

Index

• Numerics •

- 2-in-1 Dual Trigger (Thrustmaster), 330–331
- 3Com networking equipment, 155
- 3-D
 - audio sound card, 126, 127–128
 - benchmarking, 102
 - driver control applet, 113–114
 - graphics card, 27, 116
 - graphics standards, 99
 - memory usage, 109
 - scalability, 105
- 3DMark05 benchmark, 102
- 32-bit CPU, 87
- 64-bit CPU, 87

• A •

- Abit Web site, 83
- AC'97 codec, 78
- Accelerated Graphics Port (AGP) bus
 - contacts, location of, 110
 - described, 74–75
 - expansion cards, installing, 50
 - graphics card, memory allocation, 116, 211–212
- access point, wireless network, 153, 156
- accessories
 - BIOS integrated, 212–213
 - budget, 170
 - described, 161–162
 - Diamondback Gaming Mouse (Razer), 328
 - displays, 178–181
 - external storage, 184
 - gaming controllers, 175–177, 182
 - Gaming Keyboard (Saitek), 329
 - installing, 185
 - iPod (Apple), 329–330
 - keyboards, 171–172, 177
 - mouse, 172–174, 177
 - MX510 Optical Mouse (Logitech), 336
 - PistolMouse FPS (MonsterGecko), 331–332
 - ports, 162–170
 - printers, 184
 - Ray (Everglide) light-up mouse pad, 332–333
 - scanners, 184
 - speaker systems, 181–183
 - Super Multi DVD Drive GSA-4120B (LG), 335
 - 2-in-1 Dual Trigger (Thrustmaster), 330–331
 - X-5500 speaker (Logitech), 333–334
 - Zen Touch portable music player (Creative), 334–335
- acoustic effects, sound card, 130–131
- ACPI (Advanced Configuration and Power Interface), 213
- acrylic front panel
 - composition, 38
 - painting, 308
- acrylic window
 - cutting, 287–288
 - securing, 18
- Ad-Aware SE Personal, 228
- address fields, 87
- ad-hoc network, 153
- Advanced Configuration and Power Interface (ACPI), 213
- Advanced Technology Attachment packet interface (ATAPI)
 - described, 146
 - hard drive, enabling DMA mode, 236–238
 - installing, 149–150
 - motherboard expansion slots, 64
- adware
 - described, 225
 - removing, 228
- AGP (Accelerated Graphics Port) bus
 - contacts, location of, 110
 - described, 74–75
 - expansion cards, installing, 50
 - graphics card, memory allocation, 116, 211–212
- air cooling CPU, 264–265
- air filters, 259

- algorithm, audio, 128
 - Allen head screwdriver, 17
 - aluminum cases
 - cutting, 40
 - metal shards, protecting against, 19
 - painting, 303
 - AMD
 - features, 88
 - Intel versus, 84–85
 - memory, 92
 - operating frequency, assessing, 243
 - power connectors, 64
 - AnandTech Web site, 119, 317
 - animation, game, 100, 105–107
 - anode, 302
 - antialiasing
 - game, adjusting, 107
 - graphics cards, 110–111
 - antistatic bags, 20
 - antistatic bracelet, 22
 - antivirus protection
 - CPU features, 88
 - Internet-connected computers, 159–160
 - AOpen Web site, 83
 - APIs (application program interfaces)
 - graphics card compatibility, 99
 - sound card compatibility, 125–127
 - Apple iPod from HP, 329–330
 - applications
 - categories, 187–188
 - device drivers, installing, 185, 199–200
 - DirectX, updating, 202
 - information, sending in threads, 14
 - overclocking, 242
 - unwanted, eliminating in Windows XP, 224–225
 - Arctic Cooling products
 - thermal compound, 91
 - VGA Silencer, 115
 - ASUS Web site, 83
 - AT form factor, 39
 - ATAPI (Advanced Technology Attachment packet interface)
 - described, 146
 - hard drive, enabling DMA mode, 236–238
 - installing, 149–150
 - motherboard expansion slots, 64
 - Athlon processor
 - chipsets, 73–74
 - operating frequency, assessing, 243
 - 64 bits, 87
 - speed, 90
 - ATI graphics card
 - control applet, 112–114
 - graphics processors, 110–111
 - home theater features, 107–108
 - listed, 117, 118
 - manufacturers, 99
 - overclocking, 249
 - power supply, 55–56
 - ATX form factor
 - advantages, 39
 - layout, illustrated, 40
 - motherboard, 73
 - ATX12V power supply
 - connectors, 55
 - described, 25, 53
 - audio card. *See* sound card
 - audio processor, 78
- B •**
- background service programs, disabling, 229–232
 - backups
 - hard drive failure and, 28, 142
 - before installing Windows XP, 189
 - optical drives, using, 145
 - ball mice, 173
 - Basic Input/Output System. *See* BIOS
 - battery, motherboard, 69
 - bays
 - ATX board, finger-friendly layout of, 39
 - components, mounting, 45–49
 - bench, 19, 21
 - benchmarking graphics card
 - performance described, 101
 - with games, 102–105
 - synthetic tool, 102
 - timing, 102
 - vertical synchronization, turning off, 103
 - Bennett, Kyle ([H]ard|OCP Web site curator), 316
 - bezels
 - dummy, 42
 - motherboard, 43, 44
 - painting, 310–312

- BIOS (Basic Input/Output System)
 - advanced features, 209–210
 - cautionary note about tweaking, 14
 - chipset features, 210–212
 - CMOS features, 208–209
 - core components and, 76–77
 - described, 14, 207–208
 - integrated peripherals, 212–213
 - motherboard, 69
 - overclocking, 215
 - PC health status, 214–215
 - PCI and PnP configuration, 214
 - power management, 213–214
 - setup program, 190
 - updating, 215
- bit-tech Web site, 318
- bleeding liquid-cooled system
 - assembly, 268, 269
 - process, 271–274
- blocking
 - unwanted items from starting, 225–228
 - viruses, 159–160
- blowhole
 - cutting hole and adding screw holes, 261–263
 - finishing edges, 263
 - installing fan, 264
 - preparing to cut, 260–261
 - reasons for, 258–259
 - saws, 260
 - tools for cutting, 17
 - windows, cutting into, 324
- boot priority, 209
- boot up
 - floppy drive, seeking, 210
 - NumLock status, 210
- bootstrap process, 76
- buffer, hard drive, 137
- bump maps, 107
- burst rate, 138, 147
- buses
 - efficiency, 12
 - memory access, 109
 - motherboard, 73–75
 - overclocking, 243
- C •
- cables
 - Ethernet, 153, 156
 - FireWire types, 168
 - SATA versus IDE, 139
- cache, 59, 86, 88
- capacity, hard drive, 136–137
- card, expansion
 - build/mod order, 31
 - components, mounting, 50
 - edge covered in gold stripes, 20
 - slots, 41, 43
- card, graphics
 - AGP bus, 74
 - ATI, 249
 - build/mod order, 31
 - choosing, 115–119
 - control applet, 112–114
 - described, 98–100, 247
 - display settings, 112–115
 - gains achieved by, 248
 - game animation, frame rate versus image quality, 105–107
 - graphical features, 110–111
 - home theater features, 107–108
 - importance of, 97
 - listed, 117, 118
 - manufacturers, 97, 99
 - as media center, 107–108
 - NVIDIA, 249–251
 - overclocking, 249
 - parts list, 27
 - performance, gauging, 100–105
 - physical features, 109–110
 - power supplies, 55–56
 - VGA ports, 165
- card, network, 154–155, 156
- card, sound
 - acoustic effects, 130–131
 - APIs, 125–127
 - build/mod order, 31
 - digital audio outputs, 129–130
 - external, 125
 - FireWire, 129
 - importance of, 121
 - installing, 131–133
 - MIDI/wave table support, 131
 - motherboard audio, 123
 - parts list, 27
 - ports, 164
 - sample rate and bit depth, maximum, 128–129

- card, sound (*continued*)
 - SoundBlaster, 122
 - speaker compatibility, 123–124, 182
 - 3-D audio, 127–128
- CAS (Common Access Strobe), 211
- case
 - air cooling CPU, 264–265
 - blowholes, adding, 258–264
 - choosing, 40–41
 - clear, building, 325
 - computer without, 326
 - described, 15–16
 - fans and fan grills, 30
 - form factor, components matching, 38–40
 - importance of choosing correct, 37–38
 - liquid-cooling CPU, 265–274
 - mounting components, 41–50
 - parts list, 24–25
 - positive versus negative airflow, 257–258
 - slots and screws, 41
 - window, preparing, 283–285
- CaseModGod Web site, 320
- Catalina sound card (Turtle Beach), 122
- cathode, 302
- CD-ROM
 - Windows XP, booting, 190–191
 - X ratings, 147
- CD-RW drives, 147–149
- CDs
 - music, creating, 145
 - sample rate and bit depth, 129
- central processing unit. *See* CPU; CPU
 - overclocking
- CFM (cubic feet per minute), 257–258
- Chaintech Web site, 83
- Chen, Ed (Gideon X modding genius), 317–318
- chipset
 - BIOS features, 210–212
 - motherboard, 67, 73–75
 - voltage, 52
- clear case, building, 325
- clear enamel, adding, 309–310
- CMOS (Complementary Metal Oxide Semiconductor)
 - errors, halting on, 209
 - floppy drive, setting up, 208
 - time, setting, 208
 - video option, 208
- cold cathode lighting, 293–294
- color
 - painting case, choosing, 304
 - spraying on, 309
 - Windows XP, adjusting, 220
- colored motherboard, suppliers of, 82
- COMM ports, 162–163
- Common Access Strobe (CAS), 211
- Complementary Metal Oxide Semiconductor. *See* CMOS
- components
 - case slots and screws, 41
 - drive bays and storage devices, 45–49
 - expansion cards, 50
 - matching to form factor, 38–40
 - motherboard, 43–45
- computer screen
 - CRT, 178–180
 - DPMS, suspending with, 213
 - game, tweaking, 106
 - graphics card, 112–115
 - LCD, 180–181
 - multiple, 109
 - parts list, 29
- connectors
 - ATX form factor, 39, 53, 55
 - fan, 71
 - floppy drive, 64, 66
 - front panel pins, 69–70
 - IDE and floppy drive to motherboard, 64, 66
 - SATA versus Molex, 140
 - USB keyboard and mouse, 39
- contact edge, expansion card, 20
- controllers, gaming
 - described, 175–177
 - force feedback, 182
 - keyboard and mouse as, 177
- cool blue lights, power supply, 54
- cooling
 - build/mod order, 32
 - case, 257–264
 - CPU, 91
 - electronic, 276–277
 - GPU, 115
 - graphics cards, 274–276
 - overclocking and, 239, 240, 255
 - stock, 26, 255–256
 - temperature, monitoring, 256–257

- cordless screwdriver, 17
 - core components. *See also* motherboard
 - BIOS and, 76–77
 - CPU, 84–92
 - described, 59–61
 - Ethernet controller and audio chip, 78–79
 - FireWire, 82
 - frequencies, 61
 - memory, 92–95
 - RAID, 77–78
 - USB, 79–81
 - Corsair memory modules, 94
 - cost
 - CD/DVD burners, 149
 - CPU, 26
 - GPU, 116
 - graphics card, 115–116
 - memory, 95
 - motherboard, 25, 61
 - peripherals, 170
 - power supply, 58
 - tools, 16
 - updated pricing guides, 317
 - CPU (central processing unit)
 - ATX form factor, finger-friendly layout of, 39
 - brands, Intel versus AMD, 84–85
 - cache, 86, 88
 - cooling, 91
 - described, 59–60
 - efficiency, 12
 - fan protection, 214
 - features, 88–89
 - installing, 90–92
 - Moore’s law, 84
 - motherboard socket, 62, 63, 89
 - parts list, 26
 - recommendations, 90
 - stability testing program, 242
 - 32-bit and 64-bit, 87
 - threads, 85
 - transistors, 85
 - CPU (central processing unit) overclocking
 - described, 243
 - frequency and/or multiplier, bumping up, 244–246
 - stability testing and benchmarking, 247
 - voltages, tweaking, 246–247
 - Creative Labs environmental audio, 128
 - Creative Zen Touch portable music player, 334–335
 - CRT monitors, 178–180
 - Crucial memory modules, 94
 - cubic feet per minute (CFM), 257–258
 - curves, cutting, 280, 286, 323
 - cutting case
 - blowholes, 261–263
 - fancy windows, 323
 - tools, 17–19
 - window, 285–287
- D •
- DDR memory, 92, 93
 - decals, decorating windows with, 324
 - decorating windows, 324
 - defragmenting hard drive
 - benefits of, 234
 - frequency, 235
 - quick method, 235–236
 - design
 - drawing, 284
 - window cut, 280
 - device driver
 - installing, 185, 199–200
 - 3-D control applet, 113–114
 - DFI Web site, 83
 - Diamondback Gaming Mouse (Razer), 328
 - digital audio sound card outputs, 129–130
 - digital camera interface, 163
 - digital video recorder (DVR) port, 99
 - Digital Visual Interface (DVI) ports, 98, 169
 - DIMMs
 - memory, 92
 - sockets, 62
 - Direct3D graphics standard
 - control panel, tweaking, 114
 - described, 99
 - DirectX
 - gaming controllers, 177
 - graphics standards, 99, 100
 - updating, 202
 - Disk Defragmenter, 234–236
 - dismantling case, 306–307
 - display
 - CRT monitors, 178–180
 - DPMS, suspending with, 213
 - game, tweaking, 106

- display (*continued*)
 - graphics card, 112–115
 - LCD monitors, 180–181
 - multiple, 109
 - parts list, 29
 - display power management signaling (DPMS), 213
 - distributions, Linux, 188
 - Dolby Digital speakers, 182
 - Doom 3 game
 - benchmarking, 103–104
 - ping search with, 10
 - resolution, suggested, 180
 - scaling options, 106–107
 - dot pitch, 179
 - DPMS (display power management signaling), 213
 - DRAM
 - data integrity, 212
 - timing selectable chipset, 211
 - drawing
 - design, 284
 - on windows, 324
 - Dremel rotary tool, 281
 - drive bays
 - ATX board, finger-friendly layout of, 39
 - components, mounting, 45–49
 - drive bezels
 - dummy, 42
 - motherboard, 43, 44
 - painting, 310–312
 - drive, floppy
 - build/mod order, 31
 - motherboard connectors, 64, 66
 - parts list, 28
 - seeking in boot up, 210
 - setting up, 208
 - swap, 210
 - usefulness, 148
 - drive, hard
 - ATAPI, enabling DMA mode, 236–238
 - bay, accessibility in ATX board, 39
 - buffer, 137
 - build/mod order, 31
 - capacity, 136–137
 - cooling needs, 277
 - defragmenting, 234–236
 - described, 135–136
 - failure, 142
 - installing, 48–49
 - interface, 137–141
 - modding, 143, 322
 - parts list, 27–28
 - RAM versus, 136
 - recommendations, 142–143
 - rotation speed, 137
 - seek time, 137
 - Windows XP, setting up, 191–196
 - drive, optical
 - described, 45, 145
 - formats, 147–149
 - installing, 149–150
 - parts list, 28
 - recommendations, 149
 - seeks, access, and transfer rates, 147
 - tasks ideal for, 145–146
 - X factor, 146–147
 - drive rails
 - externally accessible drives, 47–48
 - installing, 132
 - driver
 - installing, 185, 199–200
 - 3-D control applet, 113–114
 - dual layer DVD writers, 149, 335
 - dual-channel memory technology, 93
 - dust, dealing with, 259
 - DVD burners, 147–149
 - DVI (Digital Visual Interface) port, 98, 169
 - DVR (Digital Video Recorder) port, 99
- E ●**
- electric components, conquering fear of
 - handling, 20
 - electronic cooling, 276–277
 - electrostatic discharge (ESD), 20, 21–22
 - environmental audio, 128
 - EPoX Web site, 83
 - errors, halting BIOS on, 209
 - ESD (electrostatic discharge), 20, 21–22
 - etching windows, 324
 - Ethernet
 - controller and audio chip, 78–79
 - physical scheme, 152
 - ports, 169, 170
 - Windows setup, 198
 - Everglide Ray light-up mouse pad, 332–333
 - exhaust fans, 257

expansion card
 build/mod order, 31
 components, mounting, 50
 edge covered in gold stripes, 20
 slots, 41, 43
expansion slots, motherboard, 43, 64, 65
external sound card, 125
external storage peripherals, 184
externally accessible drives
 bays, 45, 46
 installing, 47–48
ExtremeTech Web site, 316

● F ●

failure, hard drive, 142
fan
 controls, modding suggestions, 322–323
 exhaust, 257
 installing, 264
 motherboard connectors, 71
 mounting holes, lining up, 18
 noise, 58
 parts list, 30
 pre-lit, 32
fan grills, 30
fasteners, case window, 30
files, sharing, 146
fill rate, 111
filling liquid-cooled system
 assembly, 268, 269
 process, 271–274
filters, 259
firewall, 160
FireWire
 core components, 82
 sound card ports, 129, 130
 storage devices, 184
flash disk type, 210
flash protect, BIOS, 209
flashing
 BIOS, 28, 148, 215
 DirectX, 202
 Windows, 202–203
floppy drive
 build/mod order, 31
 motherboard connectors, 64, 66
 parts list, 28
 seeking in boot up, 210

 setting up, 208
 swap, 210
 usefulness, 148
folder settings, 222
fonts, Windows settings, 223
force feedback gaming controllers, 182
form factor
 components, matching, 38–40
 motherboard, 73
 power supply, 53–56
format, optical drive, 147–149
frame rate
 benchmarking, 101
 game animation and, 100
 image quality versus on graphics card,
 105–107
frequency
 core components, 61
 CPU overclocking, 244–246
 memory, 93
 obtaining, 60
Friga, Mark (Frozen CPU founder), 33
front panel
 connector pins, 69–70
 LED, replacing, 301–302
 plastic composition of, 38
FrozenCPU modding specialty shop, 33–34

● G ●

gamepads, 176
Gamer's Depot Web site, 118, 317
games
 animation frame rate versus image
 quality, 100, 105–107
 benchmarking with, 102–105
 computer modding and, 9
 CPU power and, 59–60
 described, 188
 monitor, choosing, 178, 180
 sound system, 121
 testing overclocking, 242
gaming controllers
 described, 175–177
 force feedback, 182
 keyboard and mouse as, 177
gates, 41, 50
GideonTech Web site, 317–318
Gigabyte Web site, 83

- gigabytes, 137
 - GPU (graphics processing unit)
 - benchmarking, 101–102
 - choosing, 115–119
 - cooling, 256
 - described, 97, 98, 100
 - graphics card
 - AGP bus, 74
 - build/mod order, 31
 - choosing, 115–119
 - described, 98–100
 - display settings, 112–115
 - game animation, frame rate versus image quality, 105–107
 - graphical features, 110–111
 - importance of, 97
 - manufacturers, 97
 - as media center, 107–108
 - parts list, 27
 - performance, gauging, 100–105
 - physical features, 109–110
 - power supplies, 55–56
 - VGA ports, 165
 - graphics card overclocking
 - ATI, 249
 - described, 247
 - gains achieved by, 248
 - NVIDIA, 249–251
 - graphics processing unit (GPU)
 - benchmarking, 101–102
 - choosing, 115–119
 - cooling, 256
 - described, 97, 98, 100
- **H** •
- hackers, 159–160
 - Halo game benchmarking, 104–105
 - hard drive
 - ATAPI, enabling DMA mode, 236–238
 - bay, accessibility in ATX board, 39
 - buffer, 137
 - build/mod order, 31
 - capacity, 136–137
 - cooling needs, 277
 - defragmenting, 234–236
 - described, 135–136
 - failure, 142
 - installing, 48–49
 - interface, 137–141
 - modding, 143, 322
 - parts list, 27–28
 - RAM versus, 136
 - recommendations, 142–143
 - rotation speed, 137
 - seek time, 137
 - Windows XP, setting up, 191–196
 - [H]ard|OCP Web site, 316
 - hardware
 - heat monitoring, 257
 - networking, 154–155
 - heat dissipation
 - build/mod order, 32
 - case, 257–264
 - CPU, 91
 - electronic, 276–277
 - GPU, 115
 - graphics cards, 274–276
 - overclocking and, 239, 240, 255
 - stock, 26, 255–256
 - temperature, monitoring, 256–257
 - heat-related transfer function (HRTF), 127
 - hertz
 - described, 61
 - overclocking, 239
 - hex head screwdriver (Allen heads), 17
 - hose, liquid-cooling system, 268, 269
 - Hot Hardware Web site, 119
 - hot-swap devices, 185
 - HRTF (heat-related transfer function), 127
 - HTT (Hyper-Threading Technology), 89
 - hub
 - Ethernet, 152, 155
 - USB, 167–168
 - HyperTransport technology, 88
- **I** •
- IBM AT form factor, 39
 - icons, 223
 - IDE (Integrated Drive Electronics)
 - devices on chip, 212
 - drivers, 200
 - hard drive interface, 138–139
 - motherboard connectors, 64, 66
 - RAID controllers, 78
 - IEEE 1394 FireWire port, 168–169
 - i.Link interface. *See* FireWire

- indexing service, 231
 - information, Windows XP, 197–198
 - Init display first, tweaking, 213
 - input devices
 - gaming controllers, 175–177, 182
 - keyboards, 171–172, 177
 - mouse, 172–174, 177
 - parts list, 29
 - installing
 - CPU, 90–92
 - device drivers, 199–200
 - fan into blowholes, 264
 - hard drive, 143
 - liquid-cooling system, 268–271
 - memory, 94
 - optical drives, 149–150
 - peripherals, 185
 - sound card, 131–133
 - Integrated Drive Electronics. *See* IDE
 - Intel
 - AC'97 codec, 78
 - Active Monitor utility, 256
 - AMD versus, 84–85
 - chipsets, 73
 - features, 89
 - PCI Express bus, 74
 - 32-bit and 64-bit CPUs, 87
 - Web site, 83
 - interface, hard drive
 - described, 137
 - IDE, 138–139
 - SATA, 139–140
 - SCSI, 140–141
 - internal drives
 - bays, 45, 47
 - installing, 48–49
 - internal parts, computer, 12–14
 - internal speaker, PC, 121
 - international settings, Windows, 197
 - Internet
 - connections, security and, 159–160
 - latency, 9–10
 - Windows, activating, 201–203
 - I/O devices, 213
 - I/O ports, 39
 - joysticks, 176
 - jumper settings, 139, 150
- **J** •
- keyboards
 - described, 29
 - peripherals, 171–172, 177
 - port, 165
 - Klipsch multimedia speaker systems, 183
 - KT800 keyboard (Key Tronic), 172
- **K** •
- keyboards
 - described, 29
 - peripherals, 171–172, 177
 - port, 165
 - Klipsch multimedia speaker systems, 183
 - KT800 keyboard (Key Tronic), 172
- **L** •
- L1, L2, and L3 cache, 92, 209
 - lag, 9–10
 - LAN party
 - mini-computer, building, 325–326
 - modding for, 9
 - networking, 159
 - laptop computer, external sound cards
 - for, 125
 - latency, 9–10, 159
 - LCD monitors, 180–181
 - LED (light-emitting diode)
 - described, 294
 - front panel, replacing, 301–302
 - hard drive, adding, 322
 - mouse, 173
 - sample project, 297–300
 - tools for replacing, 300–301
 - left-handed operators, mice for, 174
 - LG Super Multi DVD Drive GSA-4120B, 335
 - light-emitting diode. *See* LED
 - lighting
 - cold cathode, 293–294
 - described, 291–292
 - GPU routines, 111
 - LED, 294, 300–302, 323
 - lit fans, 295
 - lit power supplies, 295–296
 - neon, 292–293
 - parts list, 30
 - sample project, 296–300
 - Linux, 188

- liquid-cooling CPU
 - filling and bleeding, 271–274
 - installing system, 268–271
 - mechanics, 265–266
 - parts, 266–268
 - lit fan
 - buying, 32
 - described, 295
 - power supply, 54, 325
 - lit power supplies, 295–296
 - login, secondary, 232
 - Logitech
 - cordless mice, 173–174, 177, 336
 - Media Keyboard, 172
 - MOMO racing wheel, 175, 182
 - speakers, 183, 333–334
 - logon, network, 231
- M •**
- magnetic fields, protecting hard drive
 - from, 136
 - male serial ports, 152
 - master drive
 - described, 138–139
 - optical drive, installing, 150
 - materials
 - painting case, 305–306
 - window, securing, 282
 - media center, graphics card as, 107–108
 - Media Keyboard (Logitech), 172
 - memory
 - AGP bus, 74–75
 - DDR, 93
 - described, 60, 92
 - determining, 60
 - DIMMs, 92
 - DRAM timing, 211
 - dual-channel technology, 39
 - efficiency, 12
 - graphics card interface, 109
 - installing, 94
 - modules, 26
 - motherboard sockets, 62–63, 94
 - recommendations, 94–95
 - menus, Windows adjustment, 221, 223, 224
 - microATX, 39
 - Microsoft
 - graphics standards, 99
 - IntelliMouse Explorer, 173
 - Natural Keyboard, 172
 - Microsoft Windows
 - activating, 201
 - operating systems versus, 188
 - updating, 202–203
 - Microsoft Windows XP
 - backup program, 142
 - benefits of tweaking, 217–218
 - blocking unwanted items from starting, 225–228
 - built-in optimization, 218–219
 - Network Setup Wizard, 157–158
 - performance options, 219–224
 - services, disabling unnecessary, 229–232
 - speaker settings, 124
 - storage devices, optimizing and maintaining, 232–238
 - 32-bit and 64-bit CPUs, 87
 - unwanted programs, eliminating, 224–225
 - Microsoft Windows XP, installing
 - build/mod order, 31
 - CD-ROM, booting, 190–191
 - CPU frequency and memory, obtaining, 60
 - finalizing, 198–199
 - hard drive, setting up, 191–196
 - information, gathering, 197–198
 - new system, benefits of, 189
 - Microsoft Windows XP Network Setup Wizard, 157–158
 - MIDI (Musical Instrument Digital Interface)
 - ports, 164
 - sound card support, 131
 - military time, 208
 - mini-computer, building, 325–326
 - mirroring
 - drives, 141
 - multiple displays, 109
 - modable case, picking, 40–41
 - modding
 - hard drive, 143
 - motivation for, 10–11
 - specialty shops, 32
 - modem port, 166
 - Molex power connector, 56
 - MOMO racing wheel (Logitech), 175, 182
 - monitor
 - CRT, 178–180
 - DPMS, suspending with, 213

- game, tweaking, 106
 - graphics card, 112–115
 - LCD, 180–181
 - multiple, 109
 - parts list, 29
 - MonsterGecko PistolMouse FPS, 331–332
 - Moore, Gordon (father of doubling circuitry theory), 84
 - motherboard
 - audio, 123
 - BIOS and battery, 69
 - build/mod order, 31
 - buses, 73–75
 - chipsets, 67, 73–75
 - colored, suppliers of, 82
 - components, mounting, 43–45
 - cost, suggested, 61
 - CPU socket, 62, 63, 89
 - drivers, installing, 200
 - expansion slots, 64, 65
 - fan connectors, 71
 - form factors, 73
 - front panel connector pins, 69–70
 - IDE and floppy drive connectors, 64, 66
 - information, finding, 82–84
 - I/O ports, 39
 - memory sockets, 62–63, 94
 - network hardware, 29
 - NIC, 154–155
 - onboard feature logic, 71
 - parts list, 25–26
 - power connectors, 64, 65
 - RAID, 69
 - rear connector riser, 71–72
 - serial ATA connectors, 67–68
 - technologies, 61–62
 - tools, 17
 - voltage, 52
 - Motherboard Monitor utility, 256
 - mounting holes, 18
 - mouse
 - connectors, 39
 - described, 29, 172–174, 177
 - games, controlling, 29
 - port, 165
 - mouse pad, Everglide Ray light-up, 332–333
 - MSI Web site, 83
 - multimedia programs, 188
 - multiple displays, 109
 - multiplier, bumping up, 244–246
 - Mushkin memory modules, 94
 - Musical Instrument Digital Interface (MIDI)
 - ports, 164
 - sound card support, 131
- *N* ●
- native resolution, LCD displays, 180
 - negative case airflow, 257–258
 - neon lighting, 292–293
 - NetMeeting Remote Desktop Sharing, 231
 - network devices parts list, 29
 - network interface card (NIC), 154–155, 156
 - network latency, 9–10
 - networking
 - described, 151–152
 - hardware, 154–155
 - LAN party, 159
 - security, Internet connections and, 159–160
 - Windows XP Network Setup Wizard, 157–158
 - wired, setting up, 155–156
 - wireless, setting up, 156–157
 - wireless versus wired, 152–153
 - new system, Windows XP, 189
 - NIC (network interface card), 154–155, 156
 - north bridge, chipset
 - described, 73
 - illustrated, 67
 - NumLock status, 210
 - NVIDIA
 - chipsets, 73
 - control applet, 113–114
 - graphics card overclocking, 249–251
 - graphics processors, 99, 110
 - home theater features, 107–108
 - listed, 118
 - memory access, 109
- *O* ●
- observation, gauging graphics card performance, 101

- operating system
 - activating, 201
 - backup program, 142
 - benefits of tweaking, 217–218
 - BIOS cacheable chipset, 211
 - blocking unwanted items from starting, 225–228
 - built-in optimization, 218–219
 - non-Windows, 188
 - performance options, 219–224
 - services, disabling unnecessary, 229–232
 - speaker settings, 124
 - storage devices, optimizing and maintaining, 232–238
 - 32-bit and 64-bit CPUs, 87
 - unwanted programs, eliminating, 224–225
 - updating, 202–203
- operating system, installing
 - build/mod order, 31
 - CD-ROM, booting, 190–191
 - CPU frequency and memory, obtaining, 60
 - finalizing, 198–199
 - hard drive, setting up, 191–196
 - information, gathering, 197–198
 - new system, benefits of, 189
- optical drive
 - described, 45, 145
 - formats, 147–149
 - installing, 149–150
 - parts list, 28
 - recommendations, 149
 - seeks, access, and transfer rates, 147
 - tasks ideal for, 145–146
 - X factor, 146–147
- optical mouse, 173
- optimization, Windows XP, 218–219
- order, sample project, 31–32
- Overclockers Australia Web site, 319–320
- overclocking
 - BIOS, 215
 - cooling and, 255
 - CPU, 243–247
 - described, 239–240
 - graphics card, 247–251
 - steps, 241–242
 - testing for stability, 242–243
- *p* •
- paging file, 232–234
- painting case
 - alternative techniques, 309
 - clear enamel, adding, 309–310
 - color, choosing, 304
 - color, spraying on, 309
 - dismantling, 306–307
 - drive bezels, 310–312
 - primer, spraying, 308
 - sanding, 307
 - steel versus aluminum, 303
 - tools, 19
 - tools and materials, gathering, 305–306
 - work location, 305
- Parallel Advanced Technology Attachment (PATA). *See* IDE
- parallel ports
 - described, 163–164
 - onboard super I/O device, tweaking, 213
 - peripherals, installing, 185
- parallel technology, IDE drives, 138
- partition, hard drive, 191, 194
- parts list
 - case, 24–25
 - CPU, 26
 - fans and fan grills, 30
 - fasteners, case window, 30
 - floppy drive, 28
 - graphics card, 27
 - hard drive, 27–28
 - input devices, 29
 - lights, 30
 - liquid-cooling CPU, 266–268
 - memory modules, 26
 - monitor, 29
 - motherboard, 25–26
 - network devices, 29
 - optical drive, 28
 - power supply, 25
 - pre-modded and modding kits, 32
 - reviews and recommendations,
 - sources of, 24
 - sound card, 27
 - speakers, 29–30
 - window material, 30
- PATA (Parallel Advanced Technology Attachment). *See* IDE

- PC health status
 - CPU fan protection, 214
 - shutdown temperature, 215
- PC Modding Malaysia Web site, 319
- PCI (Peripheral Component Interface)
 - bus, 74
- PCI (Peripheral Component Interface) Express bus
 - ATX form factor power connectors, 39, 53
 - BIOS configuration, 214
 - described, 75
 - devices on chip, 212
 - graphics card, 116
 - memory access, 109
 - motherboard power connectors, 64, 73, 110
 - overclocking, 244, 245
 - slots, 50
- Peak Maximum Power Output (PMPO)
 - wattage rating, 181–182
- Peltier element, 276–277
- penlight, 17
- Pentium 4 processor
 - power supply connector, illustrated, 54
 - speed, 90
- performance
 - graphics card, gauging, 100–105
 - tuning, 14–15
 - Windows XP options, 219–224
- Peripheral Component Interface Express bus. *See* PCI Express bus
- Peripheral Component Interface (PCI) bus, 74
- peripherals
 - BIOS integrated, 212–213
 - budget, 170
 - Creative Zen Touch portable music player, 334–335
 - described, 161–162
 - Diamondback Gaming Mouse (Razer), 328
 - displays, 178–181
 - external storage, 184
 - gaming controllers, 175–177, 182
 - Gaming Keyboard (Saitek), 329
 - installing, 185
 - iPod (Apple), 329–330
 - keyboards, 171–172, 177
 - mouse, 172–174, 177
 - MX510 Optical Mouse (Logitech), 336
 - PistolMouse FPS (MonsterGecko), 331–332
 - ports, 162–170
 - printers, 184
 - Ray (Everglide) light-up mouse pad, 332–333
 - scanners, 184
 - speaker systems, 181–183
 - Super Multi DVD Drive GSA-4120B (LG), 335
 - 2-in-1 Dual Trigger (Thrustmaster), 330–331
 - X-5500 speaker (Logitech), 333–334
- Philips Aurilium, 126
- Phillips screwdrivers, 16
- PimpRig Web site, 318–319
- ping times, 9–10
- PistolMouse FPS (MonsterGecko), 331–332
- pixel response time, 180
- pixel shaders, programmable, 111
- Plain Old Telephone Service (POTS) cable, 166
- plastic front panel
 - composition, 38
 - painting, 308
- plastic window
 - cutting, 287–288
 - securing, 18
- PMPO (Peak Maximum Power Output) wattage rating, 181–182
- PnP BIOS configuration, 214
- portable media player serial number, 231
- ports
 - DVI, 169
 - Ethernet, 155, 169, 170
 - graphics card, 98
 - IEEE 1394 FireWire, 129, 130, 168–169
 - MIDI/game, 164
 - modem, 166
 - parallel, 163–164
 - peripheral, generally, 161–162
 - PS/2, 165–166
 - serial, 162–163
 - speaker jacks, 182
 - USB, 166–168, 169
 - VGA, 165
- positive versus negative case airflow, 257–258

- POST (power-on self-test)
 - BIOS order, 76, 207
 - build/mod order, 31
 - enabling, 209
- POTS (Plain Old Telephone Service)
 - cable, 166
- power button, shut down, 214
- power lost resume state, 214
- power management, BIOS, 213–214
- power supply unit (PSU)
 - brands, 57–58
 - case, attached, 25
 - described, 52
 - fan noise, 58
 - form factors, 53–56
 - importance of good choice, 51
 - lit fan, adding, 325
 - motherboard connectors, 64, 65
 - parts list, 25
 - Peltier elements, 277
 - USB ports, 167
 - wattage ratings, 57
- power-on self-test (POST)
 - BIOS order, 76, 207
 - build/mod order, 31
 - enabling, 209
- prefetching, 218–219
- pre-modded computers and modding kits, 32
- pricing
 - CD/DVD burners, 149
 - CPU, 26
 - GPU, 116
 - graphics card, 115–116
 - memory, 95
 - motherboard, 25, 61
 - peripherals, 170
 - power supply, 58
 - tools, 16
 - updated guides, 317
- primer, spraying, 308
- printer
 - described, 184
 - spooler, 231
- printer ports
 - described, 163–164
 - onboard super I/O device, tweaking, 213
 - peripherals, installing, 185
- processor
 - ATX form factor, finger-friendly layout of, 39
 - brands, Intel versus AMD, 84–85
 - cache, 86, 88
 - cooling, 91
 - described, 59–60
 - efficiency, 12
 - fan protection, 214
 - features, 88–89
 - installing, 90–92
 - Moore's law, 84
 - motherboard socket, 62, 63, 89
 - parts list, 26
 - recommendations, 90
 - socket, 61
 - stability testing program, 242
 - 32-bit and 64-bit, 87
 - threads, 85
 - transistors, 85
- processor overclocking
 - described, 243
 - frequency and/or multiplier, bumping up, 244–246
 - stability testing and benchmarking, 247
 - voltages, tweaking, 246–247
- programs
 - categories, 187–188
 - device drivers, installing, 185, 199–200
 - DirectX, updating, 202
 - information, sending in threads, 14
 - overclocking, 242
 - unwanted, eliminating in Windows XP, 224–225
- PS/2 keyboard and mouse connectors, 39
- PS/2 ports, 165–166
- PSU (power supply unit)
 - brands, 57–58
 - case, attached, 25
 - described, 52
 - fan noise, 58
 - form factors, 53–56
 - importance of good choice, 51
 - lit fan, adding, 325
 - motherboard connectors, 64, 65
 - parts list, 25
 - Peltier elements, 277
 - USB ports, 167
 - wattage ratings, 57

- pump
 - described, 266
 - illustrated, 267, 270
 - mounting, 269
- **R** •
- radiator
 - described, 266
 - illustrated, 267, 270
 - mounting, 269–270
- RAID (Redundant Array of Inexpensive Disks)
 - card boot, 209
 - core components, 77–78
 - hard drives and, 141
 - motherboard, 69
- rails
 - externally accessible drives, 47–48
 - installing, 132
- RAM (Random Access Memory)
 - ATX form factor, finger-friendly layout of, 39
 - described, 12, 60
 - hard drive versus, 136
 - modules, illustrated, 13
- random access time, 147
- random seek time, 147
- Ray (Everglide) light-up mouse pad, 332–333
- Razer Diamondback Gaming Mouse, 328
- read-only memory (ROM), 76
- real-world benchmarks
 - described, 102
 - Doom 3 game, 103–104
 - Halo game, 104–105
- rear connector riser, 71–72
- recommendations
 - CPU, 90
 - GPU, 116–118
 - hard drive, 142–143
 - memory, 94–95
 - optical drives, 149
 - tools, 281
- Redundant Array of Inexpensive Disks (RAID)
 - card boot, 209
 - core components, 77–78
 - hard drives and, 141
 - motherboard, 69
- Registry editing, NVIDIA driver, 249–251
- removable drive bays, 47
- removing spyware and adware, 228
- resolution
 - CRT monitors, 179
 - LCD displays, 180
- resources
 - drivers, updating, 199
 - hard drive, modding, 143
 - jump settings, hard drive, 139
 - keyboard shortcuts, 171
 - motherboard, 82–84
 - Web sites, suggested, 316–320
- resume state, power outage, 214
- reverb, 127
- reviews and recommendations, sources of
 - air cooling, 264
 - GPU, 118–119
 - motherboards, 62
 - overall projects, 24
- rewritable CD/DVD burners, 148
- RJ-11 port, 166
- RMS (Root Mean Square) wattage rating, 181–182
- Robertson head screwdriver, 17
- ROM (read-only memory), 76
- rotary tool, 285–287, 324
- rotation speed, hard drive, 137
- router
 - Ethernet, 152, 153, 155
 - wireless network, 156–157
- RS-232 ports, 162–163
- rubber molding, securing windows
 - with, 289
- **S** •
- safety glasses, 19, 285
- Saitek Gaming Keyboard, 329
- Saitek X45 Flight Stick game controller, 176
- sample rate and bit depth, sound card
 - maximum, 128–129
- sanding
 - etching windows, 324
 - process, 263, 307, 308
 - tools, 19, 286–287

- SATA (Serial Advanced Technology Attachment)
 - BIOS, recognizing, 190
 - described, 139–140
- satellite speakers, 121, 181
- saw, 260
- Scalable Link Interface (SLI), 109
- scanners, 184
- screen
 - CRT, 178–180
 - DPMS, suspending with, 213
 - game, tweaking, 106
 - graphics card, 112–115
 - LCD, 180–181
 - multiple, 109
 - parts list, 29
 - screen size, 106
 - screw holes, 261–263
- SCSI (Small Computer System Interface)
 - card boot, 209
 - described, 140–141
- Seagate drives, 143
- security
 - BIOS option, 210
 - Internet connections, 159–160
- seek time, hard drive, 137, 147
- seeking
 - floppy drive in boot up, 210
 - optical drives, 147
- Serial Advanced Technology Attachment (SATA)
 - BIOS, recognizing, 190
 - described, 139–140
- serial ATA connectors, 67–68
- serial ports, 162–163
- server
 - Internet time, logging onto, 232
 - sharing service, 232
- services, disabling unnecessary, 229–232
- shadows
 - games, tweaking, 106
 - pixel, programmable, 111
- sharing files, 146
- Shimpi, Anand (AnandTech Web site editor), 317
- shiny objects, adjusting game appearance, 106
- shutdown temperature, 215
- shutting down computer, 214
- Shuttle Web site, 83
- Silencer 4 graphics card, 276
- Silent Tower air cooler (Thermaltake), 264–265
- SiS chipsets, 73
- 64-bit CPU, 87
- sizes, LED, 301
- slave drive
 - described, 138–139
 - optical drives, installing, 150
- SLI (Scalable Link Interface), 109
- slots
 - covers, 41, 50
 - expansion, 43, 64, 65
 - screws and, 41
- Small Computer System Interface (SCSI)
 - card boot, 209
 - described, 140–141
- sockets
 - CPU, 26
 - motherboard, matching CPU, 89
 - processor, 61
- software
 - categories, 187–188
 - device drivers, installing, 185, 199–200
 - DirectX, updating, 202
 - information, sending in threads, 14
 - overclocking, 242
 - unwanted, eliminating in Windows XP, 224–225
- sound card
 - acoustic effects, 130–131
 - APIs, 125–127
 - build/mod order, 31
 - digital audio outputs, 129–130
 - external, 125
 - FireWire, 129
 - importance of, 121
 - installing, 131–133
 - MIDI/wave table support, 131
 - motherboard audio, 123
 - parts list, 27
 - ports, 164
 - sample rate and bit depth, maximum, 128–129
 - SoundBlaster, 122
 - speaker compatibility, 123–124, 182
 - 3-D audio, 127–128

- sound processor, 78
 - SoundBlaster sound card, 122
 - south bridge, chipset
 - described, 73
 - illustrated, 67, 68
 - SOYO Web site, 84
 - SPA (Wi-Fi Protected Access), 160
 - S/PDIF digital channel, 129
 - speaker
 - parts list, 29–30
 - recommended, 333–334
 - sound card compatibility, 123–124
 - systems, 181–183
 - special effects, game, 106
 - special instruction sets, 88
 - specular game setting, 106
 - spray paint
 - choosing, 304
 - where to use, 305
 - spyware
 - described, 225
 - removing, 228
 - square head screwdriver (Robertson heads), 17
 - squeaker, 121
 - SSID, 160
 - stability, testing overclocking for, 242–243, 247
 - star-head screwdrivers (Torx heads), 16
 - static electricity
 - DIMMs, susceptibility to, 92
 - dissipating, 20, 21–22
 - steel cases
 - cutting, 40
 - metal shards, protecting against, 19
 - painting, 303
 - stock cooling devices, 255–256
 - storage devices
 - ATX board, finger-friendly layout of, 39
 - components, mounting, 45–49
 - optimizing and maintaining, 232–238
 - Super Multi DVD Drive GSA-4120B (LG), 335
 - Supermicro Web site, 84
 - suspend type, ACPI, 213
 - sustained transfer rate, 147
 - swap floppy drive, 210
 - switches, Ethernet, 152
 - switching devices, power supply, 52
 - synthetic benchmarks, 102
 - system
 - activating, 201
 - backup program, 142
 - benefits of tweaking, 217–218
 - BIOS cacheable chipset, 211
 - blocking unwanted items from starting, 225–228
 - built-in optimization, 218–219
 - non-Windows, 188
 - performance options, 219–224
 - services, disabling unnecessary, 229–232
 - speaker settings, 124
 - storage devices, optimizing and maintaining, 232–238
 - 32-bit and 64-bit CPUs, 87
 - unwanted programs, eliminating, 224–225
 - updating, 202–203
 - System Configuration utility, 226–228
 - system, installing
 - build/mod order, 31
 - CD-ROM, booting, 190–191
 - CPU frequency and memory, obtaining, 60
 - finalizing, 198–199
 - hard drive, setting up, 191–196
 - information, gathering, 197–198
 - new, benefits of, 189
 - System Restore Service, 232
 - system tray, 199
- T ●
- tasks, optical drive, 145–146
 - TDMS (Transition Minimized Differential Signaling), 169
 - telephone port, 166
 - television, 107–108, 109
 - temperature, monitoring, 256–257
 - testing overclocking for stability, 242–243
 - textures
 - fill rate, 111
 - game, adjusting, 107
 - thermal compound, 91–92, 265
 - Thermaltake
 - Silent Tower air cooler, 264–265
 - thermal compound, 91
 - 32-bit CPU, 87
 - threads, CPU, 14, 85
 - 3Com networking equipment, 155

3-D
 audio sound card, 126, 127–128
 benchmarking, 102
 driver control applet, 113–114
 graphics card, 27, 116
 graphics standards, 99
 memory usage, 109
 scalability, 105
 3DMark05 benchmark, 102
 Thrustmaster 2-in-1 Dual Trigger, 330–331
 time
 Internet time server, logging onto, 232
 setting, 208
 Tom's Hardware Guide, 118
 tools
 building or upgrading PC, 16–17
 cutting case, 17–19
 LED, replacing, 300–301
 painting, 19, 305–306
 window, 281–282
 tooltips, 221
 Torx screwdriver, 16
 transistors, 85
 Transition Minimized Differential Signaling (TDMS), 169
 trojan horses, 160
 Turtle Beach Catalina sound card, 122
 TV-out port, 98, 109
 tweaking
 voltages, 246–247
 Windows XP, 217–218
 2-in-1 Dual Trigger (Thrustmaster), 330–331
 typematic rate status, 210

• U •

UART (Universal Asynchronous Receiver/Transmitter) ports, 163
 Ultra-ATA/133 drives, 138
 Universal Serial Bus. *See* USB
 unwanted programs, eliminating, 224–225
 updating
 BIOS, 28, 148, 215
 DirectX, 202
 Windows, 202–203
 USB (Universal Serial Bus)
 core components, 79–81
 flash disk type, 210
 keyboard and mouse connectors, 39

mice and keyboards, 165
 ports, 166–168, 169
 storage devices, 184
 utilities, 187, 256

• V •

VCORE voltage, tweaking, 246
 Velcro, securing windows with, 288
 vertical refresh rate, 179
 vertical synchronization (VSYNC), 103
 VGA ports, 98–99, 165
 VIA Web site, 84
 video
 acceleration, graphics cards and, 110
 BIOS option, 208
 chipset, 211
 game quality, tweaking, 106
 I/O ports, 99
 Viking memory modules, 94
 virus protection
 CPU features, 88
 Internet-connected computers, 159–160
 VIVO (Video-In/Video-Out) ports, 99
 voltages
 described, 52
 tweaking, 246–247
 VSYNC (vertical synchronization), 103

• W •

wake/resume on events, 214
 water-cooling CPU
 filling and bleeding, 271–274
 installing system, 268–271
 mechanics, 265–266
 parts, 266–268
 wattage ratings
 power supply, 57
 speaker systems, 181–182
 wave table sound card support, 122, 131
 Web browsers, 188
 Web sites, recommended
 AnandTech, 317
 bit-tech, 318
 CaseModGod, 320
 ExtremeTech, 316
 Gamer's Depot, 317
 GideonTech, 317–318

- Web sites (*continued*)
 [H]ard|OCP, 316
 Overclockers Australia, 319–320
 PC Modding Malaysia, 319
 PimpRig, 318–319
- WebClient service, 232
- WEP (Wired Equivalent Privacy), 160
- Wi-Fi motherboard controller, 78
- Wi-Fi Protected Access (SPA), 160
- window
 attaching, 287–289
 blowhole, cutting into, 324
 case, preparing, 283–285
 cutting case, 18, 285–287, 323
 decorating, 324
 material, 30
 planning cut, 280
 power supply, cutting, 54
 securing materials, 282
 tools, gathering, 281–282
 work area, preparing, 280–281
- Windows (Microsoft)
 activating, 201
 operating systems versus, 188
 updating, 202–203
- Windows XP (Microsoft)
 backup program, 142
 benefits of tweaking, 217–218
 blocking unwanted items from starting, 225–228
 built-in optimization, 218–219
 Network Setup Wizard, 157–158
 performance options, 219–224
 services, disabling unnecessary, 229–232
 speaker settings, 124
 storage devices, optimizing and maintaining, 232–238
 32-bit and 64-bit CPUs, 87
 unwanted programs, eliminating, 224–225
- Windows XP (Microsoft), installing
 build/mod order, 31
 CD-ROM, booting, 190–191
 CPU frequency and memory, obtaining, 60
 finalizing, 198–199
 hard drive, setting up, 191–196
 information, gathering, 197–198
 new system, benefits of, 189
- Wired Equivalent Privacy (WEP), 160
- wired networking
 setting up, 155–156
 wireless versus, 152–153
- wireless keyboard, 172
- wireless networking
 recommendation, 29
 setting up, 156–157
 wired versus, 152–153
- work area
 bench, 19, 21
 cutting, preparing for, 280–281
 electric components, conquering fear of handling, 20
 painting case, 305
- work gloves, 19, 285
- worms, 159
- X •
- X factor, optical drive, 146–147
- X-5500 speaker (Logitech), 333–334
- XP. *See* Windows XP; Windows XP, installing
- Z •
- Zen Touch portable music player (Creative), 334–335
- ZIF (Zero Insertion Force) socket, 90
- Ziff-Davis ExtremeTech Web site, 316

