CHAPTER 9 AUXILIARY VIEWS TEST

INSTRUCTIONS

Answer the questions with short, complete statements or drawings as needed.

QUESTIONS

1. Describe the purpose of auxiliary views.
2. When projecting an auxiliary view from the edge view of the surface, what is the angle of projection in relationship to the edge view?
3. Discuss how viewing-plane lines can be used to establish an auxiliary view.
4. When is it necessary to enlarge an auxiliary view?
5. Describe the procedure for drafting an enlarged auxiliary view.
6. Describe a situation when a secondary auxiliary view is necessary.
7. Identify the ASME document that governs auxiliary views.
8. What method is used to show the alignment between the auxiliary view and the direct projection from the inclined surface?
9. If the axis of a hole is perpendicular to an inclined surface, what is the shape of the hole in an auxiliary view of the inclined surface?
10. If the axis of a hole is at 45° to an inclined surface, what is the shape of the hole in an auxiliary view of the inclined surface?
11. Explain the difference between a partial auxiliary view and a full auxiliary view.
12. Why is a partial auxiliary view normally used?
13. Describe the procedure used when it is not possible to align the auxiliary view directly from the inclined surface.
14. How are multiple removed auxiliary views oriented and labeled on a drawing?
15. Describe the process of cross-reference zoning.
Chapter 9 Auxiliary Views Problems

Part 1: Problems 9.1 and 9.2

Given each object displayed in a glass box with views projected on to the glass box surfaces, draw the multiviews and auxiliary view using third-angle projection. Each square on the given grid represents 1 in. (25 mm). Use appropriate size ASME standard sheet size and sheet blocks for each problem unless otherwise specified by your instructor.

Problem 9.1

To access CADD template files with predefined drafting settings, go to the Student Companion Website, select Student Downloads and Drafting Templates, and then select the appropriate template file.

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Problem 9.2
Part 2: Problems 9.3 through 9.6

Given objects with recommended multiviews and auxiliary view having missing lines or missing views, draw the multiviews and auxiliary view using third-angle projection. Each square on the given grid represents 1 in. (25 mm). Use appropriate size ASME standard sheet size and sheet blocks for each problem unless otherwise specified by your instructor.

PROBLEM 9.3

PROBLEM 9.4

PROBLEM 9.5

PROBLEM 9.6
Part 3: Problems 9.7 through 9.14

Given objects with recommended multiviews and auxiliary view having missing lines or missing views, draw the multiviews and auxiliary view using third-angle projection. Make a print of each page and use the copy to measure. Use appropriate size ASME standard sheet size and sheet blocks for each problem unless otherwise specified by your instructor.

PROBLEM 9.7

PROBLEM 9.8

PROBLEM 9.9

PROBLEM 9.10
Part 4

PROBLEM 9.15 This problem provides you with dimensioned pictorial views and a proposed start for your multiview and auxiliary view layout. Draw the required multiviews and auxiliary views. Use the given dimensions to create your final drawing. Set up your drawings with a properly sized sheet, border, and sheet block. Properly complete the information in the title block. Do not draw the pictorial view unless required by your instructor. Do not draw the dimensions.

PROBLEM 9.15 Primary auxiliary view (in.)
   Title: Angle V-block
   Material: SAE 4320


The following problems provide you with pictorial views that contain dimensions and a recommended view layout. Draw the multiviews and auxiliary view. The pictorial views are provided to aid in visualization and to display the dimensions. You do not need to draw the pictorial view. Use the given dimensions to create your final drawing. Set up your drawings with a properly sized sheet, border, and sheet block. Properly complete the information in the title block. Do not draw the dimensions.

PROBLEM 9.16 Primary auxiliary view (in.)
   Title: Cylinder Support
   Material: Cast iron
PROBLEM 9.17  Primary auxiliary view (in.)
Title: 135 Bracket
Material: Aluminum

PROBLEM 9.18  Primary auxiliary view (in.)
Title: 135-1 Bracket
Material: Aluminum
**Problem 9.19** Primary auxiliary view (in.)
Title: Support Base
Material: Cast aluminum

**Problem 9.20** Primary auxiliary view (in.)
Title: Shaft Support
Material: SAE 1020
**PROBLEM 9.21** Primary auxiliary view (in.)

Title: Spacer

Material: Cast iron

**PROBLEM 9.22** Primary auxiliary view (in.)

Title: T-block

Material: SAE 4320
**PROBLEM 9.23**  Primary auxiliary view (in.)
Title: T-wedge
Material: Mild steel

**PROBLEM 9.24**  Primary auxiliary view (in.)
Title: Brace
Material: Cast iron

Problems 9.25 through 9.37 provide dimensioned pictorial views. Use the given information to select and draw the necessary multiviews and auxiliary view or views. Do not draw the pictorial view. Set up your drawings with a properly sized sheet, border, and sheet block. Properly complete the information in the title block. Do not draw the dimensions.

**PROBLEM 9.25** Primary auxiliary view (in.)
- Part Name: Angle Base
- Material: Mild steel

**PROBLEM 9.26** Primary auxiliary view (metric)
- Part Name: Belt Guide
- Material: Aluminum

**PROBLEM 9.28** Primary auxiliary view (metric)
- Part Name: Pivot Link
- Material: Aluminum number 195
PROBLEM 9.29  Primary auxiliary view (in.)
Part Name: Mounting Bracket
Material: Mild steel

PROBLEM 9.30  Design change
Use Problem 9.29 to change the 6.00 length to 3.25.

PROBLEM 9.31  Primary auxiliary view (in.)
Part Name: Adjustable Slide Bracket
Material: 6061-T6 Aluminum
Fillets and Rounds: R.031 unless otherwise specified.

PROBLEM 9.32  Primary auxiliary view (in.)
Part Name: Offset Bracket
Material: Mild steel
Minumun Inside Bend: R.06

PROBLEM 9.33  Secondary auxiliary view (in.)
Part Name: Angle Bracket
Material: 6061-T6 Aluminum
Fillets and Rounds: R.031 unless otherwise specified.

PROBLEM 9.34  Secondary auxiliary view (in.)
Part Name: Slide Rail Support
Material: SAE 1040
Rounds: R.25
**PROBLEM 9.35** Secondary auxiliary view (metric)
Part Name: Skewed Face Plate
Material: SAE 1040

**PROBLEM 9.36** Secondary auxiliary view (in.)
Part Name: Angle Bracket
Material: Cast iron

**PROBLEM 9.37** Primary and secondary auxiliary views (metric)
Part Name: Chassis Switch Plate
Material: 4-mm-thick .416 Stainless steel

**Part 7: Problems 9.38 and 9.39**
The following problems provide pictorial views that contain dimensions and a recommended view layout. Draw the required multiviews and auxiliary view or views. The pictorial views are provided to aid in visualization and to display the dimensions. You do not need to draw the pictorial view. Use the given dimensions to create your final drawing. Set up your drawings with a properly sized sheet, border, and sheet block. Properly complete the information in the title block. Do not draw the dimensions.

NOTE: Confirm dimensions during creation and make revisions as needed. Verify changes with your instructor.
**Problem 9.38** Rotated primary auxiliary view (in.)

Title: Coupler

Material: Cast iron

Draw the required multiview or views and auxiliary view or views using the viewing-plane line rotation method.

**Problem 9.39** Rotated primary auxiliary view (in.)

Title: Coupler

Material: Cast iron

Given the same part provided in Problem 9.38, draw the required multiview or views and auxiliary view or views using the arrow and rotation arrow method.

**Math Problems**

**Part 8: Problems 9.40 Through 9.49**

A solar panel is in the shape of a 4' × 8' rectangle. With the sun overhead, what is the area of the shadow it casts on the ground if it is inclined at the following angles?

- **Problem 9.40** 10°
- **Problem 9.41** 20°
- **Problem 9.42** 30°
- **Problem 9.43** 80°

**Problem 9.44** 90°

**Problem 9.45** What should be the area of a solar panel inclined at 45° if the projected area from an overhead sun is to be 100 ft²?

**Problem 9.46** A circular sign with an area of 77.8 ft² casts a shadow on the ground. The area of the shadow is 26.6 ft². If the sun is overhead, what is the angle that the sign is inclined from the ground?

**Problem 9.47** A long post is sticking up from the ground at an angle of 35°. The sun is overhead and casting a shadow 98.3 feet long onto the ground. How long is the post?

**Problem 9.48** A square sign measuring 3 meters on an edge is inclined at an angle of 25° to the ground. What is its projected area onto the ground?

**Problem 9.49** A solar panel in the shape of a 4' × 8' rectangle casts a shadow with an area of 16 ft² when the sun is overhead. To what angle is it inclined?