

Index

Note to the Reader: Throughout this index **boldfaced** page numbers indicate primary discussions of a topic. *Italicized* page numbers indicate illustrations.

A

- Abort buttons, 144–145, *145*
- ac prefix, 91
- acActiveViewport constant, 280
- acad.lin file, 177, 180
- acad.pat file, 226
- Acad3DSolid type, 515
- AcadDocument object, 31, *31*
- AcadEntity object, 154, 198
- AcadLeader object, 347
- AcadMLine object, 214
- AcadSelectionSet object, 198
- acAllViewports constant, 280
- acAngleUnits constant, 391, 399
- Accelerator property, 172
- Access
 - creating modules for, **588–591**, 588–589
 - displaying form data in, **591–595**, 592–593
- Access Object Model, **628**, 628
- accuracy, **450–451**
 - grids and snap angles for, **451–452**, *453*
 - polar tracking for, **453–456**, *453–454*
- acDegreeMinuteSeconds constant, 391, 399
- acDegrees constant, 391, 399
- acDim constants, 273
- acDimPrecisionZero constant, 481
- acGrads constant, 391, 399
- acHatchPatternType constants, 226
- acIntersection constant, 545–546, *545*
- acRadians constant, 391, 399
- acSelectionSetCrossing constant, 503
- acSelectionSetWindow constant, 503
- acSubtraction constant, 544, 545–546
- active viewports, 280
- ActiveDimStyle property, 403
- ActiveDocument property, 110
- ActiveSpace property, **148–149**, *148*
- ActiveTextStyle property, 331
- ActiveUCS property, 297
- ActiveViewport property, 279–280
- ActiveX controls, **566**
 - and COM, **567–568**, 568–569
 - in macros, **569**
- ActiveX Data object (ADO), 580
- acUnion constant, 544, *544*
- acwebpublish file, 613
- ADCInsertUnitsDefaultSource property, 157–158
- ADCInsertUnitsDefaultSourceTarget property, 158
- Add File To Startup Suite dialog box, 48, *49*
- Add method, 626
 - in DimStyles, 400, 402
 - in Documents, 307–308
 - in Groups, 505, 508

- in Layers, 474
- in Layouts, 421, 423
- in Menus, 408
- in PopupMenus, 406
- in SelectionSets, 502
- in Toolbars, 411
- in UCSs, 296–297
- Add prefix, 109
- Add Watch dialog box, 368, 368
- AddABlock macro, 492–493
- AddAGroup macro, 505–507
- AddAnObject macro, 154
- AddAnXref macro, 494–496, 494
- AddArc method, 215–217
- AddASelectionSet macro, 499
- AddBox method, 423, 515, 521, 523
- AddCircle method, 223, 225, 242, 303, 507
- AddCone method, 515, 532, 534
- AddCylinder method, 515, 535, 537
- AddDiametric method, 393
- AddDim3PointAngular method, 399
- AddDimAligned method, 277, 380–381, 481
- AddDimAngular method, 382, 386, 391
- AddDimDiametric method, 382
- AddDimensions macro, 475–476, 478–482
- AddDimOrdinate method, 384, 394–395
- AddDimRadial method, 385, 396
- AddDimRotate method, 386
- AddEllipticalCone method, 515, 538, 541
- AddEllipticalCylinder method, 515, 538, 543
- AddExtrudedSolid method, 515, 550
- AddExtrudedSolidAlongPath method, 515
- AddHatch method, 226, 245, 257–258
- AddItem method, 184, 520
- Additional Controls dialog box, 430, 431
- AddLeader method, 343
- AddLine method, 151, 169, 508, 580
- AddMenuItem method, 406, 409
- AddMLine method, 214
- AddMText method, 320, 322–324
- AddNew method, 587
- AddNewLineType macro, 177, 179–180
- AddPolyLine method, 257
- AddRegion method
 - for extruded solids, 549
 - for revolved solids, 553
- AddRevolvedSolid method, 515, 551, 553
- AddSeparator method, 413
- AddShape method, 461, 463
- AddSphere method, 515, 526, 528
- AddSpline method, 457, 460
- AddSubMenu method, 406, 408
- AddText method, 41, 44, 44, 320
- AddTolerance method, 404–405
- AddToolBarButton method, 412–413
- AddTorus method, 515, 529, 531
- AddWedge method, 515, 524, 526
- AdjustGridSpacing macro, 284, 286
- ADO (ActiveX Data object), 580
- Advanced tab, 250
- Align Lefts button, 69
- Aligned dimensioning style
 - adding objects with, **389–390**
 - characteristics of, **380–381**, 380–381
- AlignedDimension macro, 407
- alignment of code lines, 72
- All selection mode, 504
- Alphabetic tab, 17, 17
- Always Ask Before Opening Projects With
 - Macros option, 47
- ampersands (&) for concatenating strings, 45
- And operator, 358

- Angle argument, 551
- Angle For Slant setting, 339
- Angle To Fill setting, 312–313
- AngleFormat property, 391, 399
- angles
 - for polar arrays, 312–313
 - in polar tracking, 454, 454, 456
 - for revolved solids, 551
 - for snap points, 451–452, 453
 - for tapering, 550
- AngleToFill parameter, 313
- AngleVertex parameter, 382, 386
- Angular dimensioning style
 - adding objects with, 390–392
 - characteristics of, 381–382, 381
- AngularDimension macro, 407
- AnimatedLine macro, 152–153
- annotated arrows, 343–352, 344, 351–353
- Appearance tab, 16
- Append mode, 441
- AppendInnerLoop method, 258
- AppendItems method, 508
- AppendOuterLoop method, 228–229, 245, 257–258
- Application object, 109, 133–134, 133, 621
- Application Path property, 442–443
- applications, 5, 128
 - dimensioning from, 379–380, 379
 - loading, 142
 - running, 24, 24, 140–141
 - saving, 25–26, 25–26
 - starting from macros, 50–51
- Architectural unit format, 273
- arcs
 - collections of, 217–218, 219
 - drawing, 215–217
- areas of shapes, 249–250, 249
- arguments, 127
- Array dialog box, 311–313, 312, 316–317, 317
- ArrayPolar method, 313, 315
- ArrayRectangular method, 318–319
- arrays, 86–87
 - accessing, 87–88
 - creating, 87
 - declaring, 37, 87
 - polar, 310–315, 311–312, 316
 - rectangular, 316–320, 317, 319
- arrowhead size, 381
- arrows, text with, 343–352, 344, 351–353
- Asc function, 343
- ASCII code
 - character set, 633–635
 - in strings, 84
- associative hatches, 226
- Associativity parameter, 226
- asterisks (*) as wildcard characters, 94, 435
- AttachExternalReference method, 495
- Auto Data Tips option, 61
- Auto Indent option, 61
- Auto List Members feature, 37, 37, 60, 60
- Auto Quick Info option, 60
- Auto Syntax Check option, 59–60, 359, 360
- AutoCAD, running macros from, 43–44, 43
- AutoCAD Help: Developer Documentation dialog box, 623
- AutoCAD Object Model, 132, 621–623, 622–623
 - Application object, 133–134, 133
 - Document object, 134–136
- AutoCAD Today dialog box, 294, 295
- AutoCADDataToWord macro, 575–578
- AutoCADLineToExcel macro, 570–573, 570

automating tasks, macros for. *See* macros
 AutoQuick Info option, 156, 157
 axes in UCS, 295
 AxisDir argument, 551
 AxisPoint argument, 551

B

BackColor property, 114–115
 background color, 16, 115
 Background Compile option, 61
 BackStyle property, 115
 Backwards option, 339
 base points in polar tracking, 455–456
 bathtubs, 556–560, 556
 Beep statement, 343
 Binary mode, 441
 blank spaces, removing, 161–162
 BlockReference objects, 490
 blocks and Block objects, **150, 490**
 adding, **492–493, 493**
 creating, **490–492**
 moving, **496**
 referencing, **494–496, 494**
 Blocks collection, 490
 Bold property, 572
 boldface attribute, 324
 Boolean method, 543–545
 borders for active controls, 13
 Boundary Hatch dialog box, 250–251, 250
 bounding boxes, 515, 521
 BoxCenter argument, 521
 boxes, **521–524, 521**
 BoxHeight argument, 521
 BoxLength argument, 521

BoxWidth argument, 521
 breakpoints, 61, 72, 74, 76, **363–365, 364**
 BRICK hatch pattern, 229, 230
 bricks application, **229–235, 230, 235–236**
 Browse the Web button, 599
 Browser dialog box, 603, 604
 browsers, launching, **603–605, 604**
 BrowseTheWeb macro, 604–605, 609
 browsing, Web, **599–600, 599–600**
 bugs. *See* debugging
 built-in constants, **90–94, 90, 92**
 built-in keywords and types, icons for, 39, 39
 Button Editor dialog box, 414–415, **415–416**
 Button Properties tab, 414–416, 415
 buttons
 adding, **416–417, 417**
 in message boxes, **143–146, 144–146**
 responses in clicking, **146–147, 147**
 buttons argument, 143
 ByRef parameters, 360
 ByVal parameters, 360

C

CalculateAreaOfShape macro, 249–250
 Call Stack, **372–374, 373**
 Cancel buttons, 144, 187
 Cancel property, 187
 canceling project loading, **50**
 capitalization, 37
 Caption property, 17–18
 captions, **17–18, 17**
 carriage returns
 in prompts, 160, 259
 in writing to files, 438

- cascading menus, **57**
- case
 - changing, 161
 - of names, 37–38
- Case Else clause, 104
- Categorized tab, 17, 17
- cboArrowhead_Change procedure, 348–349
- cboIslandStyle_Change procedure, 252–253
- CDbl function, 203
- Cells collection, 572
- center
 - circles, 223
 - cones, 540
 - cylinders, 535, 537, 543
 - radial dimensions, 385
 - spheres, 526
- CenterPoint parameter, 313
- Chamfer command, 554
- chamfering, **554–556**, 554–556
- ChangeViewDirection macro, 517, 520–521
 - for boxes, 523
 - for complex solids, 546
 - for cones, 534, 541
 - for cylinders, 538, 543
 - for extruded solids, 548, 550
 - for revolved solids, 553
 - for spheres, 529
 - for tori, 531
 - for wedges, 526
- changing property values, **114–119**, 114–117
- Charset frame, 330, 336–337
- Charts collection, 626
- CheckBox controls, 10, 238
- CheckIfLocalFileIsFromWeb macro, 607–609
- CheckInterference method, 547
- CheckNumericKey Procedure, 122–124
- chkHighlightAll_Click procedure, 196–197
- chkHighlightLast_Click procedure, 189–192
- chkNewColor_Click procedure, 196
- ChordPoint parameter
 - in AddDimDiametric, 382–383
 - in AddDimRadial, 385
- CInt function, 138
- circle of bricks application, **229–235**, 230, 235–236
- circles
 - drawing, **223–225**, 225
 - filled, **225–229**, 229
- classes
 - icons for, 39, 39
 - of objects, **107–108**
- Click event procedures, 21–22
- Close method, 587
- Close statement, 440, 445
- CloseShape macro, 240, 244–245
 - for extruded solids, 548–549
 - for revolved solids, 553
 - for rotating shapes, 313
- closing files, **445**
- cmdAdd_Click procedure, 517–519
- cmdCancel_Click procedure
 - for circle of bricks, 234–235
 - for freeform shape drawing, 246–247
 - for island detection styles, 253
 - for line highlighting, 196
 - for selection set application, 501
- cmdContinue_Click procedure
 - for Draw Arrow application, 348, 350
 - for freeform shape drawing, 247
 - for island detection styles, 253
 - for selection set application, 501
 - for UCS matrix, 298

- cmdCreatePavers_Click procedure, 234–235
- cmdDelete_Click procedure, 518–519
- cmdDrawLine_Click procedure, 185–186
- cmdExit_Click procedure
 - in dimensioning application, 399
 - in format text application, 327
- cmdFinish_Click procedure, 518–519
- cmdLineWeight_Click procedure, 204
- cmdOK_Click procedure, 183
- cmdSave_Click procedure, 585–587
- cmdSaveToFile_Click procedure, 440
- cmdScale_Click procedure, 208–210
- cmdScaleLine_Click procedure, 202–203
- cmdScaleLinetype_Click procedure, 203
- cmdScaleToCenter_Click procedure, 211–212
- code commands
 - for debugging, 72–73
 - for editing, 71–72
 - for running, 73–74
- code lines
 - aligning, 72
 - indenting, 61
- Code window, 8, 19, 33, 33, 593
 - displaying, 19–20
 - event procedures in, 20–24, 20
 - keyword color in, 36
- coding, 80–81
 - applications in, 128
 - conditions in, 100–104
 - constructs in, 121–124
 - events in, 120–121
 - functions in, 126
 - loops in, 104–107
 - methods in, 119–120
 - objects in, 107–113, 111
 - parameters and arguments in, 127
 - programs in, 127
 - properties in, 113–119, 114–117
 - tab order in, 125–126
 - user-defined types in, 99–100
 - variables in. *See* variables
- collections, 106, 108–109
- colons (:) for multiple statements, 101
- color
 - dimensions, 381
 - keywords, 36
 - layers, 473, 475
 - lines, 192–197
 - objects on layers, 484
 - syntax errors, 59
 - title bars and background, 16
- Color property, 475
- columns in rectangular arrays, 317
- COM (Component Object Model), 567–568, 568–569
- CombinePrimitives macro, 543–547
- combining 3D solids, 543–547, 544–545
- ComboBox controls, 10
- command line, sending text to, 159–161
- Command13_Click procedure, 594–595
- CommandButton controls, 11
- CommandButton icon, 170
- CommandButton1_Click procedure
 - for drawings, 422
 - in Finding Name, 137
 - in Metric-Imperial Converter, 22–23
 - in Select Drawing Template, 308
 - for string handling function, 164
- CommandButton2_Click procedure
 - in Metric-Imperial Converter, 22–23
 - for string handling function, 164–165
- CommandButton3_Click procedure, 164–165

- CommandButton4_Click procedure, 164–165
- CommandButton5_Click procedure, 164–165
- CommandButton6_Click procedure, 164–165
- CommandButton7_Click procedure, 164–165
- Commands tab, 414, 417, 417
- commas (,)
 - for constants, 90
 - in Dim statements, 84
 - in number formats, 340
 - in output lists, 438
 - for parameters, 127
- Comment Block button, 65
- comments
 - in debugging, 65
 - as documentation, 35–36, 40
- CommonDialog control, **430–431**, 431
 - Open dialog box, **432–436**, 432–434
 - Save As dialog box, **436–437**, 436
- Compile ACADProject command, 72
- Compile On Demand option, 61
- compiler and compilation, 81
 - errors discovered in, **359–361**, 360
 - options for, 61
- Complete Word feature, 37–39, 38–39
- complex solids, **543–547**, 544–545
- Component Object Model (COM), **567–568**, 568–569
- concatenating strings, 45
- conditional expressions in if statements, 100
- conditions
 - If...Then... blocks, **100–102**
 - If...Then...Else... blocks, **102–103**
 - Select Case statement, **103–104**
- ConeCenter argument, 532–533, 540
- ConeHeight argument, 532–533, 540
- ConeRadius argument, 532–533, 540
- cones
 - creating, **532–534**, 532, 535
 - elliptical, **538–541**, 538
- ConeXDistance argument, 538
- ConeYDistance argument, 538
- Configure A Data Source dialog box, 581, 581
- Connection tab, 582, 582
- constants, **89**, 145
 - built-in, **90–94**, 90, 92
 - for buttons, 143–145
 - declaring, **89–90**
 - icons for, 39, 39
 - for MsgBox returned values, 146
 - scope of, **94–99**, 97
- constructive solid geometry (CSG)
 - techniques, 514
- Contents tab, 112, 133, 623
- context argument, 143
- context-sensitive help, 77
- ContourLinesPerSurface property
 - for cones, **534**, 535
 - for cylinders, 537, 543
 - for revolved solids, 553
 - for spheres, 528
 - for tori, 531
- control points for splines, 456–457, 460–461, 461
- controls, **8–12**, 9
 - dimensions and position of, **12–13**
 - names for, 171
 - placing in UserForms, **12–14**
 - tab order of, **125–126**, 176
 - TabIndex and TabStop properties for, **176**
- Controls collection, 108, **112–113**
- Convert button, 119
- Convert macro dialog box, 589

- converting
 - degrees to radians, 393
 - to double type, 203
 - to integer type, 138
 - metric measurements to imperial. *See* Metric-Imperial Converter application
 - Copy command, 72, 76
 - CopyFile macro, 429
 - CopyFrom method, 401, 403
 - copying
 - files, **429**, 443
 - items from applications, 568
 - objects, **302–303**, 302
 - CopyObject method, 302
 - CopyVariables macro, 443–444
 - CopyWholeFile macro, 444–445
 - CopyWholeLine macro, 443–445
 - Cos function, 393
 - Count property, 626
 - in Layers, 474
 - in Layouts, 423
 - Counter variables in For loops, 105
 - Create Drawings tab, 294, 295
 - Create New Drawing dialog box, 293, 295
 - Create New Drawing option, 423
 - Create New Web Page, 610
 - Create Table in Design View option, 583
 - Create Web Page page, 610, 611
 - CreateABlock macro, 490–492
 - CreateArrow macro, 346–348, 350
 - CreateDimensionedLine macro, 275, 277–278
 - CreateDimensionStyle macro, 401–403, 475–477
 - CreateLine macro, 150–151, 150, 172–173
 - CreateMenu macro, 406–410, 409
 - CreateObject method, 569–570, 572, 575, 577, 580
 - CreatePolarPoint macro, 454–456
 - CreateRectangularArray macro, 319–320
 - CreateToleranceObject macro, 404–405
 - CreateToolbar macro, 412–413
 - CreateVillaPlans procedure, 159–160
 - cross-sectioning 3D solids, **560–563**, 560–561
 - Crossing mode option, 499, 500, 504
 - CSG (constructive solid geometry)
 - techniques, 514
 - Ctrl key for copying items, 568
 - cubic curves, 457
 - Currency format, 340
 - Current Module option, 71
 - Customize dialog box, 414, 414, 416
 - Cut command, 71
 - CylinderCenter argument, 535, 537, 543
 - CylinderHeight argument, 535, 543
 - CylinderRadius argument, 535
 - cylinders
 - creating, **535–538**, 536
 - elliptical, 539, **541–543**
 - CylinderXDistance argument, 538
 - CylinderYDistance argument, 538
- ## D
- Data Link Properties dialog box, 581–582, 582
 - Data Type Summary Help window, 82, 82
 - data types, **82–84**, 82
 - for arrays, 37, 87
 - defining, **99–100**
 - memory for, 83, 85

- Data Types Keyword Summary option, 83
- Data View window, 583, 583
- databases, **580–583**, 581–583
 - Access, **588–595**, 588–589, 592–593
 - saving line data in, **583–587**, 584–585
- Date function, 45–46
- dates
 - formatting, **341–342**
 - retrieving, 45–46
- dbConnect Manager, 580–582, 581
- Debug menu
 - Add Watch command, 368
 - Edit Watch command, 369
 - Quick Watch command, 364
 - Toggle Breakpoint command, 76
- Debug object, 444–445
- Debug toolbar, **66**, 66
- debugging, **356**
 - breakpoints for, **363–365**, 364
 - Call Stack for, **372–374**, 373
 - code commands for, **72–73**
 - compiler errors, **359–361**, 360
 - Debug menu, **362**, 362
 - Immediate Window for, **366–367**, 367
 - Locals Window for, **369–371**, 370–371
 - logic errors, **357–359**, 358
 - run-time errors, **361–362**
 - stepping through code, **365**
 - Watches Window for, **368–369**, 368–369
- decimal placeholders in number formats, 340
- declaring
 - arrays, 37, 87
 - constants, **89–90**
 - procedures, 23
 - variables, 60, **83–86**
- Default button, 187
- Default Internet Location setting, 600, 600
- default methods and properties, icons for, 39, 39
- Default property, 187
- default settings, **16**
- defining types, **99–100**
- DefinitionPoint parameter, 384
- degrees, converting to radians, 393
- Delete Common Dialog command, 431
- Delete method
 - for Layout tabs, 424
 - for objects, 246
- deleting
 - blank spaces, 161–162
 - CommonDialog control, 431
 - Layout tabs, 424
 - menu groups, **410**
 - objects, 246
- Description property, 361
- design time vs. run time, **113**
- dialog boxes
 - changing properties from, **116–118**, 116–117
 - CommonDialog control for, **430–431**, 431
 - Open dialog box, **432–436**, 432–434
 - Save As dialog box, **436–437**, 436
 - modal vs. modeless, **143**
- DialogTitle property, 436
- Diametric dimensioning style
 - adding objects with, **392–393**
 - characteristics of, **382–383**, 382–383
- DiametricDimension macro, 407
- digit placeholders in number formats, 340
- Dim statement, 37, **84–85**

- DIM system variables, 402
- Dim3PointAngular object, 278
- DimAligned object, 274, 278, 288, 380–381
- DimAngular object, 278, 382
- DimDiametric object, 278
- Dimension menu, Style command, 401
- Dimension objects, 273
- Dimension Style Manager dialog box, 401, 401
- Dimension toolbar, 377, 378
- dimensioning, 376
 - application for, 387–389, 388, 399–400
 - from applications, 379–380, 379
 - automating, 274–278, 276
 - styles for, 377–378, 377–378
 - 3 Point Angular, 386–387, 387, 398–399
 - Aligned, 380–381, 380–381, 389–390
 - Angular, 381–382, 381, 390–392
 - Diametric, 382–383, 382–383, 392–393
 - Ordinate, 383–384, 384, 394–395
 - Radial, 384–385, 385, 395–396
 - Rotated, 386, 386, 397
 - saving, 400–403, 401
 - using, 403
 - Tolerance object for, 404–405
- DimensionLineWeight property, 390, 481
- dimensions
 - for arrays, 88
 - of toolbox controls, 12–13
- Dimensions & Slant frame, 325, 330, 333–334
- DimLineLocation parameter, 386
- dimmed menu items, 57
- DimOrdinate object, 278, 384
- DimRadial object, 278, 385
- DimRotated object, 278
- DimStyle object, 400–401
- DimStyles collection, 400
- Dir function, 309–310
- DirectAssistant macro, 624
- Direction parameter, 404
- Direction property, 520
- Display Properties dialog box, 16
- display schemes, 16
- DistanceBetweenColumns parameter, 318
- DistanceBetweenLevels parameter, 318
- DistanceBetweenRows parameter, 318
- Do loops, 107
- docked toolbars, 55–56, 56
- Document objects, 134–136, 621
- documentation, comments as, 35–36, 40
- documents, creating, 307–310, 307, 309
- Documents collection, 109–111
- DoDrawingSetup macro, 422–425
- double type, converting to, 203
- downloading files from Web, 600–609, 604
- Drafting Settings dialog box
 - for grid points, 283–284, 284
 - for snap spacing, 285–286
- dragging objects into AutoCAD, 567–568, 568
- Draw menu
 - Hatch command, 250
 - Solids menu
 - Extrude command, 547
 - Section command, 561
 - Slice command, 560
- DrawAlignedDimension macro, 274, 277–278, 288
- DrawALine macro, 274–275, 277–278
- DrawArc macro, 215
- DrawArrow macro, 345–346, 351

- DrawAutoCADLine macro, 573–575
- DrawBath macro, 557–560
- DrawBox macro, 518, 521–523, 521
- DrawCircle macro, 223–225
- DrawCircleOfBricks macro, 234
- DrawCircularPavers macro, 230–235
- DrawCone macro, 533–534, 535, 541
- DrawCylinder macro, 535–538, 536
- DrawEllipticalCone macro, 538–540
- DrawEllipticalCylinder macro, 538, 541–543
- DrawExtrudedSolid macro, 548–550
- DrawFilledCircle macro, 227–229
- DrawFilledShape macro, 240, 244–245, 249
- DrawFloorPlan macro, 289–292, 475–476
- DrawFloorPlanWithDimensions macro, 475–476, 482
- DrawGenericShape macro, 239–240, 248–249
- drawing
 - arcs, **215–217**
 - circles, **223–225**, 225
 - filled circles, **225–229**, 229
 - freeform shapes, **236–248**, 237, 248
 - lines, **169–175**, 171–172
 - from Excel, **573–575**, 574
 - from Word, **578–580**
 - range tops, **260–265**, 261
 - splines, **456–461**, 457, 460–461
- drawing objects, 19, **109**, 110
 - Application object, **109**
 - Documents collection, **109–111**
- drawing units, **272–278**, 273, 278
- Drawing Units dialog box, 272, 272
- DrawingAndLayouts macro, 424
- drawings
 - creating, **421–425**
 - hyperlinks in, **614–617**, 615
 - publishing on Web, **609–614**, 610–613
 - saving, **425–426**
 - from templates, **293–295**, 294
 - text in. *See* DrawText macro
- DrawLine macro, 174–175
- DrawLineInAutoCAD macro, 578–580
- DrawLineWithHyperlink macro, 616–617
- DrawMortar macro, 230–233
- DrawMultilineText macro, 323–324
- DrawMultipleLines macro, 214
- DrawPlans macro, 159–160
- DrawRangeTop macro, 261–265
- DrawRevolvedSolid macro, 551–554
- DrawSphere macro, 526–528
- DrawSpline macro, 457–460, 457
- DrawText macro
 - entering code for, **34–41**
 - running, **42–44**, 43–44
 - saving, **41–42**, 42
 - updating, **45–46**
- DrawTorus macro, 529–531
- DrawVillaPlans macro, 159–160
- DrawWedge macro, 524–525
- drop-down lists, 34
- .dvb extension, 26, 41, 64
- .dwg extension, 41
- .dwt extension, 292–293

E

- edges
 - chamfering, **554–556**, 554–556
 - filleting, **554**, **556–560**
- Edit Hyperlink dialog box, 615, 615, 617

- Edit menu
 - Complete Word command, 37–38
 - Indent command, 76
 - Paste command, 76
 - Edit toolbar, 65, 66
 - Edit Watch dialog box, 369, 369
 - editing
 - code commands for, 71–72
 - expressions, 369
 - Editor tab, 156
 - for Option Explicit, 86
 - options on, 59–61
 - for syntax checking, 359, 360
 - Editor Format tab, 36
 - ellipses (...), 71
 - elliptical 3D solids
 - cones, 538–541, 538
 - cylinders, 539, 541–543
 - Else code blocks, 23
 - Elseif clause, 103
 - empty strings, 24
 - Enable Macro Virus Protection option, 47
 - Enable Macros option, 47
 - End Function statement, 126
 - End If statement, 101–102
 - End method, 595
 - End statement, 24, 139
 - End Sub statement, 23, 35, 122
 - End Type statement, 100
 - endpoint parameter, 481
 - Engineering unit format, 273
 - Enumerated types, 114, 116, 116
 - enums, icons for, 39, 39
 - environment, 6–7, 7. *See also* IDE (Integrated Development Environment)
 - toolbox, 8–14, 9
 - UserForm modules, 7–8, 8
 - environment settings, 287–288
 - equal signs (=)
 - in comparison operators, 102
 - in expressions, 81
 - Err object, 361
 - errors, debugging. *See* debugging
 - Evaluate method, 228, 257
 - event-driven processing, 120
 - event procedures, 8, 20–24, 20, 120–121
 - events, 39, 39, 120–121
 - Excel, 569–570
 - drawing lines from, 573–575, 574
 - saving line data to, 570–573
 - Excel Object Model, 626, 627
 - exclamation marks (!) for member
 - references, 108
 - existence of files, 427–429
 - existing drawings, saving, 426
 - exposed objects, 621
 - expressions, 81
 - editing, 369
 - in Immediate Window, 366–367, 367
 - in Select case, 103–104
 - extension line offset attribute, 381, 390
 - ExtensionLineOffset property, 381, 390, 395, 481
 - external blocks, 494–496, 494
 - ExtLine1Point parameter, 380
 - ExtLine2Point parameter, 380
 - extruded solids, 547–550, 548
- ## F
- F1 function key, 77
 - FaceCenterPoint argument, 524
 - False values, 102

- Family frame, 325, 330, 337–338
- FarChordPoint parameter, 383
- file handles, 441–4442
- file input/output, **420**
 - closing files, **445**
 - CommonDialog control for, **430–431, 431**
 - creating drawings, **421–425**
 - existence of files, **427–429**
 - modes for, **441–442**
 - Open dialog box, **432–436, 432–434**
 - Path property for, **442–443**
 - reading from files, **443–445**
 - Save As dialog box, **436–437, 436**
 - saving drawings, **425–426**
 - writing to files, **437–441, 438**
- File menu
 - Close and Return to AutoCAD command, 26, 51
 - New command, 140, 295, 421, 583
 - Plot Preview command, 206
 - Print command, 70
 - Publish to Web command, 610
 - Save command, 26, 41
 - Save As command, 292
 - Save Global1 command, 25
- File New Database dialog box, 583
- file numbers, 437, 441–442
- File Transfer Protocol (FTP), 599
- FileCopy statement, 429
- FileExists function, 427–429
- FileName property
 - for Open dialog box, 436
 - for Save As dialog box, 437
- Filename argument, 441–442
- files
 - closing, **445**
 - copying, **429, 443**
 - downloading from Web, **600–609, 604**
 - existence of, **427–429**
 - project, **46–50, 47, 49**
 - reading from, **443–445**
 - writing to, **437–441, 438**
- Files tab
 - for template files, 309
 - for Web, 600
- filled circles, **225–229, 229**
- Fillet command, 554, 556
- filleting, **554, 556–560**
- filling nested areas, **250–258, 250–251**
- Filter property
 - for Open dialog box, 432
 - for Save As dialog box, 436
- FilterIndex property
 - for Open dialog box, 435
 - for Save As dialog box, 436
- Find command, 72
- Find Whole Word Only option, 92
- Finding Name application, 135–146
 - coding, **136–140, 138, 140**
 - running, **140–141**
- FindMax function, 101
- FirstEndPoint parameter, 382, 387
- Fixed format, 340
- fixed-length strings, 84
- fixed points, scaling lines with respect to, **210–213**
- floor plans, **288–292, 289**
- fmBackStyleOpaque value, 115
- fmBorders library, 91, 92
- focus of controls, 176
- Font dialog box, 117–118, *117*
- Font frame, 325, 333
- Font property, 117–118, 572
- fonts, 117–118, *117*, **320–322**

For loops, **105–106**
 For Each loops, 106
 Form Image option, 71
 Format frame, 325, 330, 334–335
 Format function
 for numbers, 340–341
 for times and dates, 341
 for Word, 578
 Format menu
 Align command, 69
 Drawing Limits command, 280
 Layer command, 473
 Linetype command, 177, 179
 Make Same Size command, 68
 Text Style command, 321
 Units command, 272
 Vertical Spacing command, 68
 FormatText procedure, 332
 formatting
 numbers, **340–341**
 text, **324–338**, 325, 338–339
 times and dates, **341–342**
 Forms collection, 108
 Forms object model, **111–113**, 111
 fractions, 39
 Frame controls, 10
 Frame2_Exit procedure, 334
 frames, 324
 FreeFile function, 442
 freeform shapes, **236–248**, 237, 248
 Freeze property, 486, 488
 FreezeActiveLayer macro, 486–488
 freezing layers, **486–488**
 FTP (File Transfer Protocol), 599

functions, **126**
 parameter help for, 60, 60
 for strings, **161–165**, 162–163

G

General Declarations section, 95, 99
 General object, 31, 31
 General tab
 options on, **61**, 62
 for ToolTips, 64
 Generate Web Page screen, 612
 GetAngle method, 120
 for arcs, 216
 in polar tracking, 456
 GetCenter macro, 211–213
 GetColorSelected macro, 194–195, 197
 GetControlPoints macro, 457–460
 GetCorner method, 503
 GetDefaultFile procedure, 434–436
 GetDistance method
 for arcs, 216
 for boxes, 523
 for circles, 224–225
 for cones, 534, 540
 for cylinders, 537
 for polar tracking, 456
 for spheres, 528
 for wedges, 526
 GetEntity method, 563
 GetNewFile macro, 427–428
 GetNextLine macro, 588–590
 GetObject function, 569, 595

- GetPoint method
 - for arcs, 216
 - for circles, 224
 - for cones, 534
 - for cylinders, 537
 - for dimensions, 277
 - for freeform shapes, 243
 - for polar tracking, 456
 - for selection sets, 503
 - for spheres, 528
 - for spreadsheets, 573
 - for tori, 531
 - for wedges, 526
 - for Word, 578
- GetRemoteFile method, 605–606
- GetShape macro
 - for extruded solids, 548–549
 - for freeform shapes, 240–243
 - for revolved solids, 553
 - for rotating shapes, 313, 315, 320
- GetShapeFromFile macro, 462–469, 462
- GetString method, 503
- GetTail procedure, 345, 347
- GetTransformationMatrix macro, 298–300
- GetUCSMatrix method, 297, 299
- GetURLFile macro, 605–606, 609
- GetURLFromUser function, 601–603
- GetUserInput macro, 258
- GetUsersSelection macro, 198–200
- GetValidURL macro, 601–603, 609
- global objects, icons for, 39, 39
- Global1 project name, 65
- graphical object spaces
 - ModelSpace collection, 147
 - PaperSpace collection, 147–149, 148
- graphical objects
 - accessing, 152–154
 - adding, 150–151, 150
- grayed menu items, 57
- greater than signs (>) in comparison operators, 100, 102
- “Grid too dense to display” message, 283
- GridOn property, 279, 452
- grids, 278, 451–452, 453
 - displaying, 281–283, 282
 - grid limits for, 280–281
 - grid point spacing in, 283–284, 284
 - grid points for, 278–280, 279
 - options for, 61
- GridX setting, 283
- GridY setting, 283
- Group objects, 505, 508
- grouping objects, 472
 - blocks, 490
 - adding, 492–493, 493
 - creating, 490–492
 - moving, 496
 - referencing, 494–496, 494
 - groups for
 - accessing, 509
 - creating, 505–508, 506
 - layers. *See* layers
 - selection sets for, 496–505, 497–500
- groups, 473
 - accessing, 509
 - creating, 505–508, 506
- Groups collection, 505
- GUIs, creating, 14–16, 14

H

handles
 for active controls, 13, 68
 for files, 441–442

hard-wired values, 289

Hatch objects, 226

HatchStyle property, 256

height
 cones, 532–533, 540
 current drawing, 134
 cylinders, 535, 543
 UserForms, 113

Height property, 113, 134

help, 59, 74–77, 75, 77

Help menu
 Contents and Index command, 82
 Developer Help command, 133, 623
 Microsoft Visual Basic Help command,
 74, 82

Help window, 74–75, 75

HelpContext property, 361

helpfile argument, 143

HelpFile property, 361

HelpString argument, 412

Highlight method, 503

HighlightAllItems macro, 192–193

highlighting lines, **188–197**, 190–191

HighlightLastItemDrawn macro, 188–190

HTTP (Hypertext Transmission Protocol), 599

Hyperlink object, 616

hyperlinks, **614–617**, 615

Hypertext Transmission Protocol (HTTP), 599

I

icons, 39, 39

IDE (Integrated Development Environment),
 5–6, **54–56**, 56
 code commands in
 for debugging, **72–73**
 for editing, **71–72**
 for running code, **73–74**
 help in, **74–77**, 75, 77
 menu bar in, **56–57**, 56
 options in, **58**, 58
 Editor, **59–61**
 General, **61**, 62
 Print command in, **70–71**, 70
 running applications from, **141**
 running macros from, **43**
 toolbars in, **62–63**
 Debug, **66**, 66
 Edit, **65**, 66
 standard, **63–64**, 63
 UserForm, **67–69**, 67

identifying selected lines, **198–200**, 199

If statements, 23

If...Then... blocks, **100–102**

If...Then...Else... blocks, **102–103**

Ignore buttons, 144–145, 145

Ignore island detection setting, 251

Image control, 11

Immediate Window, **366–367**, 367, 372

imperial units, converting to metric. *See*
 Metric-Imperial Converter application

inches, 284

Indent command, 72

indenting code lines, 61, 72

Index argument, 412
 index entries, 74
 Index tab, 74–75, 75
 index values
 for arrays, 87–88
 for collections, 109
 Information icon, 144, 144
 InitDir property, 437
 InitializeUserInput method, **503–505**
 input
 file. *See* file input/output
 validating, **342–343**
 input boxes, **258, 259**
 Input mode, 441
 InputBox function, 258, 260, 264
 Insert button, face of, **63–64**
 Insert menu
 Hyperlink command, 615, 617
 Layout command, 421
 Module command, 32, 76, 149
 UserForm command, 7, 15
 InsertAfter method, 578
 InsertBlock method, 492–493
 Insertion cursor, 35
 InsertionPoint parameter
 in AddMText, 322
 in AddTolerance, 404
 InsertPoint method, 495
 instances of classes, 108
 integers, converting to, 138
 Integrated Development Environment. *See* IDE
 (Integrated Development Environment)
 Internet, **598**
 browsing, **599–600, 599–600**
 downloading files from, **600–609, 604**

 hyperlinks for, **614–617, 615**
 publishing drawings on, **609–614, 610–613**
 URL paths in, **599–600, 599–600**
 intersecting solids, checking for, **547**
 Intersection operation, 543, 545–546, 545
 intrinsic constants, **90–94, 90**
 Island Detection styles, **251–258**
 IsRemoteFile method, 606–607
 IsURL method, 602
 italic attribute, 324
 Item method, 138, 152
 in DimStyles, 403
 in Layers, 474

K

keyword color, **36**

L

Label controls, 9, 238
 Last selection mode, 504
 LastDLLError property, 361
 LaunchBrowserDialog method, 603–605, 604
 launching browsers, **603–605, 604**
 Layer Properties Manager dialog box, 473–474,
 474, 483–484
 Layer1 layer, 473–474
 LayerOn property, 473, 475, 480, 482, 488–489
 layers
 accessing, **488–489**
 creating, **473–483, 474, 482–483**
 freezing and thawing, **486–488**

- locking, **485–486**
 - properties of, **483–485**, 484–485
 - turning on and off, **488**
- Layout blocks, 490
- Layout tabs, 421–424
- Layouts collection, 111, 421
- Layouts in Paper Space, 147–148
- LCase function, 161
- Leader object, 343
- LeaderEndPoint parameter, 384
- LeaderLength parameter
 - in AddDimDiametric, 383
 - in AddDimRadial, 385
- leading spaces, removing, 161–162
- Left function, 161
- Len Function, 161
- Length section for units, 272
- less than signs (<) in comparison operators, 100, 102
- libraries
 - constants in, 91
 - icons for, 39, 39
- lifetime of variables, **95–99**
- Limits property, 280–281
- .lin extension, 177
- Line Data Table application, 583–595, 584–585, 588–589, 592–593
- Line object, 169
- line weight, **200–206**
 - for dimensions, 381
 - for objects on layers, 484
- LineData: Database dialog box, 588–592
- LineDetails type, 99
- linefeed characters, 438
- lines, **168**
 - adding, **186–187**, 186–187
 - coloring, **192–197**
 - creating, 150–151, 150
 - drawing, **169–175**, 171–172
 - from Excel, **573–575**, 574
 - from Word, **578–580**
 - highlighting, **188–197**, 190–191
 - linetypes, **177–186**, 178, 181
 - parallel, 214
 - scales and weights for, **200–206**, 201
 - scaling using transformation matrices, **206–213**
 - selected, identifying, **198–200**, 199
- Linetype Manager dialog box, 177–179, 177
- linetypes, **177–186**, 178, 181
- Linetypes collection, 177
- Lineweight dialog box, 485, 485
- LineWeightDisplay property, 390, 481
- list boxes of objects and procedures, 19–21, 21
- ListBox controls, 10
- ListCount property, 310
- ListIndex property, 310, 518
- Load or Reload Linetypes dialog box, 177–178, 177
- Load/Unload Applications dialog box, 48, 50
- loading
 - applications, **142**
 - project files, **46–50**, 47, 49
 - shapes, **461–464**, 462, 464–465
- LoadShapeFile method, 463
- local variables, 95
- Locals Window, **369–372**, 370–371
- Lock property, 482, 485

locked layers, 486
 locking layers, **485–486**
 logic errors, **357–359**, 358
 logical groups, 473
 long names for drawings, 425
 loop counters, 106
 loops, **104**
 For, **105–106**
 While, **106–107**
 LotsOfArcs macro, 217–218, 219
 lowercase characters, converting to, 161
 lstColors_Click procedure, 196–197
 LTrim function, 161

M

Macro argument, 412
 macros, 5–6, **30–31**, **121**
 ActiveX controls in, **569**
 running, **42–44**, 43–44
 running applications from, **140–141**
 saving, **41–42**, 42
 standard modules in, **32–34**, 32–33
 starting applications from, **50–51**
 vs. templates, **295**
 for text. *See* DrawText macro
 Macros dialog box, 32–33, 32, 43–44, 43
 MakeAllLayersVisible macro, 488–489
 Margin Indicator bar, 363
 matrices
 transformation, **206–213**, 295
 two-dimensional arrays for, 88
 UCS, **297–300**, 298
 members of classes, 108
 memory
 for data types, 83, 85
 for string types, **84**
 for variables, 95
 menu bar, **55–57**, 56
 Menu Bar tab, 410
 menu commands, 6
 Menu Customization dialog box, 410, 411
 menu groups
 deleting, **410**
 restoring, **410–411**
 MenuBar collection, 134
 MenuGroups collection, 134, 413
 menus, **405**
 cascading, 57
 creating, **406–411**, 409, 411
 message boxes
 button click responses in, **146–147**, 147
 buttons in, **143–146**, 144–146
 MsgBox function, **142–147**, 144–147
 methods, 39, 39, **119–120**
 Metric-Imperial Converter application
 captions in, **17–18**, 17
 code window for, **19–24**, 20–21
 GUI for, **14–16**, 14
 running, **24**, 24
 saving, **25–26**, 25–26
 Microsoft Common Dialog Control,
 430–431, 431
 Open dialog box, **432–436**, 432–434
 Save As dialog box, **436–437**, 436
 Microsoft Form objects, **111–113**, 111
 Microsoft Forms collection, **112**

- Microsoft Object Model, **624–626**, 625
 - Mid function, 161
 - missing arguments, 361
 - MLine object, 289
 - modal dialog boxes, **143**
 - mode argument, 441
 - Model tab, 248, 248
 - modeless dialog boxes, **143**
 - ModelSpace collection, 108, 111, **147**
 - ModelSpaceToPaperSpace macro, 149
 - modes for opening files, **441–442**
 - Modify menu, Array command, 311, 316
 - module-level scope, **95–96**
 - modules, 7, 39, 39
 - Move method
 - for animated lines, 153
 - for drawing objects, 465, 468
 - MoveShape macro, 465–469
 - moving
 - blocks, **496**
 - objects, **465–469**
 - UCS icon, 383
 - MsgBox function, 138, 138, **142–147**, 144–147
 - MText object, 320
 - multidimensional arrays, **88**
 - multiline prompts, **259**, 259
 - Multiline Text Editor dialog box, 322
 - multilines, 214, 289
 - MultiPage controls, 11
 - multiple parallel lines, **214**
- N**
- name parameter
 - in AddShape, 461
 - in AddToolBarButton, 412
 - Name property, 15, 18
 - names, **85**
 - capitalization in, 37
 - case of, 38
 - constants, 89
 - controls, 12, 171
 - drawings, 425
 - event procedures, 121
 - macros, 33
 - objects, 5
 - nested areas, filling, **250–258**, 250–251
 - nested If statements, 102
 - New dialog box, 583
 - New Dimensions option, 410
 - new drawings, saving, **425**
 - New Form dialog box, 591, 592
 - New Text Style dialog box, 321
 - New Toolbar dialog box, 414
 - Next clauses, 105
 - No buttons, 144–145, 145
 - non-uniform rational B-spline (NURBS)
 - curves, 457
 - nonassociative hatches, 226
 - Normal island detection setting, 251, 251
 - not equal to operator (<>), 100, 102
 - Now function, 341
 - Number property, 361
 - number signs (#)
 - in number formats, 340
 - as wildcard characters, 94
 - NumberOfColumns parameter, 318
 - NumberOfLevels parameter, 318
 - NumberOfObjects parameter, 313
 - NumberOfRows parameter, 318
 - numbers, formatting, **340–341**
 - NURBS (non-uniform rational B-spline)
 - curves, 457

O

- Object Browser, **90–94**, 90, 92
- Object lists, 19
- object models, **620**
 - Access, **628**, 628
 - AutoCAD, **621–623**, 622–623
 - Excel, **626**, 627
 - Microsoft, **624–626**, 625
 - Word, **629**, 629
- ObjectName property, 480
- objects, 5, **107**
 - classes of, **107–108**
 - collections of, **108–109**
 - copying, **302–303**, 302
 - drawing, 19, **109**, 110
 - Application object, **109**
 - Documents collection, **109–111**
 - grouping. *See* grouping objects; layers
 - Microsoft Forms, **111–113**, 111
 - moving, **465–469**
- OK buttons, 144
- OLE Properties dialog box, 568, 568
- On Error Resume Next statement, 137–138
- online Help facility, 59
- Open dialog box, **432–436**, 432–434
- Open method
 - for files, 437
 - for Word, 578
- Open statement
 - paths in, 443
 - syntax of, 441
- Open VBA Project dialog box, 46–48, 47, 142, 180–181, 181
- Open Visual Basic Editor option, 47–48
- OpenDataBase method, 587
- opening objects, loading projects when, **48**
 - OpenRecordset method, 587
 - opt3PointAngular_Click procedure, 398
 - optAligned_Click procedure, 389–390
 - optAll_Click procedure, 501
 - optAngular_Click procedure, 390–392
 - optANSI_Click procedure, 336
 - optArial_Click procedure, 333
 - optBackwards_Click procedure, 335
 - optBold_Click procedure, 335
 - optCharsetDefault_Click procedure, 336
 - optCrossing_Click procedure, 501–502
 - optDecorative_Click procedure, 338
 - optDiametric_Click procedure, 392–393
 - optDontCare_Click procedure, 337
 - optFamilyRoman_Click procedure, 338
 - optFixed_Click procedure, 337
 - optGothic_Click procedure, 333
 - optGreek_Click procedure, 333
 - Option Base statement, 88
 - Option Compare statement, 590
 - Option Explicit statement, **86**
 - OptionButton controls, 10
 - OptionButton1_Click procedure, 349
 - OptionButton2_Click procedure, 349
 - Options dialog box, **58**, 58
 - Editor page, **59–61**
 - General page, **61**, 62
 - for keyword color, 36
 - for Option Explicit, 86
 - for Startup dialog, 293, 294
 - for syntax checking, 359, 360
 - for template files, 309
 - for units, 154–155, 155
 - for Web, 600
 - optItalic_Click procedure, 335
 - optLast_Click procedure, 502
 - optNormalFormat_Click procedure, 335

- optNormalOrientation_Click procedure, 335
 - optOrdinate_Click procedure, 394–395
 - optPitchDefault_Click procedure, 337
 - optPrevious_Click procedure, 502
 - optRadial_Click procedure, 395
 - optRoman_Click procedure, 333
 - optRotated_Click procedure, 397
 - optScript_Click procedure, 338
 - optSymbol_Click procedure, 336
 - optUpsideDown_Click procedure, 336
 - optVariable_Click procedure, 337
 - optWindow_Click procedure, 502
 - Or operator, 358
 - order of controls, **125–126, 176**
 - Ordinate dimensioning style
 - adding objects with, **394–395**
 - characteristics of, **383–384, 384**
 - OrdinateDimension macro, 408
 - Orientation frame, 335–336
 - orientation of text, 324
 - origins
 - scaling lines with respect to, **207–210**
 - in UCS, 295
 - Outdent command, 72
 - Outer island detection setting, 251
 - output, file. *See* file input/output
 - output lists, 437
 - Output mode, 441
- P**
- p-code, 81
 - in debugging, 72
 - options for, 61
 - Palette tab, 115–116, 116
 - PaperSpace collection, **147–149, 148**
 - PaperSpaceToModelSpace macro, 149
 - parallel lines, **214**
 - Parameter Info feature, 119, 119
 - parameters, **127**
 - ByVal and ByRef, 360
 - help for, 60, 60
 - for methods, 119, 119
 - parentheses ()
 - for arrays, 87
 - for methods, 120
 - Paste command, 72
 - .pat extension, 226
 - Path property, **442–443**
 - pathname argument, 441
 - PatternName parameter, 226
 - PatternType parameter, 226
 - PDMODE system variable, 246–247
 - Percent format, 340
 - periods (.) in number formats, 340
 - pipe symbols (|) as wildcard characters, 435
 - Pitch frame, 330, 337
 - polar arrays, **310–315, 311–312, 316**
 - polar tracking, **453–456, 453–454**
 - Polar Tracking On option, 454
 - Polar Tracking tab, 454
 - PolarPoint method, 454, 456
 - PopupMenu object, 406, 409, 409
 - PopupMenuItem object, 409, 409
 - PopupMenu collection, 406
 - position
 - menu bar and toolbar, 56
 - text boxes, 67
 - toolbox controls, **12–13**

- position parameter
 - in AddDimAligned, 481
 - in AddShape, 461
- positioning points, 464, 464
- pound signs (#)
 - in number formats, 340
 - as wildcard characters, 94
- precision, **450–451**
 - grids and snap angles for, **451–452, 453**
 - polar tracking for, **453–456, 453–454**
- Precision setting for units, 272–273
- Preferences object, **154–158, 155–158, 621, 623**
- prefixes
 - for constants, 91
 - in naming conventions, 171
- preprogrammed toolbar buttons, **416–417, 417**
- Preserve keyword, 243
- preset values, changing properties with, **114–116, 114–116**
- Preview and Post page, 612–613, 612
- previewing polar arrays, 312
- Previous selection mode, 504
- PrimaryUnitsPrecision property, 481
- Print-ACADProject dialog box, 70
- Print method
 - in Debug, 444–445
 - in Immediate Window, 366–367
- Print Setup dialog box, 70, 70
- Print Statement, 437–438
- printing UserForms, **70–71, 70**
- private scope, **94–95**
- private-module level scope, **95**
- procedure level scope, **95**
- Procedure lists, 19–21, 21
- procedures, **122–124, 122**
 - declaring, 23
 - event, 8, **20–24, 20, 120–121**
 - static, 96
- processTwoValues procedure, 127
- Profile argument, 551
- program statements, **81**
- programs, **127**
- Project Explorer window, **64–65**
- project files
 - icons for, 39, 39
 - loading, **46–50, 47, 49**
- Prompt method, 159–161
- prompt parameter
 - for InputBox, 258
 - for MsgBox, 142
- prompts
 - for InputBox, 258, 259
 - multiline, **259, 259**
- properties, **113**
 - changing values of, **114–119, 114–117**
 - icons for, 39, 39
 - of layers, **483–485, 484–485**
 - in Locals Window, **369–371, 370–371**
- Properties tab, 414
- Properties window, 17–18, 17, 135
- public scope, **94–95**
- public-module level scope, **96**
- Publish to Web Wizard, **609–614, 610–613**
- publishing drawings on Web, **609–614, 610–613**
- PutRemoteFile method, 606

Q

quadratic curves, 457
 QueryClose procedure, 139
 Question icon, 144, *144*
 question marks (?)
 in Immediate Window, 367
 as wildcard characters, 94
 Quick Watch command, **364–365**, *364*

R

Radial dimensioning style
 adding objects with, **395–396**
 characteristics of, **384–385**, 385
 RadialDimension macro, 407
 radians, converting degrees to, 393
 radii
 circles, 223, 303
 cones, 532–533, 540
 cylinders, 535
 spheres, 526
 Random mode, 441
 Range frame, 71
 Range method, 578
 Range object, 578
 Range property, 572
 range tops, **260–265**, *261*
 ReadData procedure, 159–160
 reading data from files, **443–445**
 rectangular arrays, **316–320**, *317*, *319*
 Redo command, 71
 RedrawPolyline macro
 for extruded solids, 548
 for freeform shapes, 243–246

 for rotating shapes, 313
 for text with arrows, 345–346
 reference points for polar arrays, 310
 References dialog box, 570, 573
 referencing external blocks, **494–496**, *494*
 Regen method, 243, 423, 508
 Regional Settings Properties dialog box, 341
 RemoveItem method, 519
 repeating code, loops for, **104**
 For, **105–106**
 While, **106–107**
 repetitive tasks, macros for. *See* macros
 Replace command, 72
 ReplicateObjects macro, 302–303
 Require Variable Declaration option, 60, 86
 Reset command, 74
 resizing
 text boxes, **67–69**
 windows, 56
 restoring menu groups, **410–411**
 Retry buttons, 144–145, *145*
 Return objects, 360
 returning to AutoCAD, **26**, **44**
 reusability, templates for, **271–272**
 revolved solids, **551–554**, *551–552*
 Right-Click Customization dialog box, 158, *158*
 Right function, 161
 Rotate Item As Copied option, 312–313, *312*
 Rotate method, 119, *119*
 Rotated dimensioning style
 adding objects with, **397**
 characteristics of, **386**, 386
 RotatedDimension macro, 408
 RotateGenericShape macro, 314–315
 RotateShape macro, 314–315
 rotating user-defined shapes, **313–315**, *316*

rotation angle parameter
 in AddDimRotate, 386
 in AddShape, 461
 rotational sweep effect, 547
 rows in rectangular arrays, 317
 RTrim function, 161–162
 Run menu, Sub/UserForm command, 24, 73, 76
 Run Sub/UserForm button, 43
 run-time errors, **361–362**
 run time vs. design time, **113**
 Run to Cursor command, 365
 RunMetricToImperialConverter procedure,
 50–51
 running
 applications, **24, 24, 140–141**
 code, commands for, **73–74**
 macros, **42–44, 43–44**

S

Save As dialog box, 25–26, 26, 42, 42,
 436–437, 436
 Save Drawing As dialog box, 292
 Save method, 425
 SaveAs method, 425
 Saved property, 426
 SaveDrawing macro, 426
 saving
 applications, **25–26, 25–26**
 dimensioning styles, **400–403, 401**
 drawings, **425–426**
 line data
 in databases, **583–587, 584–585**
 in Excel, **570–573**
 macros, **41–42, 42**

ScaleEntity method, 203
 scaling factor parameter, 461
 scaling lines
 application for, **200–206, 201**
 using transformation matrices, **206–213**
 ScalingTransformation macro, 208, 211
 scope
 procedure level, **95**
 public vs. private, **94–95**
 Static keyword in, **96–99, 97**
 UserForm and module-level, **95–96**
 ScrollBar controls, 11
 Search Results pane, 93
 searching with Object Browser, **93–94**
 SecondEndPoint parameter, 382, 387
 Section command, 560–561
 SectionSolid method, **560–563**
 Select Access Database dialog box, 582
 Select All command, 76
 Select Case statement, **103–104**
 Select Color dialog box, 484, 484
 Select Drawing Template application, **307–310**
 Select Images page, 611, 612
 Select Menu File dialog box, 410
 Select method, 503
 Select Objects control, 9
 Select Project dialog box, 33
 Select Shape File dialog box, 461
 Select Template page, 610–611, 611
 selected lines, identifying, **198–200, 199**
 selection sets, **496–505, 497–500**
 SelectionMode variable, 503
 SelectionSet object, 500
 SelectionSets collection, 496–497, 502
 semicolons (;) in output lists, 438

sending

- data to Word, **575–578**, 576

- text to command line, **159–161**

- separator bars for menus, 413

- sequential files, 437

- SetDrawingUnits macro, 156

- SetGridLimits macro, 280–281

- SetGridSpacing method, 284, 452

- SetSnapSpacing method, 452

- SetTextPosition macro, 274–276, 278

- SetUnitsFormat macro, 274, 276, 278

- Setup option, 70

- SetUpEnvironment macro, 287–288

- SetUpNewUCS macro, 296–297

- SetVariable method, 203, 402

- Shape object, 461, 464

shapes

- areas of, **249–250**, 249

- loading and adding, **461–464**, 462, 464–465

- Shelf Specification application, 122–124, 122

- Short Cut Menu properties, 158

- Short Date format, 341

- shortcut keys, **136**

- Show Startup Dialog option, 293, 294, 295

- Show ToolTips option, 64

- ShowGrid macro, 279

- ShowOpen method, 436

- ShowSave method, 436

- SHX fonts, 321

- simple blocks, 490

- SimulateChamfer macro, 555–556

- Sin function, 393

- single quotes (‘)

- for comments, 35–36

- for feet, 284

size

- text boxes, **67–69**

- toolbox controls, **12–13**

- windows, 56

- Slice command, 560

- SliceOrSection macro, 562–563

- SliceSolid method, **560–563**

- snap angles, **451–452**, 453

- snap mode, 285

- SnapOn property, 285, 452

- snapping, **285–286**, 286–287

- SnapRotationAngle property, 452

- SnapToGrid macro, 285, 451–452, 453

- solid areas, **222**. *See also* 3D solids

- area calculations for, **249–250**, 249

- circle of bricks, **229–235**, 230, 235–236

- circles, **223–225**, 225

- filled circles, **225–229**, 229

- filling nested areas, **250–258**, 250–251

- freeform shapes, **236–248**, 237, 248

- range tops, **260–265**, 261

- Source Content Units setting, 154–155

- Source property, 361

spaces

- in fixed-length strings, 84

- in output lists, 438

- removing, 161–162

spacing

- grid points, **283–284**, 284

- snapping, **285–286**, 286–287

- SphereCenter argument, 526

- SphereRadius argument, 526

- spheres, **526–529**, 527

- SpinButton controls, 11

- splines, **456–461**, 457, 460–461

spreadsheets, Excel, **569–570**
 drawing lines from, **573–575**, 574
 saving line data to, **570–573**
 standard modules, **32–34**, 32–33
 standard toolbar, 55, **63–64**, 63
 start point parameter, 481
 starting applications from macros, **50–51**
 startup, loading projects at, **48–50**, 49
 Startup Suite dialog box, 48–50, 49
 StartUpPosition property, 114–115, 114
 statements, **81**
 Static keyword, **96–99**, 97
 status bar, units in, 273
 Step Into command, 365
 Step Out command, 365
 Step Over command, 365
 stepping through code, **365**
 Steps clause, 105
 strings
 concatenating, 45
 functions for, **161–165**, 162–163
 memory for, **84**
 styles, dimension, **377–378**, 377–378
 3 Point Angular, **386–387**, 387, **398–399**
 Aligned, **380–381**, 380–381, **389–390**
 Angular, **381–382**, 381, **390–392**
 Diametric, **382–383**, 382–383, **392–393**
 Ordinate, **383–384**, 384, **394–395**
 Radial, **384–385**, 385, **395–396**
 Rotated, **386**, 386, **397**
 saving, **400–403**, 401
 using, **403**
 Sub statement, 122
 Subtraction operation, 543, 544, 546

SwitchIt1 procedure, 97–99
 SwitchIt2 procedure, 97–99
 Symbol option, 339
 symbolic constants, **89–90**
 symbols in expressions, 81
 syntax errors, **59–60**, 81, 359, 360
 System tab, 115, 115
 Systems tab, 295

T

tab, spaces for, 61
 tab order, **125–126**, **176**
 Tab Width setting, 61
 TabIndex property, 125–126, **176**
 Table dialog box, 583, 584
 tables, two-dimensional arrays for, 88
 TabStop property, **176**
 TabStrip controls, 11
 tapering extruded solids, **550**
 Target Drawing Units setting, 154–155
 TemplateDwgPath variable, 309
 templates, **270–272**
 creating, **292–293**, 293
 drawings from, **293–295**, 294
 vs. macros, **295**
 Terminate procedure, 139
 Test Connection option, 582
 text
 with arrows, **343–352**, 344, 351–353
 attributes for, **320–324**, 321, 323
 in drawings. *See* DrawText macro
 formatting, **324–338**, 325, 338–339

- sending to command line, **159–161**
 - in title bars, 18
 - for ToolTips, 64
- text boxes and TextBox controls, 9, **12–14**
 - position of, 67
 - size of, **67–69**
- Text parameter, 404
- Text Style dialog box, 321, 321
- TextBox_KeyDown procedure, 21
- TextBox1_Change procedure, 137
- TextBox1_KeyDown procedure, 22, 24
- TextBox1_KeyPress procedure, 123–124, 342–343
- TextBox2_KeyDown procedure, 22
- TextBox2_KeyPress procedure, 123–124
- TextBox3_KeyPress procedure, 123–124
- TextPoint parameter, 382, 387
- TextPosition parameter, 380
- TextString parameter, 323
- thawing layers, **486–488**
- ThisDrawing object, 19, **31–32**, 31, 110, 134
- thousands separators, 340
- three-dimensional arrays, 88
- 3 Point Angular dimensioning style
 - adding objects with, **398–399**
 - characteristics of, **386–387**, 387
- 3D solids, **514**
 - boxes, **521–524**, 521
 - chamfering, **554–556**, 554–556
 - combining, **543–547**, 544–545
 - cones, **532–534**, 532, 535
 - creating, **515–521**, 515
 - cross-sectioning, **560–563**, 560–561
 - cylinders, **535–538**, 536, 539
 - elliptical, **538–543**, 538–539
 - extruded, **547–550**, 548
 - filleting, **554**, **556–560**
 - intersecting, 547
 - revolved, **551–554**, 551–552
 - spheres, **526–529**, 527
 - tori, **529–531**, 529
 - wedges, **524–526**, 524
- Time function, 45–46
- Timer function, 153
- times
 - formatting, **341–342**
 - retrieving, 45–46
- title bars, 7, 8, 55
 - color of, 16
 - text in, 18
- title parameter
 - for InputBox, 258
 - for LaunchBrowserDialog, 603
 - for MsgBox, 143
- Toggle Breakpoint buttons, 66
- ToggleButton controls, 10
- ToggleUCSIcon macro, 301
- Tolerance object, **404–405**
- toolbars, 55–56, 56, **62–63**
 - buttons for, **416–417**, 417
 - creating, **411–416**, 414–416
 - Debug, **66**, 66
 - Dimension, 377, 378
 - Edit, **65**, 66
 - standard, **63–64**, 63
 - UserForm, **67–69**, 67
 - Zoom, 282, 282
- Toolbars collection, 411
- toolbox controls, **8–12**, 9
 - dimensions and position of, **12–13**
 - placing in UserForms, **12–14**
- Toolbox icon, 9

Tools menu, **58**

- Customize command, 410
- dbConnect command, 580
- Drafting Settings command, 283, 285, 454
- Load Application command, 48, 50
- Macro menu
 - Load Project command, 46, 50, 142
 - Macros command, 32, 43
 - VBA Manager command, 48
 - Visual Basic Editor command, 6
- Move UCS command, 383
- Options command. *See* Options dialog box
- References command, 570, 573

ToolTips, 73

- options for, 61
- text for, 64

Topics Found dialog box, 83

tori, **529–531**, 529

TorusCenter argument, 529, 531

TorusRadius argument, 529, 531

trailing spaces

- in fixed-length strings, 84
- removing, 162

transformation matrices

- scaling using, **206–213**
- in UCSs, 295

TransformBy method, 206, 210, 213

translational sweep effect, 547

TransmitWebFiles macro, 608–609

Trim function, 161–162

True values, 102

TrueType fonts, 321

TubeRadius argument, 529, 531

two-dimensional arrays, 88

txtHeight_Exit procedure, 334

txtSlant_Exit procedure, 334

txtTelephone_KeyPress procedure, 358, 363

txtWidth_Exit procedure, 334

Type keyword, 100

types, **82–84**, 82

- for arrays, 37, 87
- defining, **99–100**
- memory for, 83, 85

U

UCase function, 161

UCS icon

- moving, 383
- toggling, **300–301**, 301

UCS matrix, **297–300**, 298

UCSIconOn property, 301

Uncomment Block button, 65

undefined variables, 360

underscore characters (`_`) in names, 121

Undo command, 71

UnHighlightAllItems macro, 192–193

UnHighlightLastItemDrawn macro, 189–192

Union operation, 543–544, 544

UnitsFormat property, 273

Unload statement, **139**unlocking layers, **485–486**

Update method

- for animated lines, 153
- for arcs, 217
- for blocks, 493
- for boxes, 524
- for circles, 225, 229
- for cones, 534
- for database application, 587
- for dimensions, 274, 277

- for freeform shapes, 242
- for hatch patterns, 257
- for selection sets, 503
- for spheres, 528
- for tori, 531
- for wedges, 526

UpdateFont procedure, 333

UpdateText procedure, 330–332

updating DrawText macro, 45–46

uppercase characters, converting to, 161

Upside Down option, 339

URL address parameter, 603

URL paths, 599–600, 599–600

URLs, obtaining, 601–603

UseMyDimStyle macro, 403

user coordinate systems (UCSs), 295–297

user-defined shapes, rotating, 313–315, 316

user-defined types, 39, 39, 99–100

User Preferences tab, 155–156, 156

UserCoordinateSystems property, 297

UserForm_Click procedure, 437

UserForm_Initialize procedure

- for 3D solids application, 518, 520
- for dimensioning application, 400
- for Draw Arrow application, 349–351
- for freeform shapes, 238
- for island detection styles, 253–256
- for line highlighting, 196–197
- for linetypes, 184
- for Select Drawing Template application, 308
- for selection set application, 502
- for text formatting application, 328–329

UserForm modules, 7–8, 8

UserForm scope, 95–96

UserForm_Terminate procedure, 137

UserForm toolbar, 67–69, 67

UserForm windows, 8, 8

UserForms

- placing toolbox controls in, 12–14
- printing, 70–71, 70

UseXAxis parameter, 384

Utility object, 159–161, 223

V

validating input, 342–343

Value property, 572

values

- displaying, 61
- in expressions, 81

variables, 82–83, 82

- arrays of, 86–88
- declaring, 60, 83–86
- displaying values of, 61
- for file handles, 442
- in Immediate Window, 366–367, 367
- lifetime of, 95–99
- in Locals Window, 369–371, 370–371
- scope of, 94–99, 97
- static, 96
- undefined, 360

Variant type, 84

vb prefix, 91

VBA Manager dialog box, 48

vbAbort constant, 146

vbAbortRetryIgnore constant, 144

vbaide command, 6

vbCancel constant, 146

vbCr constant, 259

vbCritical constant, 144

vbExclamation constant, 144
 vbIgnore constant, 146
 vbInformation constant, 144
 vbLongDate constant, 341
 vbLongTime constant, 341
 vbNo constant, 146
 vbOK constant, 146
 vbOKCancel constant, 144
 vbOKOnly constant, 144
 vbQuestion constant, 144
 vbRetry constant, 146
 vbRetryCancel constant, 144
 vbShortDate constant, 341
 vbShortTime constant, 341
 vbYes constant, 146
 vbYesNo constant, 144
 vbYesNoCancel constant, 144
 vertical bars (|) as wildcard characters, 435
 View AutoCAD button, 26
 View menu

- Call Stack command, 372–373
- Code command, 8, 593
- Display command, 300
- Immediate Window command, 366
- Object command, 8–9, 20
- Object Browser command, 91
- Project Explorer command, 50, 64
- Properties Window command, 17–18, 135
- Toolbars command, 62, 414, 599
- Toolbox command, 9
- Zoom menu
 - All command, 281, 282
 - In command, 278, 283
 - Window command, 292

 viewing built-in constants, **90–94**, 90, 92
 viewports, 280

Viewports collection, 280
 visibility of layers, **488–489**
 Visible property

- for objects, 113
- for toolbars, 413

 Visual Basic Reference dialog box, 74, 75, 83, 112

W

Watches window, 364, 365, **368–369**, 368–369, 372
 WCS (World Coordinate System), 169, 295
 Web, **598**

- browsing, **599–600**, 599–600
- downloading files from, **600–609**, 604
- hyperlinks for, **614–617**, 615
- publishing drawings on, **609–614**, 610–613
- URL paths in, **599–600**, 599–600

 Web toolbar, 599, 599
 WedgeHeight argument, 524
 WedgeLength argument, 524
 wedges, **524–526**, 524
 WedgeWidth argument, 524
 weights for lines, **200–206**, 201

- for dimensions, 381
- for objects on layers, 484

 Wend clause, 106–107
 While loops, **106–107**
 Width parameter, 322
 Width property, 113
 wildcard characters, **94**, 435
 Window mode option, 499, 500
 Window selection mode, 504
 windows, resizing, 56

With statement, **176–177**

Word

drawing lines from, **578–580**

sending data to, **575–578**, 576

Word Object Model, **629**, 629

Worksheets collection, 626

World Coordinate System (WCS), 169, 295

Write statement, 437–438, 440

writing data to files, **437–441**, 438

X

XLine1Point parameter, 386

XLine2Point parameter, 386

Xref blocks, 490, **494–496**, 494

Y

Yes buttons, 144–145, 145

Z

zeros

with fractions, 39

in number formats, 340

Zoom toolbar, 282, 282

ZoomAll method, 153, 242, 281, 283

ZoomAllGrid function, 283

zooming in on areas, 292