

Table of Contents

Dedication	iii
Preface	xxi

Chapter 1: Introduction to AutoCAD

AutoCAD Screen Components	1-2
Start Tab	1-2
Drawing Area	1-2
Command Window	1-3
Navigation Bar	1-5
ViewCube	1-6
In-canvas Viewport Controls	1-6
Status Bar	1-6
Invoking Tools in AutoCAD	1-10
Keyboard	1-10
Ribbon	1-11
Application Menu	1-12
Tool Palettes	1-13
Menu Bar	1-13
Toolbar	1-13
Shortcut Menu	1-13
File Tabs	1-14
AutoCAD Dialog Boxes	1-17
Starting a New Drawing	1-18
Open a Drawing	1-19
Start from Scratch	1-19
Use a Template	1-19
Use a Wizard	1-20
Saving Your Work	1-24
Save Drawing As Dialog Box	1-25
Automatic Timed Save	1-27
Creating Backup Files	1-28
Changing Automatic Timed Saved and Backup Files into AutoCAD Format	1-28
Using the Drawing Recovery Manager to Recover Files	1-28
Closing a Drawing	1-29
Opening an Existing Drawing	1-29

Opening an Existing Drawing Using the Select File Dialog Box	1-30
Opening an Existing Drawing Using the Startup Dialog Box	1-32
Opening an Existing Drawing Using the Drag and Drop Method	1-33
Quitting AutoCAD	1-33
Creating and Managing Workspaces	1-33
Creating a New Workspace	1-34
Modifying the Workspace Settings	1-34
AutoCAD Help	1-35
Autodesk App Store	1-37
Save to Web & Mobile	1-39
Additional Help Resources	1-41
Self-Evaluation Test	1-41
Review Questions	1-42

Chapter 2: Getting Started with AutoCAD

Dynamic Input Mode	2-2
Enable Pointer Input	2-2
Enable Dimension Input where possible	2-3
Show command prompting and command input near the crosshairs	2-5
Show additional tips with command prompting	2-5
Drafting Tooltip Appearance	2-5
Drawing Lines in AutoCAD	2-6
The Close Option	2-7
The Undo Option	2-8
The Exit Option	2-8
Invoking Tools Using Dynamic INPUT/Command Prompt	2-9
Coordinate Systems	2-9
Absolute Coordinate System	2-10
Relative Coordinate System	2-12
Direct Distance Entry	2-18
Erasing Objects	2-21
Canceling and Undoing Operation	2-21
Object Selection Methods	2-22
Window Selection Method	2-22
Crossing Selection Method	2-23
Lasso Selection Method	2-23
Drawing a Circle	2-25
Basic Display Commands	2-29
Zooming Drawings	2-29
Moving the view	2-30
Setting Units Type and Precision	2-30
Specifying the Format	2-31
Specifying the Angle Format	2-31
Setting the Direction for Angle Measurement	2-32
Specifying Units for the Drawing or Block to be Inserted	2-33
Sample Output	2-33
Specifying Units for Lighting	2-33

Setting the Limits of a Drawing	2-35
Setting Limits	2-36
Limits for Architectural Drawings	2-36
Limits for Metric Drawings	2-38
Introduction to Plotting Drawings	2-39
Modifying AutoCAD Settings by Using the Options Dialog Box	2-41
Self-Evaluation Test	2-45
Review Questions	2-46

Chapter 3: Getting Started with Advanced Sketching

Drawing Arcs	3-2
Drawing Rectangles	3-10
Drawing Ellipses	3-14
Drawing Regular Polygons	3-18
Drawing Polylines	3-20
Drawing Donuts	3-25
Placing Points	3-27
Changing the Point Style and Size	3-27
Placing Multiple Points	3-28
Placing Points at Equal Distance	3-28
Placing Points at Specified Intervals	3-28
Drawing an Infinite Line	3-28
Drawing Construction Lines	3-29
Drawing Ray	3-31
Writing a Single Line Text	3-32
Working With Templates	3-32
Self-Evaluation Test	3-33
Review Questions	3-34

Chapter 4: Working with Drawing Aids

Introduction	4-2
Understanding the Concept and Use of Layers	4-2
Working with Layers	4-3
Creating New Layers	4-4
Making a Layer Current	4-5
Controlling the Display of Layers	4-6
Arranging Layers in Increasing Order	4-10
Arranging Layers in Increasing Order with Respect to First Digit	4-11
Merging Layers	4-12
Deleting Layers	4-13
Managing the Display of Columns	4-13
Selective Display of Layers	4-14
Layer States	4-16
Reconciling New Layers	4-17
Isolating and Unisolating Layers	4-17
Controlling the Layer Settings	4-18

Toggle Override Highlight	4-19
Object Properties	4-23
Changing the Color	4-23
Changing the Linetype	4-23
Changing the Lineweight	4-24
Changing the Plot Style	4-25
Changing Object Properties using the PROPERTIES Palette	4-25
Changing Object Properties using the Quick Properties Palette	4-26
Global and Current Linetype Scaling	4-27
LTSCALE Factor for Plotting	4-27
Changing the Linetype Scale Using the PROPERTIES Palette	4-28
Working with the DesignCenter	4-28
Drafting Settings Dialog Box	4-29
Setting Grid	4-30
Setting Snap	4-31
Snap Type	4-31
Drawing Straight Lines Using the ORTHOMODE	4-32
Working with Object Snap	4-33
Running Object Snap Mode	4-45
Overriding the Running Snap	4-46
Cycling through Snaps	4-46
Setting the Priority for Coordinate Entry	4-47
Using AutoTracking	4-48
Object Snap Tracking	4-48
Polar Tracking	4-49
AutoTrack Settings	4-50
Function and Control Keys	4-50
Self-Evaluation Test	4-51
Review Questions	4-51

Chapter 5: Editing Sketched Objects-I

Creating a Selection Set	5-2
Editing Sketches	5-7
Moving Sketched Objects	5-7
Copying Sketched Objects	5-8
Creating Multiple Copies	5-9
Creating an Array of Selected Objects	5-9
Creating a Single Copy	5-10
Pasting Contents from the Clipboard	5-11
Pasting Contents Using the Original Coordinates	5-11
Offsetting Sketched Objects	5-11
Through Option	5-12
Erase Option	5-12
Layer Option	5-13
Rotating Sketched Objects	5-13
Scaling the Sketched Objects	5-15
Filleting the Sketches	5-17

Chamfering the Sketches	5-20
Blending the Curves	5-23
Trimming the Sketched Objects	5-24
Extending the Sketched Objects	5-28
Stretching the Sketched Objects	5-30
Lengthening the Sketched Objects	5-31
Arraying the Sketched Objects	5-32
Rectangular Array	5-33
Polar Array	5-40
Path Array	5-45
Mirroring the Sketched Objects	5-48
Text Mirroring	5-49
Breaking the Sketched Objects	5-50
Placing Points at Specified Intervals	5-51
Dividing the Sketched Objects	5-53
Joining the Sketched Objects	5-54
Self-Evaluation Test	5-58
Review Questions	5-59

Chapter 6: Editing Sketched Objects-II

Introduction to Grips	6-2
Types of Grips	6-2
Adjusting Grip Settings	6-3
Editing Objects by Using Grips	6-5
Stretching the Objects by Using Grips (Stretch Mode)	6-5
Moving the Objects by Using Grips (Move Mode)	6-6
Rotating the Objects by Using Grips (Rotate Mode)	6-7
Scaling the Objects by Using Grips (Scale Mode)	6-9
Mirroring the Objects by Using Grips (Mirror Mode)	6-10
Editing a Polyline by Using Grips	6-11
Loading Hyperlinks	6-13
Editing Gripped Objects	6-13
Changing the Properties Using the PROPERTIES Palette	6-13
Matching the Properties of Sketched Objects	6-14
Quick Selection of Sketched Objects	6-15
Cycling Through Selection	6-17
Managing Contents Using the DesignCenter	6-17
Folders Tab	6-19
Open Drawings Tab	6-20
History Tab	6-20
Autodesk Seek design content Link	6-20
Making Inquiries About Objects and Drawings	6-22
Measuring Area of Objects	6-23
Measuring the Distance between Two Points	6-26
Identifying the Location of a Point	6-27
Listing Information about Objects	6-27
Listing Information about all Objects in a Drawing	6-28

Checking Time-Related Information	6-28
Obtaining Drawing Status Information	6-29
Displaying Drawing Properties	6-30
Basic Display Options	6-30
Redrawing the Screen	6-31
Regenerating Drawings	6-31
Zooming Drawings	6-32
Panning Drawings	6-39
Creating Views	6-41
New View	6-44
Understanding the Concept of Sheet Sets	6-44
Creating a Sheet Set	6-45
Adding a Subset to a Sheet Set	6-49
Adding Sheets to a Sheet Set or a Subset	6-50
Archiving a Sheet Set	6-50
Resaving all Sheets in a Sheet Set	6-51
Placing Views on a Sheet of a Sheet Set	6-51
Self-Evaluation Test	6-52
Review Questions	6-53

Chapter 7: Creating Texts and Tables

Annotative Objects	7-2
Annotation Scale	7-2
Assigning Annotative Property and Annotation Scales	7-2
Customizing Annotation Scale	7-3
Multiple Annotation Scales	7-3
Assigning Multiple Annotation Scales Manually	7-3
Assigning Multiple Annotation Scales Automatically	7-4
Controlling the Display of Annotative Objects	7-5
Creating Text	7-6
Writing Single Line Text	7-6
Entering Special Characters	7-11
Creating Multiline Text	7-11
Editing Text	7-29
Editing Text Using the TEXTEDIT Command	7-29
Editing Text Using the PROPERTIES Palette	7-29
Modifying the Scale of the Text	7-30
Modifying the Justification of the Text	7-31
Aligning Text	7-31
Combine Text	7-32
Inserting Table in the Drawing	7-32
Creating a New Table Style	7-38
Setting a Table Style As Current	7-41
Modifying a Table Style	7-41
Modifying Tables	7-42
Creating Text Styles	7-47
Creating Annotative Text	7-49

Checking Spelling	7-50
Text Quality and Text Fill	7-51
Finding and Replacing Text	7-52
Creating Title Sheet Table in a Sheet Set	7-53
Self-Evaluation Test	7-55
Review Questions	7-56

Chapter 8: Basic Dimensioning, Geometric Dimensioning, and Tolerancing

Need for Dimensioning	8-2
Dimensioning in AutoCAD	8-2
Fundamental Dimensioning Terms	8-3
Dimension Line	8-3
Dimension Text	8-3
Arrowheads	8-3
Extension Lines	8-4
Leader	8-4
Center Mark and Centerlines	8-5
Alternate Units	8-5
Tolerances	8-5
Limits	8-6
Associative Dimensions	8-6
Definition Points	8-7
Annotative Dimensions	8-8
Selecting Dimensioning Tools	8-8
Dimensioning a Number of Objects Together	8-9
Creating Linear Dimensions	8-10
Creating Aligned Dimensions	8-14
Creating Arc Length Dimensions	8-15
Creating Rotated Dimensions	8-16
Creating Baseline Dimensions	8-17
Creating Continued Dimensions	8-18
Creating Angular Dimensions	8-19
Creating Diameter Dimensions	8-23
Creating Jogged Dimensions	8-23
Creating Radius Dimensions	8-24
Creating Jogged Linear Dimensions	8-25
Generating Center Marks and Centerlines	8-25
Creating Associative Centermarks	8-26
Creating Associative Centerlines	8-27
Creating Ordinate Dimensions	8-28
Maintaining Equal Spacing between Dimensions	8-29
Creating Dimension Breaks	8-30
Creating Inspection Dimensions	8-32
Working with True Associative Dimensions	8-33
Removing the Dimension Associativity	8-34

Converting a Dimension into a True Associative Dimension	8-34
Drawing Leaders	8-35
Multileaders	8-39
Drawing Multileaders	8-39
Adding Leaders to Existing Multileader	8-42
Removing Leaders from Existing Multileader	8-42
Aligning Multileaders	8-42
Collecting Multiple Leaders	8-45
Geometric Dimensioning and Tolerancing	8-47
Geometric Characteristics and Symbols	8-47
Adding Geometric Tolerance	8-48
Complex Feature Control Frames	8-50
Combining Geometric Characteristics	8-50
Composite Position Tolerancing	8-51
Using Feature Control Frames with Leaders	8-52
Projected Tolerance Zone	8-53
Creating Annotative Dimensions, Tolerances, Leaders, and Multileaders	8-56
Self-Evaluation Test	8-57
Review Questions	8-57

Chapter 9: Editing Dimensions

Editing Dimensions Using Editing Tools	9-2
Editing Dimensions by Stretching	9-2
Editing Dimensions by Trimming and Extending	9-4
Flipping Dimension Arrow	9-5
Modifying the Dimensions	9-5
Editing the Dimension Text	9-7
Updating Dimensions	9-8
Editing Dimensions with Grips	9-8
Editing Dimensions Using the PROPERTIES Palette	9-8
Model Space and Paper Space Dimensioning	9-12
Self-Evaluation Test	9-14
Review Questions	9-14

Chapter 10: Dimension Styles, Multileader Styles, and System Variables

Using Styles and Variables to Control Dimensions	10-2
Creating and Restoring Dimension Styles	10-2
New Dimension Style Dialog box	10-3
Controlling the Dimension Text Format	10-11
Fitting Dimension Text and Arrowheads	10-16
Formatting Primary Dimension Units	10-19
Formatting Alternate Dimension Units	10-22
Formatting the Tolerances	10-24
Dimension Style Families	10-28

Using Dimension Style Overrides	10-31
Comparing and Listing Dimension Styles	10-33
Using Externally Referenced Dimension Styles	10-33
Creating and Restoring Multileader Styles	10-34
Modify Multileader Style Dialog Box	10-35
Self-Evaluation Test	10-42
Review Questions	10-42

Chapter 11: Adding Constraints to Sketches

Introduction	11-2
Adding Geometric Constraints	11-2
Applying the Horizontal Constraint	11-2
Applying the Vertical Constraint	11-3
Applying the Coincident Constraint	11-4
Applying the Fix Constraint	11-4
Applying the Perpendicular Constraint	11-5
Applying the Parallel Constraint	11-5
Applying the Collinear Constraint	11-6
Applying the Concentric Constraint	11-6
Applying the Tangent Constraint	11-6
Applying the Symmetric Constraint	11-7
Applying the Equal Constraint	11-7
Applying the Smooth Constraint	11-8
Controlling the Display of Constraints	11-8
Applying Constraints Automatically	11-13
Applying Dimensional Constraints	11-14
Converting a Dimensional Constraint into an Annotational Constraint	11-15
Concept of a Fully-Defined Sketch	11-16
Under-defined	11-16
Fully-defined	11-16
Over-defined	11-16
Controlling the Display of the Dimensional Constraint	11-17
Working with Equations	11-22
Adding Equations while Applying Dimensional Constraints	11-22
Adding Equations Using the Parameters Manager	11-22
Self-Evaluation Test	11-27
Review Questions	11-27

Chapter 12: Hatching Drawings

Hatching	12-2
Hatch Patterns	12-2
Hatch Boundary	12-2
Hatching Drawings Using the Hatch Tool	12-3
Panels in the Hatch Creation Tab	12-4
Creating Annotative Hatch	12-17

Hatching the Drawing Using the Tool Palettes	12-18
Drag and Drop Method	12-18
Select and Place Method	12-18
Modifying the Properties of the Predefined Patterns available in the Tool Palettes	12-19
Hatching Around Text, Dimensions, and Attributes	12-20
Editing Hatch Patterns	12-20
Using the Hatch Editor Tab	12-20
Using the Edit Hatch Tool	12-21
Using the Properties Tool	12-22
Editing the Hatch Boundary	12-24
Using Grips	12-24
Trimming the Hatch Patterns	12-25
Using AutoCAD Editing Tools	12-27
Hatching Blocks and Xref Drawings	12-27
Creating a Boundary Using Closed Loops	12-28
Other Features of Hatching	12-29
Self-Evaluation Test	12-30
Review Questions	12-31

Chapter 13: Model Space Viewports, Paper Space Viewports, and Layouts

Model Space and Paper Space/Layouts	13-2
Model Space Viewports (Tiled Viewports)	13-2
Creating Tiled Viewports	13-2
Making a Viewport Current	13-5
Joining Two Adjacent Viewports	13-5
Splitting and Resizing Viewports in Model Space	13-7
Paper Space Viewports (Floating Viewports)	13-7
Creating Floating Viewports	13-8
Creating Rectangular Viewports	13-9
Creating Polygonal Viewports	13-10
Converting an Existing Closed Object into a Viewport	13-11
Temporary Model Space	13-11
Editing Viewports	13-13
Controlling the Display of Objects in Viewports	13-13
Locking the Display of Objects in Viewports	13-13
Controlling the Display of Hidden Lines in Viewports	13-14
Clipping Existing Viewports	13-14
Maximizing Viewports	13-15
Controlling the Properties of Viewport Layers	13-16
Controlling the Layers in Viewports Using Layer Properties Manager	13-18
Paper Space Linetype Scaling (PSLTSCALE System variable)	13-20
Inserting Layouts	13-21
Importing Layouts to Sheet Sets	13-24

Inserting a Layout Using the Wizard	13-24
Defining Page Settings	13-24
Working with the MVSETUP Command	13-26
Converting the Distance Between Model Space and Paper Space	13-30
Controlling the Display of Annotative Objects in Viewports	13-31
Self-Evaluation Test	13-33
Review Questions	13-34

Chapter 14: Plotting Drawings

Plotting Drawings in AutoCAD	14-2
Plotting Drawings Using the Plot Dialog Box	14-2
Adding Plotters	14-10
Editing the Plotter Configuration	14-11
Importing PCP/PC2 Configuration Files	14-13
Setting Plot Parameters	14-13
Working with Page Setups	14-13
Importing a Page Setup	14-16
Using Plot Styles	14-17
Adding a Plot Style	14-17
Plot Style Table Editor	14-19
Applying Plot Styles	14-23
Setting the Current Plot Style	14-24
Plotting Sheets in a Sheet Set	14-27
Self-Evaluation Test	14-28
Review Questions	14-28

Chapter 15: Template Drawings

Creating Template Drawings	15-2
Standard Template Drawings	15-2
Loading a Template Drawing	15-7
Customizing Drawings with Layers and Dimensioning Specifications	15-9
Customizing a Drawing with Layout	15-13
Customizing Drawings with Viewports	15-16
Customizing Drawings According to Plot Size and Drawing Scale	15-18
Self-Evaluation Test	15-22
Review Questions	15-23

Chapter 16: Working with Blocks

The Concept of Blocks	16-2
Converting Entities into a Block	16-2
Inserting Blocks <small>Enhanced</small>	16-5
Creating and Inserting Annotative Blocks	16-12
Block Editor	16-14
Dynamic Blocks	16-16

Adding Parameter and Action Simultaneously Using Parameter Sets	16-33
Inserting Blocks Using the DesignCenter	16-34
Using Tool Palettes to Insert Blocks	16-34
Inserting Blocks in the Drawing	16-35
Modifying Properties of the Blocks in the Tool Palettes	16-35
Adding Blocks in Tool Palettes	16-36
Drag and Drop Method	16-37
Shortcut Menu	16-37
Modifying Existing Blocks in the Tool Palettes	16-37
Layers, Colors, Linetypes, and Lineweights for Blocks	16-38
Nesting of Blocks	16-39
Inserting Multiple Blocks	16-41
Creating Drawing Files Using the Write Block Dialog box	16-43
Defining the Insertion Base Point	16-45
Editing Blocks	16-45
Editing Blocks in Place	16-45
Exploding Blocks Using the XPLODE Command	16-48
Renaming Blocks	16-50
Deleting Unused Blocks	16-51
Applying Constraints to Blocks	16-51
Self-Evaluation Test	16-58
Review Questions	16-58

Chapter 17: Defining Block Attributes

Understanding Attributes	17-2
Defining Attributes	17-2
Editing Attribute Definition	17-7
Using the PROPERTIES Palette	17-8
Inserting Blocks with Attributes	17-8
Managing Attributes	17-11
Extracting Attributes	17-17
Controlling the Attribute Visibility	17-35
Editing Block Attributes	17-36
Editing Attributes Using the Enhanced Attribute Editor	17-36
Editing Attributes Using the Edit Attributes Dialog Box	17-38
Global Editing of Attributes	17-40
Redefining a Block with Attributes	17-45
In-place Editing of Blocks with Attributes	17-45
Inserting Text Files in the Drawing	17-46
Self-Evaluation Test	17-47
Review Questions	17-48

Chapter 18: Understanding External References

External References	18-2
Dependent Symbols	18-2
Managing External References in a Drawing	18-4

The Overlay Option	18-12
Attaching Files to a Drawing	18-16
Working with Underlays	18-16
Editing an Underlay	18-17
Opening an Xreffed Object in a Separate Window	18-19
Using the DesignCenter to Attach a Drawing as an Xref	18-19
Adding Xref Dependent Named Objects	18-20
Clipping External References	18-21
Displaying Clipping Frame	18-23
Demand Loading	18-24
Editing References In-Place	18-26
Self-Evaluation Test	18-27
Review Questions	18-27

Chapter 19: Working with Advanced Drawing Options

Understanding the Use of Multilines	19-2
Defining a Multiline Style	19-2
Drawing Multilines	19-6
Editing Multilines by Using Grips	19-8
Editing Multilines by Using Dialog Box	19-8
Cross Intersection (CC/OC/MC)	19-9
Tee Intersection (CT/OT/MT)	19-10
Corner Joint (CJ)	19-11
Adding and Deleting Vertices (AV/DV)	19-11
Cutting and Welding Multilines (CS/CA/WA)	19-12
Creating Revision Clouds	19-15
Rectangular Revision Cloud	19-15
Polygonal Revision Cloud	19-15
Freehand Revision Cloud	19-15
Creating Wipeouts	19-16
Creating NURBS	19-17
Editing Splines	19-20
Editing Splines using 3D Edit Bar	19-24
DWG Compare <small>Enhanced</small>	19-24
Self-Evaluation Test	19-28
Review Questions	19-29

Chapter 20: Grouping and Advanced Editing of Sketched Objects

Grouping Sketched Objects Using the Object Grouping Dialog Box	20-2
Grouping Sketched Objects Using the Group Button	20-7
Selecting Groups	20-7
Changing Properties of an Object	20-8
Exploding Compound Objects	20-14
Editing Polylines	20-15
Editing Single Polyline	20-16

Editing Multiple Polylines	20-29
Undoing Previous Commands	20-30
Reversing the Undo Operation	20-35
Renaming Named Objects	20-35
Removing Unused Named Objects	20-36
View items you can purge	20-37
View items you cannot purge	20-37
Setting Selection Modes Using the Options Dialog Box	20-38
Self-Evaluation Test	20-42
Review Questions	20-42

Chapter 21: Working with Data Exchange & Object Linking and Embedding

Understanding the Concept of Data Exchange in AutoCAD	21-2
Creating Data Interchange (DXF) Files	21-2
Creating a Data Interchange File	21-2
Information in a DXF File	21-3
Converting DXF Files into Drawing Files	21-3
Importing CAD Files	21-4
Other Data Exchange Formats	21-4
DXB File Format	21-4
Creating and Using an ACIS File	21-4
Importing PDF Files	21-5
Importing 3D Studio Files	21-7
Creating and Using a Windows Metafile	21-7
Creating and Using a V8 DGN File	21-8
Creating a BMP File	21-8
Raster Images	21-8
Attaching Raster Images	21-9
Managing Raster Images	21-10
Editing Raster Image Files	21-13
Clipping Raster Images	21-13
Adjusting Raster Images	21-14
Modifying the Image Quality	21-15
Modifying the Transparency of an Image	21-15
Controlling the Display of Image Frames	21-16
Changing the Display Order	21-16
Other Editing Operations	21-16
Scaling Raster Images	21-17
DWG Convert	21-17
Conversion Setup Options	21-18
Working with PostScript Files	21-21
Object Linking and Embedding (OLE)	21-24
Sharing Drawing Views	21-32
Self-Evaluation Test	21-36
Review Questions	21-37

CHAPTERS AVAILABLE FOR FREE DOWNLOAD

In this textbook three chapters have been given for free download. You can download these chapters from our website www.cadcim.com. To download these chapters follow the given path: *Textbooks > CAD/CAM > AutoCAD > AutoCAD 2020: A Problem-Solving Approach, Basic and Intermediate > Chapters for Free Download* and then select the chapter name from the **Chapters for Free Download** drop-down. Click the **Download** button to download the chapter in the PDF format.

Chapter 22: Conventional Dimensioning and Projection Theory Using AutoCAD

Dimensioning	22-2
Dimension Units	22-2
Inch Units	22-2
SI (Metric) Units	22-3
Dimensioning Components	22-4
Common Rules For Dimensioning	22-4
Dimensioning of Rounds, Fillets, and Chamfers	22-13
Dimensioning of Repetitive Features	22-14
Working Drawings	22-14
Detail Drawing	22-14
Assembly Drawing	22-15
Bill of Materials	22-16
Multiview Drawings	22-16
Understanding the X, Y, and Z Axes	22-17
Orthographic Projections	22-18
Positioning Orthographic Views	22-21
Sectional Views	22-26
Auxiliary Views	22-37
Self-Evaluation Test	22-42
Review Questions	22-43

Chapter 23: Concepts of Geometric Dimensioning and Tolerancing

History of Tolerances and Allowances	23-2
Methods of Tolerancing	23-2
Limit Dimensioning	23-3
Plus and Minus Tolerancing	23-4
Geometric Tolerances	23-4
Form Tolerances	23-10
Profile Tolerances	23-19
Orientation Tolerances	23-22
Location Tolerances	23-25
Runout Tolerances	23-29
Fits	23-33
Hole Basis System	23-33
Shaft Basis System	23-34

Standards of Fits	23-39
Standard Inch Fits	23-39
Standard Metric Fits	23-43
Self-Evaluation Test	23-49
Review Questions	23-49

Chapter 24: Isometric Drawings

Isometric Drawings	24-2
Isometric Projections	24-2
Isometric Axes and Planes	24-3
Setting the Isometric Grip and Snap	24-3
Drawing Isometric Circles	24-7
Creating Fillets in Isometric Drawings	24-8
Dimensioning Isometric Objects	24-8
Isometric Text	24-10
Self-Evaluation Test	24-11
Review Questions	24-12

Index	I-1
--------------	------------