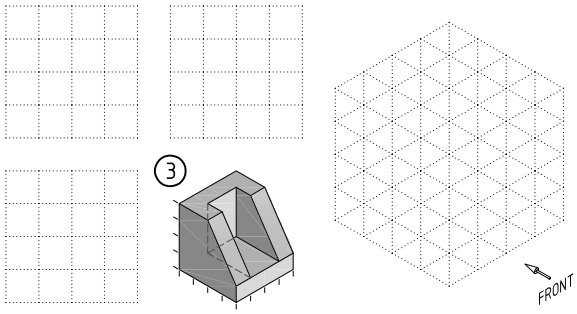
0 (mm) 10 20 30 40 50

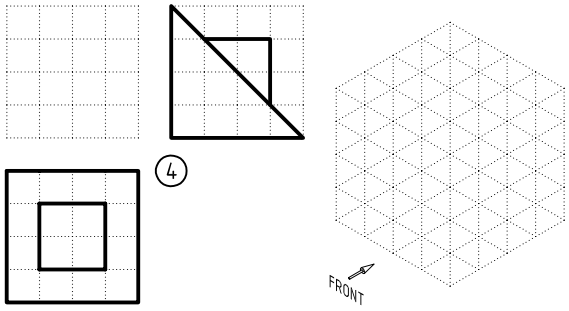
PRACTICE:

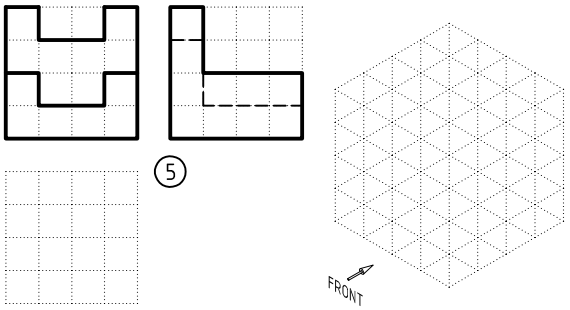
Draw the missing views and the isometric views by freehand line! (No ruler should be used!)

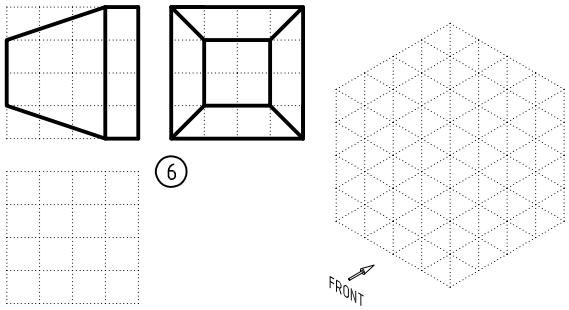


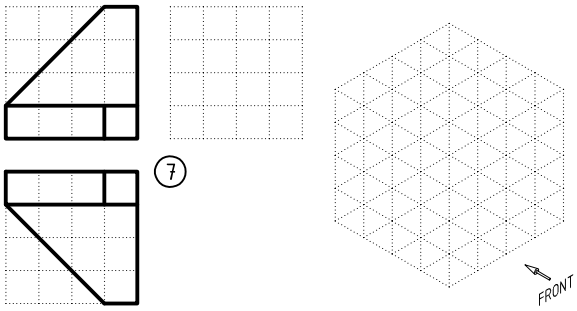


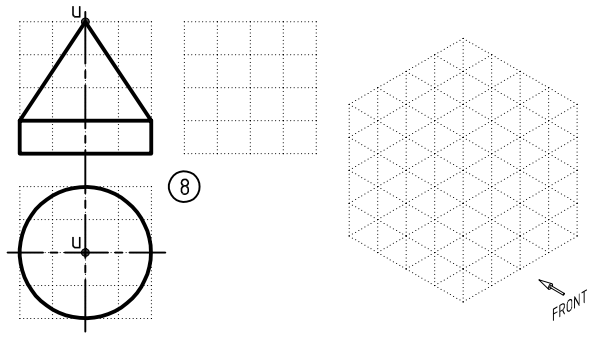


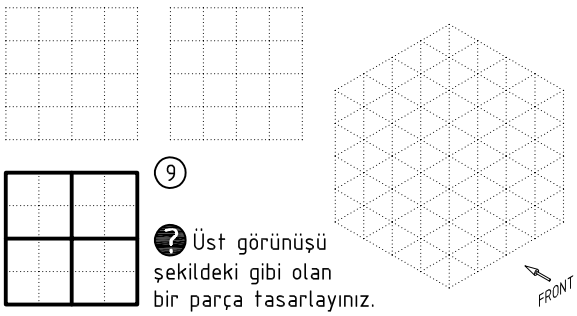




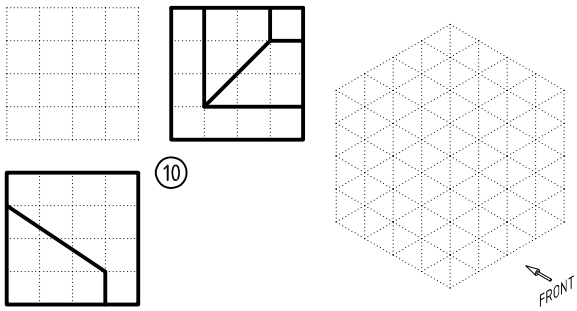








Üst görünüşü şekildeki gibi olan bir parça tasarlayınız.

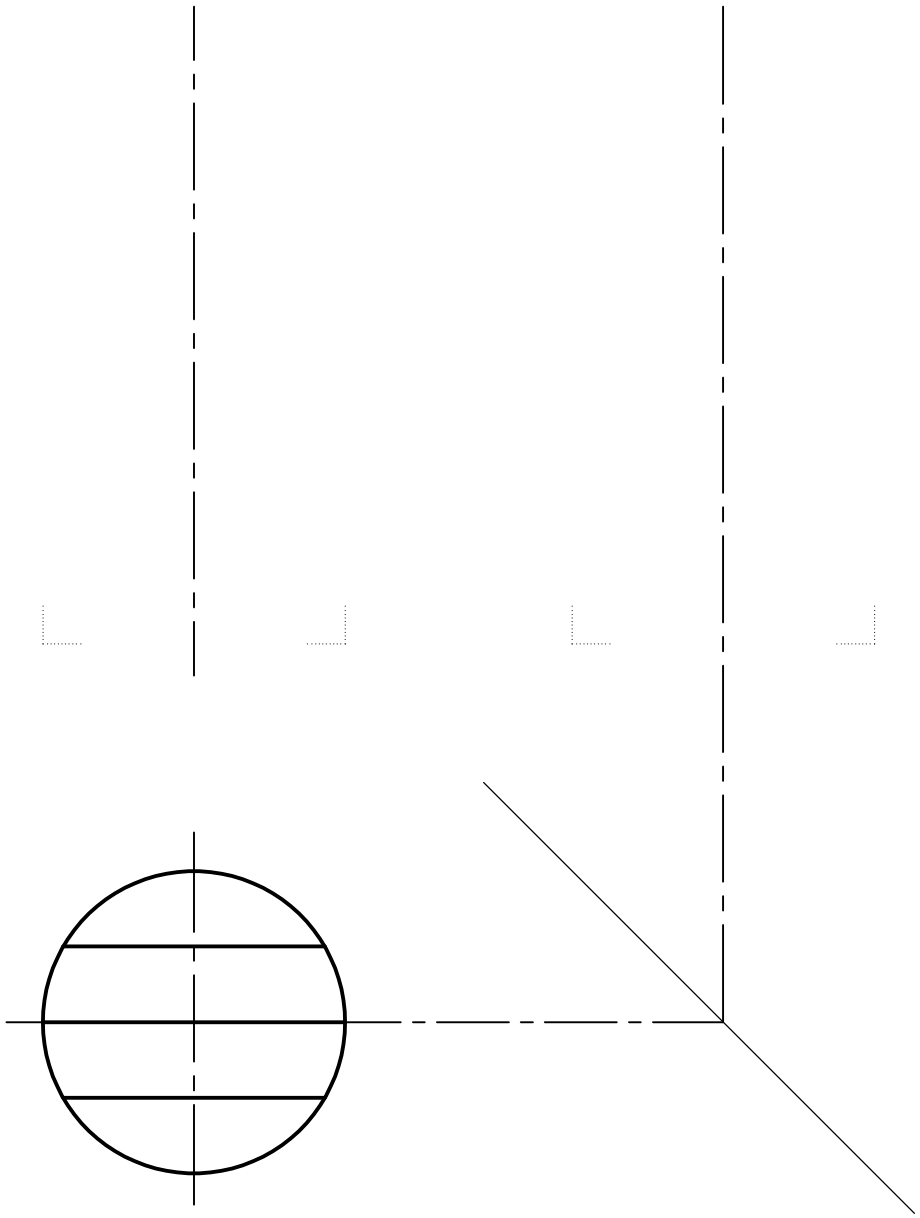


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PART/PROJECT TITLE		MATERIAL	SCALE	GROUP/DRAWING NO / TD 109

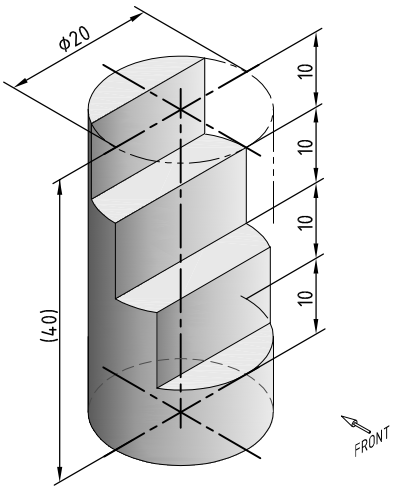
0 (mm) 10 20 30 40 50

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PRACTICE: Step Cut Cylinder

Draw the missing views and determine scale of the drawing
from the given top view above and fill in the title block correctly.



Explanation:
A cylinder with dimensions of ϕ20x40 is cutted longitudinal range of 10 mm and diametrical transverse range of 5 mm.

HINT:
The easiest way to find the exact positions of the border lines in the cut areas is to move the point-edge between two views. Use the reflection line given above!

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PART/PROJECT TITLE			MATERIAL	SCALE	GROUP/DRAWING NO	TD 110

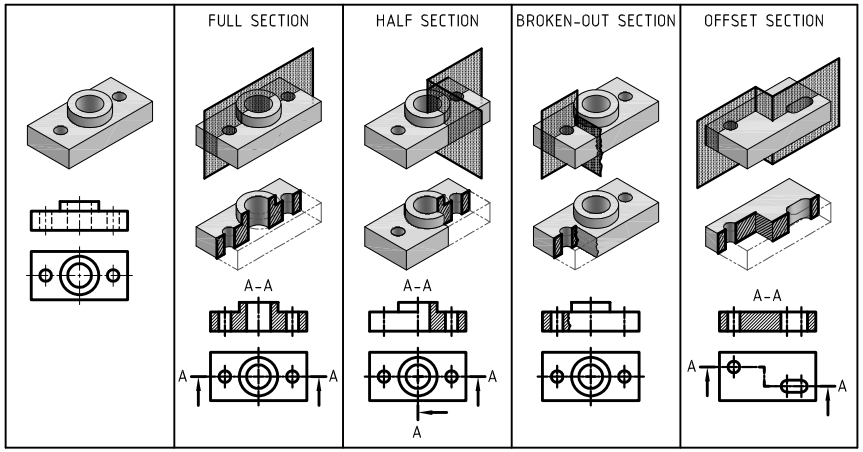
0 (mm) 10 20 30 40 50

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SECTIONAL VIEWS

TS 88-40 ISO 128-40, TS 88-44 ISO 128-44, TS 88-50 ISO 128-50

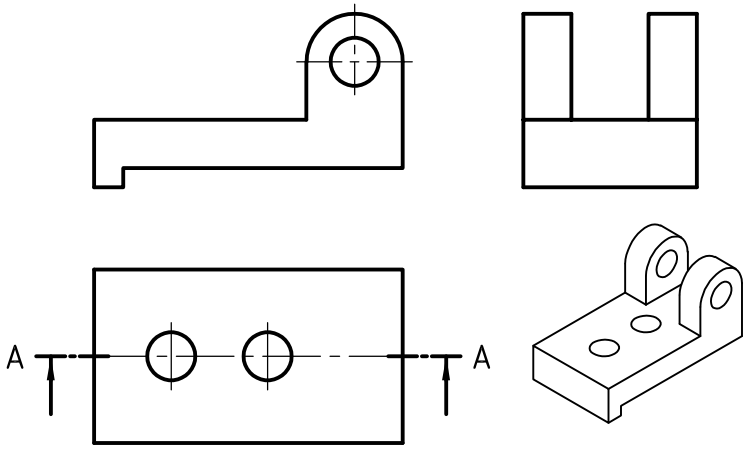
In order to explain the invisible internal structures (holes, channels, etc.) of some parts, the sectional views of the parts are used. The basic section view types are as follows.



PRACTICE-1:

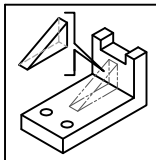
The isometric view and the basic views of a part are partially given below;

- Complete the each missing details by using the partially given three basic views. (HINT: Start from the top view.)
- Draw the Front view as FULL SECTION and the Left view as BROKEN-OUT SECTION from one of the hole zone on the half-cylinder area.



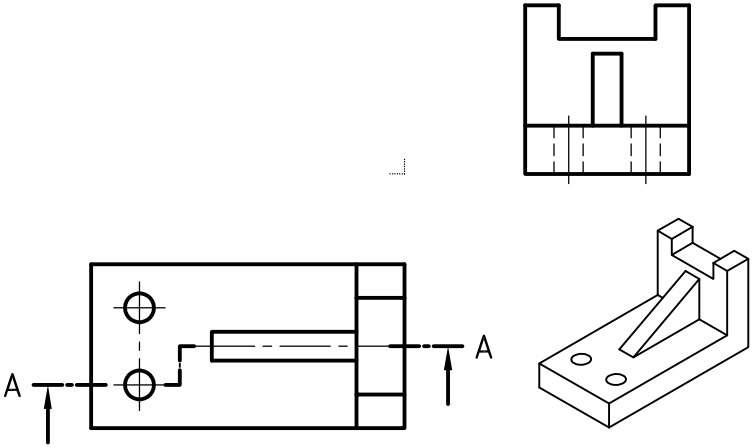
PRACTICE-2:

Isometric, left and top views of a part is given below;
Draw the Front view as OFFSET SECTION from given cutting plane (A-A).



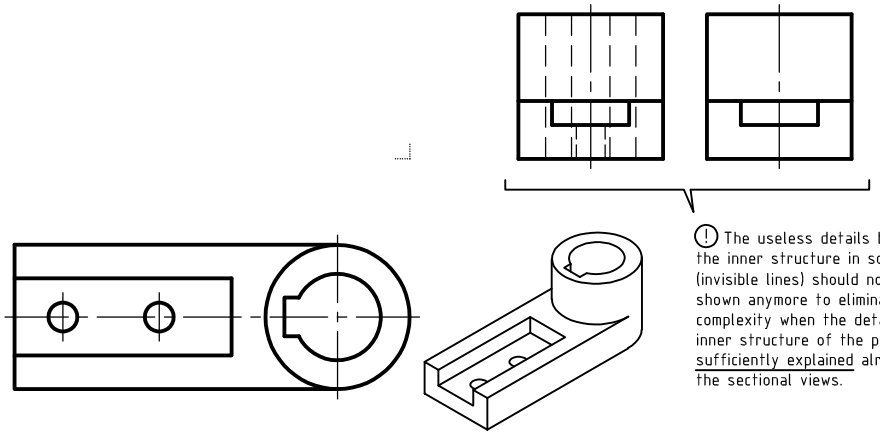
Supporting elements are used to increase the strength of some parts as shown in the figure. This kind of elements are shown uncut even if they are on the section plane!

Rib (eng.), Destek, Feder, Takviye Kanadı, Payanda...



PRACTICE-3:

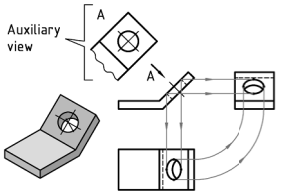
Isometric, left and top views of a part is given below;
Draw the Front view as FULL SECTION from the convenient cutting plane.



! The useless details because of the inner structure in some views (invisible lines) should not be shown anymore to eliminate complexity when the details of the inner structure of the part are sufficiently explained already in the sectional views.

STUDENT NO	DRAWN by	DATE	SCALE		TD 111
		SIGN	1:1		

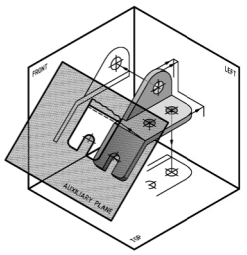
AUXILIARY VIEWS: Partial views, Representation by an arrow



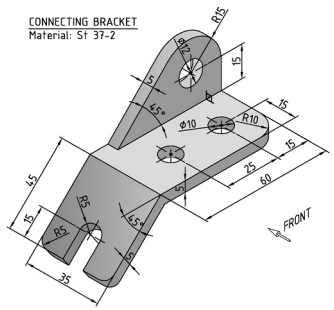
Some part shapes may be too comlex to be explained by conventional three basic views. In these cases the auxiliary views are used.

In the example, the hole shape appears as an ellipse on the top and left views because of the hole plane is angled with respect to the left and top plane. That's why an auxiliary view perpendicular to the hole plane is needed for this part to be fully explained.

HINT:



CONNECTING BRACKET
Material: St 37-2



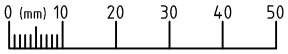
QUESTION:

Isometric view of a part named CONNECTING BRACKET is given on the left. Prepare the *production drawing in accordance with standards;

1-) Draw at scale of 1:1 in the following A4 sheet with reference of the given Ø12 hole view.

2-) Fill in the title block correctly.

*production drawings *are a kind of drawings that contain all the technical information necessary to manufacture a part (required views, sections, measures, tolerances, surface textures etc.).*



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PRACTICE: Production (Manufacturing) Drawings

Auxiliary views, Section views, Dimensioning

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X	X			
PART/PROJECT TITLE		MATERIAL	SCALE	GROUP/DRAWING NO	TD 112
X		X	X:X	GX/X	

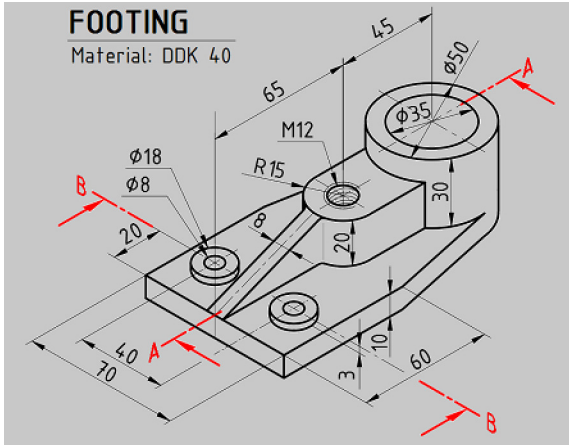
QUESTION:

Isometric view of a part named FOOTING is given below. Prepare the *production drawing in accordance with standards;

1-) Pay attention to the given section planes!

2-) Fill in the title block correctly.

**production drawings are a kind of drawings that contain all the technical information necessary to manufacture a part.*



STUDENT NO	DRAWN by	SIGN 17/2/2019	YILDIZ TECHNICAL UNIVERSITY Faculty of Mechanical Engineering	
X	X			
PART/PROJECT TITLE			MATERIAL / SCALE / GROUP/DRAWING NO	TD 113
X			X / X:X / GX/X	