

Index

Symbols & Numbers

#DIV/0! errors, 586–587
#N/A errors, 585, 587, 711–712
#NAME? errors, 585, 587
#NULL! errors, 585, 588
#NUM! errors, 585, 588
#REF! errors, 585, 588, 594
#VALUE! errors, 585, 589, 634, 637, 667, 684, 711
1900 (year), date entries before, 148, 705–706

A

A1 notation, 45
ABS function, 411, 736
absolute references, 45–47, 545–546, 589–590
accidental circular references, correcting, 430–431
Accounting Number Format button, 747, 748
ACCRINT function, 731
ACCRINTM function, 731
accumulated amounts, using NPV function to calculate
 calculating future value, 330–331
 smoothing payments, 331–332
ACOS function, 736
ACOSH function, 736
acronyms, returning, 696–697
ActiveX controls, 23
Add Level button, Tables menu, 247
Add Subtotal To list box, Subtotal dialog box, 275
add-in programs, 26–27
adding. *See* summing
Add-Ins dialog box, VB Editor, 642–643
Add-Ins tab, Options dialog box, 24–25
additional payment table, amortization schedules, 354–356
ADDRESS function, 230, 408, 735
address of value within a range, determining, 228
Address property, 672–673
adjustable bins, using to create histogram, 199–200
Advanced Filter dialog box, Tables menu, 261–263
Advanced tab, 17, 746
age, calculating, 156–157
Alignment group, Home tab, 11–12
Alignment tab, 12
All Chart Types option, 446
Allow drop-down list, Settings tab, 560
AMORDEGRC function, 731
AMORLINC function, 732
amortization schedules
 credit card calculations, 356–357
 dynamic amortization schedule, 351–354
 payment and interest tables, 354–356
 simple amortization schedule, 348–351
analysis tools
 auditing capabilities, 30
 database access, 27–28
 outlines, 29
 pivot tables, 29–30
 scenario management, 29
 Solver add-in, 30
AnalysisToolPak add-in, 21, 195–199
And criteria
 conditional sums using multiple criteria, 208–209
 counting cells that meet multiple criteria using,
 187–188
AND function, 403–404, 735
And operator, 655
Annual effective rate, 314
annual percentage rates (APRs), 308
annual return calculation, 342–343
annuity with lump sum, present value of, 301–302
ANSI (American National Standards Institute) character set,
 116, 122
Any Value option, Settings tab, 556
Apple II, 3
Apple III, 3
Apply Names dialog box, 75
Apply These Changes to All Other Cells with the Same
 Settings check box, Settings tab, 557
Appraisal Institute of America (AIA), 323
area
 of circles, 282–283
 of rectangles, 282
 of squares, 282
 of trapezoids, 283
 of triangles, 283
AREAS function, 111, 735
arguments
 arrays as, 105
 expressions as, 104–105
 full-column or full-row as, 103–104
 indefinite number of, 719–723
 literal values as, 104
 names as, 103
 optional, 718–719
 other functions as, 105

- array constant, 378–379, 382–383
 - Array formula entry error, 582–583
 - array formulas. *See also* arrays; multicell array formulas; single-cell array formulas
 - array constant elements, 379
 - creating array constants, 378–379
 - editing, 384–386
 - entering, 383–384
 - expanding or contracting multicell array formula, 386
 - selecting array formula range, 384
 - arrays. *See also* array formulas
 - dimensions of, 380–383
 - naming array constants, 382–383
 - of nonduplicated random integers, returning, 714–715
 - overview, 656–657
 - returning from a function, 712–713
 - using in named formulas, 93–94
 - ASIN function, 736
 - ASINH function, 736
 - asset use ratios, 368
 - assignment expressions, 654–656
 - asterisk (*) symbol, 128, 766
 - At Each Change In drop-down table, Subtotal dialog box, 274
 - “at” symbol (@), 32
 - ATAN function, 736
 - ATAN2 function, 736
 - ATANH function, 736
 - auditing capabilities, 30
 - auditing tools
 - fixing circular reference errors, 601
 - identifying cells of particular type, 596–597
 - tracing cell relationships, 599–600
 - tracing error values, 600
 - using background error checking, 601–603
 - using Formula Evaluator, 603–604
 - viewing formulas, 597–598
 - AutoCalculate feature, 178
 - AutoComplete feature, 251, 256
 - AutoFill feature, 49, 150, 171
 - AutoFiltering, 247
 - Automatic Except for Data Tables option, 362
 - automatic grouping of pivot tables, 505–510
 - automatic number formatting, 746
 - Automatic setting, Calculation mode, 42
 - AutoSum button, 107
 - AVEDEV function, 739
 - Average formula, Tables menu, 249
 - AVERAGE function, 98, 107, 251, 395–396, 405–406, 624, 687, 739
 - AVERAGEA function, 739
 - AVERAGEIF function, 739
 - AVERAGEIFS function, 739
 - Axis Labels option, Chart Tools, 454
 - Axis Options tab, Chart Tools, 454
 - axis title links, 448
- ## B
- background error checking, 601–603
 - backsolving, 53–54
 - BAHTTEXT function, 742
 - balance sheet, 362, 364
 - Banded Columns check box, Tables menu, 244
 - Banded Rows check box, Tables menu, 244
 - BESSELI function, 730
 - BESSELJ function, 730
 - BESSELK function, 730
 - BESSELY function, 730
 - BETADIST function, 739
 - BETAINV function, 739
 - Between dialog box, 530
 - BIN2DEC function, 730
 - BIN2HEX function, 730
 - BIN2OCT function, 730
 - BINOMDIST function, 739
 - blank cells, 182–183, 584–585
 - bond calculations, 318–320
 - Boolean values, 17, 207, 394, 417, 649, 650, 723
 - Border Color tab, Chart Tools, 457
 - Borders tool menu, 11
 - Borland International company, 3
 - borrowing formulas. *See* financial functions
 - Bottom Double Border command, 11
 - box plot, 457–459
 - Bricklin, Dan, 2
 - Bullen, Stephen, 772
 - Byte data type, 650
- ## C
- Calculate Now control, 42
 - Calculate Sheet control, 42
 - Calculated Field option, 513–516
 - Calculated Item option, 513–514, 516–519
 - Calculation section, Formulas tab, 55
 - Calculation tab, Options dialog box, 745
 - calculations
 - area and perimeter of circles, 282–283
 - area and perimeter of rectangles, 282
 - area and perimeter of squares, 282
 - area and perimeter of trapezoids, 283
 - area of triangles, 283
 - rounding numbers, 286–291

- solving right triangles, 279–281
 - solving simultaneous equations, 284–286
 - surface and volume of cones, 284
 - surface and volume of cubes, 283
 - surface and volume of spheres, 283
 - unit conversions, 277–279
 - volume of cylinders, 284
 - volume of pyramids, 284
- case of text, changing, 127–128
- case-sensitive lookup, 221–222
- cash flows, irregular, 340–342
- cash in and cash out, 296–297
- Categories in Reverse Order option, Format Axis dialog box, 457
- category fields, 490
- category_labels argument, SERIES formula, 445
- CEILING function, 286, 288, 737
- CELL function, 111, 734
- cell references, 45–48
- cell selecting, 19–21
- CELLCOUNT function, 673
- cells, formatting, 22, 23
- Cells property, 669–671
- Change Shape option, Drawing Tools, 449
- CHAR function, 117, 119–120, 647, 742
- character codes, 118–120
- characters
 - counting in cells, 131
 - extracting from strings, 128
 - repeating, 124
- Chart Elements drop-down control, Chart Tools, 446
- Chart Name control button, Chart Tools option, 81
- chart sheets, 10
- chart title link, 448
- Chart Tools tab, 24
- charts
 - animating using iteration, 441–442
 - creating links to cells, 448–449
 - data bars in lieu of, 534–535
 - examples
 - box plot, 457–459
 - charting progress toward a goal, 450–451
 - comparative histogram, 453–454
 - creating awesome designs, 473
 - creating clock charts, 469–472
 - displaying conditional colors in column chart, 452–453
 - Gantt chart, 454–457
 - gauge chart, 451–452
 - plotting circles, 468–469
 - plotting every n th data point, 459–460
 - plotting last n data points, 461–462
 - plotting mathematical functions, 463–468
 - selecting series from combo box, 462–463
 - SERIES formula, 443–447
 - trendlines, 475–483
 - using names in, 79
- checkerboard shading, 548
- CHIDIST function, 739
- CHIINV function, 739
- CHITEST function, 739
- CHOOSE function, 212, 224, 735
- Circle Invalid Data option, Data Validation drop-down control, 557–558
- circles
 - area of, 282–283
 - perimeter of, 282–283
 - plotting, 468–469
- circular references
 - accidental, correcting, 430–431
 - calculation and iteration settings, 435
 - errors with, 442, 595
 - examples
 - animating charts using iteration, 441–442
 - generating unique random integers, 436–437
 - solving recursive equation, 437–438
 - solving simultaneous equations, 439–440
 - fixing errors with, 601
 - indirect, 431
 - overview, 429–431
 - potential problems with, 442
- Circular References warning dialog box, 430–431, 435
- Classic Pivot Table Layout option, 493
- CLEAN function, 124, 742
- Clear Formats option, 543
- Clear Rules command, 529
- Clip Art task pane, 15–16
- Clipboard group, Home tab, 11, 47
- clock charts, creating, 469–472
- CODE function, 117, 119, 742
- code windows, Visual Basic (VB) editor, 616–618
- coefficient of determination, 476
- Collapse Dialog button, 106
- colon (:), 74
- color scales, 535–537
- Color Scales command, 529, 535
- coloring values, 761–762
- colors
 - conditional, displaying in column charts, 452–453
 - counting, 702–703
- Columbus Day, 164
- column charts, displaying conditional colors in, 452–453
- COLUMN function, 548, 735
- Column labels, 489

- columns
 - adding to tables, 241–242
 - deleting in tables, 242
 - determining column letters for column numbers, 132–133
 - naming, 68–69
 - returning last value in, 414–416
- Columns and Rows properties, 675
- COLUMNS function, 111, 180, 735
- COMBIN function, 737
- combo box, selecting series from, 462–463
- Comma Style button, 747
- Comment Block button, VB Editor, 648
- comments, 648
- comparative histogram, 453–454
- comparison operators, 264–265
- COMPLEX function, 730
- CONCATENATE function, 120, 742
- concatenation, 119
- concatenation operator, 639, 647
- conditional colors, displaying in column charts, 452–453
- conditional formatting
 - copying cells containing, 542–543
 - creating formula-based rules, 546–551
 - deleting, 543
 - find and replace limitations, 543
 - locating cells containing, 543–544
 - managing rules, 542
 - specifying, 528–532
 - using graphics, 532–542
- Conditional Formatting feature, 20, 354, 527, 528–529, 546, 751
- Conditional Formatting Rules Manager dialog box, 541–543
- conditional number formatting, 761
- Conditional Sum Wizard, 204
- conditional sums using multiple criteria
 - using And criteria, 208–209
 - using Or criteria, 210
- conditional sums using single criterion, 204–208
- cones, surface and volume of, 284
- CONFIDENCE function, 739
- constants, 84–86, 652–653
- contextual tabs, 14
- controls, 25
- conversions, unit, 277–279
- CONVERT function, 277–279, 730
- Convert software, 279
- Convert Text to Columns Wizard, 134
- Convert Text to Table command, 134
- Convert to Number option, Smart Tag, 115
- Convert To Range option, Tables menu, 259
- Copy to Another Location option, Tables menu, 262
- Copy To box, Tables menu, 262
- Copy tool, Clipboard group, 11
- copying
 - cells containing conditional formatting, 542–543
 - sheets, potential name problems, 81–82
- Corel company, 3
- CORREL function, 739
- COS function, 737
- COSH function, 737
- Cost argument, 344
- Count formula, Tables menu, 249
- COUNT function, 176, 673, 687, 739
- Count Numbers formula, Tables menu, 249
- Count property, 673
- COUNTA function, 93, 176, 181, 415, 671, 675, 739
- COUNTBLANK function, 176, 180–181, 739
- COUNTIF function, 176, 182–183, 187, 189, 406–407, 550, 561, 701, 739
- COUNTIFS function, 176, 739
- counting
 - cells, 182–190, 701
 - colors, 702–703
 - creating frequency distribution, 194–200
 - error values in a range, 184
 - logical values, 184
 - most frequently occurring entry, 190–191
 - number of unique values, 193–194
 - occurrences of specific text, 191–193
 - records in databases and pivot tables, 180–181
 - sheets in a workbook, 701
 - words in a range, 702
- COUPDAYBS function, 732
- COUPDAYS function, 732
- COUPDAYSNC function, 732
- COUPNCD function, 732
- COUPNUM function, 732
- COUPPCD function, 732
- COVAR function, 739
- Create Names From Selection dialog box, 65–67
- Create Pivot Table dialog box, 491, 525
- Create Table dialog box, Tables menu, 239
- credit card calculations, 356–357
- credit card number, determining validity of, 575–578
- CRITBINOM function, 739
- Criteria range box, Tables menu, 262–264
- crosstab table, 417–418
- cube functions, 114
- CUBEKPIMEMBER function, 727
- CUBEMEMBER function, 727
- CUBEMEMBERPROPERTY function, 728
- CUBERANKEDMEMBER function, 728
- cubes, surface and volume of, 283

CUBESET function, 728
 CUBESETCOUNT function, 728
 CUBEVALUE function, 728
 CUMIPMT function, 313–314, 565, 732
 CUMPRINC function, 313–314, 732
 cumulative sum, 202–203
 currency, 123
 Currency data type, 650
 Currency number format, Options dialog box, 748
 currency values, rounding, 288–289
 Current Array option, 384
 current date, displaying, 150
 current time, displaying, 166–167
 custom functions, 551–554, 624
 custom number formats
 creating, 749–754
 examples
 coloring values, 761–762
 conditional number formatting, 761
 displaying a zero with dashes, 763–764
 displaying fractions, 759
 displaying leading dots, 766
 displaying leading zeros, 759
 displaying N/A for text, 759–760
 displaying negative sign on the right, 760–761
 displaying text in quotes, 760
 displaying text with numbers, 763
 filling cells with a repeating character, 766
 formatting dates and times, 762–763
 hiding zeros, 758
 repeating a cell entry, 760
 scaling values, 755–758
 suppressing certain types of entries, 764–765
 using special symbols, 764
 number formatting overview, 746–749
 Custom option, Settings tab, 557
 custom VBA functions, 137
 customization, 26–27
 Customize Regional Options dialog box, Control Panel,
 139, 146
 customized onscreen display, 18–19
 Cut tool, Clipboard group, 11
 cutting named ranges, 80
 cylinders, volume of, 284

D

Daily Dose of Excel web site, 772
 data bars, 532–535
 Data Bars command, 528, 533
 data bars conditional format, 532–535
 data entry, 19
 Data Field Settings dialog box, PivotTable Tools, 493–494,
 501, 510, 526
 data fields, 490
 data labels, links to, 449
 Data Labels option, Chart Tools, 449
 Data Table command, 358, 463–464
 data types, 649–650, 689
 data validation
 creating drop-down list, 558–559
 rules, using formulas for, 559–562
 specifying validation criteria, 555–556
 types of validation criteria, 556–558
 Data Validation command, 89
 Data Validation dialog box, 555–556, 560, 687
 database access, 27–28
 database functions, 112
 Date & Time drop-down list, 147, 164
 date comparison, summing values based on, 207–208
 Date data type, 650
 DATE function, 147, 149, 151, 156, 160, 163, 165–166,
 205, 350, 355, 729
 Date number format, Options dialog box, 749
 Date option, Settings tab, 557
 DATEDIF function, 147, 155, 346
 dates and times
 calculating next day of week, 704
 calculating the next Monday, 703–704
 date serial numbers, 140–141
 date-related functions
 calculating dates of holidays, 162–164
 calculating number of days between dates, 153–154
 calculating number of work days between dates,
 154–155
 calculating number of years between dates, 156
 calculating person's age, 156–157
 converting non-date string to date, 153
 converting year to Roman numerals, 166
 counting occurrences of day of week, 160–161
 determining date of most recent Sunday, 159
 determining date's quarter, 165
 determining day of week, 158
 determining day of year, 158
 determining first day of week after date, 159
 determining last day of month, 165
 determining nth occurrence of day of week in month,
 159–160
 determining whether year is a leap year, 165
 displaying any date, 151
 displaying current date, 150
 expressing date as ordinal number, 161–162
 generating series of dates, 151–153
 offsetting date using only work days, 155–156

continued

- dates and times *continued*
 - dates before 1900, 705–706
 - entering dates, 141–143
 - entering times, 144–145
 - formatting, 145–147, 762–763
 - overview, 654
 - problems with dates, 147–149
 - time serial numbers, 143–144
 - time-related functions
 - adding hours, minutes, or seconds to a time, 172–173
 - calculating difference between two times, 170–171
 - converting between time zones, 173–174
 - converting decimal hours, minutes, or seconds to a time, 172
 - converting from military time, 171–172
 - displaying any time, 167–168
 - displaying current time, 166–167
 - rounding time values, 174–175
 - summing times exceeding 24 hours, 168–170
 - working with non... time-of-day values, 175–176
- DATEVALUE function, 147, 149, 729
- DAVERAGE function, 271, 728
- David McRitchie's Excel Pages web site, 773
- DAY function, 147, 729
- DAYS360 function, 147, 729
- DB function, 344, 732
- DCOUNT function, 110, 176, 178, 271, 728
- DCOUNTA function, 176, 271, 728
- DDB function, 344, 732
- Debt-to-Equity Ratio, 369
- Debug button, VB Editor, 639
- debugging formulas
 - auditing tools, 596–604
 - overview, 581–582
 - problems and solutions
 - absolute/relative reference problems, 589–590
 - actual versus displayed values, 591–592
 - “blank cells” that are not blank, 584–585
 - cells are filled with hash marks, 584
 - circular reference errors, 595
 - extra space characters, 585
 - floating-point number errors, 592–593
 - formulas are not calculated, 591
 - formulas returning errors, 585–589
 - logical value errors, 594–595
 - mismatched parentheses, 583–584
 - operator precedence problems, 590–591
 - phantom link errors, 593–594
- debugging functions, 637–641
- DEC2BIN function, 730
- DEC2HEX function, 730
- DEC2OCT function, 730
- Decimal data type, 650
- Decimal option, Settings tab, 557
- declaration line, 646
- Decrease Decimal button, 747, 753
- Default date format, 139
- Define Name dialog box, 70
- Define Name option, 546
- DEGREES function, 280, 737
- Delete button, 62
- deleting
 - conditional formatting, 543
 - names, 64
 - rows or columns, 80, 242
 - sheets, potential name problems, 82–83
- Delimited option, Convert Text to Columns Wizard, 134
- DELTA function, 730
- dependents, identifying, 600
- depreciation formulas. *See* discounting and depreciation formulas
- Developer tab, 23, 608
- DEVSQ function, 176, 739
- DGET function, 271, 728
- Diagrams program, 22
- dialog box launcher, 12
- dialog icons, 14
- dialog sheets, 10–11
- Disable All Macros with Notification option, Macro Settings, 609
- DISC function, 732
- discounting and depreciation formulas
 - depreciation calculations, 343–346
 - FVCHEDULE function, 342–343
 - IRR function, 332–336
 - irregular cash flows, 340–342
 - multiple rates of IRR and the MIRR function, 336–340
 - NPV function, 322–332
- Display Item Labels When No Fields Are in the Values Area option, 511
- DMAX function, 271, 728
- DMIN function, 271, 728
- Do Until loops, 662, 666
- Do While loops, 662, 664–665
- document themes, 20
- DOLLAR function, 121, 742
- DOLLARDE function, 286, 289–290, 732
- DOLLARFR function, 286, 289–290, 732
- dollars, fractional, 289–290
- dots, leading, 766
- Double data type, 650
- Double-click Allows Editing Directly in Cell check box, 36

DPRODUCT function, 271, 728
 drag and drop, 15, 17
 drawing layer, objects on, 24–26
 Drawing Tools tab, 12
 drop-down list, 558–559
 DSTDEV function, 271, 728
 DSTDEVP function, 271, 728
 DSUM function, 177, 178, 271–272, 728
 duplicate rows, removing, 244–245
 DURATION function, 732
 DVAR function, 271, 729
 DVARP function, 271, 729
 dynamic amortization schedules, 351–354
 dynamic arrays, 657
 dynamic crosstab table, 417–418
 dynamic named formulas, 94–95

E

early loan payoff, 310–311
 EDATE function, 147, 729
 Edit Custom Lists option, 523
 Edit Formatting Rule dialog box, 541
 Edit Links dialog box, 594, 643
 Edit Name dialog box, 62
 Edit toolbar, VB Editor, 648
 EFFECT function, 315, 732
 elements of formulas, 34
 embedded charts, 8
 Enable Automatic Percent Entry check box, Options dialog box, 746
 Enable Background Error Checking, Formulas tab, 601
 Enable Iterative Calculation check box, 432–436, 438, 442
 Enable Iterative Calculation setting, 53
 Encrypt Document dialog box, 30
 engineering functions, 113
 entering formulas, 34–35
 EntireRow and EntireColumn properties, 675
 EOMONTH function, 148, 729
 equal sign (=), 33
 Eqv operator, 655
 ERF function, 730
 ERFC function, 730
 Error Alert tab, Data Validation dialog box, 557, 559
 Error Checking dialog box, Formulas tab, 602–603
 Error Checking Rules section, 601–602
 Error Checking section, Formulas tab, 115
 errors
 # DIV/0! errors, 586–587
 # N/A errors, 587
 # NAME? errors, 587

 # NULL! errors, 588
 # NUM! errors, 588
 # REF! errors, 588
 # VALUE! errors, 589
 in formulas, 52–53
 names with, 78
 returning error value, 711–712
 ERROR.TYPE function, 734
 Evaluate Formula dialog box, Formulas tab, 414, 603–604
 EVEN function, 286, 290–291, 737
 even integer, rounding to, 290–291
 EXACT function, 118, 742
 Excel versions, 3–7
 Excel Function Library Group, 99
 Excel Help system, 767
 Excel newsgroups websites, 769–770
 Excel Options button, 13
 Excel Options dialog box, 13, 18, 55, 138
 EXP function, 737
 explicit intersection, 73
 EXPONDIST function, 739
 exponential trendlines, 479, 481–482
 expressions, as arguments, 104–105
 eXtensible Markup Language (XML), 5
 external databases, 25
 extra space characters, 585
 extracting
 all but first word of strings, 134–135
 characters from strings, 128
 filenames from path specifications, 133
 first word of strings, 133–134
 last word of strings, 134
 names, 135–137

F

FACT function, 737
 FACTDOUBLE function, 737
 FALSE function, 735
 FDIST function, 739
 fields, 234
 filenames, extracting from path specifications, 133
 fill handle, 49
 Filter command, 26, 249
 filtering
 clearing, 262–263
 setting up criteria range, 260–262
 specifying computed criteria, 269–270
 specifying criteria, 263–270
 specifying multiple criteria, 266–269
 tables, 248–249

- financial functions
 - bond calculations, 319–320
 - Excel's limitations with, 317–318
 - financial concepts, 296–297
 - future value, 302–305
 - interest and principal components, 312–314
 - interest rates, 314–316
 - payments, 305–306
 - periods, 309–311
 - present value, 298–302
 - rates, 306–309
- financial schedules
 - amortization schedules, 348–354
 - basic financial statements, 362–366
 - creating, 347–348
 - creating indices, 369–371
 - loan options, summarizing using data table, 358–362
 - ratio analysis, 366–369
- Find and Replace dialog box, 126, 543, 746
- Find dialog box, 140
- FIND function, 127–128, 132, 190, 742
- Find What field, Find dialog box, 140
- finding and searching within strings, 129–130
- FINV function, 740
- First Column check box, Tables menu, 244
- first payment, timing of, 297
- FISHER function, 740
- FISHERINV function, 740
- FIXED function, 742
- Fixed-length strings data type, 653–654
- floating-point number errors, 592–593
- FLOOR function, 286, 288, 737
- Format table gallery, 12
- Font group, Home tab, 11–12
- Font property, 674–675
- Font tab, 12
- FORECAST function, 390, 478, 740
- Form controls, 23
- Format Axis dialog box, 457
- Format Cells dialog box, 12, 139, 144, 531, 748–749
- Format Control dialog box, 463
- Format Data Series dialog box, Series Options tab, 452–454, 457
- Format Only Cells That Contain rule, 532, 541
- Format Only Top or Bottom Ranked Values rule, 532
- Format Only Unique or Duplicate Values rule, 532
- Format Only Values That Are Above or Below Average rule, 532
- Format Painter tool, Clipboard group, 11
- Format Series dialog box, Series Option tab, 451
- Format Trendline dialog box, 474, 479
- Format Value Axis dialog box, 451, 453–454, 457
- formatting. *See also* conditional formatting
 - dates and times, 145–147, 762–763
 - numeric, 22
 - pivot tables, 493–496
 - stylistic, 22
- Formula Auditing group, 28
- Formula AutoComplete feature, 72, 104, 627, 629
- Formula AutoCorrect feature, 41
- Formula Bar, 36
- Formula box, 517
- Formula Evaluator, 603–604
- Formula property, 672
- Formula tab, Options dialog box, 434
- formula-based rules, 545–554
- formulas. *See also* megaformulas
 - array formulas, 375–379
 - calculating, 44–45
 - cell and range references, 45–48
 - circular references, 53–55
 - converting to values, 49–51
 - for counting, 181–184
 - debugging. *See* debugging formulas
 - editing, 38–39
 - elements of, 34
 - entering, 34–35
 - entering worksheet functions into, 106–111
 - errors in, 52–53
 - goal seeking, 55–57
 - hiding, 51–52
 - limits, 37
 - making exact copy of, 48–49
 - overview, 23–24
 - pasting names into, 36
 - protecting from being overwritten, 30–31
 - returning errors, 585–589
 - sample formulas, 37
 - spaces and line breaks, 36
 - summing, 201–204
 - text formulas, 131–137
 - that are not calculated, 591
 - using operators in, 39–44
- For-Next loops, 662–664
- Fraction category, Format Cells dialog box, 759
- Fraction number format, 18, 749
- fractional dollars, 289–290
- fractions, displaying, 759
- Frankston, Bob, 2
- frequency distribution, 122, 192–195
- FREQUENCY function, 177, 192–196, 390, 740
- FTEST function, 740

- full-column or full-row as arguments, 103–104
- function arguments, 100–101
- Function Arguments dialog box, 106, 107–108, 631
- Function Library group, Formulas tab, 106
- functions. *See also* lookup functions; VBA custom
 - function examples
 - arguments, 102–105, 629
 - categories of, 111–114
 - choosing name for, 627–628
 - creating add-ins, 641–643
 - custom, 551–554
 - custom, reasons for creating, 624
 - database functions, 271–273
 - date-related
 - calculating dates of holidays, 162–164
 - calculating number of days between dates, 153–154
 - calculating number of work days between dates, 154–155
 - calculating number of years between dates, 156
 - calculating person's age, 156–157
 - converting non-date string to date, 153
 - converting year to Roman numerals, 166
 - counting occurrences of day of week, 160–161
 - determining date of most recent Sunday, 159
 - determining date's quarter, 165
 - determining day of week, 158
 - determining day of year, 158
 - determining first day of week after date, 159
 - determining last day of month, 165
 - determining nth occurrence of day of week in month, 159–160
 - determining whether year is a leap year, 165
 - displaying any date, 151
 - displaying current date, 150
 - expressing date as ordinal number, 161–162
 - generating series of dates, 151–153
 - offsetting date using only work days, 155–156
 - declaring, 626–627
 - entering into formulas, 106–111
 - financial functions
 - bond calculations, 318–320
 - Excel's limitations with, 316–318
 - financial concepts, 296–297
 - future value, 302–305
 - interest and principal components, 311–314
 - interest rates, conversion formulas, 315–316
 - payments, 305–306
 - periods, 309–311
 - present value, 298–302
 - rates, 306–309
 - function procedures, 626–629
 - Insert Function dialog box, 630–633
 - mathematical, plotting, 463–468
 - multifunctional, 687–689
 - overview, 23–24, 99–102
 - performing otherwise impossible calculations, 100
 - providing decision-making capability, 101
 - reference for, 727–743
 - simplifying, 100
 - speeding up editing tasks, 100–101
 - testing and debugging
 - calling function from sub procedure, 637–640
 - setting breakpoint in functions, 640–641
 - using `debug.print` statements in code, 636–637
 - using VBA `MsgBox` statement, 634–636
- text functions
 - changing case of text, 127–128
 - character codes, 118–120
 - counting characters in strings, 123–124
 - creating text histogram, 124–125
 - custom VBA functions, 137
 - determining whether cells contain text, 117–118
 - determining whether two strings are identical, 120–121
 - displaying formatted currency values as text, 123
 - displaying formatted values as text, 122–123
 - extracting characters from strings, 128
 - finding and searching within strings, 129–130
 - joining two or more cells, 121–122
 - padding numbers, 125–126
 - removing excess spaces and nonprinting characters, 126–127
 - repeating characters or strings, 124
 - replacing text with other text, 128–129
 - searching and replacing within strings, 130
- time-related
 - adding hours, minutes, or seconds to a time, 172–173
 - calculating difference between two times, 170–171
 - converting between time zones, 173–174
 - converting decimal hours, minutes, or seconds to a time, 172
 - converting from military time, 171–172
 - displaying any time, 167–168
 - displaying current time, 166–167
 - rounding time values, 174–175
 - summing times exceeding 24 hours, 168–170
 - working with non... time-of-day values, 175–176
- using in formulas, 628–629
- using in named formulas, 86
- VBA function example, 624–626

future value
 calculating using NPV function, 330–331
 of lump sum, 303–304
 of payments, 302–303
 of payments and lump sum, 304–305
 Fv argument, 299–300
 FV function, 732
 FVSCCHEDULE function, 316, 342–343, 732

G

galleries, 14
 GAMMADIST function, 740
 GAMMAINV function, 740
 GAMMALN function, 740
 Gantt chart, 454–457
 gauge charts, 451–457
 GCD function, 737
 General number format, Options dialog box, 745, 748
 GEOMEAN function, 740
 geometric growth rates, 334–335
 GESTEP function, 730
 GETPIVOTDATA function, 520–521, 735
 global recalculation, 684
 Go To dialog box, 70, 83, 93
 Go To Special dialog box, 259, 384, 526, 543, 553, 585, 596, 599
 Goal Seek feature, 54–55, 302, 339–340
 goal seeking, 55–57
 goals, charting progress toward, 450–451
 Google Groups website, 769–770
 grades, 223–225
 Grand totals, 489, 518
 graphics, conditional formatting using, 532–542
 Gross Profit Margin, 369
 Grouping dialog box, 501, 504, 508, 511, 512
 grouping pivot tables, 504–510
 groups, 12–13
 GROWTH function, 390, 482, 740
 growth rates, 308, 334–335
 Guess argument, 299, 308

H

HARMEAN function, 740
 hash marks (#), 51, 141, 168–169, 584, 749
 Header Row check box, Tables menu, 244
 Help on This Function hyperlink, 107–108
 help system, 16, 19, 21, 767
 Herber, Hans, 162
 HEX2BIN function, 730
 HEX2DEC function, 730
 HEX2OCT function, 730

Hidden and Empty Cells button, Chart Tools, 456
 Hidden check box, 29, 49–50
 Hidden property, 675–676
 Hide command, 7
 hiding formulas, 51–52
 Highlight Cell Rules command, 528
 Hi-Lo Lines option, Chart Tools, 459
 Histogram dialog box, Data Analysis dialog box, 195–198
 histograms, 122–123, 199–200
 history of Excel, 4–7
 HLOOKUP function, 212, 215, 229, 736
 holidays, calculating dates of, 162–164
 Home tab, Ribbon component, 10–11
 HOUR function, 164, 729
 hours, 172–173
 hundreds, displaying values in, 756
 hurdle rate, 321
 HYPERLINK function, 736
 HYPGEOMDIST function, 740
 hypocycloid curves, Chart Tools, 473

I

icon sets, 538–542
 Icon Sets command, 529, 538, 541
 identity operations, 394
 IF function, 99, 393–395, 401–403, 408–409, 412–413
 IFERROR function, 130–132, 355–356, 420–422, 568–570
 If-Then construct, 659–661
 Ignore Blank check box, Settings tab, 557
 Ignore Error option, 602
 Ignore Relative/Absolute check box, 75
 illustrations, 24
 IMABS function, 731
 IMAGINARY function, 731
 IMARGUMENT function, 731
 IMCONJUGATE function, 731
 IMCOS function, 731
 IMDIV function, 731
 IMEXP function, 731
 IMLN function, 731
 IMLOG10 function, 731
 IMLOG2 function, 731
 Immediate window, VB Editor, 613, 632, 636–638
 Imp operator, 655
 implicit intersections, 73–74
 IMPOWER function, 731
 IMPRODUCT function, 731
 IMREAL function, 731
 IMSIN function, 731
 IMSQRT function, 731
 IMSUB function, 731

IMSUM function, 731
income statement, 362, 365
Incomplete calculation errors, 583
inconsistent date entries, 148–149
incorrect reference errors, 582
Increase Decimal button, 747, 753
indefinite number of arguments, 719–723
Independence Day, 163
INDEX function, 74, 108, 217–218, 221, 226, 409, 736
indices, creating, 369–371
indirect cell precedents, 599
indirect circular references, 431
INDIRECT function, 89–93, 111, 230, 391, 410, 736
INFO function, 734
information functions, 113
Insert Calculated Field dialog box, 515
Insert Function dialog box, 107–109, 630–633
Insert tab, Ribbon component, 10–11
inserting rows or columns, 80
INT function, 286, 290, 737
Integer data type, 650
integers, summing digits of, 410–411
INTERCEPT function, 740
interest, 312–316, 354–356
interest-free loans, 309
internal rate of return, 341–342
Internet features, 27
Internet newsgroups. *See* newsgroups
interpolation, 230–232
Intersect function, 676–677
INTRATE function, 732
INVALIDPART function, 554
IPMT function, 312–313, 732
IRR function, 332–336
irregular cash flows, 340–342
ISBLANK function, 734
ISERR function, 182, 401, 734
ISERROR function, 182, 401, 685, 734
ISEVEN function, 734
ISLOGICAL function, 685, 734
ISMISSING function, 718
ISNA function, 182, 401, 409, 734
ISNONTEXT function, 181, 712, 734
ISNUMBER function, 734
ISODD function, 734
ISPMT function, 733
ISREF function, 734
ISTEXT function, 111, 115, 685, 698–699, 735
iteration, animating charts using, 441–442

J

Jansen, Thomas, 162
Jelen, Bill, 773
joining cells, 121–122
Jon Peltier's Excel Page web site, 772

K

Kapor, Mitch, 4
keyboard shortcuts, 18
KURT function, 740
Kusleika, Dick, 772

L

Labor Day, 163
LARGE function, 100, 201–202, 405, 421, 740
Last Column check box, Tables menu, 244
LASTINCOLUMN function, 707
LASTINROW function, 707–708
late payment table, amortization schedules, 354–355
Layout group option, 495
LCM function, 737
leading dots, displaying, 766
leap year bug, 147–148
LEFT function, 85, 102, 126, 131–132, 151, 670, 718, 742
LEN function, 121, 392, 410, 743
letter grades, determining for test scores, 223–224
Life argument, 344
Line with Markers option, Chart Tools, 459
linear equations, 284–285
linear interpolation, looking up values using, 230–232
linear trendlines, 475–478
LINEST function, 390, 476, 740
link formulas, 46
linked picture objects, 25
links to cells, creating, 448–449
liquidity ratios, 366–368
List Formulas option, 523
List option, Settings tab, 557
List Separator setting, 100
literal argument, 102
literal values, as arguments, 104
live preview, 12, 14
LN function, 737
loan options, summarizing using data table, 358–362
loan rates, 307–308
loans, interest-free, 309
Lock Project for Viewing checkbox, VB Editor, 642
LOG function, 737
LOG10 function, 737

logarithmic trendlines, 479–480
 LOGEST function, 390, 740
 Logical errors, 582, 634
 logical functions, 112–113
 logical values, 184, 594–595
 LOGINV function, 740
 LOGNORMDIST function, 740
 Long data type, 650
 lookup formula, 211
 LOOKUP function, 213, 216–217, 221, 224, 232, 736
 lookup functions

- calculating grade point average, 224–225
- case-sensitive lookup, 221–222
- choosing among multiple lookup tables, 222–223
- combining MATCH and INDEX functions, 217–218
- determining address of value within a range, 228
- determining letter grades for test scores, 223–224
- HLOOKUP function, 215
- looking up a value using linear interpolation, 230–232
- looking up exact value, 219–220
- looking up value by using closest match, 229–230
- looking up value to the left, 220–221
- LOOKUP function, 216–217
- overview, 211–213
- two-column lookup, 227–228
- two-way lookup, 225–227
- VLOOKUP function, 213–215

 Lookup Wizard add-in, 226
 looping blocks of instructions, 662–666
 Lotus, 2, 4, 76, 101, 145, 263
 Lotus Compatibility Settings section, 76
 LOWER function, 125, 743
 lump sum, future value of, 303–304

M

Macro dialog box, 631
 Macro Name box, 631
 Macro Options dialog box, 631
 Macro Security option, 609
 macro sheets, 10–11
 macros, 26, 610–611
 Madison, Josh, 279
 Manage Rules command, 529, 542
 Manual Recalculation mode, 111
 Manual setting, Calculation mode, 42
 Martin Luther King, Jr. Day, 163
 MATCH function, 213, 217–218, 221, 226, 409, 571–572, 736
 math trigonometry functions, 112
 mathematical functions, plotting, 464–468
 Maturity, bond properties, 318
 Max formula, Tables menu, 250
 MAX function, 98, 401, 409, 664, 687, 740
 MAXA function, 740
 maximizing windows, in VB editor, 616–617
 Maximum Change field, 53
 Maximum iterations, 53, 434, 437, 442
 McRitchie, David, 773
 MDETERM function, 737
 MDURATION function, 733
 MEDIAN function, 687, 740
 megaformulas

- examples
 - determining validity of credit card number, 574–578
 - generating random names, 578–579
 - removing middle names, 567–570
 - returning string's last space character position, 570–574
 - simple example, 564–566
 - overview, 563–564
 - pros and cons of, 580

 Memorial Day, 163
 menu bar, Visual Basic (VB) editor, 612
 Merge & Center command, 238, 424
 Microsoft, 5
 Microsoft Knowledge Base website, 768
 Microsoft news server website, 769
 Microsoft newsgroups website, 769
 Microsoft Office Online website, 19
 Microsoft SharePoint service, 238
 Microsoft technical support, 768–769
 MID function, 110, 126, 151, 410, 572, 647, 743
 military time, converting from, 171–172
 millions, displaying values in, 756–757
 MIN function, 401, 408, 452, 687, 740
 MINA function, 740
 Mini Toolbar, 10, 14
 minimizing windows, in VB editor, 616–617
 MINUTE function, 164, 729
 minutes, 172–173
 MINVERSE function, 390, 737
 MIRR function, 316, 336–340, 733
 mismatched parentheses, 583–584
 mixed references, 43–47, 88–89, 158, 200, 589
 MMULT function, 390, 737
 MOD function, 412–413, 460, 548, 655, 737
 MODE function, 188, 687, 741
 modifying pivot tables, 496–498
 money. *See* financial functions
 month

- determining last day of, 165
- determining *n*th occurrence of day of week in, 159–160

- MONTH function, 84, 148, 158, 729
 - More functions option, Table menu, 250
 - More Number Formats option, Number Format control, 144
 - Most Recently Used category, 105
 - Moving Average option, Chart Tools, 479
 - Mr. Excel web site, 773
 - MROUND function, 286, 288, 737
 - MS-DOS, 3
 - multicell array formulas
 - creating array constant from values in a range, 386–387
 - creating array from values in a range, 386
 - displaying calendar in a range, 423–425
 - generating an array of consecutive integers, 390–391
 - performing operations on an array, 387–388
 - returning list of unique items in a range, 422–423
 - returning nonblank cells from a range, 420
 - returning only positive values from a range, 419–420
 - reversing order of cells in a range, 420–421
 - sorting range of values dynamically, 421–422
 - transposing an array, 389–390
 - using functions with an array, 389
 - multidimensional arrays, declaring, 657
 - multifunctional functions, 687–689
 - MULTINOMIAL function, 737
 - Multiplan, 3
 - multiple lookup tables, choosing among, 222–223
 - multisheet functions, 708–710
 - multisheet names, creating, 71–72
 - My Power Utility Pak, 25
- ## N
- N function, 735
 - N/A for text, displaying, 759–760
 - NA function, 735
 - Name box, 58, 64–67
 - Name Lister utility, 68
 - Name Manager dialog box, 60–61, 64, 70, 76, 80–81, 83, 87, 92
 - Name Manager option, 256, 461, 594
 - Name property, 674
 - named cells, 81
 - named ranges, 81
 - names
 - advanced techniques that use names, 91–95
 - creating, 63–64
 - creating multisheet names, 71–72
 - deleting, 64
 - editing, 64
 - extracting, 135–137
 - Name Manager, 62–64
 - naming constants, 84–85
 - naming text constants, 85–86
 - overview, 60
 - pasting into formulas, 36
 - potential problems with, 80–83
 - of ranges and cells, 72–80
 - removing titles from, 137
 - scope of, 61–62
 - using cell and range references in named formulas, 87–88
 - using named formulas with relative references, 88–91
 - using worksheet functions in named formulas, 86
 - navigation, 13, 241
 - nearest multiple, rounding numbers to, 288
 - negative numbers, 291
 - negative sign, displaying on the right, 760–761
 - NEGBINOMDIST function, 741
 - nested parentheses, 40–41, 42–44
 - nesting functions, 102–103
 - net present value, 340–341
 - Net Profit Margin, 369
 - NETWORKDAYS function, 148, 152–153, 729
 - New Formatting Rule dialog box, 531, 533, 535–536, 538–539, 545–546
 - New Name dialog box, 61–64, 65–66, 85–86, 91, 382–383, 461–462
 - New Rule command, 529, 544
 - New Window option, 597
 - New Year's day, 163
 - newsgroups, 769–771
 - No Switch argument, 344
 - nodes, 614
 - NOMINAL function, 315–316, 733
 - Nominal rate, 314
 - nonblank cells, counting, 183
 - non-date string to date, converting, 153
 - None formula, 249
 - non-integers, 291
 - nonlinear trendlines, 479–483
 - non-numeric characters, removing from strings, 413–414
 - nonprinting characters, removing, 126–127
 - nontext cells, counting, 183
 - NORMDIST function, 741
 - NORMINV function, 741
 - NORMSDIST function, 741
 - NORMSINV function, 741
 - NOT function, 735
 - Not operator, 655
 - Novell company, 3
 - NOW function, 111, 121, 148, 164, 729
 - Nper argument, 299, 301, 309–311
 - NPV function, 733

- NPV function
 - definition of NPV, 322–323
 - examples, 324–330
 - using to calculate accumulated amounts, 330–332
 - Number Format control, 143–144
 - Number format, Options dialog box, 748
 - number format string, 750–751
 - Number group, Home tab, 746–747
 - Number tab, Format Cells dialog box, 748–750, 753
 - NumberFormat property, 674
 - numbers
 - displaying text with, 763
 - expressing as ordinals, 132
 - formatting, 745–749. *See also* custom number formats
 - padding, 125–126
 - random, generating, 689–692
 - rounding, 286–291
 - spelling out, 700
 - numeric cells, counting, 183
 - numeric formatting, 20, 22
 - Numerical Count, 178
- O**
- Object data type, 650
 - object hierarchy, 6
 - object model, 6, 8
 - object selecting, 19–21
 - object variable, 676
 - object-oriented programming (OOP), 6, 683
 - objects on drawing layer, 24–26
 - OCT2BIN function, 731
 - OCT2DEC function, 731
 - OCT2HEX function, 731
 - ODD function, 286, 290–291, 737
 - odd integer, rounding to, 290–291
 - ODDFPRICE function, 733
 - ODDFYIELD function, 733
 - ODDLPRICE function, 733
 - ODDLYIELD function, 733
 - Office Button menu, 14–15
 - OFFSET function, 93, 111, 213, 415, 461, 736
 - Offset property, 669, 671–672
 - OLAP data cube, 112
 - On Error statement, 667–668
 - one-dimensional arrays, 376, 380–381
 - one-way data table, 358–360
 - onscreen display, 16
 - Opened By field, 501
 - operators, 39–44, 590–591
 - optional arguments, 718–719
 - options, setting in tables, 244
 - Options dialog box, 76, 431, 437, 520, 523, 592, 602, 619–620
 - Or criteria, 189, 210
 - OR function, 403–404, 735
 - Or operator, 655
 - order argument, 445
 - ordinal numbers, 130–132, 159–162
 - outlines, 29
- P**
- padding numbers, 125–126
 - Page Break between Groups option, Subtotal dialog box, 275
 - Page Layout tab, Ribbon component, 10–11
 - Panko, Raymond, 582
 - Parent property, 673–674
 - parentheses, 42–44, 583–584
 - passwords, protecting workbooks with, 32
 - Paste Function dialog box, 111
 - Paste List button, 71
 - Paste Name dialog box, 34, 71–72
 - Paste Picture Link command, 23
 - Paste Special dialog box, 114, 542
 - Paste tool, Clipboard group, 11
 - Paste Values command, 47–48, 125
 - pasting
 - named ranges, 80
 - names into formulas, 36
 - path specifications, extracting filenames from, 133
 - pattern, whether text matches, 697–698
 - pattern-matched cells, counting, 701
 - payday loan rates, 307–308
 - payments
 - future value of, 302–303
 - and interest tables, 354–356
 - loan payments, 305–306
 - retirement payments, 305–306
 - smoothing, 331–332
 - Pearson, Chip, 772
 - PEARSON function, 741
 - Pearson Software Consulting web site, 772
 - Peltier, Jon, 772
 - Percent Style button, 747
 - Percentage number format, Options dialog box, 749
 - PERCENTILE function, 741
 - PERCENTRANK function, 741
 - perimeter, 282–283
 - Period argument, 344
 - periodic effective rate, 315
 - periods
 - early loan payoff, 310–311
 - years until retirement, 309–310

PERMUT function, 741
phantom link errors, 593–594
PI function, 737
pivot charts, 28, 179, 192, 512
Pivot Table Field List, 492–493, 496, 526
Pivot Table Options dialog box, 493, 495–496
Pivot Table Styles option, 493, 505, 526
pivot tables
 calculated field, creating, 514–516
 calculated item, inserting, 516–519
 creating, 493–498
 data appropriate for, 488–491
 examples, 486–488, 498–503, 521–524
 frequency distribution, 510–512
 grouping, 504–510
 overview, 29–30, 485–486
 producing report with, 524–526
 referencing cells within, 519–521
plus sign (+), 33
Pmt argument, 299, 305–306, 311, 331
PMT function, 109, 349–350, 733
POISSON function, 741
polynomial trendlines, 479, 482–483
POWER function, 737
power trendlines, 479–481
Power Utility Pak, 68
PPMT function, 312–313, 733
pre-1900 dates, 148
precedents, identifying, 599–600
Precision as Displayed option, Calculation tab, 745
predicted values, calculating, 477
present value, of annuity with lump sum, 301–302
Presidents' Day, 163
PRICE function, 319–320, 733
PRICEDISC function, 733
PRICEMAT function, 733
principal, 312–314
PROB function, 741
PRODUCT function, 737
profitability ratios, 369
Project window, Visual Basic (VB) editor, 612–616
PROPER function, 98, 125–126, 743
Properties window, Visual Basic (VB) editor, 613
Protect Sheet dialog box, 28–29, 50
Protect Structure and Windows dialog box, 29
protection options, 30–32
Protection tab, 29, 49–50
Pv argument, 299, 310
PV function, 298, 317–318, 733
pyramids, volume of, 284

Q

QUARTILE function, 741
quartile plot, 457–459
Quattro Pro company, 3
question mark, Search function, 128
Quick Access toolbar (QAT), 10, 14, 16, 243
quotes, displaying text in, 760
QUOTIENT function, 737

R

R1C1 notation, 45
R1C1 Reference Style option, 45
RADIANS function, 103, 110, 280, 464, 737
RAND function, 100, 111, 689–690, 738
RANDBETWEEN function, 691, 738
random names, generating, 578–579
random numbers, generating, 689–692
range operator, 74
Range property, 669–670
range references, 45–48
ranges
 counting number of differences in, 407–408
 counting number of error values in, 401–402
 determining closest value in, 414
 determining whether contains valid values, 409
 determining whether particular value appears in, 406–407
 displaying calendar in, 423–425
 For Each-Next construct, 669
 finding row of value's *n*th occurrence in, 408–409
 Intersect function, 676–677
 names of, 72–79
 properties of, 672–676
 randomizing, 716–717
 referencing, 669–672
 returning list of unique items in, 422–423
 returning location of maximum value in, 408
 returning longest text in, 409
 returning nonblank cells from, 420
 returning only positive values from, 419–420
 reversing order of cells in, 420–421
 Set keyword, 676
 sorting range of values dynamically, 421–422
 summing all cells in, 201–202
 summing every *n*th value in, 412–413
 summing *n* largest values in, 405
 that contains errors, summing, 400–401
 Union function, 677
 UsedRange property, 677–678
 words in, counting, 702

- RANK function, 416–417, 741
 - Rate argument, 299, 301, 306, 308, 321, 344, 371
 - RATE function, 733
 - ratio analysis, 366–369
 - Recalculate Before Save option, 111
 - RECEIVED function, 733
 - Record Macro dialog box, 619
 - records, 234
 - rectangles, 282
 - recursive equation, solving, 437–438
 - Redo Delete button, 619
 - Redo tool, Quick Access toolbar (QAT), 14
 - reference functions, 112
 - reference operators, 38, 40
 - references, 545–546
 - References command, VB Editor's Tools, 628
 - referencing data, in tables, 255–259
 - Refers To field, 62, 79–80, 83, 86–87
 - Refresh, 489
 - Regional and Language Options, Windows
 - Control Panel, 762
 - Regional Settings dialog box, Control Panel, 100
 - Regional Settings option, Windows Control Panel, 654
 - relative references, 545–546
 - problems with, 589–590
 - using named formulas with, 88–91
 - Remove All button, Subtotal dialog box, 275
 - Remove Arrows option, 599
 - Remove Duplicates dialog box, Tables menu, 244–245
 - Remove Errors option, 586
 - renaming
 - modules, in Visual Basic (VB) editor, 615
 - projects, in Visual Basic (VB) editor, 614
 - repeating character, filling cells with, 766
 - Replace Current Subtotals option, Subtotal dialog box, 275–276
 - REPLACE function, 127–128, 743
 - Report Filter section, 488, 496, 501–503
 - Report Layout option, 526
 - reports, producing with pivot tables, 524–526
 - REPT function, 122–123, 743
 - Require Variable Declaration option, VB Editor Options dialog box, 652
 - reserved words, 649
 - Reset Ignored Errors button, Formulas tab, 602
 - resources
 - help system, 767
 - Internet newsgroups, 769–771
 - Microsoft technical support, 768–769
 - web sites, 771–773
 - retirement, years until, 309–310
 - return on assets, 369
 - return on equity, 369
 - reversing strings, 695
 - Ribbon
 - contextual tabs, 14
 - galleries and live preview, 14
 - navigation, 13
 - number formatting using, 746–747
 - one-stop shopping, 12
 - screen tips and dialog icons, 14
 - tabs, groups, and tools, 12–13
 - RIGHT function, 126, 151, 743
 - ROMAN function, 658–659, 738
 - Roman numerals, converting year to, 166
 - ROUND function, 172–173, 287, 304, 349, 412, 592–593, 738
 - ROUNDDOWN function, 287–288, 304, 738
 - rounding numbers, 286–291
 - rounding time values, 174–175
 - ROUNDUP function, 287–288, 304, 738
 - ROW function, 390, 410, 548, 736
 - Row labels, 490
 - rows
 - adding to tables, 241–242
 - deleting in tables, 242
 - displaying alternate-row shading, 547–548
 - duplicate, removing from tables, 244–245
 - groups of, shading, 548–549
 - naming, 68–69
 - returning last value in, 416
 - ROWS function, 111, 180, 736
 - RSQ function, 478, 741
 - R-squared, calculating, 478
 - RTD function, 736
 - Run Sub/UserForm option, VB Editor, 638
 - running total, 200
 - Runtime errors, 634
- ## S
- Sachs, Jonathon, 4
 - sales commissions calculation, 692–695
 - Salvage argument, 344
 - Sample box, Format Cells dialog box, 760
 - Save As command, 621
 - Save As dialog box, VB Editor, 642
 - Save as Template option, Chart Tools, 446, 459
 - Save tool, Quick Access toolbar (QAT), 14
 - saving projects, Visual Basic (VB) editor, 621
 - scaling values, 755–758
 - scenario management, 29
 - Scenario Manager program, 27

- Scientific number format, Options dialog box, 749
- scrambling text, 696
- ScreenTips, 12, 14, 16–17, 104
- Search box, Help system, 19
- SEARCH function, 127–128, 190, 743
- searching within strings, 129–130
- SECOND function, 164, 729
- seconds
 - adding to a time, 172–173
 - decimal, converting to a time, 172
- security, macro, 609–610
- Security Warning, 609–610, 776
- Select a Function list box, 105
- Select Arguments dialog box, 108
- Select Case construct, 661–662
- Select Data Source, Chart Tools, 456
- selecting in tables, 241
- Semantic errors, 582
- serial numbers
 - date, 140–141
 - time, 143–144
- SERIES formula
 - unlinking chart series from its data range, 447
 - using names in, 445–447
- series of dates, generating, 151–153
- Series Options tab, Chart Tools, 454, 457
- series_name argument, SERIES formula, 444
- SERIESSUM function, 738
- Set keyword, 676
- Set Precision as Displayed check box, Options dialog box, 592
- Settings tab, Data Validation dialog box, 555–557
- shading
 - checkerboard, 548
 - displaying alternate-row shading, 547–548
 - groups of rows, 548–549
- shapes, 22, 24
- Sheet tab, 7
- SHEETOFFSET function, 709–710
- shortcut keys, number formatting using, 747–748
- shortcut letters, Ribbon component, 11
- shortcut menus and the mini toolbar, 15–16
- shortcuts, for creating cell and range names, 65–70
- Show a Zero in Cells That Have Zero Value option, Display options, 180
- Show Bars Only option, 534
- Show Formulas option, 597
- Show Icon Only option, Trend column, 540–541
- Show Values As tab, Data Field Settings dialog box, 494–495
- SIGN function, 738
- simple amortization schedules, 348–351
- simultaneous equations, solving, 284–286, 439–440
- SIN function, 103, 108, 464, 738
- Single data type, 650
- single-cell array formulas
 - computing average that excludes zeros, 405–406
 - counting characters in a range, 391–392
 - counting number of differences in two ranges, 407–408
 - counting number of error values in a range, 401–402
 - counting text cells in a range, 393–395
 - creating dynamic crosstab table, 417–418
 - determining closest value in a range, 414
 - determining whether a range contains valid values, 409
 - determining whether particular value appears in a range, 406–407
 - eliminating intermediate formulas, 395–396
 - finding row of value's *n*th occurrence in a range, 408–409
 - ranking data with an array formula, 416–417
 - removing non-numeric characters from strings, 413–414
 - returning last value in a column, 414–416
 - returning location of maximum value in a range, 408
 - returning longest text in a range, 409
 - returning the last value in a row, 416
 - summing based on conditions, 402–404
 - summing digits of an integer, 410–411
 - summing every *n*th value in a range, 412–413
 - summing *n* largest values in a range, 405
 - summing range that contains errors, 400–401
 - summing rounded values, 411–412
 - summing three smallest values in a range, 392–393
 - using array in lieu of range reference, 396–397
- single-cell goal seeking, 53–54
- SINH function, 738
- Size and Properties dialog box, Chart Tools, 446
- sizes argument, SERIES formula, 445
- SKEW function, 741
- SLN function, 344, 345, 733
- slope, calculating, 476–477
- SLOPE function, 741
- SMALL function, 201–202, 392–393, 405, 409, 421, 741
- Smart Icon, 51
- smart tags, 16–17
- SmartArt, 15, 22
- SmartTag, 14–15, 48, 115, 255, 602
- Smoothed Line option, Format Data Series dialog box, 468
- smoothing payments, 331–332
- solvency ratios, 368–369
- Solver add-in, 28, 30, 55
- Sort By Color option, Tables menu, 246
- Sort command, 26

- Sort Largest to Smallest option, Tables menu, 246
 - Sort Newest to Oldest option, Tables menu, 246
 - Sort Oldest to Newest option, Tables menu, 246
 - Sort Smallest to Largest option, Tables menu, 246
 - sorting tables, 246–247
 - Source data, 490
 - spaces, excess, 126–127, 585
 - Special number format, Options dialog box, 749
 - special symbols, 764
 - spheres, surface and volume of, 283
 - Spreadsheet Page web site, 772
 - Spreadsheet Research (SSR) website, 582
 - SQL Server, 25
 - SQRT function, 102
 - SQRT worksheet function, 659, 670, 738
 - SQRTPI function, 738
 - squares, area and perimeter of, 282
 - Stacked Bar Chart, Chart Tools, 457
 - STANDARDIZE function, 741
 - static chart, 447
 - static value, 165
 - statistical functions, 112
 - status bar, 17
 - StdDev formula, Tables menu, 250
 - STDEV function, 687, 741
 - STDEVA function, 741
 - STDEVPA function, 741
 - STDEVPA function, 741
 - Stephen Bullen's Excel Page web site, 772
 - STEYX function, 741
 - Stop Automatically Creating Calculated Columns option, 255
 - storing VBA code, in VB editor, 617–618
 - String (fixed length) data type, 650
 - String (variable length) data type, 650
 - strings
 - converting non-date string to date, 153
 - counting characters in, 123–124
 - counting occurrences of substrings in cells, 131
 - determining whether identical, 120–121
 - extracting all but first word of, 134–135
 - extracting characters from, 128
 - extracting first word of, 133–134
 - extracting last word of, 134
 - extracting *n*th element from, 699–700
 - finding and searching within, 129–130
 - overview, 653–654
 - removing non-numeric characters from, 413–414
 - repeating, 124
 - returning last space character position, 570–574
 - reversing, 695
 - searching and replacing within, 130
 - Style dialog box, 752
 - Styles gallery, 12
 - stylistic formatting, 20, 22
 - SUBSTITUTE function, 127–129, 135, 648, 743
 - substrings, counting occurrences in cells, 131
 - Subtotal command, 27, 107
 - Subtotal dialog box, 273–274
 - SUBTOTAL function, 107, 177, 250–252, 259, 273, 276, 738
 - subtotals, 26–27, 490
 - Sum formula, Tables menu, 250
 - SUM function, 97, 378–379, 392–393, 687, 721–723, 738
 - SUMIF function, 177, 202, 204–205, 206, 352, 402–403, 738
 - SUMIFS function, 177, 206–208, 356, 402–403, 738
 - Summarize By tab, Data Field Settings dialog box, 494–495
 - Summary below Data option, Subtotal dialog box, 275
 - summing
 - conditional sums using multiple criteria, 208–210
 - formulas, 201–204
 - only negative values, 205–207
 - records in databases and pivot tables, 180–181
 - values based on a date comparison, 207–208
 - values based on a different range, 207
 - values based on a text comparison, 207
 - worksheet cells, 178–180
 - SUMPRODUCT function, 177, 186, 207, 378, 738
 - SUMSQ function, 177, 738
 - SUMX2MY2 function, 177, 738
 - SUMX2PY2 function, 177, 738
 - SUMXYMY2 function, 177, 738
 - Sunday, determining date of most recent, 159
 - support, technical, 768–769
 - suppressing entries, 764–765
 - surface
 - of cones, 284
 - of cubes, 283
 - of spheres, 283
 - Switch Row/Column option, Chart Tools, 459
 - SYD function, 344, 733
 - Symbol command, Insert Symbol Dialog box, 764
 - Symbol dialog box, 118
 - symbols, special, 764
 - Syntax errors, 582–583, 634
- ## T
- T function, 743
 - Tab key, Tables menu, 241
 - Table Filter, 490
 - TABLE function, 360, 362
 - Table Name box, Tables menu, 256

- Table object, 21
- Table of Contents, Help system, 19
- Table Styles, 239–240
- Table Tools tab, Ribbon component, 21
- tables. *See also* pivot tables
 - adding new rows or columns, 241–242
 - advanced filtering, 259–263
 - changing look of table, 239–240
 - converting to worksheets, 259
 - creating, 238–239
 - database functions, 271–273
 - deleting rows or columns, 242
 - example, 234–236
 - filtering, 248–249
 - formatting, 23
 - inserting subtotals, 273–276
 - moving, 242–243
 - navigating and selecting in, 241
 - referencing data in, 255–259
 - removing duplicate rows from, 244–245
 - setting options, 244
 - sorting, 246–247
 - and terminology, 234–237
 - uses for, 236–237
 - using formulas within, 253–255
 - working with Total Row, 249–253
 - worksheet database example, 234
- tabs, 12–13
- TAN function, 738
- TANH function, 738
- task pane, 15, 17
- TBILLEQ function, 733
- TBILLPRICE function, 734
- TBILLYIELD function, 734
- TDIST function, 742
- technical support, 768–769
- test scores, determining letter grades for, 223–224
- testing and debugging functions
 - calling function from sub procedure, 637–640
 - setting breakpoint in functions, 640–641
 - using `debug.print` statements in code, 636–637
 - using VBA `MsgBox` statement, 634–636
- text
 - number of characters in cells, 116
 - with numbers, displaying, 763
 - numbers as, 116–117
 - overview, 115–117
 - in quotes, displaying, 760
 - scrambling, 696
- text cells, counting, 184
- text formulas
 - counting number of words in cells, 137
 - counting occurrences of substrings in cells, 131
 - counting specific characters in cells, 131
 - determining column letters for column numbers, 132–133
 - expressing numbers as ordinals, 132
 - extracting all but first word of strings, 134–135
 - extracting filenames from path specifications, 133
 - extracting first names, middle names, and last names, 135–137
 - extracting first word of strings, 133–134
 - extracting last word of strings, 134
 - removing titles from names, 137
- TEXT function, 120–121, 170, 743, 764
- text functions
 - changing case of text, 127–128
 - character codes, 118–120
 - counting characters in strings, 123–124
 - creating text histogram, 124–125
 - custom VBA functions, 137
 - determining whether cells contain text, 117–118
 - determining whether two strings are identical, 120–121
 - displaying formatted currency values as text, 123
 - displaying formatted values as text, 122–123
 - extracting characters from strings, 128
 - finding and searching within strings, 129–130
 - joining two or more cells, 121–122
 - padding numbers, 125–126
 - removing excess spaces and nonprinting characters, 126–127
 - repeating characters or strings, 124
 - replacing text with other text, 128–129
 - searching and replacing within strings, 130
- Text Length option, Settings tab, 557
- text links, 449
- text manipulation
 - extracting *n*th element from a string, 699–700
 - returning acronyms, 696–697
 - reversing strings, 695
 - scrambling text, 696
 - spelling out numbers, 700
 - whether cell contains text, 698–699
 - whether text matches a pattern, 697–698
- Text number format, Options dialog box, 749
- text string, 114, 151, 164
- Thanksgiving Day, 164
- thousands, displaying values in, 755
- tilde, Search function, 130
- TIME function, 164–166, 170–171, 729

- time functions, 111
 - Time number format, Options dialog box, 749
 - Time option, Settings tab, 557
 - time value of money, 296
 - times. *See* dates and times
 - Times Interest Earned Ratio, 369
 - TIMEVALUE function, 164, 166, 170, 729
 - TINV function, 742
 - titles, removing from names, 137
 - TODAY function, 84, 109, 111, 148–149, 729
 - Toggle Breakpoint, Debug option, 640–641
 - toolbars, Visual Basic (VB) editor, 612
 - tools, 12–13
 - ToolTips, 12
 - Top Bottom Rules command, 528
 - “top n” values, summing, 203–204
 - total number of cells, counting, 182
 - Total Row, 107, 249–253
 - Totals Row check box, Tables menu, 244, 249, 253
 - Trace Error option, 586, 600
 - Transition Formula Entry option, 76
 - TRANSPOSE function, 383, 389, 413, 713, 736
 - trapezoids, area and parameter of, 283
 - Trend column, 540
 - TREND function, 232, 390, 477, 742
 - Trendline option, Chart Tools, 474
 - Trendline Options tab, Format Trendline dialog box, 474, 477–479
 - trendlines, 474–483
 - linear
 - calculating predicted values, 477
 - calculating R-squared, 478
 - calculating slope and *y*-intercept, 476–477
 - linear forecasting, 477–478
 - nonlinear
 - exponential trendlines, 481–482
 - logarithmic trendlines, 479–480
 - polynomial trendlines, 482–483
 - power trendlines, 480–481
 - trial balances, converting, 363–365
 - triangles, area of, 283
 - trigonometric identities, 280
 - trigonometry functions, 112
 - TRIM function, 124–125, 135, 547, 697, 743
 - TRIMMEAN function, 742
 - TRUE function, 735
 - TRUNC function, 287, 290, 738
 - Trust Center dialog box, Macro Settings, 609–610
 - Trusted Locations section, Trust Center dialog box, 610
 - TTEST function, 742
 - two-column lookup, 227–228
 - two-dimensional arrays, 376, 381–382
 - two-way data table, 360–362
 - two-way lookup, 225–227
 - Type argument, 297, 299–300, 302
 - TYPE function, 116, 735
- ## U
- Uncomment Block button, VB Editor, 648
 - Undo button, 619
 - Undo tool, Quick Access toolbar (QAT), 14
 - Union function, 677
 - unique random integers, generating, 436–437
 - unit conversions, 277–279
 - Up/Down Bars option, Chart Tools, 459
 - UPPER function, 125, 743
 - Use a Formula to Determine Which Cells to Format rule, 532, 544–546
 - Use Function option, Subtotal dialog box, 274
 - Use GetPivotData Function For PivotTable References option, 520
 - Use in Formula command, 58, 72
 - Use Row and Column Names check box, 75
 - UsedRange property, 677–678
 - Usenet internet service, 769
 - user interface
 - customized onscreen display, 18–19
 - data entry, 19
 - drag and drop, 17
 - keyboard shortcuts, 18
 - object and cell selecting, 19–21
 - Office Button menu, 14–15
 - Quick Access Toolbar (QAT), 16
 - Ribbon, 12–14
 - shortcut menus and the mini toolbar, 15–16
 - smart tags, 16–17
 - task pane, 17
 - user-defined functions, 113
 - user-defined functions (UDFs), 624
 - UserForms, 8
- ## V
- validation. *See* data validation
 - VALUE function, 410, 743
 - values
 - actual versus displayed, 591–592
 - coloring, 761–762
 - converting formulas to, 49–51
 - determining address of value within a range, 228

- determining whether particular value appears in a range, 406–407
- displaying total only when entered, 549
- error values in a range, counting, 184
- formatted, displaying as text, 122–123
- literal, as arguments, 104
- logical, counting, 184
- looking up by using closest match, 229–230
- looking up exact value, 219–220
- looking up using linear interpolation, 230–232
- looking up value to the left, 220–221
- n* largest, summing in ranges, 405
- non... time-of-day values, 175–176
- returning last value in rows and columns, 414–416
- rounded, summing, 411–412
- rounding time values, 174–175
- scaling, 755–758
- summing based on a date comparison, 207–208
- summing based on a different range, 207
- summing based on a text comparison, 207
- valid, determining whether range contains, 409
- Values area, 490, 516
- values argument, SERIES formula, 445
- Var formula, Tables menu, 250
- VAR function, 687, 742
- VARA function, 742
- Variable-length strings data type, 653–654
- variables, 650–652
- Variant (with characters) data type, 650
- Variant (with numbers) data type, 650
- VARP function, 742
- VARPA function, 742
- Vary Colors by Point option, 452
- VB Editor window, 611–612, 619
- VBA (Visual Basic for Applications)
 - arrays, 656–657
 - built-in VBA functions, 657–659
 - comments, 648
 - constants, 652–653
 - controlling execution
 - On Error statement, 667–668
 - If-Then construct, 659–661
 - looping blocks of instructions, 662–666
 - Select Case construct, 661–662
 - custom functions, 137. *See also* VBA custom function examples
 - data types, 649–650
 - dates, 654
 - displaying Developer tab, 608
 - example function procedure, 646–648
 - macro security, 609–610
 - overview, 607–608
 - ranges
 - For Each-Next construct, 669
 - Intersect function, 676–677
 - referencing, 669–672
 - Set keyword, 676
 - Union function, 677
 - UsedRange property, 677–678
 - useful properties of, 672–676
 - saving workbooks that contain macros, 610–611
 - assignment expressions, 654–656
 - strings, 653–654
 - variables, 650–652
- VB editor
 - activating, 611
 - code windows, 613, 616–618
 - entering VBA code, 618–621
 - Immediate window, 613
 - menu bar, 612
 - Project window, 612, 613–616
 - Properties window, 613
 - saving projects, 621
 - toolbars, 612
- VBA custom function examples
 - advanced function techniques
 - randomizing a range, 716–717
 - returning array from a function, 712–713
 - returning array of nonduplicated random integers, 714–715
 - returning error value, 711–712
 - using indefinite number of arguments, 719–723
 - using optional arguments, 718–719
 - counting, 701–703
 - dates, 703–706
 - determining cell's data type, 685–686
 - generating random numbers, 689–692
 - multifunctional functions, 687–689
 - multisheet functions, 708–710
 - returning last nonempty cell in column or row, 706–708
 - sales commissions calculation, 692–695
 - simple functions, 680–685
 - text manipulation, 695–700
- VBA MsgBox statement, 634–636
- VDB function, 344, 345–346, 734
- version of Excel, 5–7, 683
- Veterans Day, 164
- View Side by Side command, 597
- VisiCalc, 2, 4
- VLOOKUP function, 110, 211–215, 220–221, 223, 229, 355–356, 736
- volatile functions, 111

volume

- of cones, 284
- of cubes, 283
- of cylinders, 284
- of pyramids, 284
- of spheres, 283

W

Web site resources, 771–772

week

- counting occurrences of day of, 160–161
- determining day of, 158
- determining first day of after date, 159

WEEKDAY function, 148, 156, 562, 729

weekend days, identifying, 547

WEEKNUM function, 148, 729

WEIBULL function, 742

Whole Number option, Settings tab, 556

wildcard characters, 265–266

windows, minimizing and maximizing in VB editor, 616–617

WORDCOUNT function, 702

workbooks, 8–11

WORKDAY function, 148, 153–154, 730

Worksheet databases, 25

worksheets, 9–10

X

XENIX, 3

XIRR function, 316, 340–342, 734

XLAM extension, 610

XML language, 608

XML macros, 8

XLSM extension, 610, 776

XLSX extension, 610, 776

XNPV function, 316, 340–341, 734

XOR operator, 655

Y

year

- determining day of, 158

- leap year, 165

YEAR function, 148–149, 154, 158, 730

YEARFRAC function, 148, 154–155, 730

Yield, bond properties, 318

YIELD function, 320, 734

YIELDDISC function, 734

YIELDMAT function, 734

y-intercept, calculating, 476–477

Z

zeros

- adding to value, 758

- computing average that excludes, 405–406

- with dashes, displaying, 763–764

- hiding, 758

- leading, displaying, 759