

Contents

Introduction xxi

Chapter 1 • Getting Familiar with AutoCAD **1**

Understanding the AutoCAD Window 1

 Getting to Know the Window Components 4

 The Menu Bar 9

 Using the Toolbars 14

 Closing and Opening Toolbars 17

 Other Toolbars 18

 Checking Out the Draw and Modify Toolbars 20

Starting a Drawing 21

Panning and Zooming to Adjust Your View 25

Understanding the Layout Tabs 26

Understanding How Command Options Work 28

Getting Help 30

 Using the Search Tab 31

 Using Context-Sensitive Help 32

 Additional Sources of Help 33

 Staying Informed with the Communication Center 33

Just Enough Summary 34

Chapter 2 • Understanding the Drafting Tools **35**

Understanding the AutoCAD Coordinate System 35

 Experimenting with Coordinates Using Lines 37

 Specifying Exact Distances 39

Setting Up a Drawing 45

 Selecting the Drawing Units 45

 Other Drawing Unit Options 47

 Determining the Drawing Area 47

Using a Digital T Square and Triangle 49

 Using a Quick T Square Function with Ortho 49

 Using an Adjustable Triangle with Polar Tracking 49

 Modifying Polar Tracking's Behavior 50

Getting a Visual Reference with the Grid Mode 52

Snapping to the Grid or Other Regular Intervals 53

Changing the Grid and Snap Settings 54

 Adjusting the X and Y Spacing 54

 Setting Up for Isometric 2D Drawing 55

 Rotating the Grid, Snap, and Cursor 56

 Aligning the Grid to an Object 56

Selecting Exact Locations on Objects	57
Setting Up Osnap Locations	57
Automatically Snapping to Locations	58
Selecting Object Snaps on the Fly	59
Understanding the Osnap Options	60
Fine-Tuning the AutoSnap Feature	62
Aligning Objects Using Object Snap Tracking and Tracking Points	62
Using the Temporary Tracking Point Feature	66
Just Enough Summary	68
Chapter 3 • Drawing 2D Objects	69
Drawing Straight Lines	69
Drawing Circles and Arcs	70
Using the Circle Options	70
Using the Arc Options	72
Drawing Curves	73
Drawing an Ellipse	73
Drawing an Elliptical Arc	75
Drawing Smooth Curves	75
Drawing Curves with Polylines	77
Drawing Parallel Lines	79
Drawing Revision Clouds	80
Drawing a Freehand Revision Cloud	81
Drawing a Revision Cloud Based on the Shape of an Object	81
Working with Hatch Patterns and Solid Fills	82
Placing a Hatch Pattern: The Basics	83
Using Predefined Patterns	84
Adding Solid Fills	85
Positioning Hatch Patterns Accurately	86
Editing the Hatch Area	88
Modifying a Hatch Pattern	89
Understanding the Boundary Hatch Options	90
Drawing Regular Polygons	96
Using Objects to Lay Out Your Drawing	97
Marking Points in a Drawing	97
Marking Off Equal Divisions	98
Dividing Objects into Specified Lengths	98
Using Construction Lines	99
Just Enough Summary	102
Chapter 4 • Editing AutoCAD Objects	103
Selecting Objects	103
Using the Standard AutoCAD Selection Method	103
Practice Using Selection Options	104
Selecting Objects with Windows	105

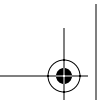
Editing the Windows Way	107
Stretching Lines Using Grips	107
Copy, Mirror, Rotate, Scale, and Stretch with Grips	109
Other Grips Features	110
Changing Objects with Grips and Dynamic Input	111
Controlling Objects Using the Properties Palette	114
Just Enough Summary	117
Chapter 5 • Editing with the Modify Toolbar	119
Selecting Objects	119
Erasing Objects	120
Joining Objects	121
Joining End to End with Intermediate Arcs	121
Joining with a Chamfer	123
Extending or Trimming Lines to Other Objects	125
Moving and Copying	128
Moving with Accuracy	128
Copying Objects with the Copy Command	129
Making Circular Copies	130
Copying Rows and Columns	131
Scaling, Stretching, and Rotating	133
Scaling to a Specific Scale Factor	133
Scaling an Object to Fit Another	133
Stretching Objects	134
Rotating Objects	134
Aligning the Rotation Cursor with an Object	135
Breaking an Object into Two	136
Editing Xrefs and Blocks	137
Editing Polylines	139
Just Enough Summary	141
Chapter 6 • Creating 3D Drawings	143
Getting to Know the 3D Modeling Workspace	143
Drawing in 3D Using Solids and Surfaces	146
Creating a 3D Solid	148
Editing 3D Solids with Grips	150
Constraining Motion with the Grip Tool	150
Rotating Objects in 3D Using Dynamic UCS	151
Drawing on a 3D Object's Surface	154
Sculpting Objects with Union and Subtraction	156
Making Changes to Your Solid	157
Changing Your Point of View	158
Moving Around Your Model	159
Change Where You Are Looking	159
Flying through Your View	160
Saving a View	161

Creating a Camera	161
Changing a Camera's Properties	164
Changing from Perspective to Parallel Projection	164
Creating 3D Forms from 2D Shapes	165
Extruding a Polyline	165
Checking Interference and Finding the Intersection of 3D Shapes	168
Filleting a Corner	170
Extruding Along a Path	170
Creating a Helix	171
Lofting through Different Shapes	172
Revolving a Polyline	176
Specifying Exact Distances in 3D Space	177
Controlling the Appearance of Your Model	178
Adding Materials	178
Adding Lights	182
Getting a Rendered View	187
Getting a Wireframe or Shaded View	190
Just Enough Summary	191
Chapter 7 • Getting Organized with Layers	193
Creating and Assigning Layers	193
Understanding the Layer Properties Manager Dialog Box	195
Assigning Layers to Objects	196
Setting the Current Layer	198
Controlling Layer Visibility	199
Controlling Layer Visibility Using the On/Off Option	201
Controlling Layer Visibility with Freeze and Thaw	201
Controlling Layer Visibility in Individual Viewports of a Layout Tab	202
Locking Layers from Printing and Editing	204
Finding the Layers You Want	205
Taming an Unwieldy List of Layers	205
Filtering Layers by Their Properties	206
Creating Layer Groups by Selection	208
Applying Filters to the Properties Toolbar Layer List and Other Options	209
Saving and Recalling Layer Settings	210
Layers II Toolbar for Managing Layers	211
Getting Familiar with the Layers II Toolbar	211
Organizing Visual Content through Properties	213
Assigning Linetypes to Layers	214
Controlling Linetype Scale	216
Setting Line Weights	218
Setting Colors, Linetypes, Linetype Scales, and Line Weights for Individual Objects	221
Just Enough Summary	223

Chapter 8 • Blocks, Groups, Xrefs, and DesignCenter	225
Using Blocks to Organize Objects	225
Creating a Block	226
Understanding the Block Definition Dialog Box	227
Inserting a Block	228
Scaling and Rotating Blocks	229
Importing an Existing Drawing as a Block	230
Saving Blocks as AutoCAD Drawing Files	231
Organizing Objects Using Groups	232
Toggling Groups On and Off	233
Working with the Object Grouping Dialog Box	233
Working with the LT Group Manager	235
Finding Files on Your Hard Disk	236
Getting Multiple Uses from Drawings	
Using External References	236
Attaching a Drawing as an External Reference	238
Updating an Xref While You Draw	239
Differences between External References and Blocks	240
Keeping Track of Drawing Components with DesignCenter	241
Getting Familiar with DesignCenter	241
Opening and Inserting Files with DesignCenter	244
Finding and Extracting the Contents of a Drawing	245
Exchanging Data between Open Files	246
Loading Specific Files into DesignCenter	247
Downloading Symbols from DesignCenter Online	247
Keeping Tools on Hand with Tool Palettes Window	247
Deleting Tools and Palettes	249
Customizing a Tool	249
Just Enough Summary	251
 Chapter 9 • Creating Text	 253
Adding and Formatting Text	253
Adjusting the Text Height and Font	254
Using Color, Stacked Fractions, Alignment, Lists, and Special Symbols	255
Adjusting the Text Boundary	256
Setting Indents and Tabs	257
Adjusting Line Spacing	258
Adding a Background Mask to Text	259
Making Changes to Multiple Text Objects	259
Using AutoCAD's Spelling Checker	260
Using AutoCAD's Find and Replace Text Feature	261
Importing Text Files from Other Programs	262
Understanding Text and Scale	262
Using Styles to Organize Your Fonts	264
Creating and Setting a Style	264
Using a Text Style	265
Setting the Current Default Style	265

Adding Single Words with the Single-Line Text Object	266
Adding Tables to Your Drawing	267
Creating a Table	268
Adding Cell Text	268
Combining Cells	268
Adjusting Table Cell Text Orientation	269
Adjusting Table Cell Text Justification	271
Adding or Deleting Rows and Columns of Cells	271
Adding Formulas to Cells	272
Exporting Tables	275
Importing Tables	276
Editing Table Line Weights	276
Changing Cell Background Colors	278
Adding Graphics to Table Cells	278
Creating Table Styles	279
Just Enough Summary	281
Chapter 10 • Using Dimensions	283
Understanding the Parts of an AutoCAD Dimension	283
Dimensioning in the Model or Layout Tab	284
Drawing Linear Dimensions	285
Placing Horizontal and Vertical Dimensions	285
Continuing a Dimension	286
Drawing Dimensions from a Common Base Extension Line	287
Adding a String of Dimensions with a Single Operation	288
Dimensioning Nonorthogonal Objects	289
Adding Nonorthogonal Linear Dimensions	289
Dimensioning Arcs and Circles	290
Dimensioning Angles and Arc Lengths	291
Adding a Note with an Arrow Using the Leader Tool	292
Using Ordinate Dimensions	294
Adding Tolerance Notation	295
Editing Dimensions	296
Appending Data to Dimension Text	296
Making Changes to Multiple Dimensions	297
Detaching Dimension Text from the Dimension Line	298
Rotating a Dimension Text	299
Skewing Dimension Lines	299
Setting Up the Dimension's Appearance	300
Creating a Dimension Style	300
Setting the Current Dimension Style	311
Editing a Dimension Style	313
Just Enough Summary	313

Chapter 11 • Gathering Information	315
Measuring Areas	315
Measuring the Area of a Polygonal Shape	316
Measuring the Area of Complex or Curved Shapes	316
Finding the Coordinate of a Point	319
Measuring Distances	319
Measuring Angles	320
Getting the General Status of the Drawing	320
Finding the Time Spent on a Drawing	322
Adding Nondrawing Data to Store with Your Drawing	323
Finding Text in a Drawing	324
Locating and Selecting Named Components	325
Searching Using Quick Select	325
Viewing a List of Named Components	326
Finding Missing Support Files	326
Locating Xrefs	326
Locating Fonts, Linetypes, and Hatch Patterns	328
Just Enough Summary	329
Chapter 12 • Laying Out and Printing Your Drawing	331
Setting Up a Drawing for Printing	332
Exploring the Layout Tab	332
Using the Layout Tab to Scale Down Your Drawing	336
Creating Additional Viewports	337
Controlling How Viewports Display and Print	340
Setting Layers for Individual Viewports	340
Adding Layouts	342
Printing Your Drawing	343
Selecting and Storing Printer Settings	343
Printer Configuration Options	344
Selecting a Paper Size and Number of Copies	346
Determining What View Will Print	346
Adjusting the Location of Your Printed Image	346
Setting the Print Scale	347
Options for Printing 3D Views	347
Plot Options	348
Drawing Orientation	349
Storing Your Printer Settings	349
Controlling Color, Lines, and Fills through Plot Styles	351
Using AutoCAD's Predefined Plot Styles	352
Choosing between Color and Named Plot Style Tables	353
Creating a Plot Style Table	354
Editing and Using Plot Style Tables	355
Understanding the Options in the Plot Style Table Editor	356



Assigning Named Plot Styles Directly to Layers and Objects 358
 Assigning Plot Styles to Objects 358
 Assigning Named Plot Style Tables to Layers 360
 Converting a Drawing from Color Plot Styles to Named Plot Styles 361
 Just Enough Summary 362

Index 363

