

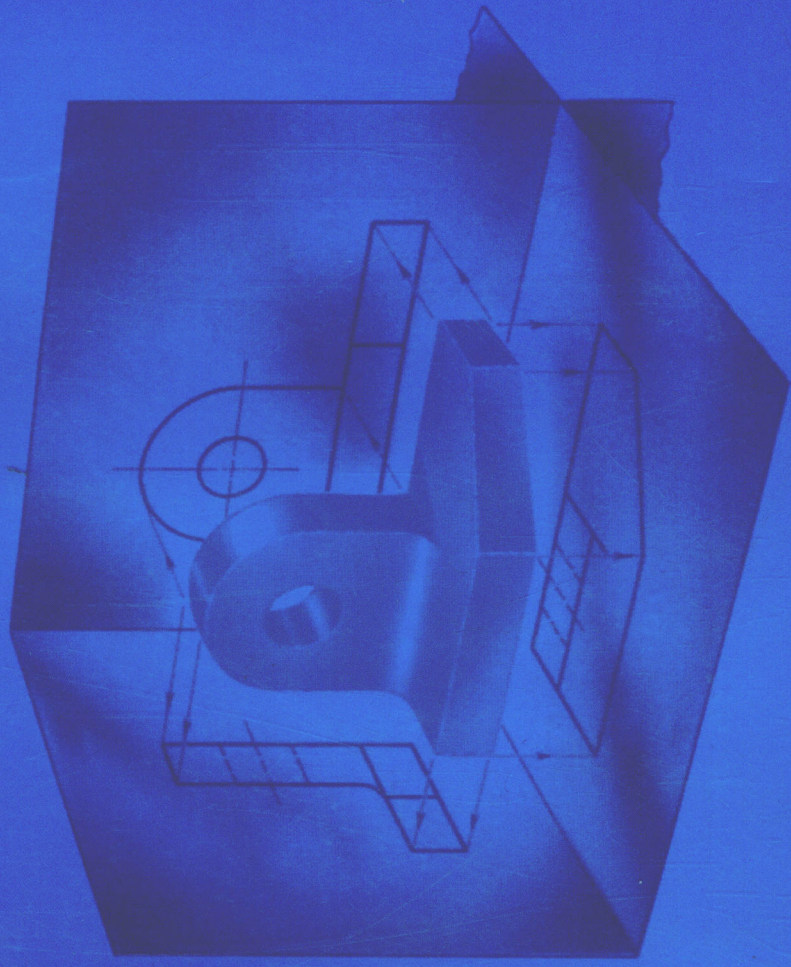
双语
教学版

Fundamentals of Engineering Drawing Student Workbook

工程制图基础

习题集

■ 主编 张庆伟



重庆大学出版社

Fundamentals of Engineering Drawing

(Student Workbook)

工程制图基础习题集

主 编 张庆伟

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重 庆 大 学 出 版 社

内 容 提 要

本习题集与张庆伟等编写的双语教材《Fundamentals of Engineering Drawing》配套使用。其内容包括:制图的基础知识;点、直线和平面的投影;基本立体及表面交线;组合体;物体的表达;螺纹及螺纹连接件、零件图及装配图简介。

本习题集中的工程制图知识符合教育部 2000 年批准的《画法几何及工程制图课程教学基本要求》及《工程制图基础课程教学基本要求》。

本书可供本科工科各专业学生使用,也可供成人高校学生使用。

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前 言

本习题集是在教学实践和总结教学改革成果的基础上编写的,与《Fundamentals of Engineering Drawing》双语教材配套使用。其编排顺序与教材相同,在使用过程中教师可视具体情况作适当调整。

本习题集有以下特点:

- (1)在选题方面由浅入深,并注重了习题形式的多样性,前后衔接,逐步提高。
- (2)在习题的数量和难度方面有选择余地,可满足不同水平学生的需求。

本习题集由重庆大学张庆伟主编,夏红、王建宏任副主编,参加编写的有易于、薛寒松、朱小飞。由丁一教授审阅。由于编者水平有限,书中不当之处在所难免,敬请读者批评指正。

编者

2005年9月

作业要求

1. 绘图仪器准备:三角板一副(10 cm 和 25 cm 各一副);绘图仪器盒(含圆规、分规);铅笔(HB $\times$ 2、B $\times$ 2);削铅笔用小刀及砂纸;橡皮擦;擦图片。
2. 解题前应认真听课和仔细阅读教材,先复习后做作业,并仔细阅读作业说明。
3. 作业中的图线、字体应符合技术制图国家标准。
4. 保持图面整洁、图线标准、作图规范、投影正确。

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Chapter 1 Basic Skills of Engineering Drawing

1.1 Practice texts, letters and numerals in the grids. Use a medium grade pencil (HB or B).

Class

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汉字应写长仿宋体并应采用国家正式公布的简化汉字

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工程图样是工程界的共同语言 技术人员必须掌握它

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abcdefghijklmnopqrstuvwxyz VIII IX

机 械 造 汽 车 应 用 力 学 重 锻 压 铸 焊 接 热 能 物 电 高 采

矿 化 冶 金 材 无 线 技 工 自 仪 表 计 算 数 理 一 长 仿 宋 体

技 术 要 求 其 余 全 部 倒 角 未 注 铸 造 楔 角 皆 为 表 面 热 处 理 斜 锥 厚 度 左 右

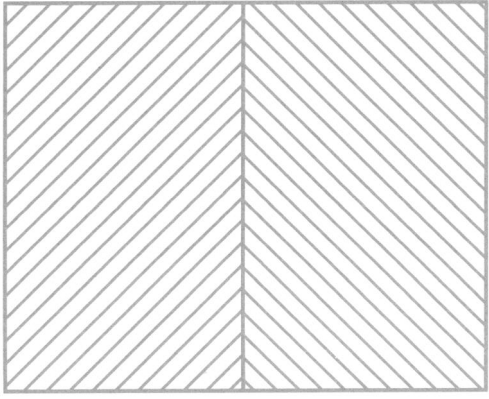
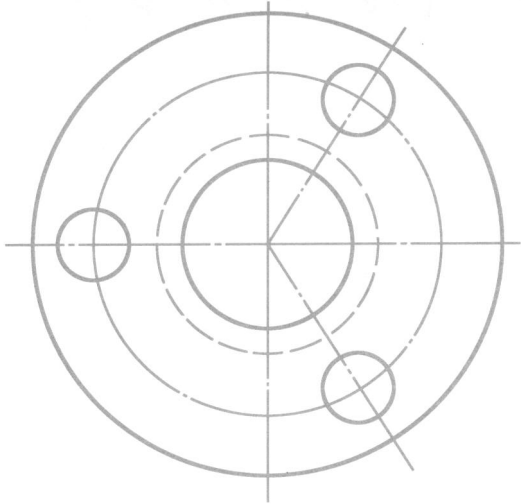
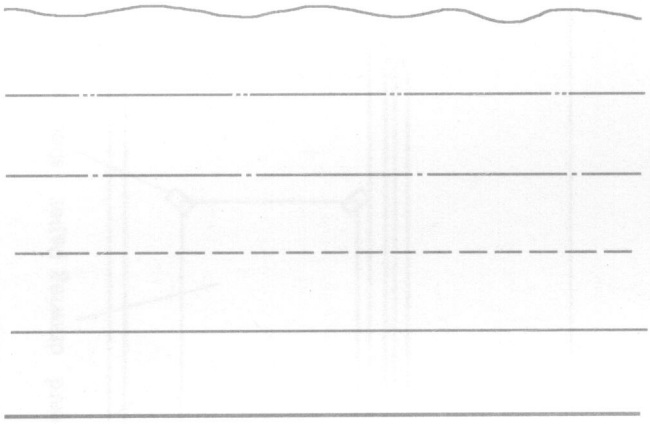
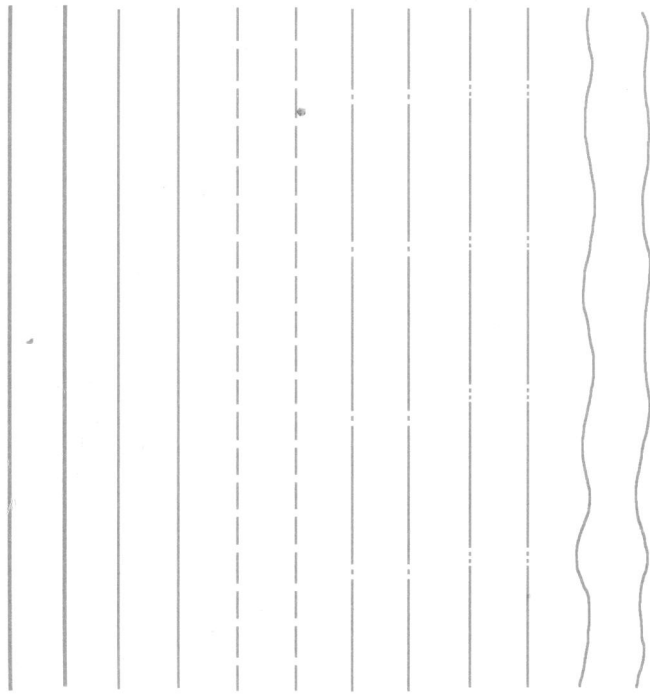
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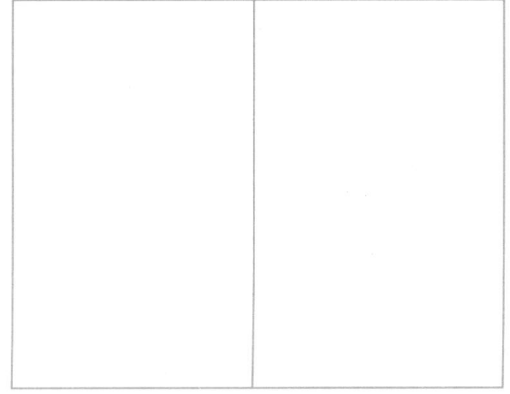
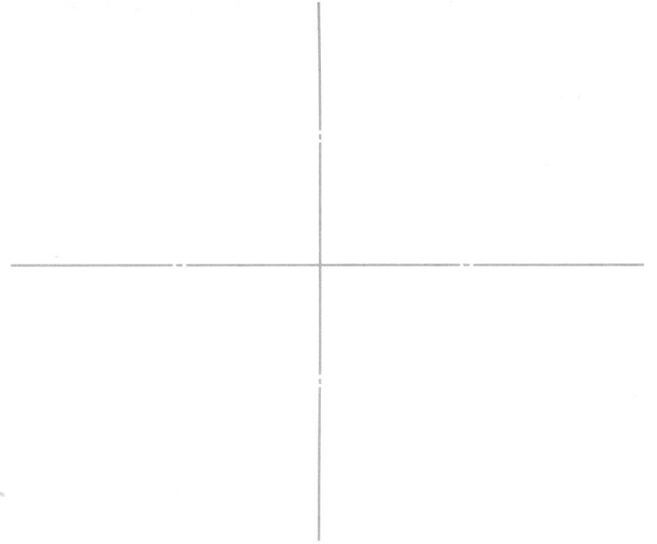
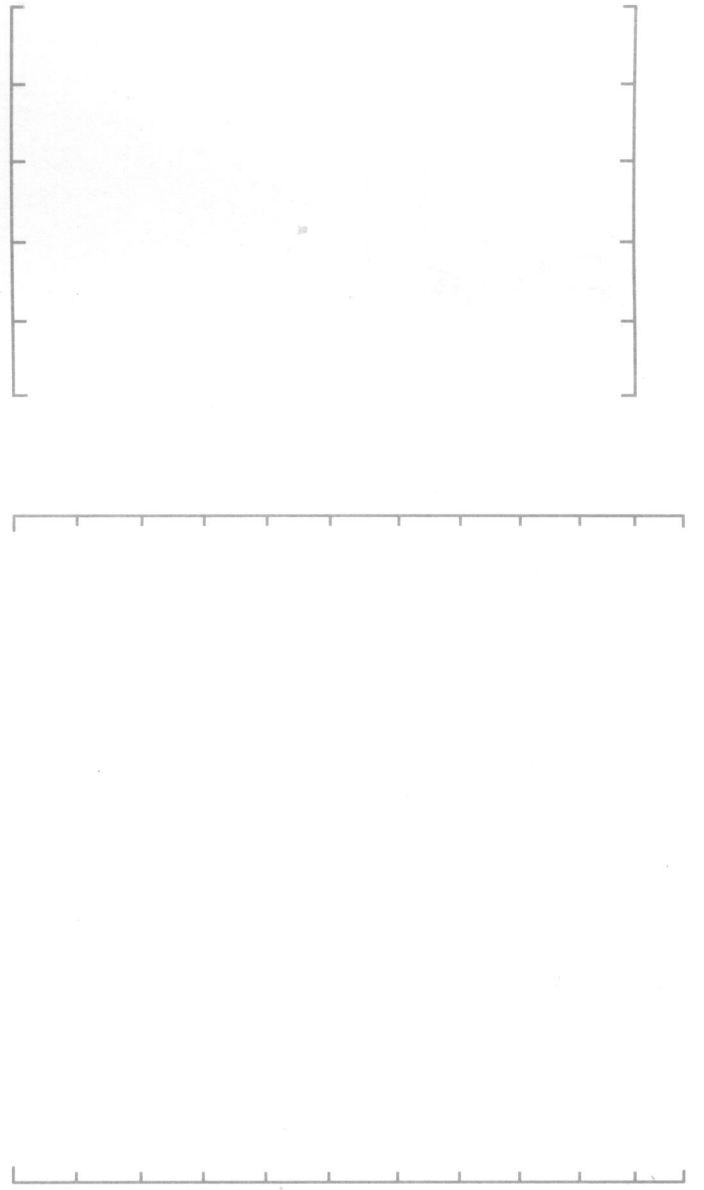
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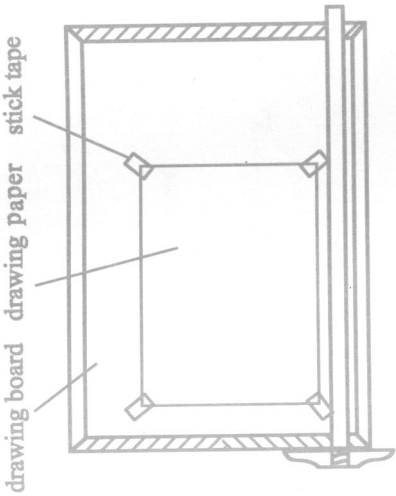
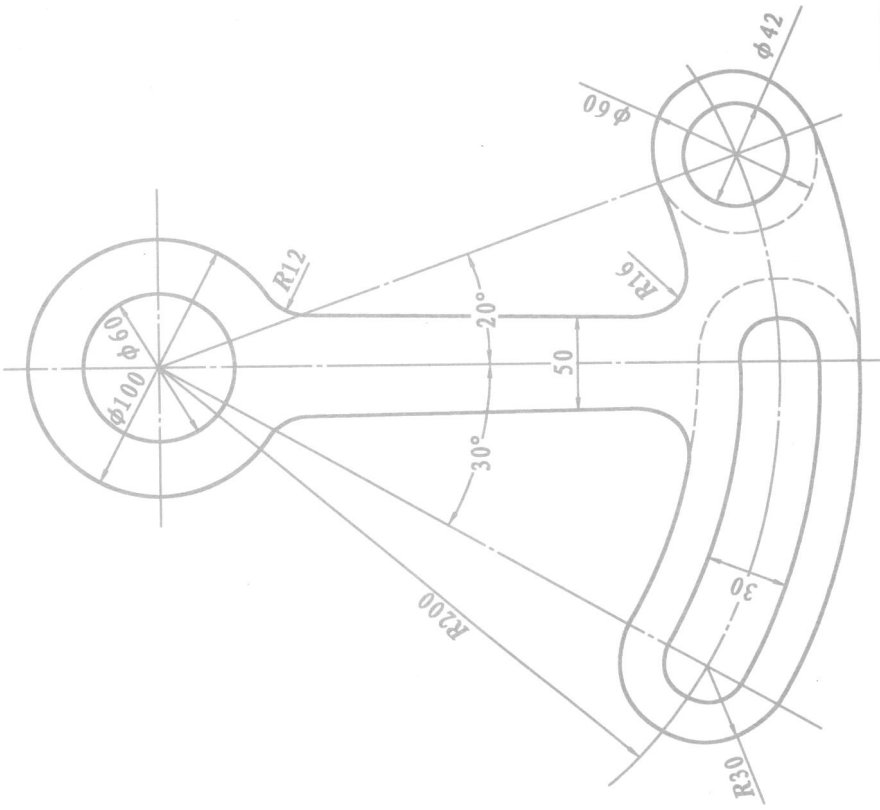
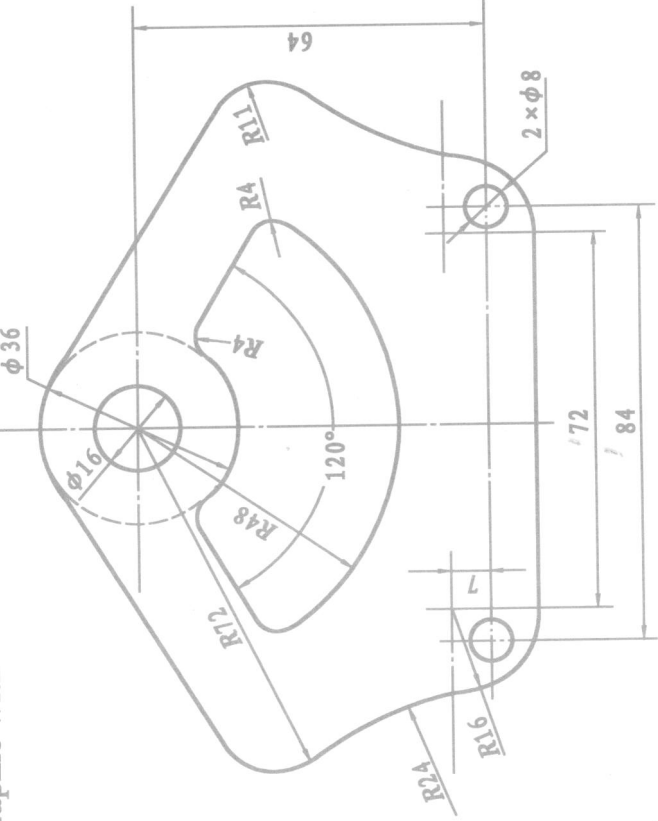
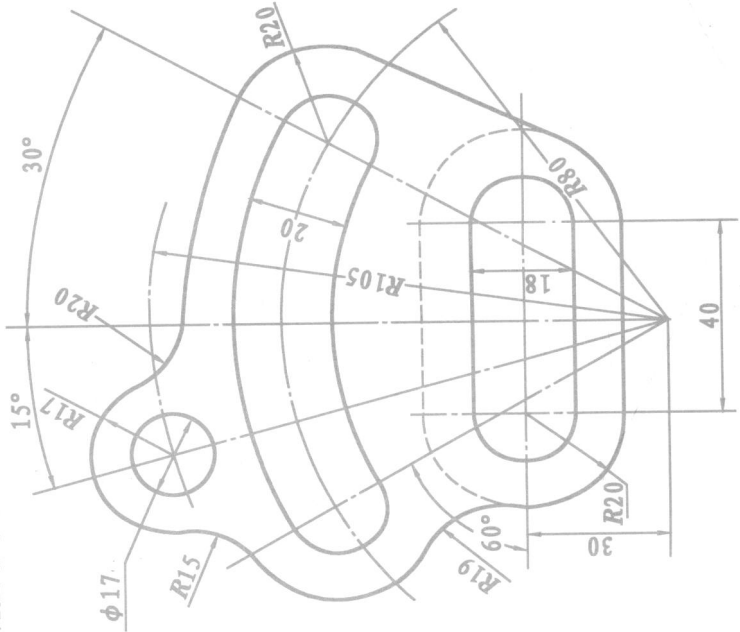
1.2 Practice all kinds of lines.

Given:



Draw all kinds of lines according to the given lines on the paper.



1.3 Draw graphic. Given: (1), (2) and (3) graphics. Choose one of the given graphics to draw and dimension in an A3 drawing paper.		Class	Name	No.	4
Solution: Step1. Based on analyzing graphic and dimensions, find out position dimensions and form dimensions. Step2. Draw base lines, center lines and thin continuous lines, with medium grade pencil, H or HB. Step3. Draw the known lines and arcs. Step4. Draw unknown arcs. Step5. Dimension. Step6. Brighten graphic. Step7. Fill out title block.		 drawing board drawing paper stick tape (1) Draw graphic with the scale 1:2. 			
		(2) Draw graphic with the scale 1:1.  (3) Draw graphic with the scale 1:1. 			

Chapter 2 Points, Lines and Planes

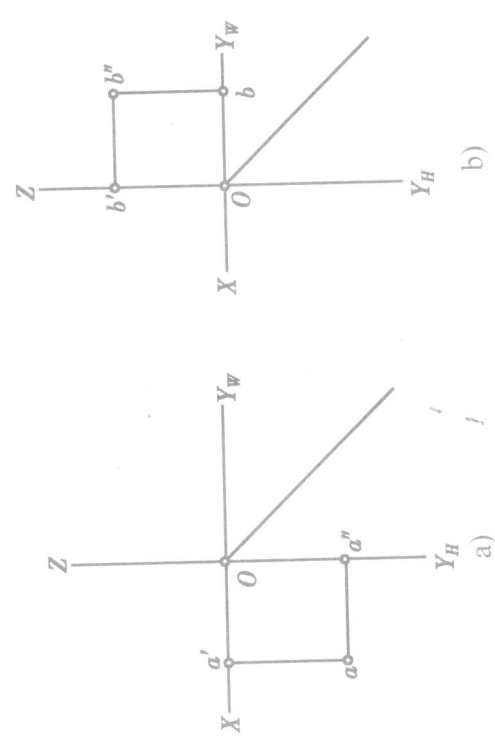
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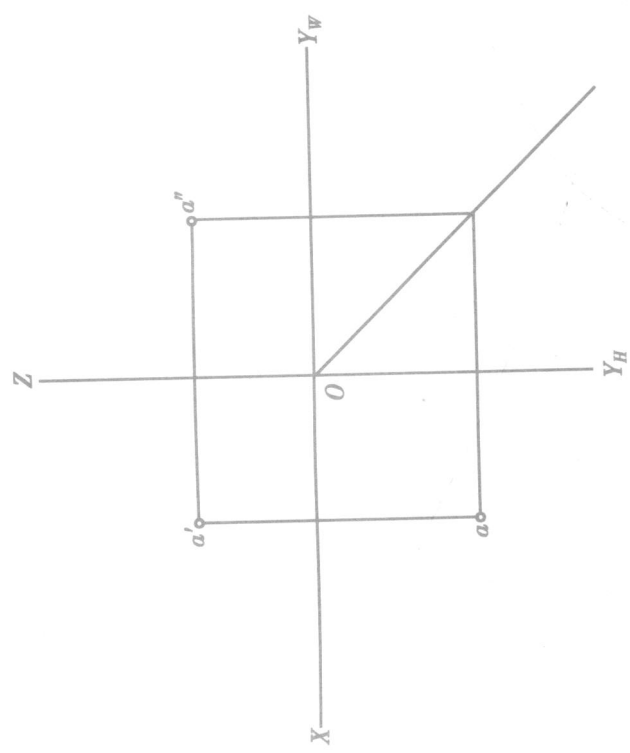
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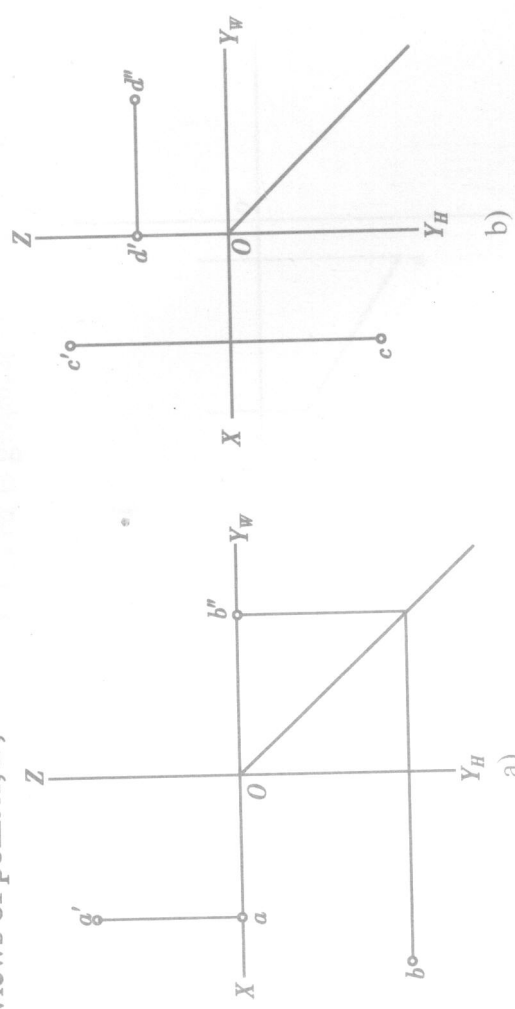
2.2 Point out the mistakes on the following figures and correct them.



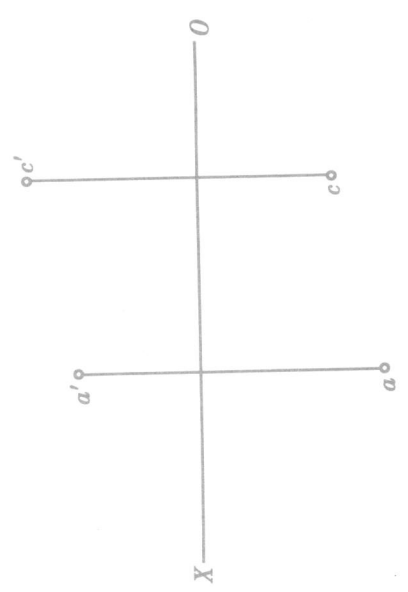
2.4 Point B is above point A 10 mm, in front of Point A 5 mm, and to the left of point A 15 mm; point C is to the right of point B 10 mm, draw the three views of point B and point C, and determine their visibility.

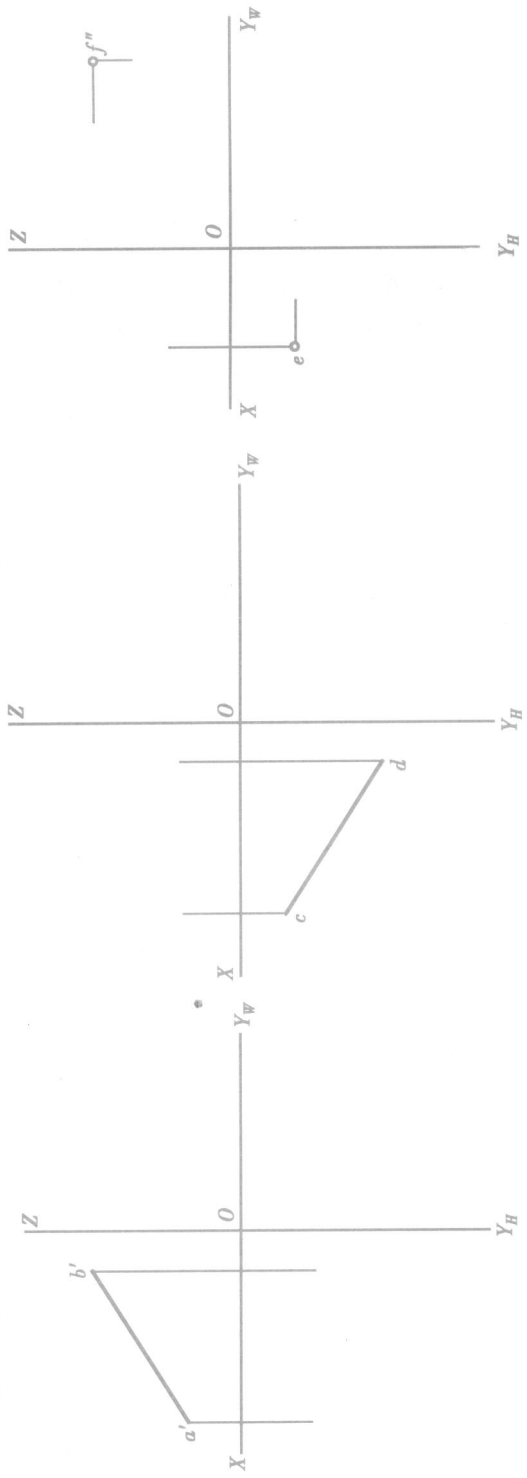
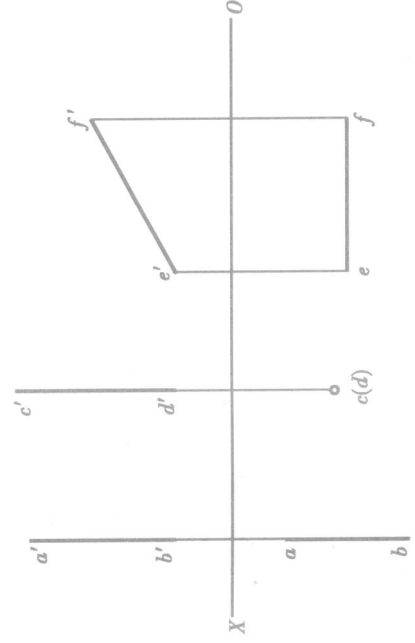
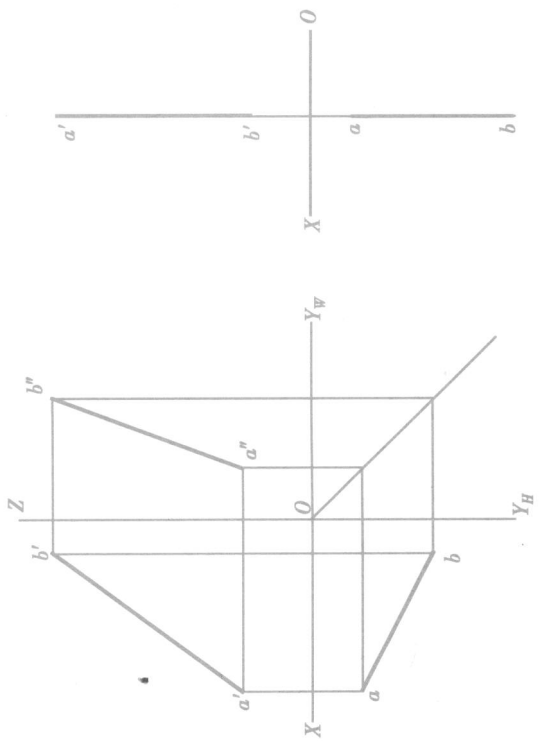
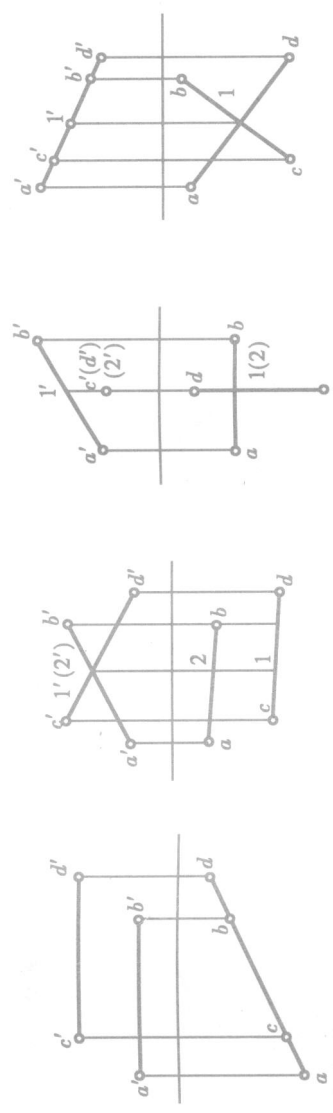


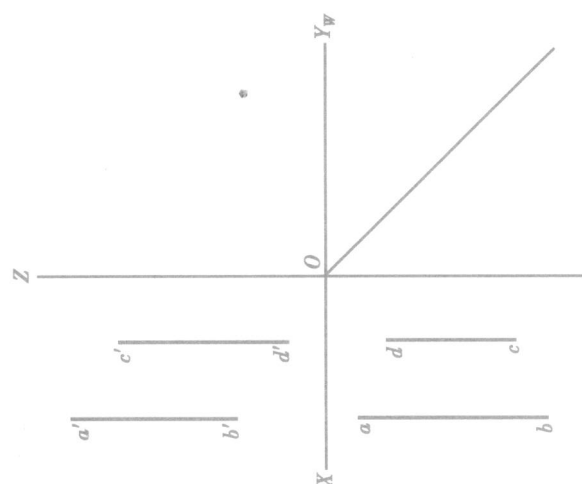
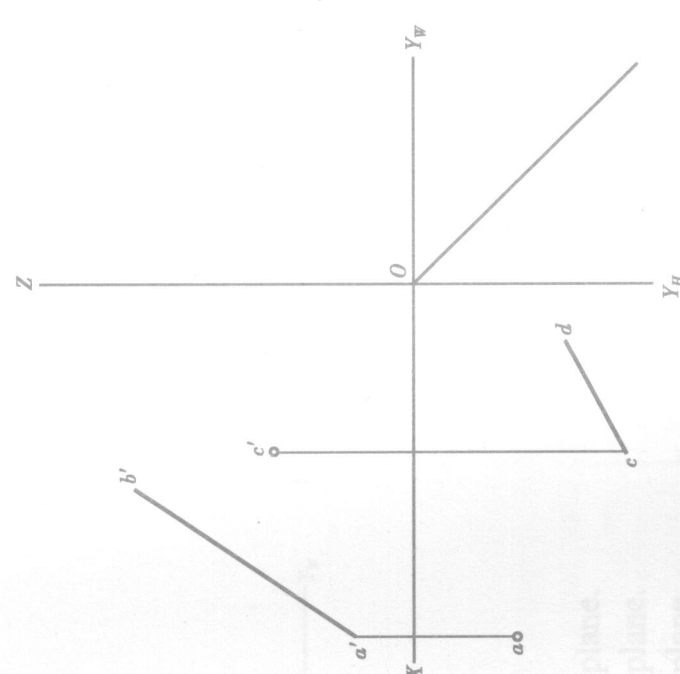
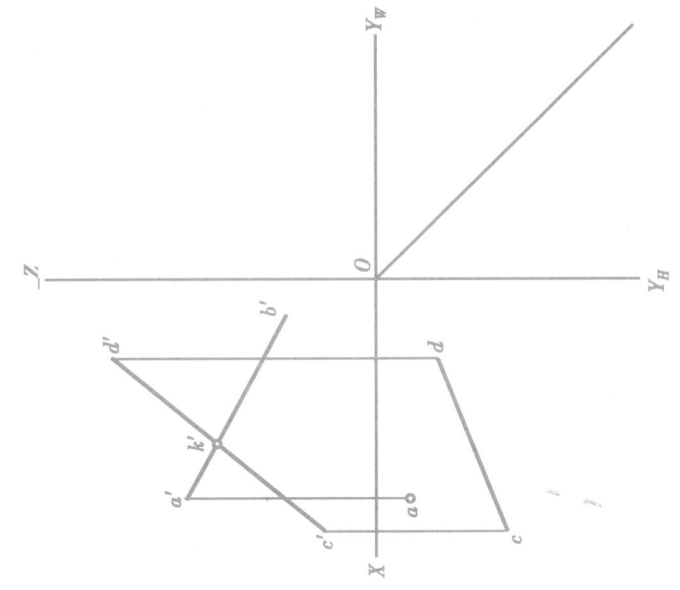
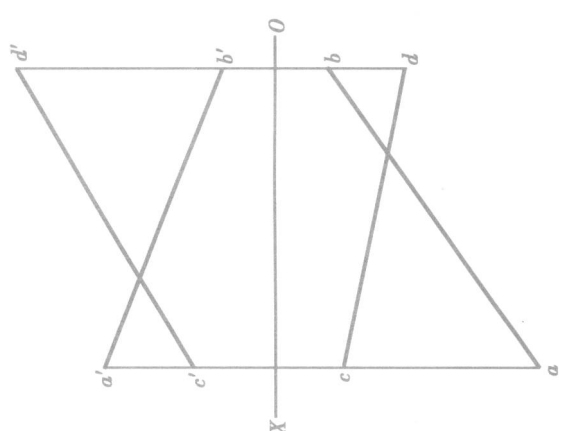
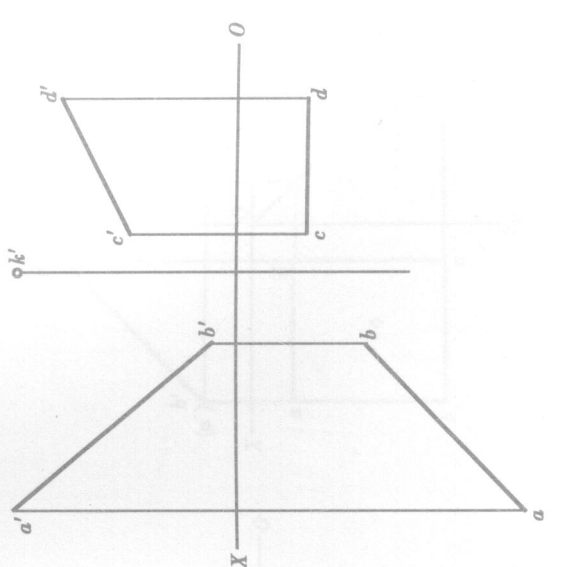
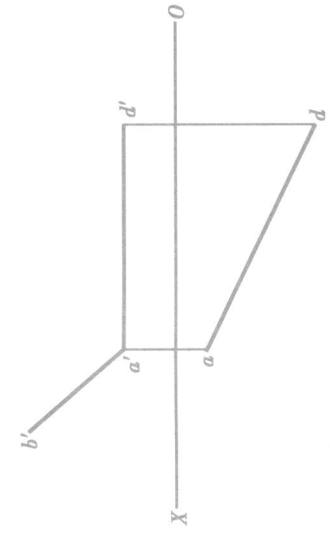
2.1 Two views of following points are given, please complete the third views of point A, B, C and D.



2.3 Point B is above point A 15 mm, Point D is in front of point C 20 mm. Determine the position of them and draw the front and top views of point B, point D. Use parenthesis () to indicate the invisible views.

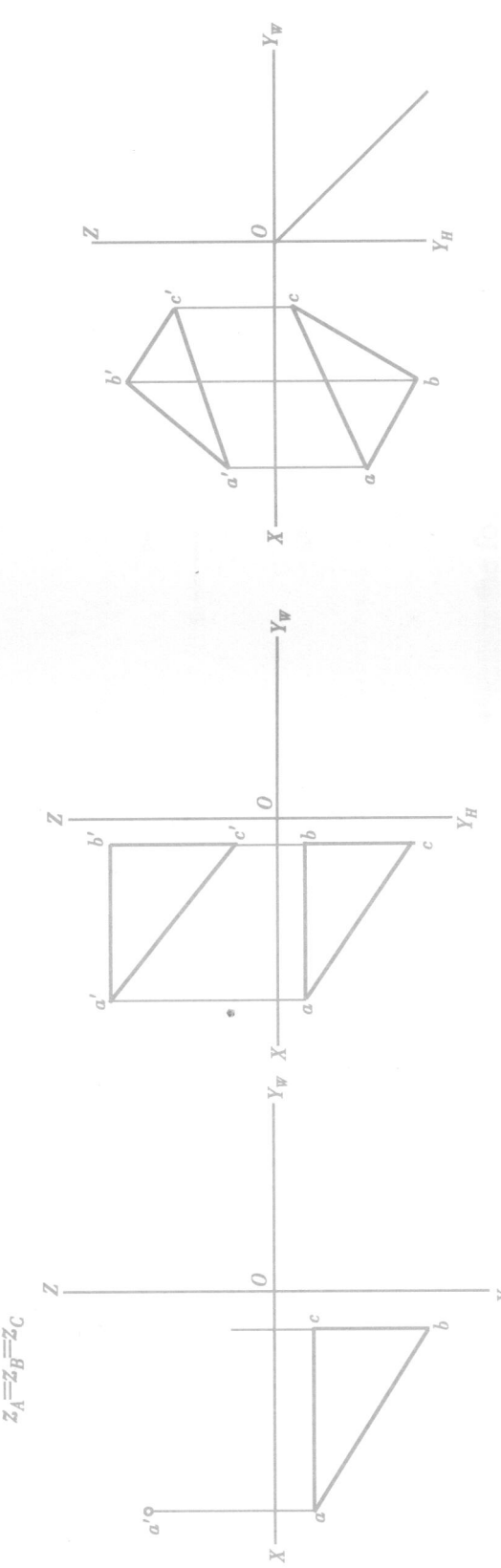


Class		Name		No.		6	
2.5 Complete projections of lines based on the given conditions, and determine the relative position to three projection planes for each question.				2.6 Determine the relative position between the line and three projection planes.			
(1) $a'b'$ is given, $\gamma_A=10$, $\gamma_B=20$. (2) cd is given, $z_C=z_D=20$. (3) e and f'' are given, $x_E=x_F$, $z_E=z_F$. 							
AB is _____ line. CD is _____ line. EF is _____ line.				AB (), CD (), EF ()			
2.7 Find a point K on a given line AB, which divide AB into two segments in ratio of 2:1.				2.8 Determine the relative position between two lines AB and CD.			
							
a)				Line AB is _____ to line CD. Line AB is _____ to line CD. Line AB is _____ to line CD. Line AB _____ with line CD.			
b)							

Class	Name	No.	7
2.9	Determine the relative position between two lines AB and CD by completing their views.	 The relative position of line AB and CD is _____.	
2.10	Line AB is parallel to line CD , complete their three views.		
2.11	Line AB intersects with line CD at K , complete their three views.		
2.12	Label the coincided points on skew lines AB and CD , use parenthesis() to indicate the invisible views.		
2.13	Draw a line EF through point K (k' is given.) and make line EF parallel to line CD and intersect with line AB at point E .		
2.14	AD , an edge of a rectangle $ABCD$, is given, and line AD is parallel to H Plane, complete views of the rectangle.		

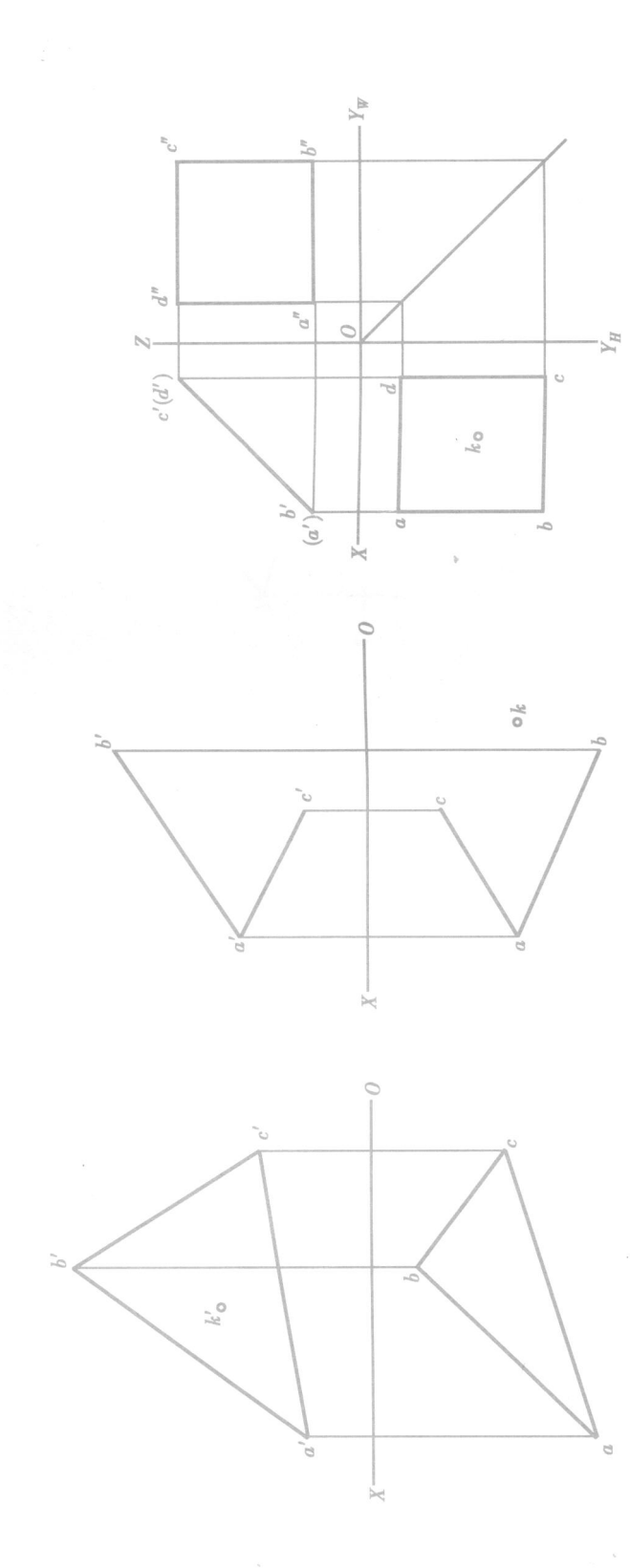
2.15 Complete the three views of following triangles, and determine their positions relative to three projection planes. .

$Z_A = Z_B = Z_C$

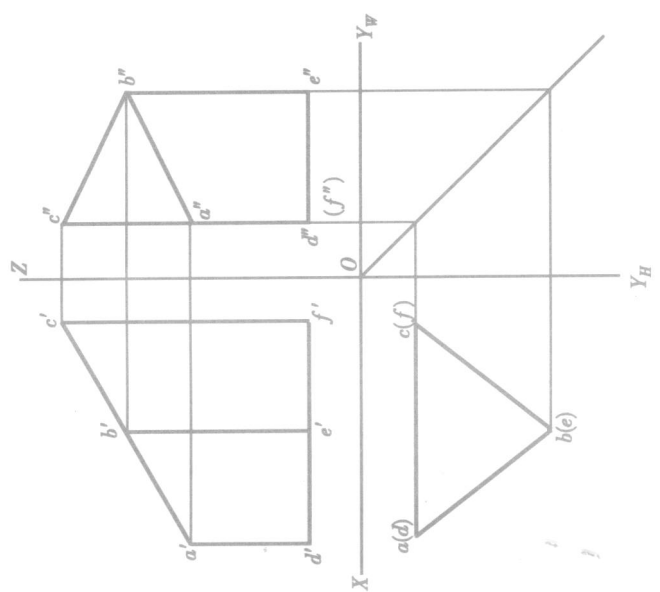


$\triangle ABC$ is _____ to _____ projection plane.
 $\triangle ABC$ is _____ to _____ projection plane.
 $\triangle ABC$ is _____ to _____ projection plane.

2.16 Point K is located on the following plane and find out the other views of it.



2.17 Judge the relative position of each following plane on the object.



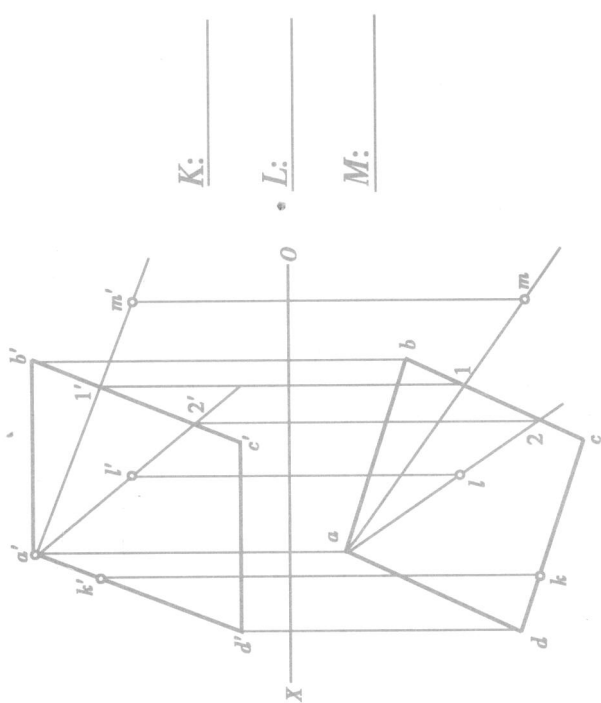
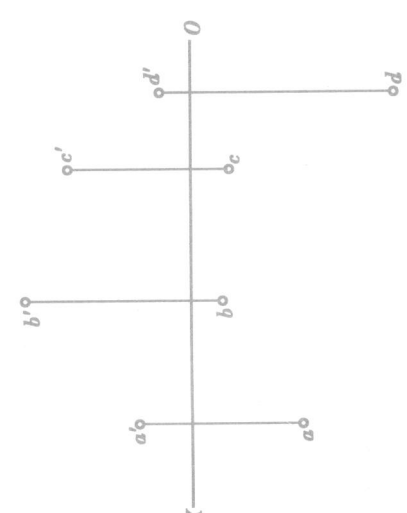
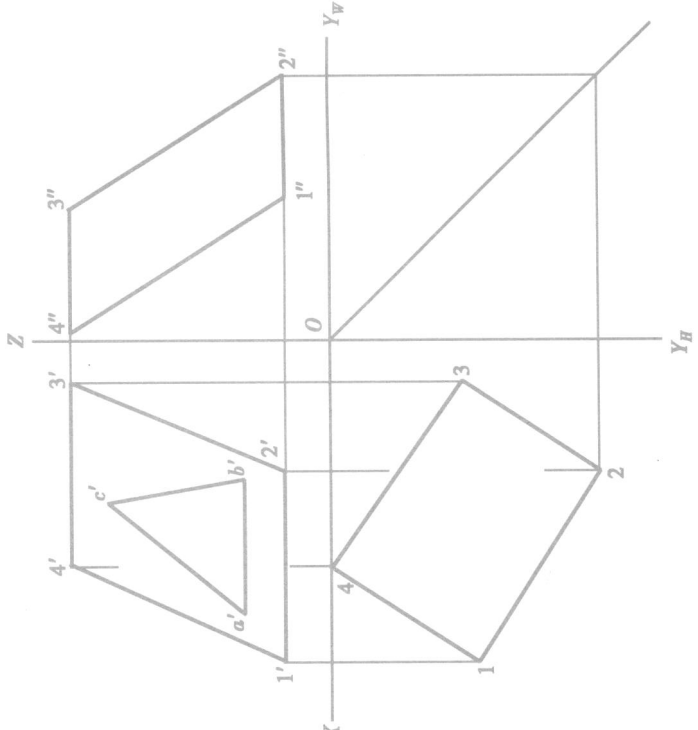
Plane ABC is _____.

Plane $ABED$ is _____.

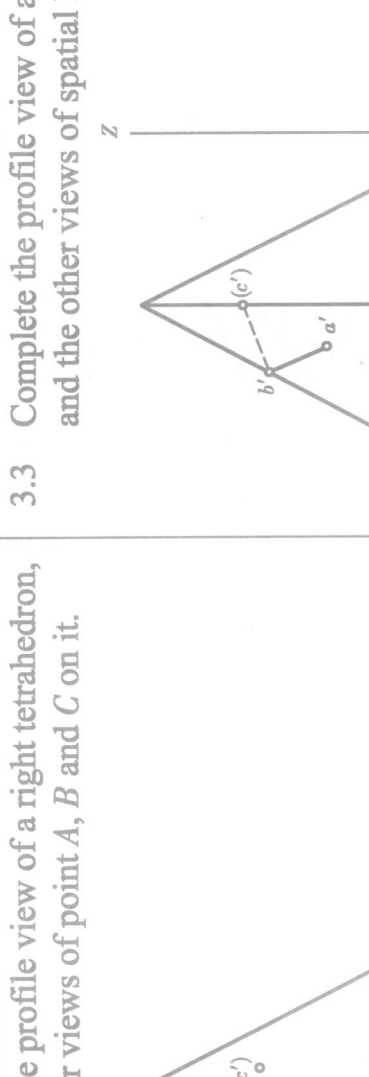
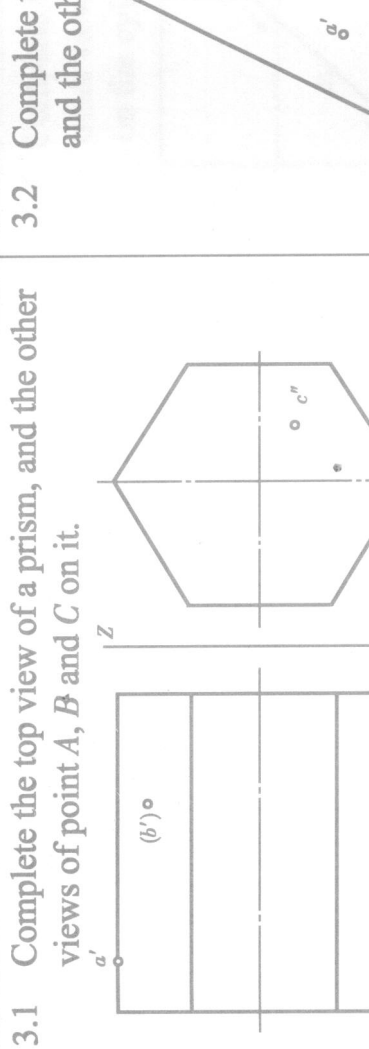
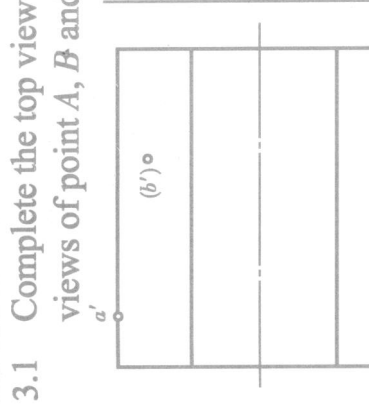
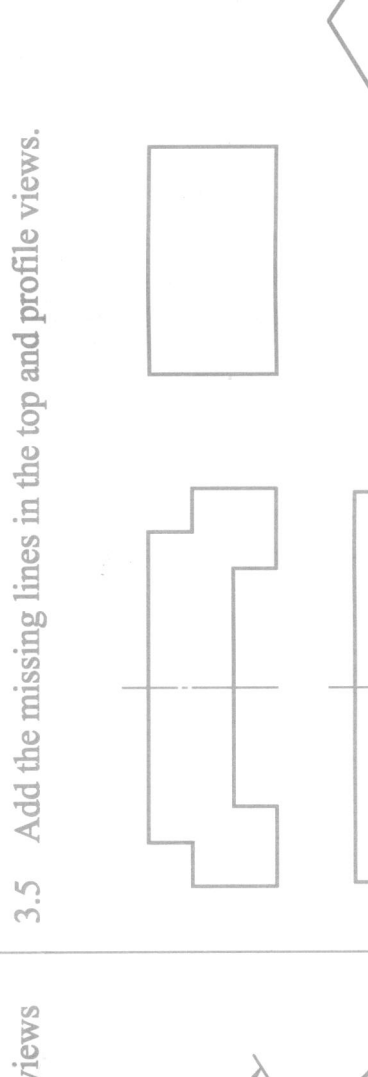
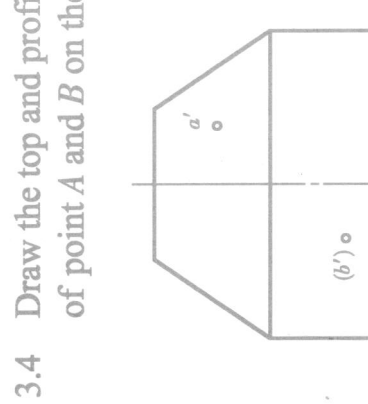
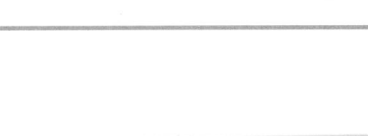
Plane $ACFD$ is _____.

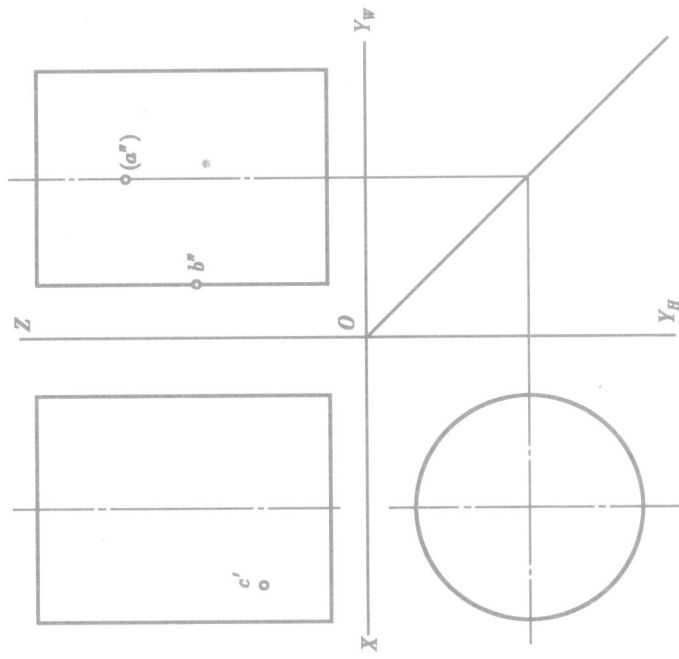
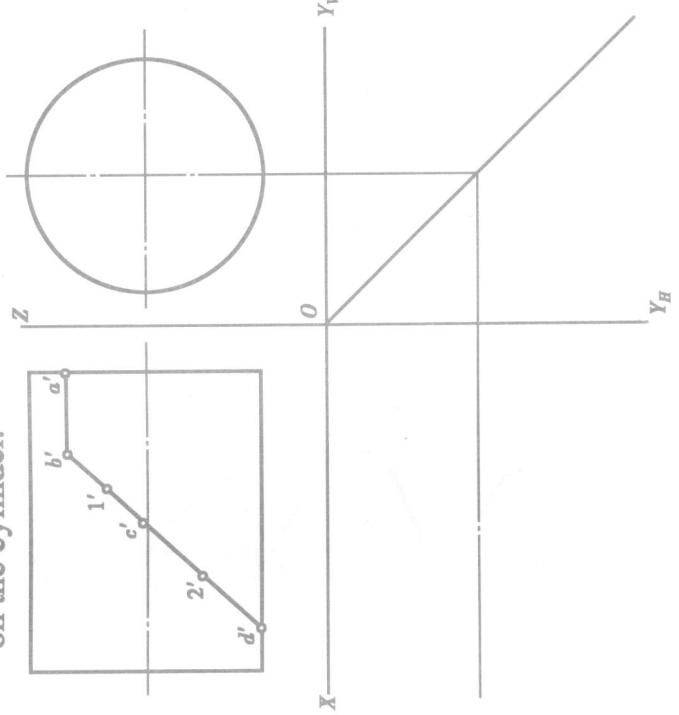
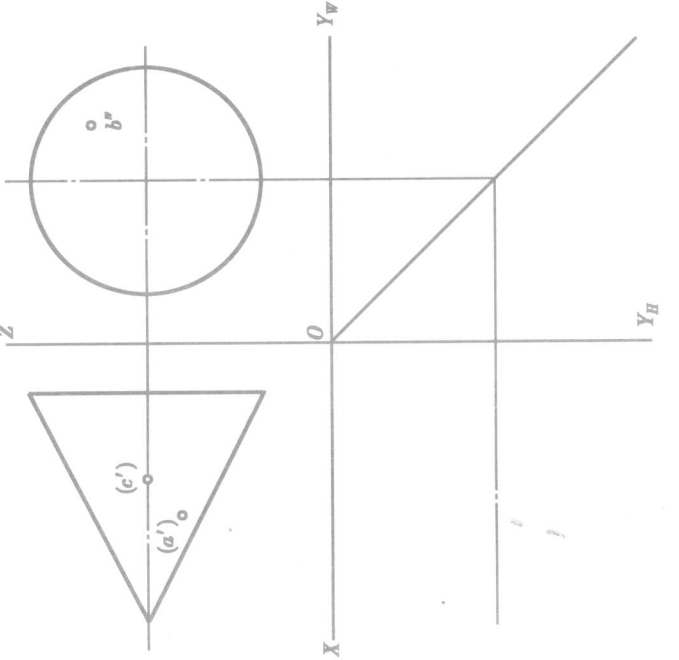
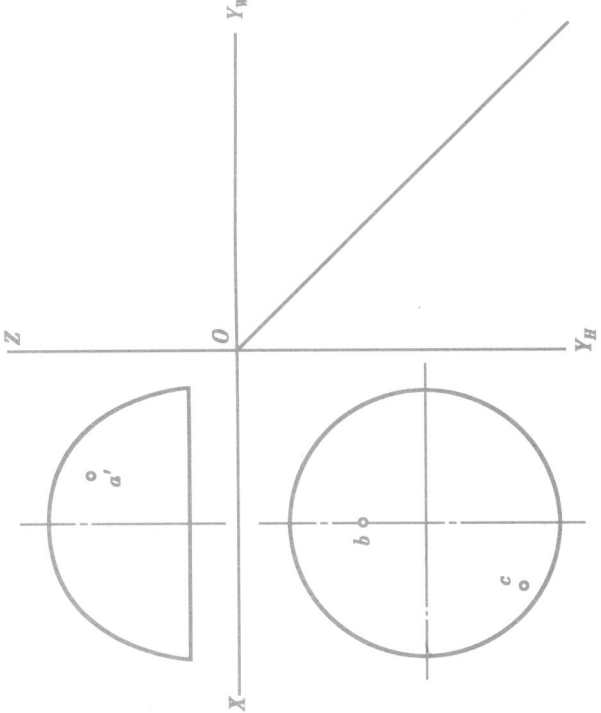
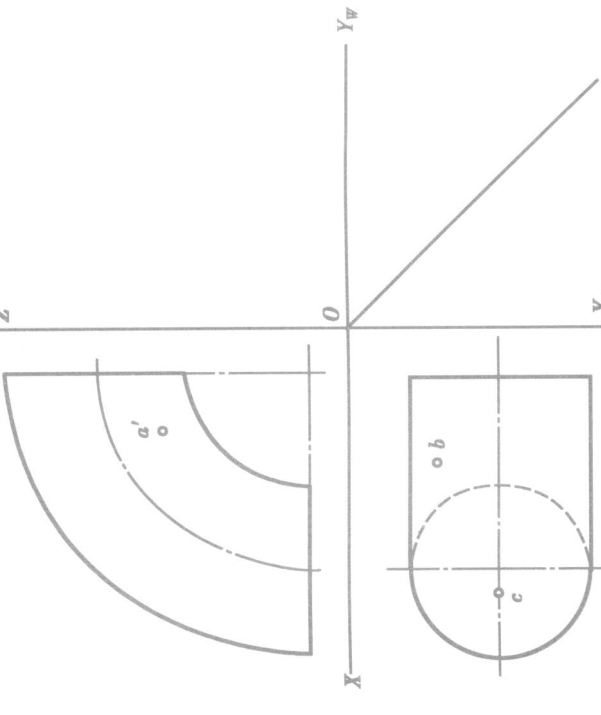
Plane $BCFE$ is _____.

Plane DEF is _____.

Class	Name	No.	9
2.18	Judge if point K , L , and M lie in the plane $ABCD$.	 K: _____ L: _____ M: _____	2.20 Complete the top view of pentagon $ABCDE$.
2.19	Judge if point A , B , C and D lie in one plane.	 Whether the four points, A, B, C and D, belong to the same plane or not? (Yes ____, No ____.)	2.23 Locate a point D in the plane ABC and let $z_D = z_C$, $y_D = y_A$.
2.21	$\triangle ABC$ lies in a trapezium, complete the views of the triangle ABC .		2.22 Line CD is frontal line, complete the top view of the plane $ABCD$.

Chapter 3 The Projections of an Object

Class	Name	No.	10
3.1 Complete the top view of a prism, and the other views of point A, B and C on it. 	3.2 Complete the profile view of a right tetrahedron, and the other views of point A, B and C on it. 	3.3 Complete the profile view of a right square, and the other views of spatial line $ABCD$ on it. 	
3.4 Draw the top and profile views of the object, and complete the other views of point A and B on the object. 	3.5 Add the missing lines in the top and profile views. 	3.6 Add the missing lines in the top and profile views. 	3.7 Add the missing lines in the top and profile views. 

Class	Name	No.	11
3.6 Draw other views of point A, B and C on the cylinder. 	3.7 Complete the top view of the cylinder, and draw other views of the line AB and curve BCD on the cylinder. 	3.8 Complete the top view of the cone, and draw other views of point A, B and C on the cone. 	3.9 Complete the profile view of the semi-sphere, and draw other views of point A, B and C on the sphere.  3.10 Draw the profile view of a quarter of a torus and complete other view of point A, B and C on the torus.  3.11 Draw other views of point A, B and C on the object. 