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ABSTRACT

These materials, which can be used to supplement a drafting program, are designed to assist the instructor in helping students develop a better understanding of certain areas of drafting. The materials are divided into exercises that allow the student to devote full attention to one aspect of drafting at a time, and tests, which can be used either for determining student's degree of understanding, for additional exercises, or for use as part of a regular testing program. Instructions are given for exercises and tests, both of which cover: Scale Measuring, Orthographic Projection, Hidden Lines, Dimensioning, Isometric Construction, and Cabinet Drawing. This unbound material was prepared to be easily traced onto ditto or mimeograph stencils for reproduction. (HD)

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Drafting Exercises To Improve Understanding

Sponsored by the

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1976

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AUTHENTICATION COMMITTEE

The material in this publication was reviewed and endorsed as being appropriate and beneficial for inclusion in the industrial arts curriculum by an authentication committee. Deep appreciation is extended to the members for their time and valuable suggestions.

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Appreciation is extended to Mrs. Donna Breckenridge for the cover design.

INTRODUCTION

This material is not a course of study, a unit on drafting, or daily lesson plans. It is material that should prove helpful, however, in supplementing your drafting program. It has been designed with the idea of assisting you in helping your students develop a better understanding of certain areas of drafting. To this end both exercises and tests are included in the material.

The exercises are designed to allow the student to devote full attention to one aspect of drafting at a time. Not needing to be concerned with other aspects, the student more easily grasps and understanding of the one item under study. An example of this is the study of hidden lines. Traditionally, the student is required to make a three-view drawing and include all hidden lines. In actuality, when using this approach approximately 5 percent of the student's time may be spent on drawing hidden lines, while about 95 percent of the time required to complete the assignment is devoted to other aspects of drafting.

The rationale used in these exercises is simple. It is based upon the belief that when learning to understand and do a certain thing, you should study and work on that particular thing. With this thought in mind, the exercises have been completed with the exception of the one particular aspect you are teaching the student.

An appropriate time to use the exercises would be immediately following your presentation of new information to the students. Letting the students do a few quick exercises at this time will allow them to put your information to use now—not several days later when it comes up on the drawing. But remember, these exercises are supplemental material only, and your regular plate assignments should follow.

Tests are also included in the material. These may be used to determine the degree to which the students understand the aspect just taught, or they could be used at the end of a unit as part of your regular testing program. They could also be used as additional exercises.

No attempt is made in this material to provide the information necessary to conduct your instructional program in drafting. As industrial arts teachers, you will recognize the need for such instruction and possess the expertise necessary to provide the information to your students at the appropriate time.

The material purposely was not bound in booklet form. It was prepared to be easily traced onto ditto or mimeograph stencils for reproducing the number you will need for your classes. Don't throw your stencils away after they are used. Save them in a folder so you can have additional copies made when your supply is depleted.

EXERCISES

INSTRUCTIONS FOR EXERCISES

These exercises were designed as supplemental material to provide practice for students as they study certain aspects of drafting. Obviously then, each series of exercises should be used at the time students are studying that particular phase of drafting. For example, the exercises for orthographic projection should be used while students are studying this method. These exercises could be worked before or during regular plate assignments on orthographic projection.

Students should be instructed to read the **recommended use** section appearing on the top of each page. This contains two important items of information pertaining to the assignment. First, it indicates the position in which the paper should be lined-up on the drawing board. And secondly, it states what the student is expected to do to complete the assignment.

It is recommended that all assignments be done using instruments. If you included a unit on sketching, however, you may wish to use some of the assignments a second time for that purpose.

Correcting students' work can be done quickly with the aid of a grading key. Simply complete the assignment yourself and tape onto a light table. Place the students' work over the grade key and errors are visible.

Title: SCALE MEASURING

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

SCALE FULL SIZE		Measure Lines											Period
													Date
Mark Length											Title of Exercise		
											Student's Name		

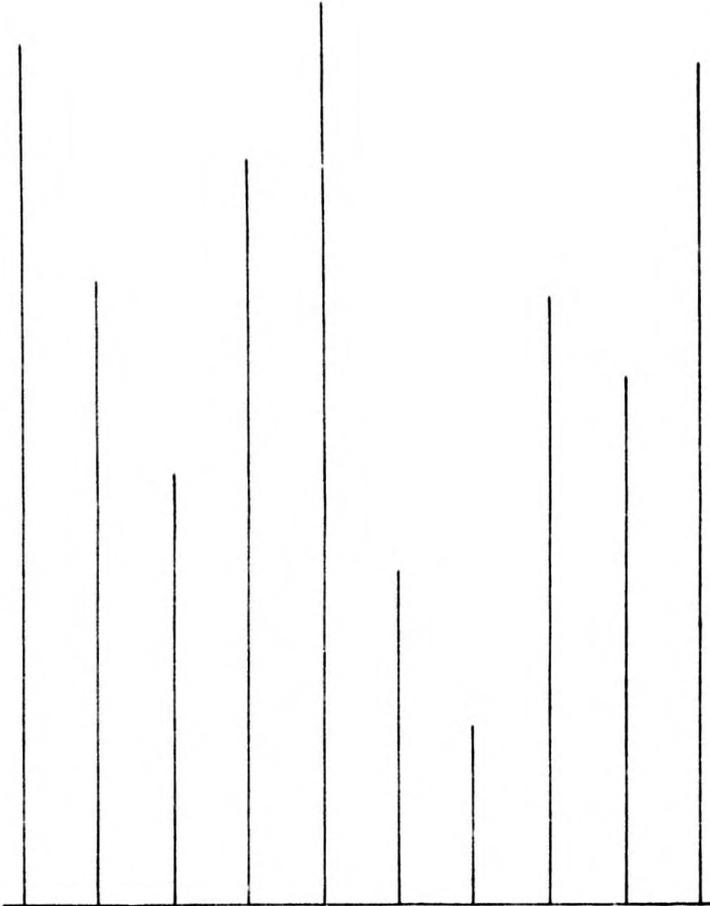
Title: SCALE MEASURING

Recommended Use: *Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.*

SCALE 6" = 1' - 0"	Measure Lines		Period
		Date	
Mark Length		Title of Exercise	
	Student's Name		

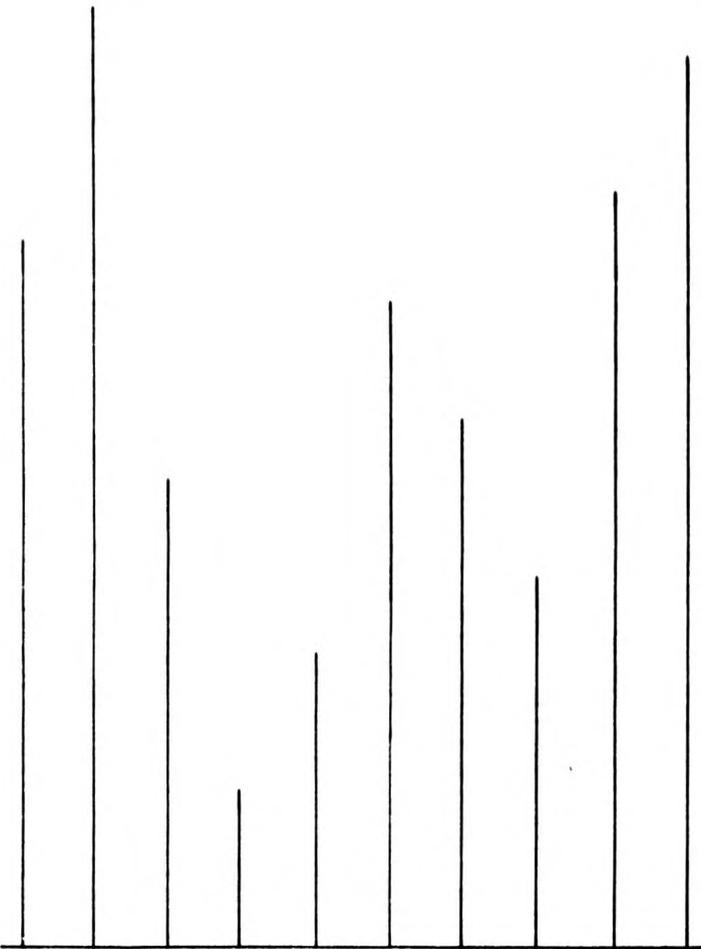
Title: SCALE MEASURING

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

<p>SCALE 3" = 1' - 0"</p> <p>Measure Lines</p> 	<p>Mark Length</p> 	<p>Title of Exercise</p>	<p>Date</p>	<p>Period</p>
	<p>Student's Name</p>			

Title: SCALE MEASURING

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

<p>SCALE $1/4" = 1' - 0"$</p> <p>Measure Lines</p> 		Period
		Date
Mark Length	Title of Exercise	
	Student's Name	

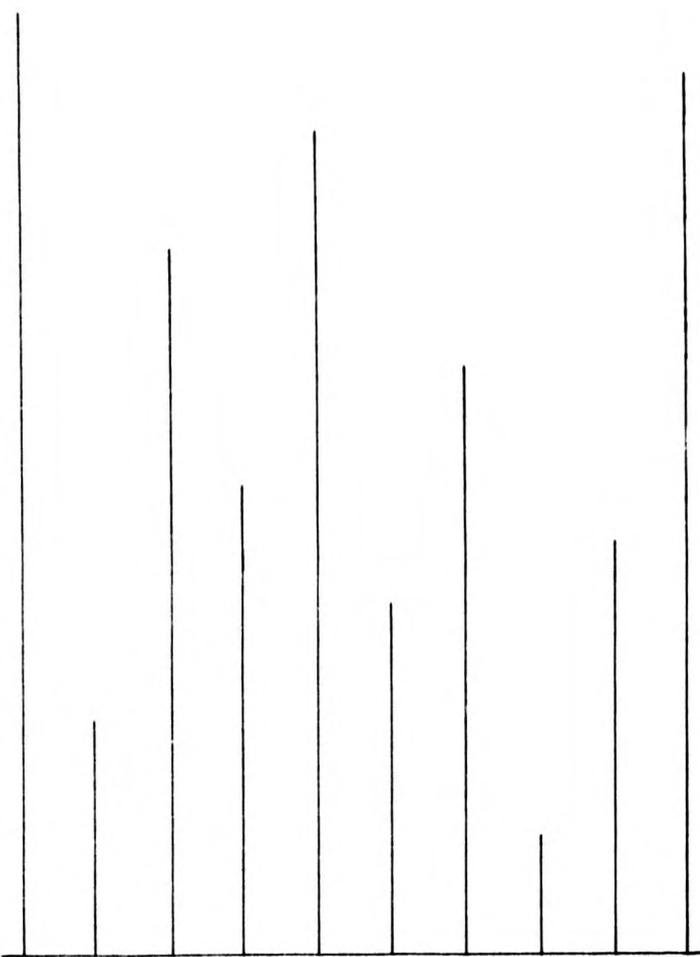
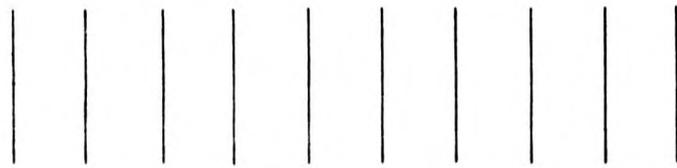
Title: SCALE MEASURING

Recommended Use: *Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.*

<p>SCALE $1/8'' = 1' - 0''$</p>	<p>Measure Lines</p>		<p>Period</p>
		<p>Mark Length</p>	<p>Date</p>
<p>Student's Name</p>			

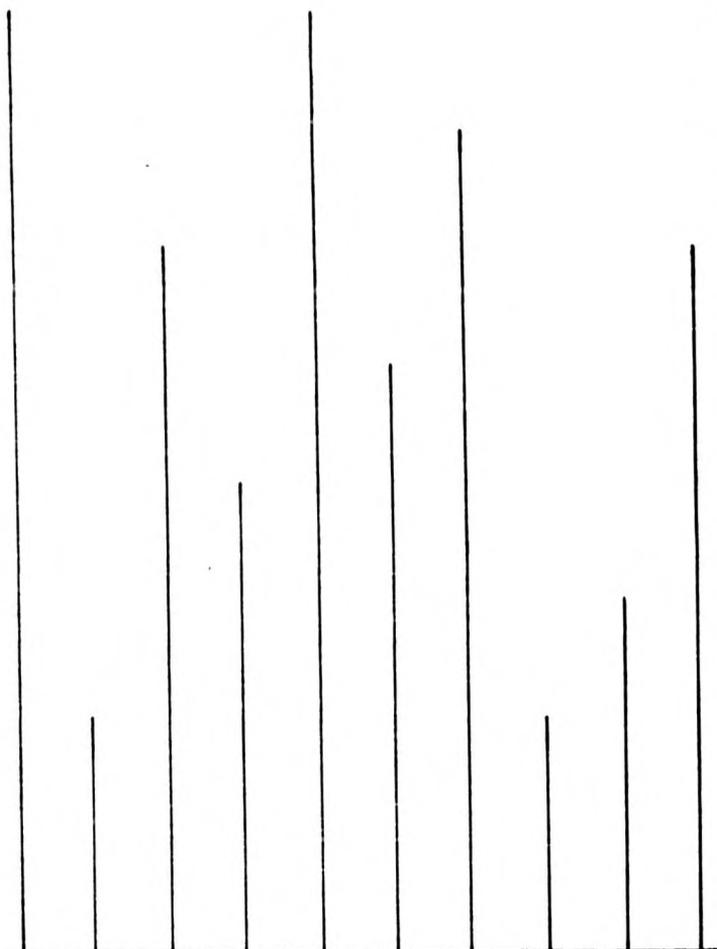
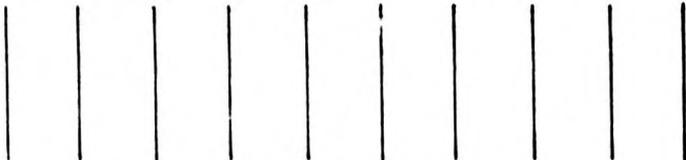
Title: SCALE MEASURING

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

<p>SCALE 18" = 1' - 0"</p> <p>Measure Lines</p> 		Period
		Date
<p>Mark Length</p> 		Title of Exercise
		Student's Name

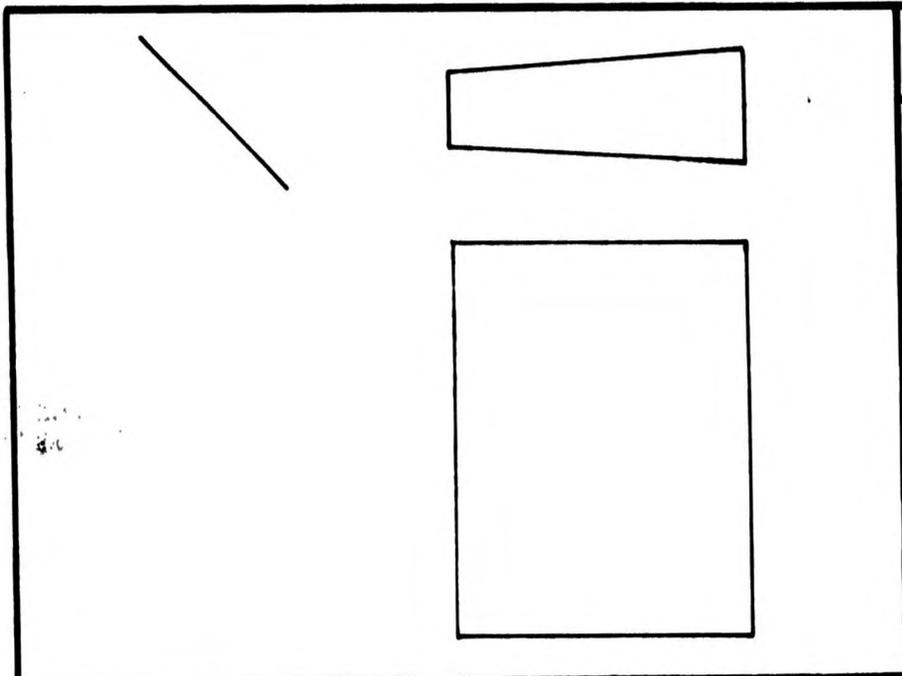
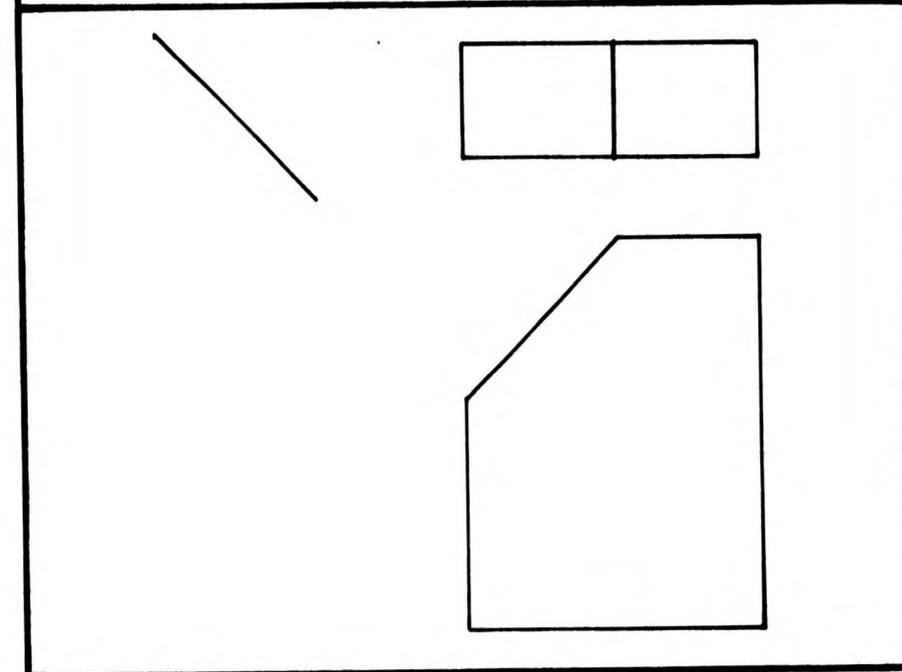
Title: *SCALE MEASURING*

Recommended Use: *Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.*

<p>SCALE $36'' = 1' - 0''$</p> <p>Measure Lines</p> 		Period
		Date
<p>Mark Length</p> 		Title of Exercise
		Student's Name

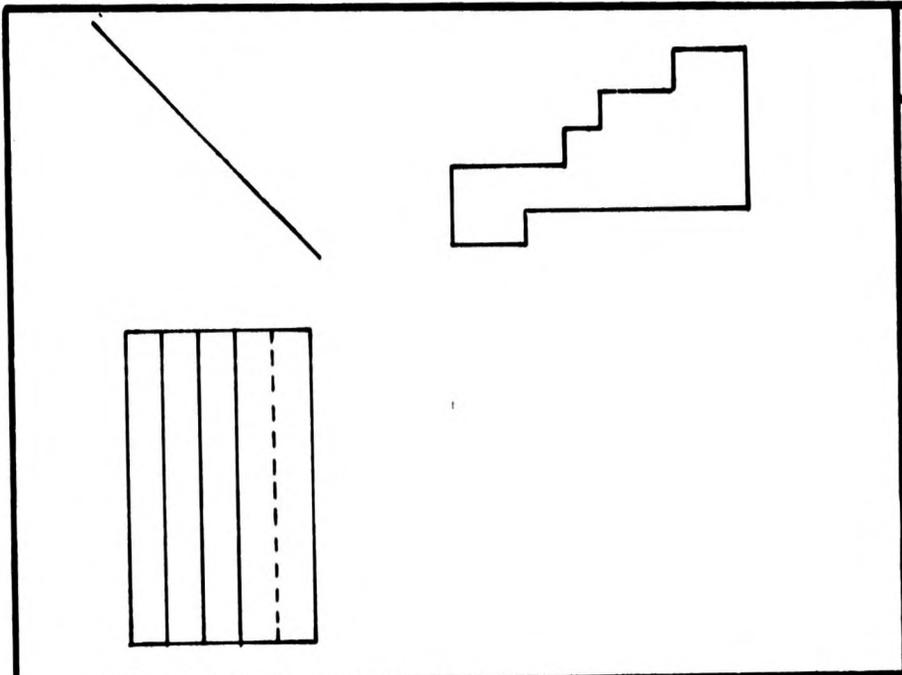
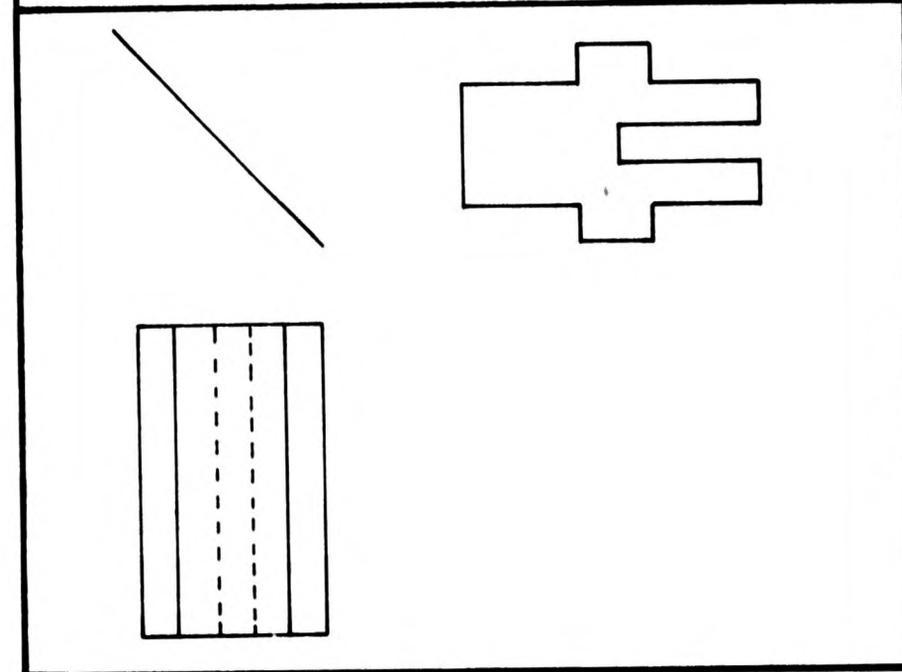
Title: *ORTHOGRAPHIC PROJECTION*

Recommended Use: *Place title block to bottom of board and letter.
Draw top view of each object.*

	Period	_____
	Date	_____
	Title of Exercise	_____
	Student's Name	_____

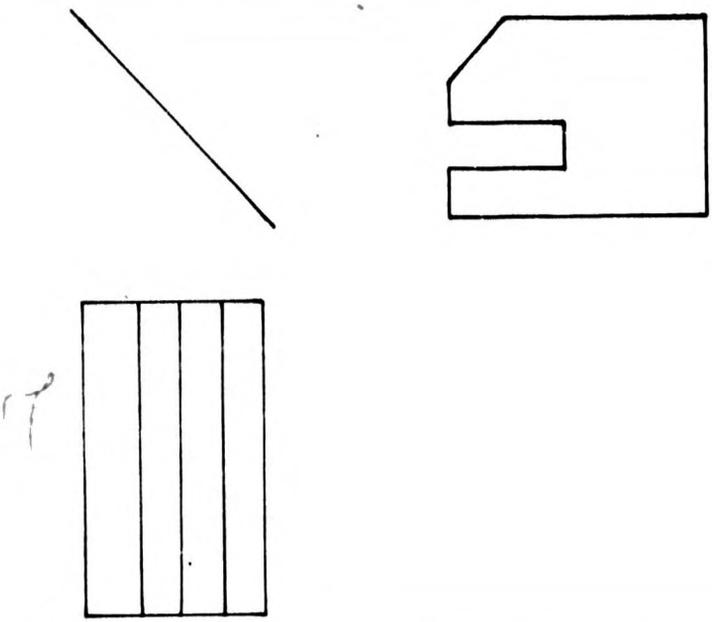
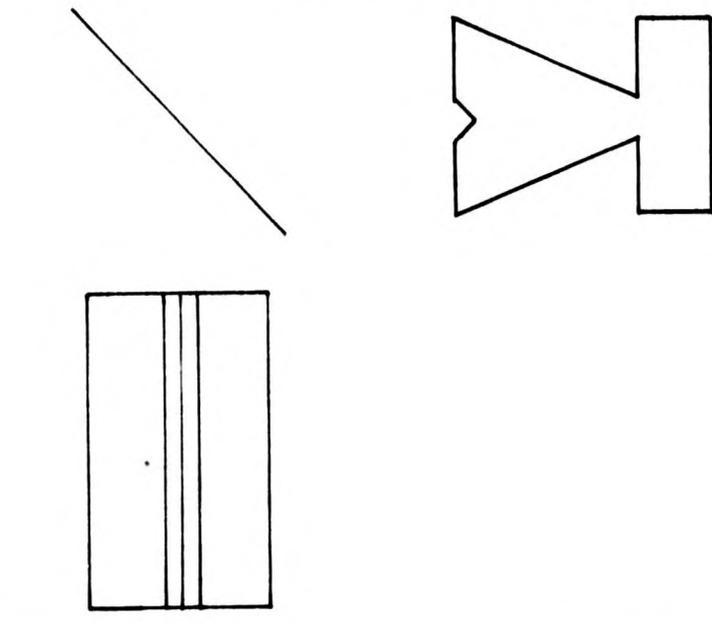
Title: *ORTHOGRPAHIC PROJECTION*

Recommended Use: *Place title block to bottom of board and letter.
Draw front view of each object.*

	Period _____ _____
	Date _____ _____
Title of Exercise _____ _____ _____	
Student's Name _____ _____ _____	

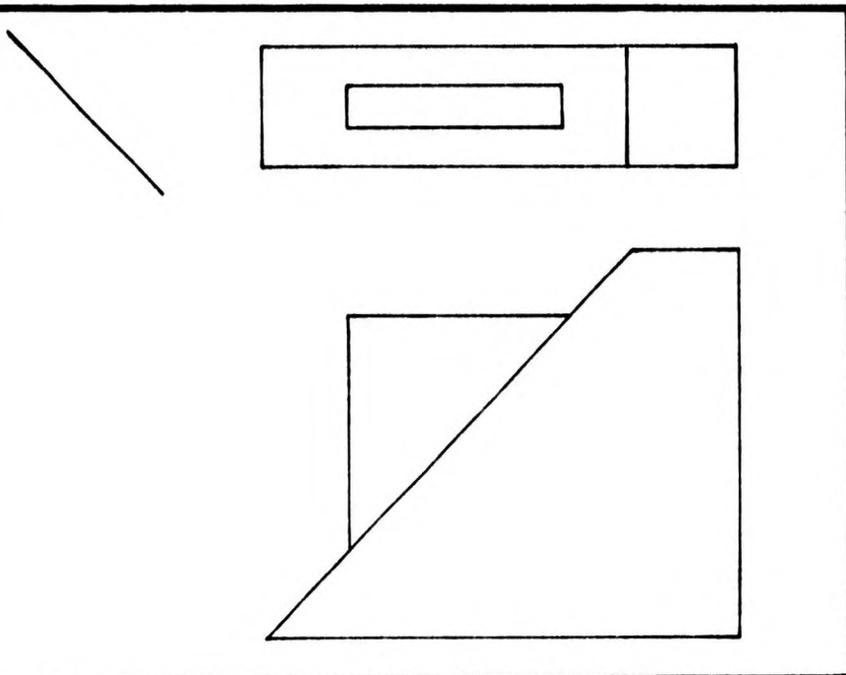
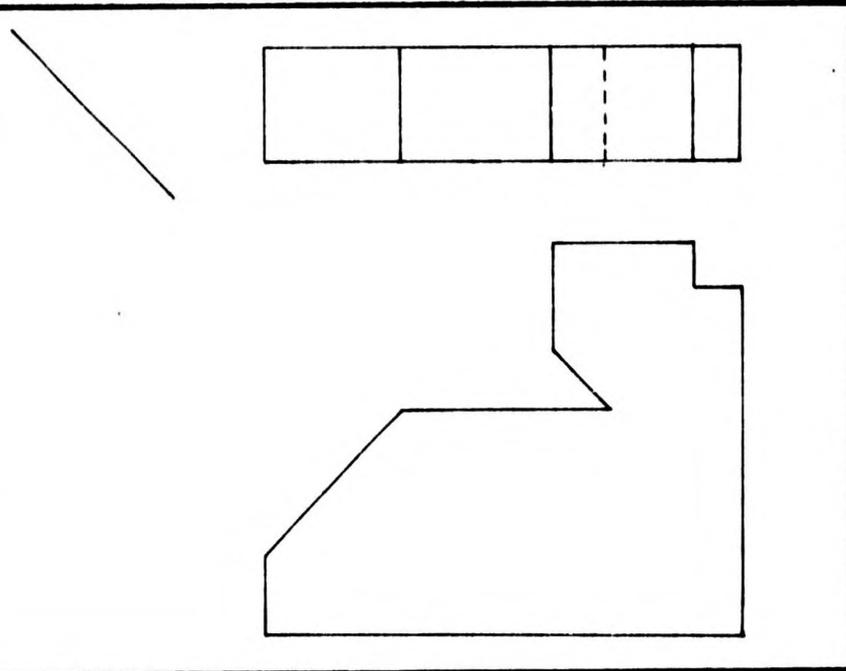
Title: *ORTHOGRAPHIC PROJECTION*

Recommended Use: *Place title block to bottom of board and letter.
Draw front view of each object.*

	Period
	Date
Title of Exercise	
Student's Name	

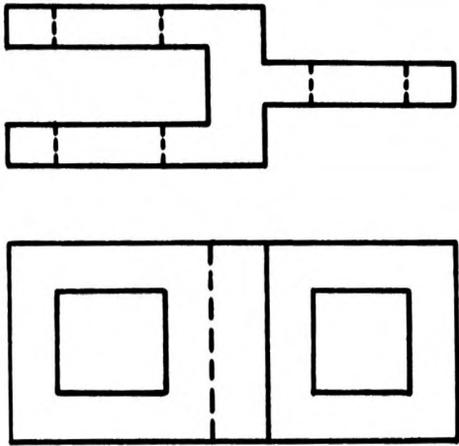
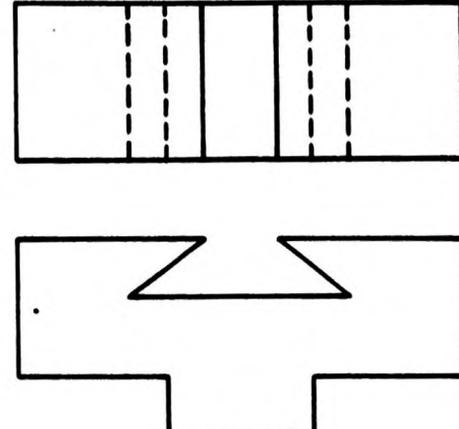
Title: ORTHOGRAPHIC PROJECTION

Recommended Use: Place title block to bottom of board and letter.
Draw top view of each object.

	Period	_____
	Date	____/____/____
	Title of Exercise	
	Student's Name	

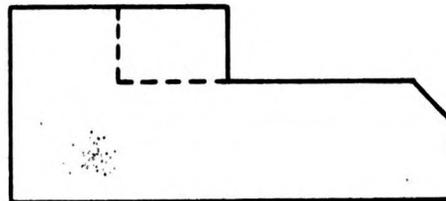
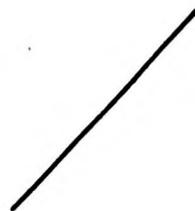
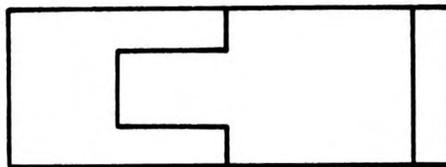
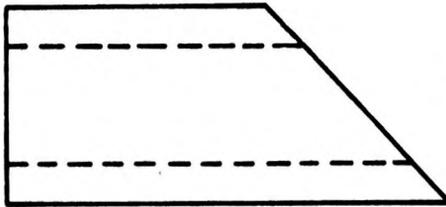
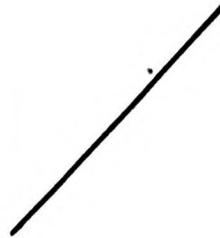
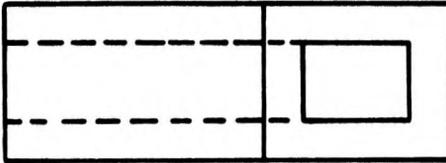
Title: ORTHOGRAPHIC PROJECTION

Recommended Use: Place title block to right side of board and letter.
Draw right side view of both objects.

	Period _____ _____
	Date _____ _____
Title of Exercise _____ _____ _____	Student's Name _____ _____ _____

Title: ORTHOGRAPHIC PROJECTION

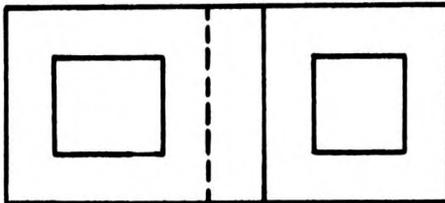
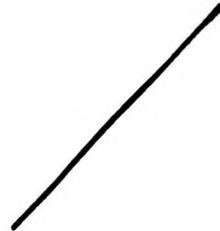
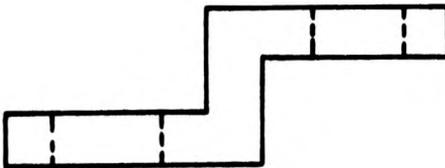
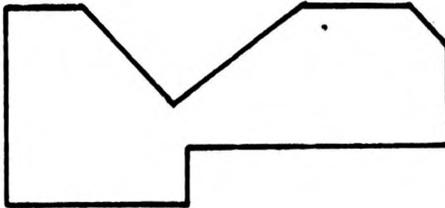
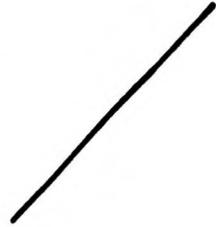
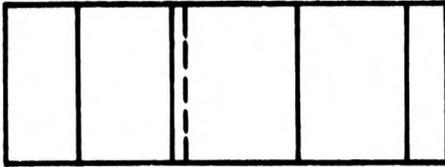
Recommended Use: Place title block to right side of board and letter.
Draw right side view of both objects.



Period	_____
Date	_____
Title of Exercise	_____
Student's Name	_____

Title: ORTHOGRAPHIC PROJECTION

Recommended Use: *Place title block to right side of board and letter.
Draw right side view of both objects.*



Period

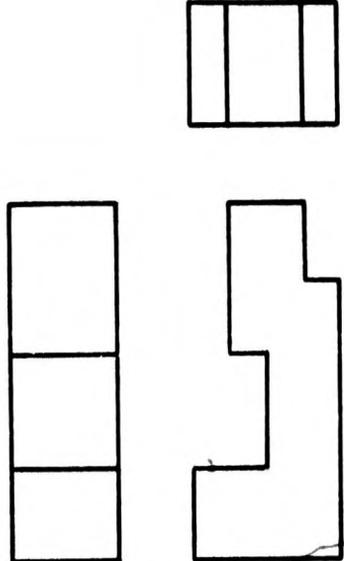
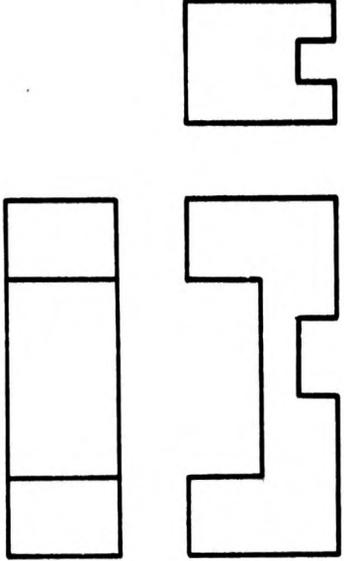
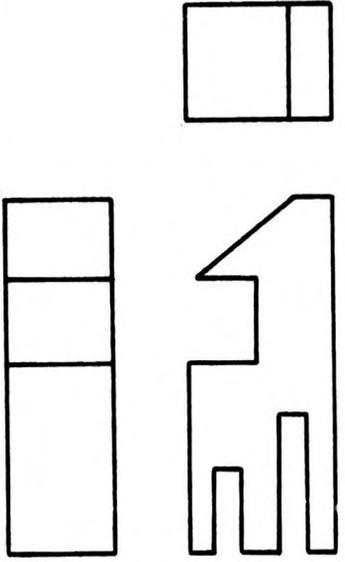
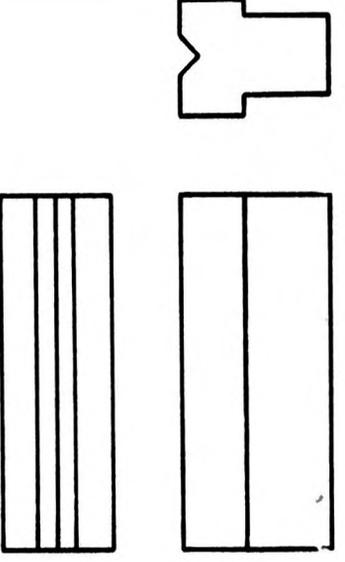
Date

Title of Exercise

Student's Name

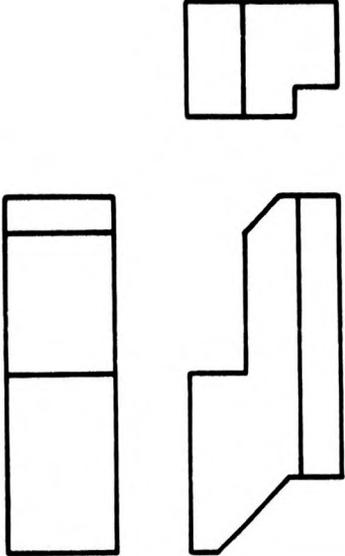
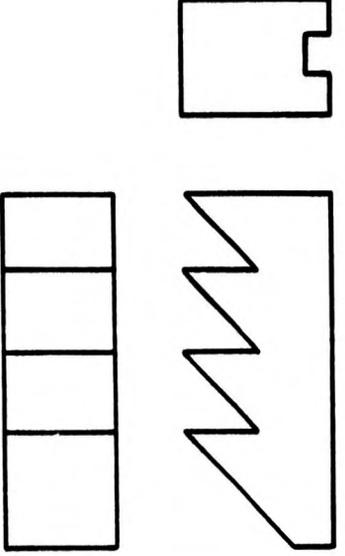
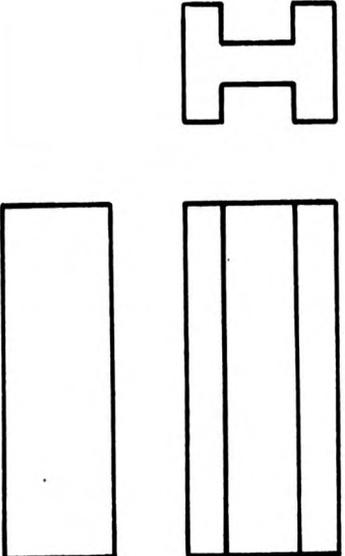
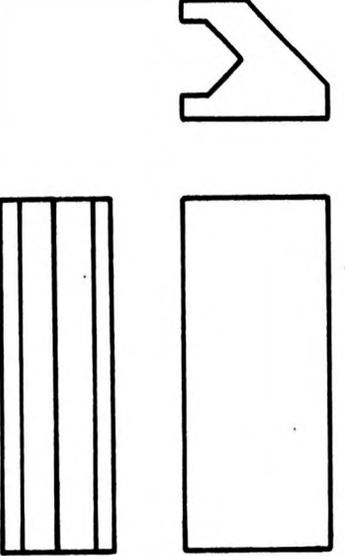
Title: HIDDEN LINES

Recommended Use: Place title block to bottom of board and letter.
Draw hidden lines which have been omitted on all views.

		Period _____ Date _____
		Title of Exercise _____ _____
		Student's Name _____ _____

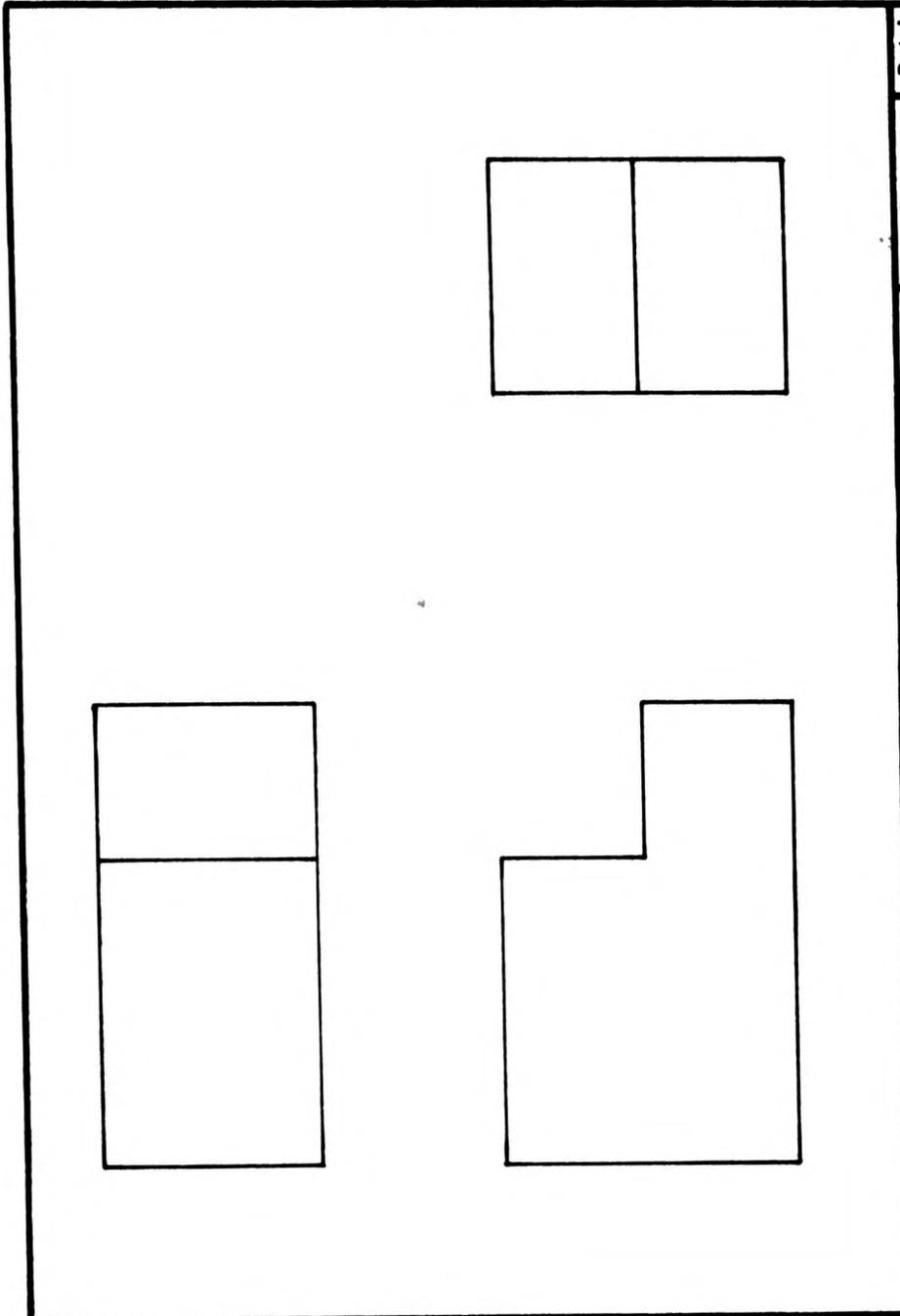
Title: HIDDEN LINES

Recommended Use: Place title block to bottom of board and letter.
Draw hidden lines which have been omitted on all views.

 <p>Orthographic projections of a block with a notch and a cutout. The front view shows a rectangular block with a notch on the right side. The top view shows a rectangular block with a cutout on the right side.</p>	 <p>Orthographic projections of a block with a notch and a cutout. The front view shows a rectangular block with a notch on the right side. The top view shows a rectangular block with a cutout on the right side.</p>	Period
 <p>Orthographic projections of a block with a notch and a cutout. The front view shows a rectangular block with a notch on the right side. The top view shows a rectangular block with a cutout on the right side.</p>	 <p>Orthographic projections of a block with a notch and a cutout. The front view shows a rectangular block with a notch on the right side. The top view shows a rectangular block with a cutout on the right side.</p>	Date
Title of Exercise		
Student's Name		

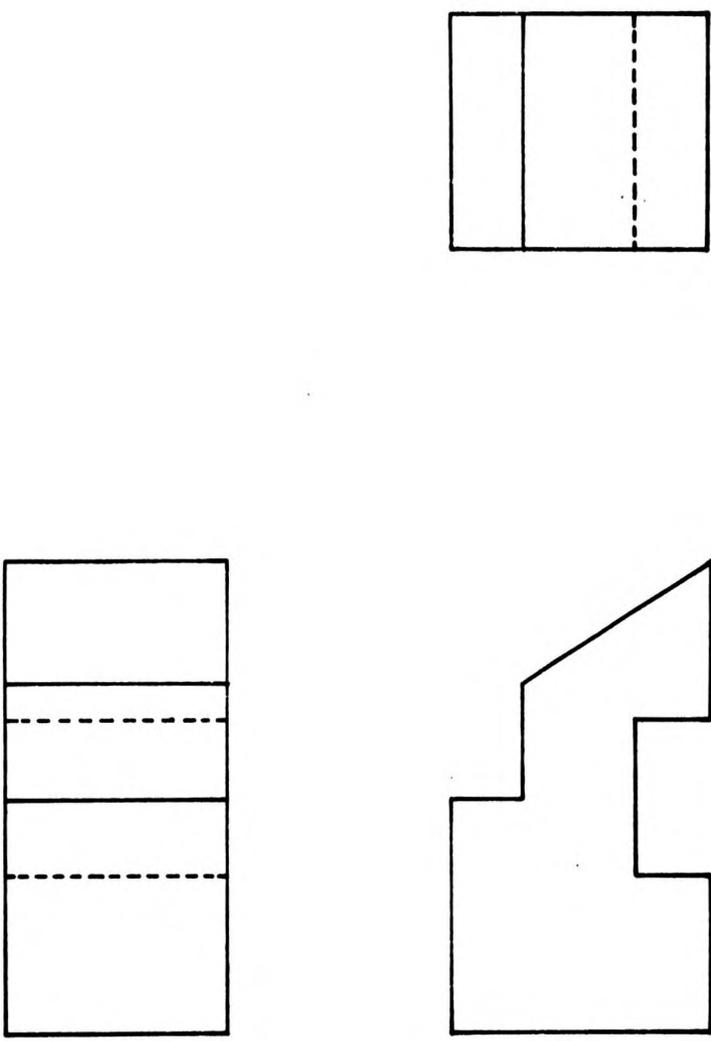
Title: *DIMENSIONING*

Recommended Use: *Place title block to bottom of board and letter.
Using instruments completely dimension the 3 view drawing.*

	Period _____ _____
	Date _____ _____
	Title of Exercise _____ _____ _____
Student's Name _____ _____ _____	

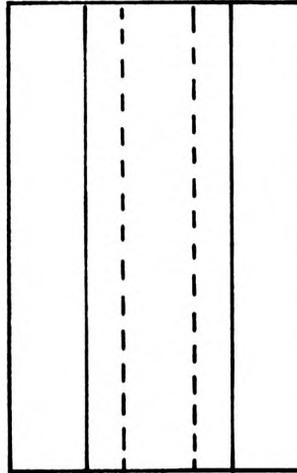
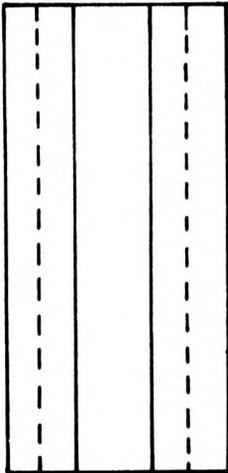
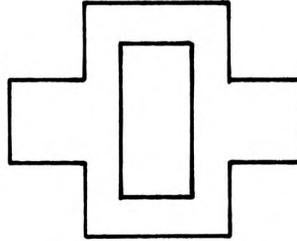
Title: *DIMENSIONING*

Recommended Use: *Place title block to bottom of board and letter.
Using instruments completely dimension the 3 view drawing.*

	Period _____ _____
Date _____ _____	
Title of Exercise _____ _____ _____	
Student's Name _____ _____ _____	

Title: DIMENSIONING

Recommended Use: Place title block to bottom of board and letter. Using instruments completely dimension the 3 view drawing.



Period

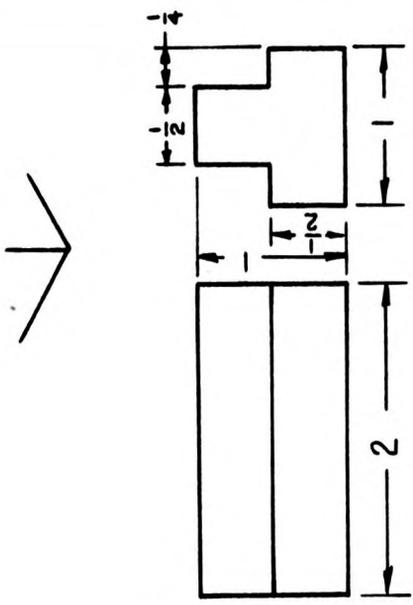
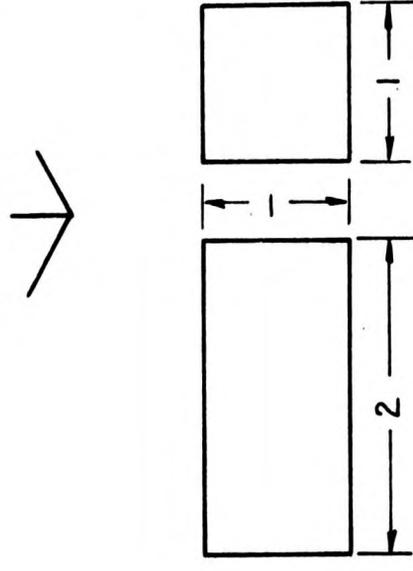
Date

Title of Exercise

Student's Name

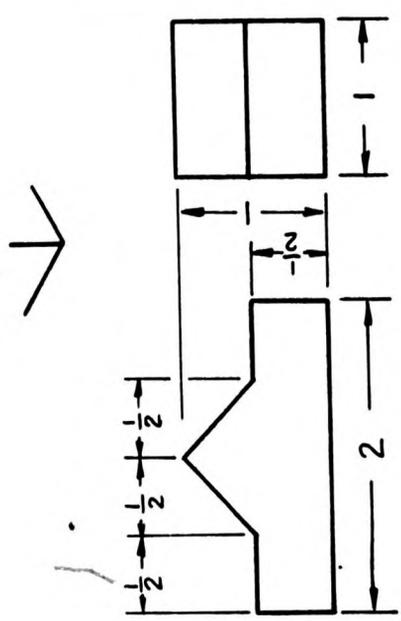
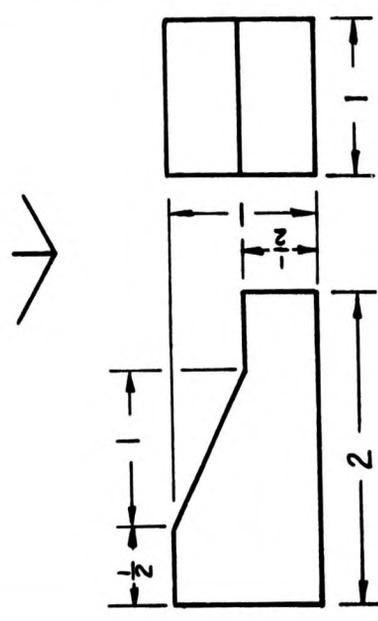
Title: ISOMETRIC CONSTRUCTION

Recommended Use: Place title block to bottom of board and letter.
Construct isometric drawing starting at reference axis.

	Period _____ _____
	Title of Exercise _____ _____
Student's Name _____ _____	

Title: ISOMETRIC CONSTRUCTION

Recommended Use: Place title block to bottom of board and letter.
Construct isometric drawing starting at reference axis.

	Period
	Date
Title of Exercise	
Student's Name	Period
Student's Name	Date
Title of Exercise	

Title: ISOMETRIC CONSTRUCTION

Recommended Use: Place title block to bottom of board and letter.
Construct isometric drawing starting at reference axis.

Period	Date	Title of Exercise	Student's Name
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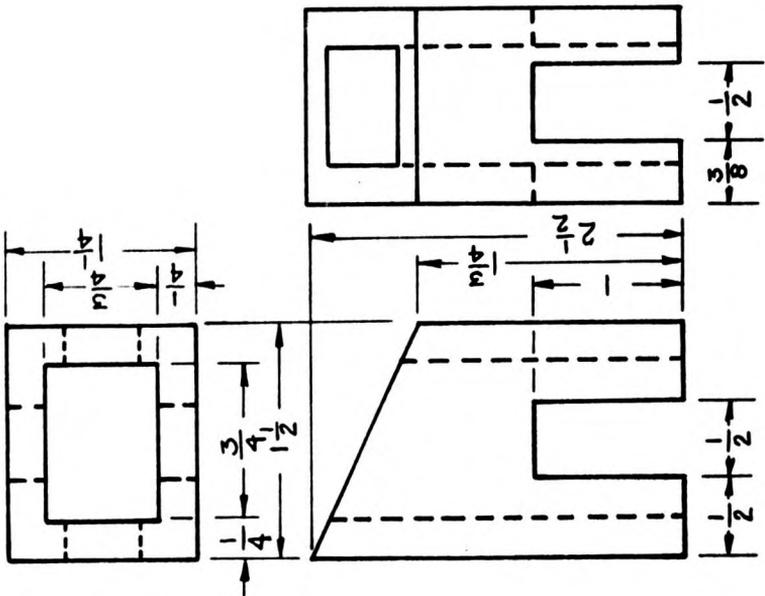
Orthographic projections of a mechanical part. The front view (left) shows a U-shaped profile with a total height of 2, a bottom width of 1, and a top width of 4. The top width is divided into three segments of $\frac{4}{3}$, $\frac{4}{3}$, and $\frac{4}{3}$. The side view (right) shows a rectangular profile with a total width of $2\frac{1}{2}$ and a total height of 2. The top surface is divided into two segments of $1\frac{1}{2}$ and 1. A dashed line indicates a hidden edge at the bottom of the side view.

Title: ISOMETRIC CONSTRUCTION

Recommended Use: Place title block to bottom of board and letter.
Construct isometric drawing starting at reference axis.

	Period	
	Date	
	Title of Exercise	
	Student's Name	





Title: CABINET DRAWING

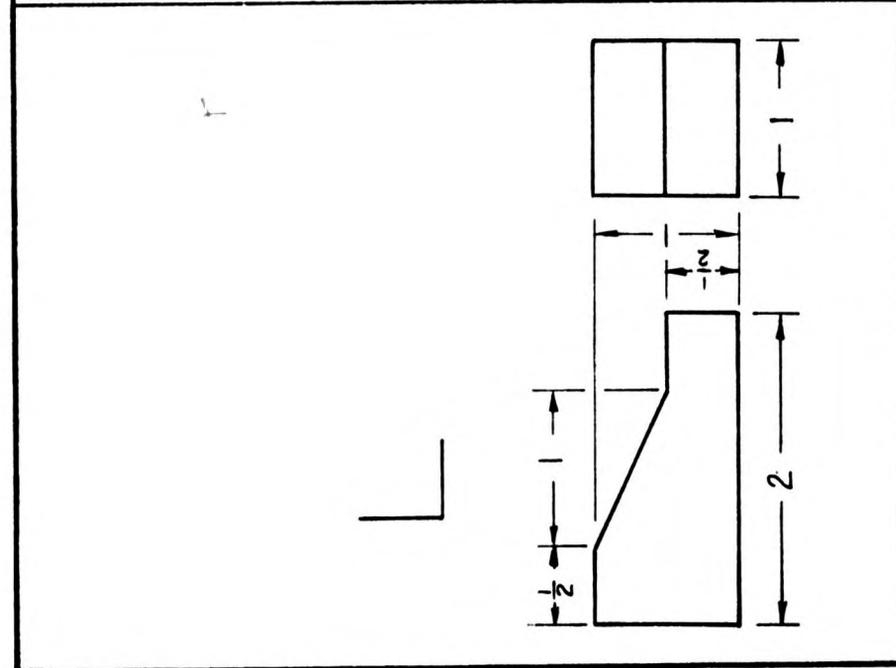
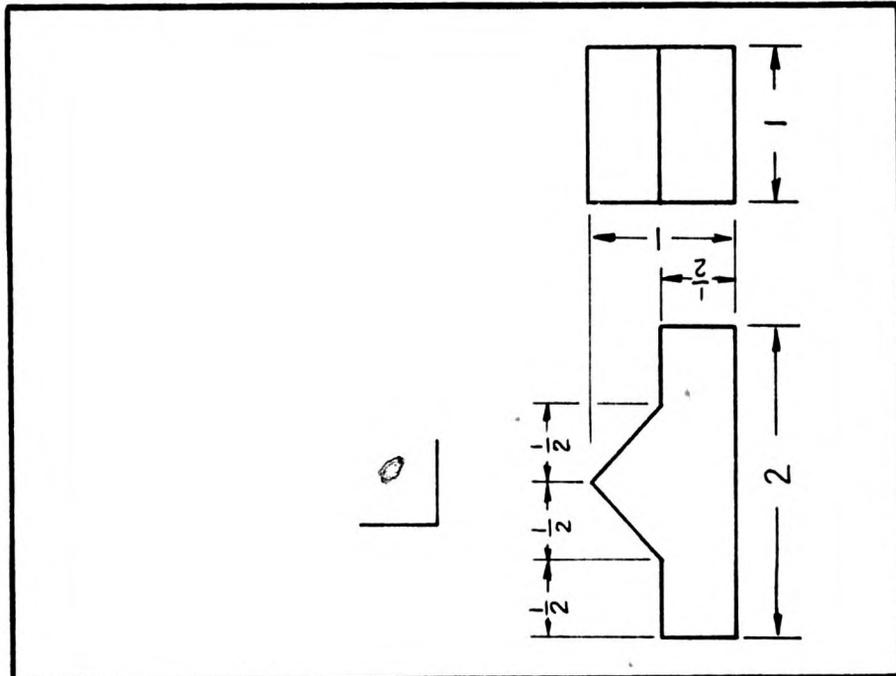
Recommended Use: Place title block to bottom of board and letter.
Construct cabinet view of object starting where indicated.

The drawing area is divided into two sections. The top section contains a partial cabinet drawing of a stepped object. The object has a total width of 2 units and a total height of 1 unit. The top surface is divided into a 1x1 unit section on the left and a 1x1 unit section on the right. The right section is further divided into a 2/3 unit wide section on the left and a 1/3 unit wide section on the right. The 2/3 unit wide section has a height of 1/2 unit, and the 1/3 unit wide section has a height of 1 unit. A corner line is drawn at the bottom-left of the object. The bottom section contains a partial cabinet drawing of a rectangular object with a total width of 2 units and a total height of 1 unit. A corner line is drawn at the bottom-left of the object.

Student's Name		Date		Period
_____		_____		_____
Title of Exercise				_____
_____				_____

Title: CABINET DRAWING

Recommended Use: Place title block to bottom of board and letter.
Construct cabinet view of object starting where indicated.



Student's Name		Title of Exercise		Date	Period

TESTS

36

31

INSTRUCTIONS FOR TESTS

These tests were designed to help determine how well students understand certain aspects of drawing. The tests could be administered at the end of a unit of study for a certain phase of drafting, or after a few exercises or regularly assigned plates to determine if additional assignments are needed.

Instruction for students are identical to those pertaining to the exercises. A grading key and light table should also be used to quickly score tests.

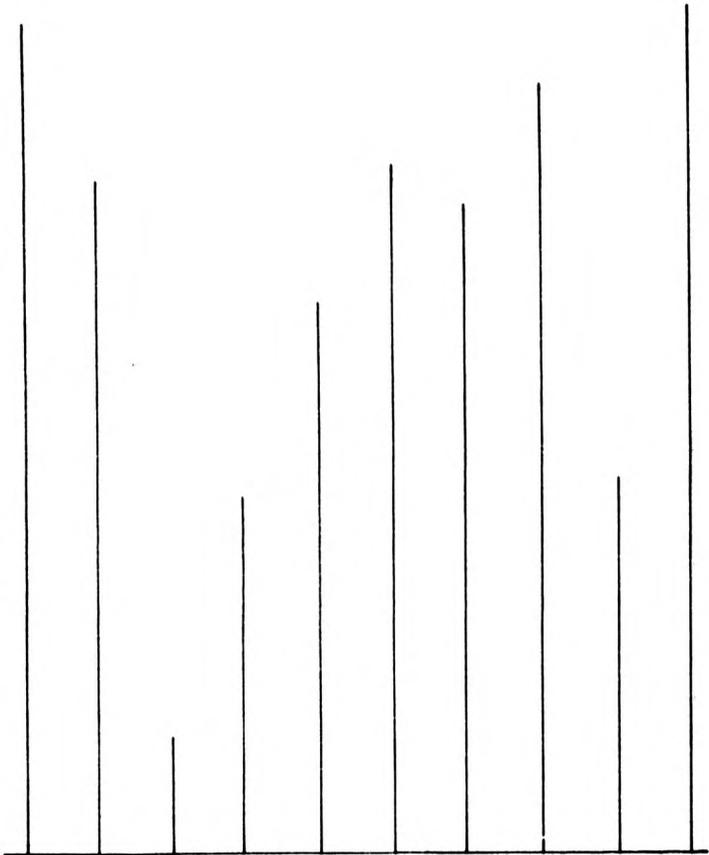
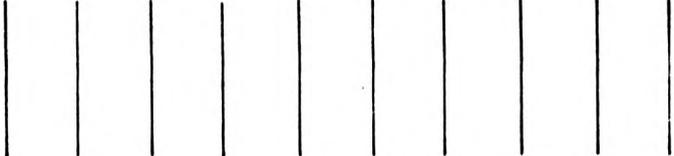
Title: SCALE MEASURING TEST

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

SCALE 6" = 1' - 0"	Measure Lines		Period
			Date
Mark Length		Title of Exercise	
		Student's Name	

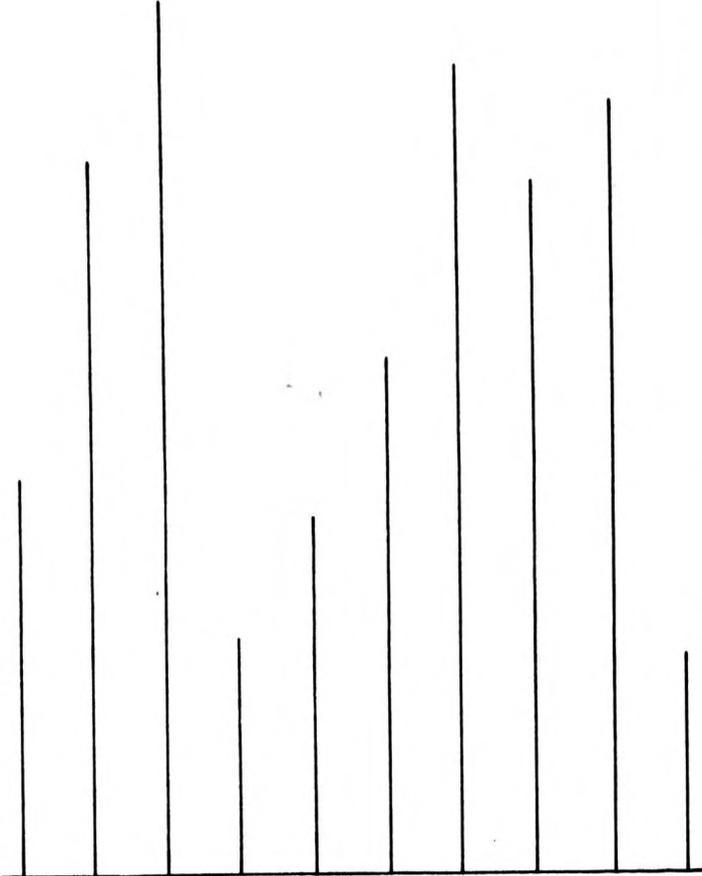
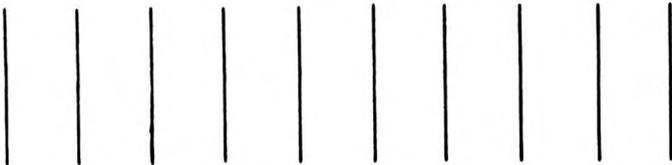
Title: SCALE MEASURING TEST

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

<p style="text-align: center;">SCALE 1/4" = 1' - 0"</p> <p>Measure Lines</p> 		Period
		Date
<p>Mark Length</p> 		Title of Exercise
		Student's Name

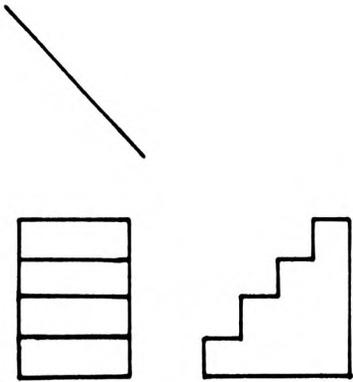
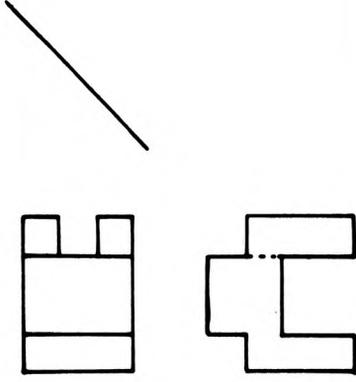
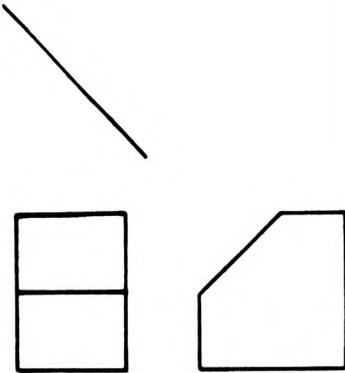
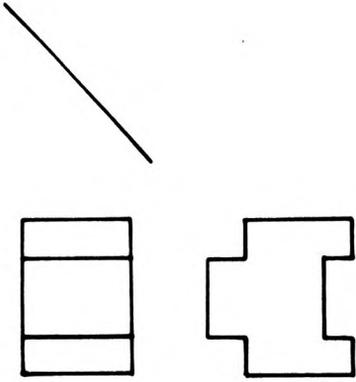
Title: SCALE MEASURING TEST

Recommended Use: Place title block to bottom of board and letter.
Using scale indicated, measure lines and mark lengths.

<p>SCALE 36" = 1' - 0"</p> <p>Measure Lines</p> 		Period
		Date
<p>Mark Length</p> 		Title of Exercise
		Student's Name

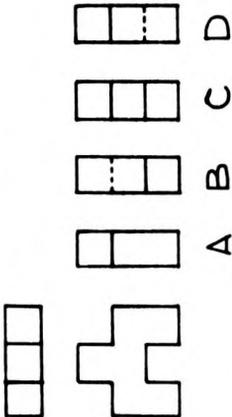
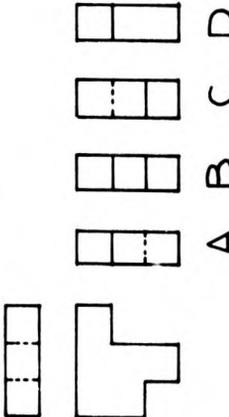
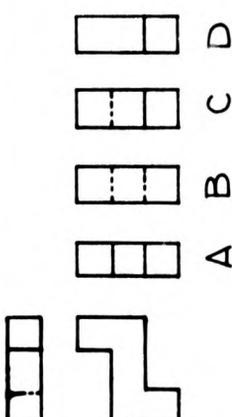
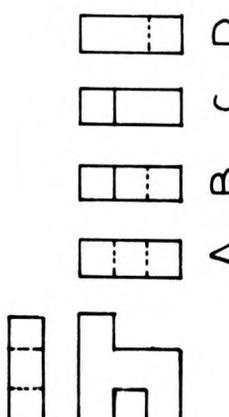
Title: ORTHOGRAPHIC PROJECTION TEST

Recommended Use: Place title block to bottom of board and letter.
Draw right side view of each object.

		Period _____ _____
Title of Exercise _____ _____ _____		Date _____ _____ _____
		Student's Name _____ _____ _____

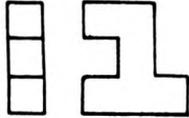
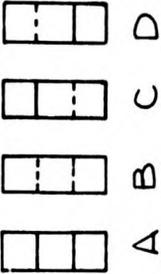
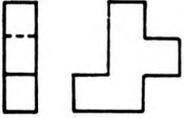
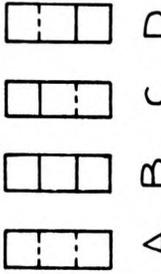
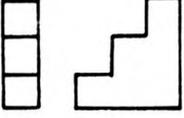
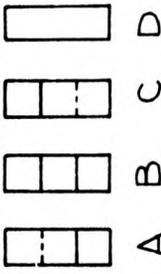
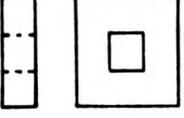
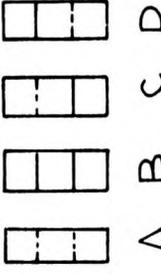
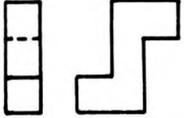
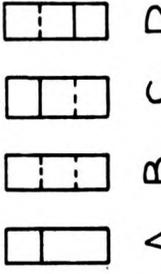
Title: ORTHOGRAPHIC PROJECTION TEST

Recommended Use: Place title block to bottom of board and letter. Study the front and top view of each drawing and select the correct right side view for the object. Draw a circle around the letter underneath the correct view.

		Title of Exercise _____ _____	Date _____ _____	Period _____ _____
			Student's Name _____ _____	

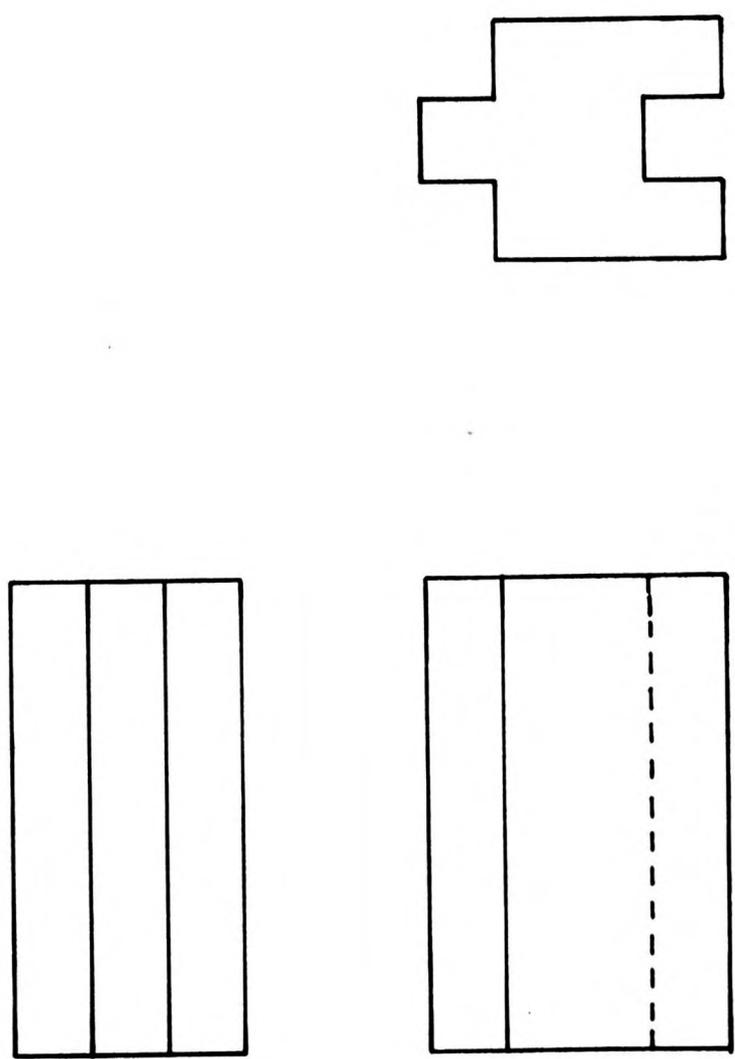
Title: HIDDEN LINES TEST

Recommended Use: Place title block to bottom of board and letter. Study the front and top view of each drawing and select the correct right side view for the object. Draw a circle around the letter underneath the correct view.

			
			
			
			
		Title of Exercise _____	
		Student's Name _____	
		Date _____	Period _____

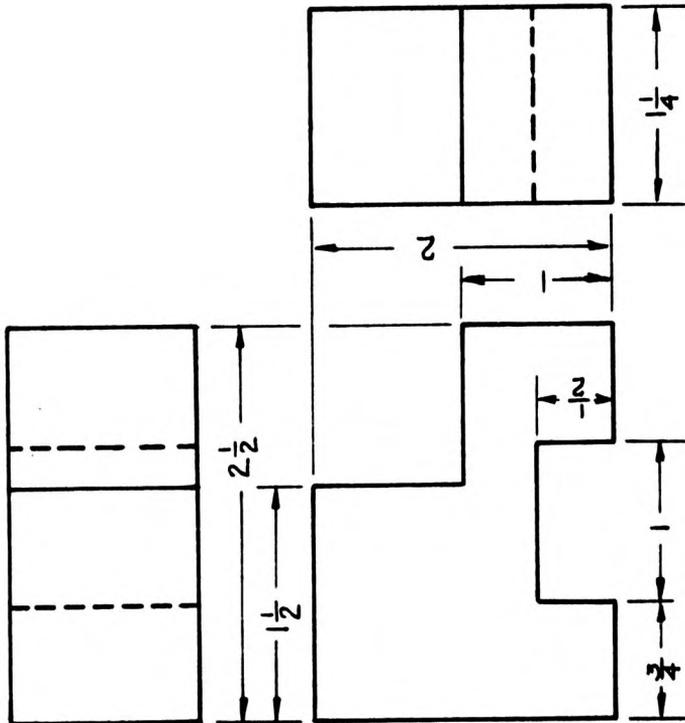
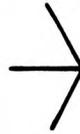
Title: *DIMENSIONING TEST*

Recommended Use: *Place title block to bottom of board and letter.
Using instruments completely dimension the 3 view drawing.*

	Period _____ _____
Date _____ _____	
Title of Exercise _____ _____ _____	
Student's Name _____ _____ _____	

Title: ISOMETRIC CONSTRUCTION TEST

Recommended Use: Place title block to bottom of board and letter.
Construct isometric drawing starting at reference axis.



Period

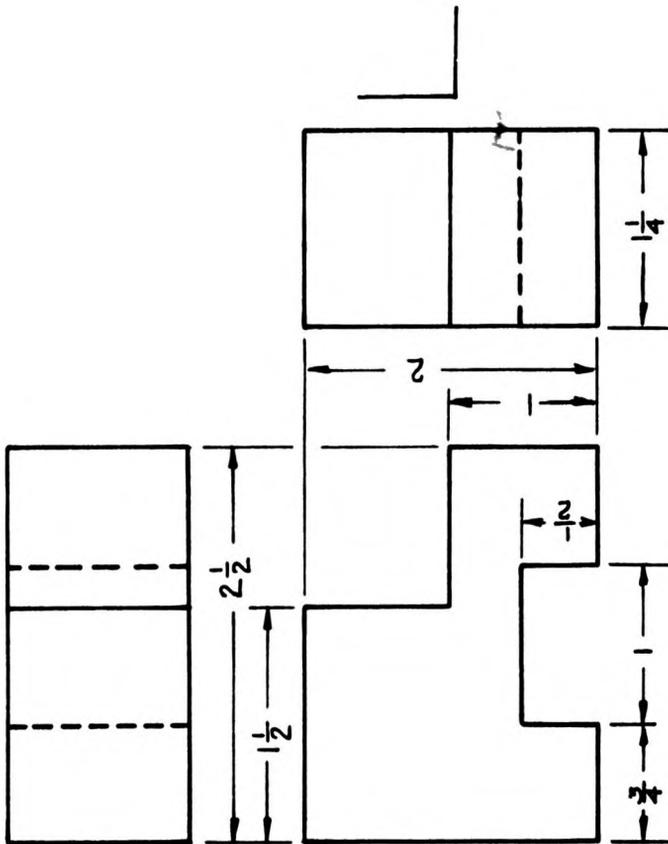
Date

Title of Exercise

Student's Name

Title: CABINET DRAWING TEST

Recommended Use: Place title block to bottom of board and letter.
Construct cabinet view of object starting where indicated.



Period

Date

Title of Exercise

Student's Name

DE 007573