



INDEX



A

- A/FD (Airport/Facility Directory), 89, 116
- A-N radio range, 224
- ABCs for engine-out, 150–153, 611
- accelerate-go charts, 572
- accelerate-stop charts, 572
- accident reports
- aileron misrigged*, 208
 - base-to-final spin accident*, 72
 - buzzing treetops*, 186–187
 - circling in fog*, 522–523
 - communication error*, 96
 - departure procedures*, 358
 - depressurized cabin*, 154–155
 - distractions*, 595–596
 - door latches*, 193
 - fuel exhaustion*, 131–132
 - GPS approach*, 503
 - high-performance aircraft landing*, 329–330
 - navigation id error*, 436–437
 - night VFR into IMC*, 276
 - partial panel*, 557
 - runway overrun*, 170–171
 - scud running*, 297
 - single-engine situation*, 640
 - technology distractions*, 271
 - underfueled*, 245
 - uphill takeoff*, 55
 - weight and balance*, 602
 - wind shear*, 293–294
- accuracy, GPS, 233–234
- active communication frequency, 198
- active controllers, 684
- active runways, 101, 370
- Adam Aircraft A500, 620
- ADF (automatic direction finder)
- Cessna 172*, 198
 - GPS for*, 444
 - NDB approaches*, 506–507
 - operation*, 222–223
- administrators of virtual airlines, 674–675
- ADS (air data system), 249
- ADS-B (Automatic Dependent Surveillance–Broadcast) system, 698
- Advanced Simulated Radar Client (ASRC), 681, 689–690
- for communication*, 695
 - radar screen*, 693
- adverse yaw, 81
- aerodynamics
- performance*, 160
 - rate and angle of climb and descent*, 162–163
 - short-field*, 163–167
 - soft runways*, 167–170
 - takeoff and landing calculations*, 160–162
 - water surface*, 171–172
 - slow flight*, 173–174
- AHRS (attitude and heading reference system), 249
- aileron, 35–36
- and adverse yaw*, 81
 - failures*, 145, 155–156
 - misrigged*, 208
 - in spins*, 183–184
 - in taxiing*, 75–76
 - trim*, 574
- air data system (ADS), 249
- air pressure and altitude, 197
- air route traffic control center (ARTCC), 681, 691
- air shows, virtual airlines for, 675
- air traffic controllers (ATCs)
- at airports*, 97–98
 - for departure procedures*, 355–360
 - for emergencies*, 149
 - and flight plans*, 352–354
 - future need for*, 697–698
 - lost communication with*, 557–562, 565
 - for missed approaches*, 419
 - in multiplayer mode*, 665–668
 - in partial-panel situations*, 548
 - radar*, 352
 - shortages*, 703
 - virtual*. *See virtual air traffic controllers*
 - for VOR approaches*, 393–395
- aircraft
- as flight school selection factor*, 20
 - labels*, 661
 - lights*, 280–281
 - rental costs*, 22
 - virtual*, 674
- airlines, virtual. *See virtual airlines*
- airport elevation in takeoff calculations, 161
- Airport/Facility Directory (A/FD), 89, 116
- airports
- charts*, 89, 111
 - etiquette*, 99
 - lights*, 91–92, 281–283
 - Mansfield to Boston flight*, 109–111
 - markings and signs*, 89–90
 - Post Mills to Lebanon Municipal flight*, 102–109
 - progressive taxiing*, 111–112, 701
 - radio communications*, 95–98
 - right of way near*, 98
 - runway layout*, 88
 - traffic patterns*, 92–94
 - weather and notices*, 99–101
 - wind indicators*, 90–91
- airspace, 125
- Class A*, 125
 - Class B*, 125–126
 - Class C*, 126–127
 - Class D*, 128
 - Class E*, 129
 - Class G*, 129
 - special-use*, 130
- airspeed
- and altitude*, 576
 - IFR flights*, 337
 - in performance equation*, 49
 - power-off descents*, 146–147, 611
 - in stalls*, 184–185
 - and trim setting*, 46, 164
- airspeed indicators, 124
- Cessna 172*, 197, 209
 - Cub*, 38
 - failures*, 156, 546, 548
 - G1000 glass cockpits*, 250–251
 - in ice conditions*, 552
 - night flights*, 278
- airways, Victor, 229–232, 361–362
- alphabet, aviation, 102
- ALT MASTER switch, Cessna 172, 218
- ALT setting, autopilot, 240, 338
- alternate air, 548
- alternators
- Baron*, 575
 - Cessna 172*, 203–204, 218
 - failures*, 553
- altimeters and altimeter setting, 100
- alternate*, 405
 - Cessna 172*, 197
 - Cub*, 39
 - failures*, 156, 548
 - high altitudes*, 578
 - IFR flights*, 334
 - multiplayer mode*, 667
 - night flights*, 278
 - partial-panel situations*, 544
 - updating*, 461
- VOR approaches, 413
- altitude
- and air pressure*, 197
 - autopilot setting*, 240, 338, 464
 - calling out*, 419
 - in CIGAR acronym*, 45
 - controller assignment*, 698–699
 - in CRAFT acronym*, 353, 700
 - in flight plans*, 364
 - G1000 glass cockpits*, 251–252
 - IFR flights*, 337
 - and indicated airspeed*, 576
 - lost communication situations*, 561–562
 - Mooney*, 318
 - in performance equation*, 49
 - planning*, 123–124
 - in steep turns*, 74
 - in takeoff calculations*, 161
- AMP gauge, 204
- amperes, 204
- Angel Flight organization, 27
- angle differences in crosswind calculations, 84–85
- angle of attack, 31
- and ailerons*, 35–36
 - with flaps*, 200
 - in performance equation*, 49
 - slow flight*, 174
 - in stalls*, 176
- angle of climb and descent, 162–163
- AOPA website, 26
- approach-certified GPSs, 444
- approach clearance, 395
- approach controllers, 704–706
- approach descent flight profile
- Baron*, 583
 - Mooney*, 315
- approach level flight profile
- Baron*, 583
 - Mooney*, 315
- approach mode (APR) button, 438
- approach sensitivity, GPS, 449–450
- approaches
- Cessna 172*, 214–215
 - Cub*, 51–52
 - emergency*, 610–611
 - flaps*, 312
 - GPS*. *See GPS approaches*
 - instrument*. *See instrument approach procedures (IAPs)*
 - Mooney*, 324–326
 - partial-panel*, 549–550

Post Mills to Lebanon Municipal flight, 105–109
single-engine, 630–635
 approaches with vertical guidance (APVs), 448–449
 APR (approach mode) button, 438
 area navigation (RNAV) system, 233, 446–449
 arrivals
 in flight plans, 369–370
 IFR flights, 384–385
 night flights, 287–288
 online flying, 704
 stalls, 181–182
 in traffic patterns, 93
 ARTCCs (air route traffic control centers), 681, 691
 ARTS radar screen, 693
 ASOS (automated surface observation system), 99–100
 ASRC (Advanced Simulated Radar Client), 681, 689–690
 for communication, 695
 radar screen, 693
 assigned altitude in lost communication situations, 561–562
 assigned routes in lost communication situations, 559
 ATCs. See air traffic controllers (ATCs)
 ATIS (automatic terminal information service), 101
 for active runway, 370
 G1000 glass cockpit, 265
 for weather, 298–299
 Atlantic City runway overrun, 170–171
 attitude and attitude indicators
 Cessna 172, 196
 failures, 544–546
 G1000 glass cockpits, 248–249
 in gait, 32
 IFR flights, 335–338
 slow flight, 174
 unusual, 555–556, 564–565
 attitude and heading reference system (AHRS), 249
 audio panel, *Cessna 172*, 198
 autokinesis, 277
 automated surface observation system (ASOS), 99–100
 automated weather observation system (AWOS), 99–100, 265, 299
 Automatic Dependent Surveillance--Broadcast (ADS-B) system, 698
 automatic direction finder (ADF)

Cessna 172, 198
 GPS *for*, 444
 NDB approaches, 506–507
 operation, 222–223
 automatic takeoffs, 50
 automatic terminal information service (ATIS), 101
 autopilot
 altitude mode, 464
 Cessna 172, 199
 for control, 276
 G1000 glass cockpit, 265
 IFR, 338
 Mooney, 318
 in radio navigation, 239–241
 VOR approaches, 410–411
 AVEF acronym, 559
 aviate...navigate...communicate priorities, 107
 aviation alphabet, 102
 avionics. See radios
 AVSIG pilot community, 27
 AVSIM Online website, 26
 AWOS (automated weather observation system), 99–100, 265, 299

B

Bach, Richard, 191
 back-course approaches
 back course to front course, 517–518
 at KSLE, 533–535
 procedure, 512–517
 with wind, 539
 back taxiing, 164
 backup instruments in G1000, 490
 balance, 598–600
 accident incident, 602
 Baron, 607–609
 in rate of climb, 572–574
 ball
 Cessna 172, 196
 Cub, 39
 IFR flights, 335, 338
 banking
 ailerons for, 35–36
 Gs of force in, 555
 rectangular course, 67
 S-turns, 70–72
 single-engine situations, 625
 steep turns, 73–75
 turns around points, 69–70

barbs for procedure turns, 397
 barometric pressure, 100, 292
 Baron
 alternators, 575
 avionics stack, GPS, and *throttle quadrant*, 577–578
 crosswind approaches, 594–595
 deice boots, 575
 EGT, 580–581
 engine-out procedures, 573, 624–630
 flaps, 582, 585
 flight profiles, 582–586
 fuel crossfeeding, 626–627
 G1000 and virtual cockpit, 587
 instrument air, 575
 instruments, 587–591
 performance takeoffs and landings, 591–593
 propeller synchronizer system, 576
 single-engine situations. See *single-engine situations*
 slow flight and stalls, 607
 startup and run-up, 579
 steep turns, 606
 takeoff speeds, 572–574
 takeoffs, 581–582
 taxiing, 579
 trims, 574
 weight and balance flight testing, 607–609
 base leg in traffic patterns, 92–94
 base-to-final spin accident, 72
 baselines for flight profiles, 317
 basic commands, 17
 batteries
 in alternator failures, 553
 Cessna 172, 203–204
 failures in night flights, 284
 Baxter, Gordon, 291
 BCN switch, 204
 Be a Pilot program, 23
 beacons, 222–223
 aircraft, 204, 280
 airport, 91, 281
 NDB approaches. See *NDB (non-directional beacon) approaches*
 bearing to next waypoint, 451
 Beechcraft Baron. See Baron
 Berge, Paul, 351
 Bertorelli, Paul, 387
 best field in power-off descents, 146, 611
 best glide
 vs. minimum sink speed, 180

in power-off descents, 146–147
 best rate of climb, 165
 binocular vision, 275
 black hole illusion, 277
 blueline in Baron, 572–574
 brakes, 17
 differential, 42, 211–212
 engine startup, 41
 in rollout, 54
 short-field landings, 166
 short-field takeoffs, 165
 speed, 313–314
 brevity in communications, 99
 briefing page, 657
 broadcasts in multiplayer mode, 659
 broken clouds, 296
 Buck, Robert, 115
 buffeting, 176
 bump for procedure turns, 397
 burning gas, 130–131
 buzzing treetops, 186–187
 Byran, Hal, 11

C

C-GUMPS acronym, 210–211
 cabin depressurization, 154–155
 cabin fires, 145
 California Screamin' online event, 684
 call signs in online flying, 678
 Campbell, Pete, 709
 canyon turns, 612–613
 carburetor heat
 in C-GUMPS, 210
 Cub, 39–40, 55
 in takeoff, 45
 carburetor ice, 39–40, 147
 carburetors, *Cessna 172*, 201
 “catching the bus” mission, 186
 CAVU (clear above, visibility unlimited) weather, 297
 CDIs. See course deviation indicators (CDIs)
 ceiling, 296
 center controllers, 706–708
 center of gravity (CG), 130–131, 600–602
 center of lift (CL), 49, 602
 center of mass, 49
 centerline thrust aircraft, 620
 centerlines
 lights, 92, 282

- runway, 89
taxiways, 90
- centers (ARTCCs), 681, 691
- certificates, pilot, 19, 25, 576–577
- certified flight instructors (CFIs)
costs, 22
as flight school selection factor, 21
FSX as part of lessons, 23–24
shared cockpit, 24
- Cessna 172, 192
approach and landing, 214–215
basic maneuvers, 210–211
checkout flight, 206
cross-country flights with radio navigation, 235–244
electrical system, 203–204, 218
emergency descents, 219
engine and engine instruments, 201–202
engine failures and power-off descents, 218–219
engine start, 207
flaps, 199–200, 213, 218
extension speed, 197, 213
failure, 172, 217
fuel tanks, 203
IFR flight, 347–348
instruments, 194–197
lights, 204–205
night flight, 285–289
performance takeoffs and landings, 216–217
radios and other avionics, 198–199, 205, 207–208
scud running with, 306
slow flight, 212
stalls, 213
steep turns, 211
takeoff and climb, 209–210
taxiing and runup, 208–209
- Cessna 337, 620
- CFL.com website, 27
- CFIs (certified flight instructors)
costs, 22
as flight school selection factor, 21
FSX as part of lessons, 23–24
shared cockpit, 24
- CG (center of gravity), 130–131, 600–602
- chandelles, 611–613
- changeover points with VORs, 230
- charts
airport, 111
for flight plans, 354–355
IFR, 354–355
reading, 117
sources, 26, 116, 354
VOR approaches, 390–392
- chat
multiplayer mode, 649, 657–658
online flying, 679
- checklists
Cessna 172, 207
Cub, 136
engine-out, 151–152
power-off descents, 146, 611
- checkrides
real-world, 25
virtual airlines, 676
- Chelton glass cockpit, 248
- CHTs (cylinder head temperatures), 319
- CIGAR takeoff acronym, 44–45
- circle to land approach, 523–525
- circle with GPS approach, 525–526
- circling
in fog, 522–523
in night flight six C's, 279
- circuit breakers, 204
- CL (center of lift), 49, 602
- Class A airspace, 125
- Class B airspace, 125–126
- Class C airspace, 126–127
- Class D airspace, 128
- Class E airspace, 129
- Class G airspace, 129
- clean up in Mooney departure, 320
- clear above, visibility unlimited (CAVU) weather, 297
- clearance
approach, 395
ATC, 352–354
Class B airspace, 126
cruise, 370
flight plan, 698–700
IFR flights, 371–372
landing, 98
takeoff, 701
- clearance limits
in CRAFT acronym, 353, 700
in lost communication situations, 560–561
- clearing area in rectangular course, 67
- climb cruise profiles
Baron, 583
Mooney, 315
- climbing
Baron, 581–583
Cessna 172, 209–210
in missed approaches, 419
Mooney, 319–320
in night flight six C's, 279
rate and angle, 162–163
single-engine situations, 618
and throttle, 50
- climbing flight, 32
- clocks, 205
- clouds, 294–296
density setting, 409
height reports, 100
weather reports, 296
- clubs. See virtual airlines
- cockpit view, 17
- cockpits
Cub, 38–40
glass. See G1000 glass cockpits
lights, 275
organization, 16
- Collins, Richard, 617
- collisions, midair, 145
- color vision, 275
- colored arcs on airspeed indicator, 197
- colored spotlights, 218
- COM radios
Cessna 172, 207
G1000 glass cockpit, 256–257
- combo approaches with wind, 539–541
- commands, 17
basic, 17
view, 17–19
- commercial flights
center of gravity, 600–602
chandelles, 611–613
eights on pylons maneuver, 603–605, 615–616
emergency approach and landing, 610–611
lazy eights, 613–615
one engine out. See single-engine situations
steep spirals, 609–610
weight and balance, 598–600
- commercial license. See Baron commercial pilot checkrides, 603
- committed to takeoff speed, 572–574
- common traffic advisory frequency (CTAF), 95, 283
- communication. See also radios
controlled airports, 97–98
frequency changes, 104
lost, 352, 557–562, 565
missed approaches, 419
- Mooney departure, 320
multiplayer mode, 658–660
in night flight six C's, 279
online flying, 678–679, 696, 705
uncontrolled airports, 95–97
virtual controllers, 695–696
- compass, 61
Cub, 39
in IFR flights, 336
in turns, 133–135
- compass direction in planning routes, 118
- compliance in night flight six C's, 279
- cones, 275
- confessing in night flight six C's, 279
- connection speed in multiplayer mode, 648
- conservation in night flight six C's, 279
- contact approaches, 521, 535–536
- control surfaces, 33–36
- controlled airports, 88, 97–98
- controlled flights into terrain, 295
- controllers. See air traffic controllers (ATCs)
- “controls free and correct” in CIGAR, 44
- conventional landing gear, 43
- cooldown
Mooney departure, 320
turbochargers, 328
- coordinated turns, 48–49
Cub, 39
vs. uncoordinated, 63
- Coriolis force, 293
- costs, flight school, 21–22
- counter-rotating propellers, 621
- coupled approaches, 438
- course
flight plans, 362–363
with wind, 61–62
- course deviation indicators (CDIs)
back-course approaches, 514–515, 517
coupled approaches, 438
G1000 glass cockpit, 252–253, 267
GPS, 243
GPS approaches, 475
operation, 226–229
sensitivity, 449, 480
- cowl flaps
in missed approaches, 419

purpose, 312
 trail position, 319
 crabbing, 62
 in crosswind landings, 80–81
 in crosswind takeoffs, 76
 CRAFT acronym, 353, 700
 critical angle of attack, 31
 cross-checking instruments, 544–545
 cross-country flight, 263–271
 cross-track error (XTE), 260
 crossfeeding fuel, 626–627
 crosswind
 approaches, 594–595
 calculation, 84–85
 Cessna 172, 217
 G1000 glass cockpits with, 270
 Kona, Hawaii, 85–86
 landings, 80–83
 maximum demonstrated, 83–84
 single-engine situations, 635–636
 takeoffs, 75–77
 crosswind leg in traffic patterns, 92–94
 CRS/BARO knob, 253
 cruise clearance, 370
 cruise climb flight profiles
 Baron, 583
 Mooney, 315
 cruise descent, 315, 323
 cruising
 Cub, 50
 IFR flights, 374–377
 Mooney, 321
 night flights, 287
 CTAF (common traffic advisory frequency), 95, 283
 Cub, 19
 aileron failures, 155–156
 carb heat, 55
 crosswinds
 Kona, Hawaii, 85–86
 landings, 80–83
 takeoffs, 75–77
 departure stalls, 182–183
 first flight, 38
 approach, 51–52
 cockpit, 38–40
 cruising, 50
 engine start, 40–42
 landing, 52–53
 rollout, 54
 takeoff, 44–46
 taxiing, 42–43
 trim, 46
 turns, 47–49

forward slips, 77–79
 instrument failure, 156
 Mansfield to Boston flight, 109–111
 multileg flight using pilotage, 132–136
 Post Mills to Lebanon Municipal flight, 102–109
 power-off descents, 150–153
 power-off stalls, 181–182
 rapid descents, 153
 rectangular course, 65–67
 S-turns, 70–72
 scud running, 301–305
 short-field situations
 landings, 166–167
 takeoffs, 164–165
 slow flight, 178–181
 soft runway situations
 landings, 169
 takeoffs, 168–169
 spins, 183–184
 steep turns, 73–75
 turns around points, 68–70
 wind flight, 63–64
 cumulative distance remaining (CUM) indicator, 454
 current altimeter in multiplayer mode, 667
 cylinder head temperatures (CHTs), 319

D

dark adaptation, 275
 datatag information, 693
 daylight saving time, 101
 dead-end canyon turns, 612–613
 dead reckoning, 139–140, 222
 decision altitude, 390
 GPS approaches, 442, 466
 VOR approaches, 401
 declaring emergencies, 148–149
 default settings, 15, 37
 degrees for latitude and longitude, 119
 deicing, 553, 575
 delays in online flying communications, 705
 Denker, John S., 32
 departure controllers, 704–706
 departure stalls
 Cessna 172, 213
 Cub, 182–183
 departures

ATC frequency, 354
 flight plans for, 355
 IFR flights, 380–381
 ignoring procedures, 358
 night flights, 285–286
 obstacle, 357
 online flying, 699, 704
 pilot navigation, 356
 Post Mills to Lebanon Municipal flight, 106
 in traffic patterns, 93
 vector, 359–360
 depressurization, 154–155
 descending flight, 32
 descents
 emergency, 219
 Mooney, 322–323
 power-off
 Cessna 172, 218–219
 commercial flights, 610–611
 Cub, 150–153
 procedure, 146–147
 rapid, 147, 153
 rate and angle of, 162–163
 Desired Track (DTK) indicator, 272, 451, 454, 475
 dew point, 100
 Diamond, David, 597
 differential brakes, 42, 211–212
 direct connections in multiplayer mode, 656
 direct entry into holds, 367
 direct navigation
 G1000 glass cockpits, 269
 GPS, 234, 242, 454
 direct routes, 118
 direction, wind, 62, 90–91, 298
 directional gyro in LIST-MD acronym, 336
 DIS (distance to next waypoint) indicator, 451, 454
 disorientation
 night flights, 277
 unusual attitudes, 555
 distance-measuring equipment (DME)
 Cessna 172, 198
 GPS for, 444
 operation, 232–233
 distance to next waypoint (DIS) indicator, 451, 454
 distractions
 accident incident, 595–596
 dealing with, 107
 dive away in taxiing, 75
 diversions, 121, 141
 divisions, virtual controller, 691
 DME (distance-measuring equipment), 232–233
 Cessna 172, 198
 GPS for, 444
 operation, 232–233
 DME arc approach
 at KOLM, 531–532
 overview, 509–512
 with wind, 538
 dome lights, 281
 door handle, Cub, 40
 door latches, 193
 downwind leg in traffic patterns, 92–94
 drag
 banking, 36
 landing gear, 313
 single-engine situations, 618–619, 625, 639
 drifting gyros, 195
 dry rental rate, 22
 DSR radar screen, 693
 DTK (Desired Track) indicator, 242, 451, 454, 475
 dual ILS, 513
 dynamic objects, 11

E

E6B flight computers, 139
 EAA chapters, 27
 Eaglesoft site, 248
 Easy realism setting, 37
 EGT (exhaust gas temperature)
 Baron, 580–581
 Cessna 172, 202
 eights on pylons maneuver, 603–605, 615–616
 electric fuel pumps
 Cessna 172, 201
 Mooney, 314
 electric rudder trim, 314
 electric starters, 203
 electrical generators, 202
 electrical system, Cessna 172, 201, 203–204
 electrical system failure
 Cessna 172, 218
 IFR flights, 563–564
 night flights, 284
 elevation in takeoff calculations, 161
 elevator trim, 36–37
 for airspeeds, 164
 Baron, 574
 elevators, 34

crosswind takeoffs, 76
 failures, 145
 soft runway takeoffs, 168
 embedded thunderstorms, 339
 emergencies, 143
 approach and landing, 610–611
 cabin depressurization, 154–155
 Cessna 172, 217–219
 declaring, 148–149
 Direct-To key for, 269
 IFR flights. See *IFR (instrument flight rules) flights*
 immediate-action, 145–147
 lost ATC contact, 354
 night flights, 284
 oddball, 155–156
 overview, 144
 training for, 149–153
 urgent situations, 147–148
 emergency descents, 219
 emergency landing spots, 67
 en route controllers, 706–708
 en route GPS sensitivity, 449–450
 en route operations, 360
 altitudes, 364
 course, 362–363
 holds, 365–369
 routes, 361–362
 engine fires, 145
 engine noise in multiplayer mode, 660
 engines
 Cessna 172, 201–202, 207
 failure
 ABCs, 150–153, 611
 Cessna 172, 218–219
 multiengine aircraft. See *single-engine situations*
 after takeoff, 573
 in ice conditions, 552
 multifunction flight display, 259
 performance, 50, 310–311
 shock cooling, 314
 slow down problems, 146
 starting
 Cessna 172, 207
 Cub, 40–42
 entering
 holds, 367–369
 traffic patterns, 137–138
 Esc key, 17
 estimated time en route (ETE)
 GPS, 243
 multifunction flight display,

260
 to next waypoint, 451
 etiquette, airport, 99
 Europe, multiplayer mode in, 648
 events, online flying, 684–685
 exhaust gas temperature (EGT)
 Baron, 580–581
 Cessna 172, 202
 expected altitude in lost communication situations, 561–562
 expected routes in lost communication situations, 559
 experience, online flying, 679–680
 Experimental Aircraft Association, 26
 extinguishers, 145
 Extra 300 aircraft, 555

F

F10 key, 17
 FAA Order 7110.65, 700
 FAA Practical Test Standards, 25
 Facility Information window, 103–104
 FAF (final approach fix), 401, 442
 falling-leaf stalls, 181
 false horizons in night flights, 277
 FAP (final approach point), 401
 FAR altitude regulations, 124
 fear in slow flight, 174
 feather position in single-engine situations
 in flight, 625
 takeoffs, 637
 feeder routes for VOR approaches, 401–402
 “few clouds”, 296
 Fickeisen, Frank, 571
 final approach fix (FAF), 401, 442
 final approach point (FAP), 401
 final leg in traffic patterns, 92–94
 finding
 aircraft in multiplayer mode, 668
 virtual airlines, 673–674
 fires, 145
 FIRs (flight information regions), 681, 691
 first flight, *Cub*, 38
 approach, 51–52

cockpit, 38–40
 cruising, 50
 engine start, 40–42
 landing, 52–53
 rollout, 54
 takeoff, 44–46
 taxiing, 42–43
 trim, 46
 turns, 47–49
 five Ts
 GPS approaches, 461–462
 holds, 368–369
 ILS approaches, 431
 localizer approaches, 426
 VOR approaches, 397–399
 fixed-pitch propellers, 311
 flagging with VORs, 230
 flaps
 Baron, 582, 585
 Cessna 172, 199–200, 213, 218
 extension speed, 197, 213
 failure, 172, 217
 Mooney, 312, 318–319
 single-engine situations, 624
 flare, 53
 flashing strobe lights, 205, 209, 280
 flashlights, 284
 Flight Aware website, 26
 flight checklists
 Cessna 172, 207
 Cub, 136
 engine-out, 151–152
 power-off descents, 146, 611
 flight clubs. See *virtual airlines*
 flight computers, 125, 139
 flight controls
 failures, 145
 requirements, 13–14
 flight director, 314, 321
 flight fundamentals, 30
 control surfaces, 33–36
 gaits of flight, 32–33
 limitations, 31
 trim, 36–37
 flight information regions (FIRs), 681, 691
 flight instructor station feature, 24
 flight instructors
 costs, 22
 as flight school selection factor, 21
 FSX as part of lessons, 23–24
 shared cockpit, 24
 flight lessons, 19–20
 flight plan page in GPS, 454

flight planner, 121–123
 for dead reckoning, 139–140
 for G1000 glass cockpits, 262
 flight plans, 352
 altitudes, 364
 arrival procedures, 369–370
 and ATC, 352–354
 course, 362–363
 creating, 236
 departure procedures, 355–360
 G1000 glass cockpit, 254–255
 holds, 365–369
 IFR flights, 352, 371–372, 378–379
 instrument charts for, 354–355
 loading, 436
 lost communication situations, 559
 routes, 361–362
 tracking, 694
 flight profiles
 Baron, 582–586
 Mooney, 314–317
 partial-panel situations, 548
 flight school selection criteria, 20
 aircraft types, 20
 costs, 21–22
 environment, 20–21
 instructors, 21
 introductory flights, 23
 float planes, 171–172
 flow check, 136
 flux gates, 248
 fly-by waypoints, 446
 fly-ins
 real-world, 27
 virtual airlines, 675
 Fly Leg option, 461
 fly-over waypoints, 446
 flying clubs, 20
 fog, circling in, 522–523
 forecasts, weather, 296
 formation flying
 multiplayer mode, 661–662
 virtual airlines, 675
 45-degree angles for traffic pattern entrance, 93
 45 degree turns, 73–75
 forums for virtual airlines, 674
 forward slips
 overview, 77–79
 power-off descents, 152
 four C's in Mooney departures, 320
 frame rate
 with detail, 341

- online flying, 685
 setting, 15
 in taxiing, 43
 Free Flight lobby, 647
 freeze heading, VOR, 229
 freezing in emergencies, 149
 freezing rain, 145
 frequencies
 active, 198
 changing, 104
 in CRAFT acronym, 353, 700
 localizer, 430
 multiplayer mode, 667
 online flying, 696–697
 radar controllers, 700
 friends in multiplayer mode, 649
 front course to back course, 516–517
 FS 2004 multiplayer mode, 662–664
 FSInst program, 664
 FSInn software, 677–679
 fuel
 burning, 130–131
 Cessna 172, 203
 costs, 21
 crossfeeding, 626–627
 exhaustion, 131–132, 245
 in fires, 145
 mixture. *See* mixture
 power-off descents, 152
 starvation, 132
 in weight and balance calculations, 599–600
 fuel flow indicators, 201
 fuel gauges
 Cub, 39
 limitations, 203
 fuel-injected engines, 147, 201
 fuel pumps
 Cessna 172, 201
 Mooney, 314
 fuel shutoffs
 Cessna 172, 203
 Cub, 38
 full flaps speed, 197
 full nose-up trim, 147
 full procedure, 388
 full-screen mode, 17
- G**
- G1000 glass cockpits, 248
 airspeed tape, 250–251
 altitude, 251–252
 approaches, 489–490
 KPWT GPS Rwy 1, 490–498
 KTIW ILS Rwy 17, 498–502
 attitude, 248–249
 Baron, 587
 cross-country flight, 263–271
 crosswinds, 270
 cruising, 267
 Direct-To key, 269
 distributed system, 248
 failures, 253–254
 flight planning on, 254–255, 262
 flight setup, 263–264
 IFR flights, 347–348, 385
 instrument simulation, 252–253
 instruments failures, 551
 maps, 493–494
 Mooney, 328
 multifunction flight display, 258–262
 night flight, 289
 partial-panel situations, 550–551
 primary flight display, 249–252
 radios, 256–258
 real-life, 255
 screens, 489
 scud running with, 306
 softkeys, 255
 takeoffs, 266
 transponder settings, 373
 VORs with, 268
 waypoints, 254–255, 265–266
 gaits of flight, 32–33
 GameSpy service
 multiplayer mode, 647–648
 virtual controllers, 690–691
 Gann, Ernest K., 221
 Garmin 500-series GPS, 199, 234, 243
 Garmin G1000. *See* G1000 glass cockpits
 gas. *See* fuel
 “gas”
 in C-GUMPS, 210
 in CIGAR, 45
 gauges. *See* instruments
 gear. *See* landing gear
 gear-safe green light, 416
 generators, electrical, 202
 George (autopilot). *See* autopilot
 Getting Started page, 10
 “getting the flick”, 695
 glass cockpits. *See* G1000 glass cockpits
 glassy water, 172
 glide
 vs. minimum sink speed, 180
 in power-off descents, 146–147
 glideslope (GS), 407
 gliding, 49
 GMT (Greenwich mean time), 101
 go-arounds, 54, 320
 Gordon, Richard, 87
 GPS
 Baron, 577–578
 Cessna 172, 199, 234, 243
 circling approach, 525–526
 Direct-To page, 454
 for diversions, 121, 141
 for DME arcs, 512
 flight plan page, 454
 G1000. *See* G1000 glass cockpits
 groups and pages, 243
 IFR flights, 376–377
 missed approaches, 466–470
 navigating with, 233–234
 Nearest pages, 453
 night flights, 279
 on non-GPS approaches, 488
 partial-panel situations, 547–548
 primary Nav page, 450–451
 sensitivity, 449–450
 setting up, 457
 for system failures, 554
 table of contents, 452
 Waypoint pages, 452–453
 GPS approaches, 441–442
 accident incident, 503
 G1000, 489–502
 KFHR GPS Rwy 34, 471–480
 KHQM VOR or GPS Rwy 6, 480–489
 KSHN GPS Rwy 23, 455–471
 overlay, 444–445
 overview, 442–443
 RNAV, 446–449
 single-engine, 634–635
 GPS direct navigation, 242
 grass runways, 163
 green arc, airspeed indicator, 197
 Greenwich mean time (GMT), 101
 ground checks, 334–336
 ground controllers, 97, 700–701
 ground effect, 168
 ground instruction, 22, 24
 ground loops, 44
 Ground mode, 693
 ground speed (GS) indicator, 260, 451
 Group Flight organization, 684
 groups
 GPS, 243
 multifunction flight display, 261–262
 GS (ground speed) indicator, 260, 451
 gyroscopic instruments, 194–196
 gyroscopic procession of propeller, 45, 47
- H**
- Hale, Sandra, 143
 handoffs, controller, 696–697, 703–704
 Hard realism setting, 37
 hardware requirements, 11–12
 flight controls and headsets, 13–14
 monitors, 13
 processors, memory, and video cards, 12–13
 harmonics, multiengine, 576
 heading
 autopilot setting, 240, 338
 forward slips, 77–79
 magnetic, 61, 506–507
 Mooney, 318
 runway, 360
 syncing, 252, 267
 with wind, 61–62
 heading bug, 195, 238–239
 heading indicator
 Cessna 172, 194–195
 coupled approaches, 438
 failures, 547
 IFR flights, 335–336
 night flights, 278
 headsets, 13–14
 high altitude altimeter settings, 578
 high cruise profiles
 Baron, 583
 Mooney, 315
 high-pressure areas, 292–293
 high VORs, 230
 high winds, 292–293
 history trails on radar screens, 694
 Hobbs meters, 22
 hold short instruction, 97
 holds, 365
 entering, 367–369

GPS approaches, 442
 IFR flights, 381–384
 online flying, 697
 wind in, 366, 383–384

horizons in night flights, 277

horizontal situation indicator (HSI)
 failures, 544–545
 G1000 glass cockpit, 252
 ILS approaches, 407
 Mooney, 318

hosts in multiplayer mode, 646, 649–653

hub-and-spoke system, 336–337

hubs, virtual airlines, 674

Hunter, Rick, 308

I

IAF (initial approach fix)
 GPS approaches, 442
 RNAV approaches, 446
 VOR approaches, 390

ICAO (International Civil Aviation Organization), 125

ice
 accumulation, 145
 Baron, 575
 carburetor, 39–40, 147
 emergencies from, 551–553
 IFR flights, 339
 in LIST-MD acronym, 336
 pitot tube, 205, 552
 simulating, 563

ident, transponder, 373

identifiers, Morse code, 225

idle power
 Cub, 38
 spin recovery, 177

IF (intermediate fix), 446

IFR (instrument flight rules) flights
 arrivals, 384–385
 attitude in, 336–338
 autopilot, 338
 departures, 380–381
 emergencies, 544
 electrical failure, 563–564
 ice, 551–553
 lost communication, 557–562, 565
 partial-panel flying, 544–551, 562–563
 system failures, 553–554
 unexpected, 565–566

unusual attitude, 555–556, 564–565

flight plans, 352, 371–372, 378–379

Garmin G1000 flight, 347–348, 385

ground checks, 334–336
 holds, 381–384

IMC flight, 340–342

maneuvers, 342–347

online flying, 702

to visual approach, 370–377

weather, 339–340

ignition systems, 40

illusions in night flights, 277

ILS (instrument landing system) approaches
 G1000, 498–502
 at KPAE, 429–435
 procedure, 407–409
 single-engine, 633–634

IMC (instrument meteorological conditions)
 accident incident, 276
 hub-and-spoke system for, 336
 Mooney flight, 340–342

immediate-action emergencies, 145
 power-off descents, 146–147, 150–153
 rapid descents, 147, 153
 troubleshooting and problem solving, 145–146

“in trail” term, 707

inclinometers
 Cub, 39
 IFR flights, 335, 338

indicated airspeed. See airspeed

initial approach fix (IAF)
 GPS approaches, 442
 RNAV approaches, 446
 VOR approaches, 390

installing FSX, 10

instructors
 costs, 22
 as flight school selection factor, 21
 FSX as part of lessons, 23–24
 shared cockpit, 24

instrument air, 575

instrument approach procedures (IAPs)
 circle to land, 523–525
 circle with GPS, 525–526
 contact, 521, 535–536
 coupled, 438
 DME arcs, 509–512, 531–532, 538
 G1000, 489

GPS. See GPS approaches

ILS
 G1000, 498–502
 at KPAE, 429–435
 procedure, 407–409
 single-engine, 633–634
 localizer (LOC) approaches, 403–406
 back-course. See back-course approaches
 KAWO, 423–429
 NDB, 506–508
 at KTIW, 527–530
 navigation basics, 506–507
 procedure, 508–509
 with wind, 537–538
 plates, 26, 388–389
 visual, 518–520
 VOR. See VOR approaches with wind, 437

instrument charts. See charts

instrument flight rules. See IFR (instrument flight rules) flights

instrument landing system (ILS) approaches
 G1000, 498–502
 at KPAE, 429–435
 procedure, 407–409
 single-engine, 633–634

instrument meteorological conditions (IMC)
 accident incident, 276
 hub-and-spoke system for, 336
 Mooney flight, 340–342

Instrument Rating, 334

instruments
 Baron, 587–591
 Cessna 172, 194–197
 engine, 201–202
 failures, 156, 551
 gyroscopic, 194–196
 night flights, 284
 partial-panel situations, 544–551, 562–563
 pitot-static, 197
 simulating, 252–253

“instruments set” in CIGAR, 44

insurance costs, 22

intermediate fix (IF), 446

International Civil Aviation Organization (ICAO), 125

International Virtual Aviation Organization (IVAIO), 677

intersections, VOR, 231

introductory flights, 23

IO-360 engine, 310

IP addresses in multiplayer mode, 656

IVAIO (International Virtual Aviation Organization), 677

J

Jeppesen
 approach plates, 392
 SIMCharts for FSX, 355

jet routes, 230

Jetstar International Airlines, 673

Jetstar Virtual Airways, 673

joining multiplayer sessions, 654–656

joystick requirements, 13–14

K

KAP 140 autopilot screen, 489

knobs, scrolling, 237

knots, 38

Kona, Hawaii, crosswinds, 85–86

L

LAAS (Local Area Augmentation System), 234

lags in online flying communications, 705

landing configuration for slow flight, 180

landing gear
 accident incident, 595–596
 conventional, 43
 drag from, 154
 single-engine situations, 624, 637

landing lights, 204, 209, 281

landing panel, 490

landing sites in power-off descents, 146

landings
 Baron, 591–593
 calculations, 160–162
 center of gravity, 601
 Cessna 172, 214–217
 crosswind, 80–83, 635–636
 Cub, 52–53
 emergency, 610–611
 flaps, 312

- Mooney, 326–327, 610–611
 Post Mills to Lebanon Municipal flight, 105, 109
 power-off descents, 152
 short-field runways, 166–167
 single-engine situations, 635–636
 soft runways, 169–170
 tailwheel vs. nosewheel airplanes, 206
 three-point and wheeled, 54
 wind shear, 294
- landmarks
 in contact approaches, 521
 in pilotage, 120
- Landsberg, Bruce, 59
- Langewiesche, William, 291, 333
- Langewiesche, Wolfgang, 32
- large airplane wake, 178
- lateral navigation (LNAV), 449
- latitude, 119
- lazy eights, 613–615
- LDA (localizer directional aid), 405–406
- leaning, 39, 136
- Learning Center, 10, 40
- lessons, 19–20
- letters, taxiways, 90
- level turns, 33
- lift, 31
 and ailerons, 35–36
 with flaps, 200
 in ice conditions, 552
 in performance equation, 49–50
 in turns, 33
- lights
 aircraft, 280–281
 airport, 91–92, 281–283
 Cessna 172, 204–205
 in cockpit, 275
 in LIST-MD acronym, 336
 obstacles, 284
 in VOR approaches, 393
- “lights, camera, action!”, takeoff procedure, 209
- Lindbergh, Charles A., 273
- listening in multiplayer mode, 660
- live weather radar website, 26
- Livingston, Robert, 597, 687
- LNAV (lateral navigation), 449
- loading flight plans, 436
- loads
 moving, 130–131
 weight and balance, 598–600
- lobbies in multiplayer mode, 647
- Local Area Augmentation System (LAAS), 234
- local controllers, 701–703
- local networking in multiplayer mode, 647
- local time in multiplayer mode, 667
- localizer
 frequencies, 430
 in ILS approaches, 407
- localizer (LOC) approaches
 back-course
 back course to front course, 517–518
 at KSLE, 533–535
 procedure, 512–517
 with wind, 539
 KAWO, 423–429
 procedure, 403–406
- localizer directional aid (LDA), 405–406
- locator outer marker (LOM), 405
- locked spot view, 34, 43
- longitude, 119
- Loopy Larry mission, 185
- lost communication, 557–558
 altitude in, 561–562
 practice, 565
 routes in, 559–560
 vector departures, 360
- low cruise profiles
 Baron, 583
 Mooney, 315
- low-cruise speed in holds, 367
- low-pressure areas, 292–293
- low visibility, 294–296
- low VORs, 230
- Lycoming TIO-540 engine, 310
-
- M**
- Machado, Rod, 19, 441, 583
- magnetic bearing (MB) in NDB navigation, 506–507
- magnetic compass, 39, 61
- magnetic direction, 61
 NDB navigation, 506–507
 in planning routes, 118
 runway numbers, 88
 wind, 298
- magnets
 Cessna 172, 218
 Cub, 40
 overview, 202
 power-off descents, 152
- management in virtual airlines, 674–675
- manifold pressure (MP)
 Baron, 578, 582–583
 throttle for, 310–311
- MAP (missed approach point), 390
 GPS approaches, 442, 466
 VOR approaches, 401
- maps
 charts. *See charts*
 G1000, 493–494
 GPS, 234
 multifunction flight display, 260, 262
- marginal VFR, 294
- marker beacons, 405
- markings, airport, 89–90
- MASTER switches, 204
- maximum demonstrated crosswind, 83–84
- maximum power in single-engine situations, 624
- Mayday, 152
- MB (magnetic bearing) in NDB navigation, 506–507
- MDA (minimum descent altitude)
 altitude callout for, 419
 VOR approaches, 390
- MEA in en route operations, 364
- mean sea level (MSL), 100
- Medium realism setting, 37
- membership in multiplayer mode, 657
- memory requirements, 12–13
- messages, disabling, 454
- METARs (Meteorological Aviation Reports)
 online flying, 694
 real-world, 299–300
- MFD (multifunction flight display), 489
 G1000 glass cockpits, 258–262
 groups and pages, 261–262
 main window, 260
 moving maps, 493–494
- microphones
 in multiplayer mode, 659
 requirements, 14
- midair collisions, 145
- midfield downwind, 138
- miles, statute and nautical, 119
- miles per hour in Cub, 38
- minima section, 390
- minimum altitude in lost communication situations, 561–562
- minimum controllable airspeed
 Baron, 573
 single-engine situations, 621–624, 638
- minimum descent altitude (MDA)
 altitude callout for, 419
 VOR approaches, 390
- minimum obstruction clearance altitude (MOCA), 364
- minimum sink speed, 180
- misrigged ailerons, 208
- missed approach point (MAP), 390
 GPS approaches, 442, 466
 VOR approaches, 401
- missed approaches
 GPS, 466–470
 VOR, 399, 419–423
- Mississippi River, magnetic north at, 118
- mistakes by virtual controllers, 682–683
- mixture
 Baron, 580
 in C-GUMPS, 211
 Cessna 172, 202
 Cub, 39
 leaning, 136
 in LIST-MD acronym, 336
 in rollout, 54
 single-engine situations, 624, 626
- MOCA (minimum obstruction clearance altitude), 364
- Mode S transponders, 697
- monitor requirements, 13
- Mooney
 approach, 324–326
 arrivals, 384–385
 chandelles, 611–613
 climbing, 319–320
 cruising, 321
 departures, 380–381
 descents, 322–323
 eights on pylons, 615–616
 emergency approach and landing, 610–611
 engines, 310–311
 flaps, 312, 318
 flight profiles, 314–317
 G1000 glass cockpit, 328, 385
 GPS approaches. *See GPS approaches*
 holds, 381–384
 IFR flight to visual approach, 370–377
 IFR maneuvers, 342–347
 IMC flight in, 340–342
 landings, 326–327
 lazy eights, 613–615

NDB approaches, 506–508
 at KTIW, 527–530
 navigation basics, 506–507
 procedure, 508–509
 with wind, 537–538
 partial-panel situations, 544–551
 retractable gear, 312
 speed brakes, 313–314
 steep spirals, 609–610
 takeoff setup, 317–319

Morse code identifiers, 225

mountain flying
 canyon turns, 612–613
 single-engine situations, 635
 teardrop turns, 594

mountains in altitude planning, 123

moving loads, 130–131

moving map
 G1000, 493–494
 GPS, 234
 multifunction flight display, 260, 262

MP (manifold pressure)
 Baron, 578, 582–583
 throttle for, 310–311

MSG button, 454

MSL (mean sea level), 100

multiengine airplanes
 Beechcraft Baron. *See* Baron
 one engine out. *See* single-engine situations

multifunction flight display (MFD), 489
 G1000 glass cockpits, 258–262
 groups and pages, 261–262
 main window, 260
 moving maps, 493–494

multileg flight using pilotage, 132–136

multiplayer mode, 26–27, 646
 ATC roles, 665–668
 chat, 649, 657–658
 flying in, 661–662
 FS 2004, 662–664
 hosting, 649–653
 joining sessions, 654–656
 overview, 646
 shared cockpits, 653–654, 657, 662–664
 starting, 647–648
 virtual airlines, 675–676
 virtual worlds, 646, 669
 voice communications, 658–660

multitasking, 107

mushing, 176

N

NACO (National Aeronautical Charting Office), 116, 354, 391

names
 entering in GPS, 453
 next waypoint, 451
 VOR approaches, 403
 waypoint, 472

National Aeronautical Charting Office (NACO), 116, 354, 391

NAV function, 266

Nav group, 244

nav lights, 280

Nav page, 450–451

navigation, 115
 IFR, 352
 night flights, 279
 planning. *See* planning trips
 radio. *See* radio navigation

navigation frequency, 198

navigation lights, 172, 205

NDB (non-directional beacon) approaches
 at KTIW, 527–530
 navigation basics, 506–507
 procedure, 508–509
 with wind, 537–538

NDBs (non-directional beacons), 222–223

Nearest Airport page, 137, 453

Nearest group, 244

Nearest key (NRST), 255

Nearest VOR page, 453

negative transfer, 489

networks. *See* online flying

new features, 10–11

newbies in online flying, 680

NEXRAD weather radar, 339

night flights, 273–274
 aircraft control, 278
 arrivals, 287–288
 Cessna 172, 285–289
 cruising, 287
 departures, 285–286
 emergencies, 284
 G1000 glass cockpits, 289
 illusions in, 277
 lights, 280–284
 navigation, 279
 vision, 274–275

no-flap landing approach, 217

no-gyro approaches, 550

noise-canceling microphones, 14

noise in multiplayer mode, 660

non-directional beacon (NDB) approaches
 at KTIW, 527–530
 navigation basics, 506–507
 procedure, 508–509
 with wind, 537–538

non-directional beacons (NDBs), 222–223

non-GPS approaches, GPS on, 488

nonprecision approaches, 409, 435–436

normal cockpit view, 17–18

normal operating range, 197

north, magnetic, 61, 118

nose, seeing over, 166

nose-up attitude in slow flight, 174

nosewheel airplanes
 configuration, 44
 vs. tailwheel, 205–206

notes for GPS approaches, 444

notices, airports, 99–101

NRST (Nearest) key, 255, 269

numbers
 pronunciation, 102
 runway, 88–89
 taxiways, 90

O

OBS (omni-bearing selector)
 G1000 glass cockpit, 252
 with GPS, 466
 setting, 226–228

observing controllers, 691

obstacle departures, 357

obstacles
 lights, 284
 short-field landings, 166–167
 short-field takeoffs, 164–165
 in takeoff calculations, 161–612

oddball emergencies, 155–156

off-center viewing, 275

oil pressure drop, 146

oil temperature and pressure
 Cessna 172, 202
 Cub, 39

omni-bearing selector (OBS)
 G1000 glass cockpit, 252
 with GPS, 466
 setting, 226–228

one in, one out method, 352

online charts, 117

online flying, 676–677
 communication, 678–679
 controllers. *See* virtual air traffic controllers
 events, 684–685
 starting out, 677–678
 training and experience, 679–680

organizations
 aviation, 26
 virtual controllers, 681

outer marker, 405

overcast clouds, 296

overhead joins, 138

overlay approaches, 444–445

overrun, runway, 170–171

P

P-38 WWII fighter, 621

P-factor
 description, 47
 single-engine situations, 620–621

pages
 GPS, 243, 450–454
 multifunction flight display, 261–262

panel lights, 281

PAPI (precision approach path indicator), 282

parallel entry into holds, 367–368

parking spots in multiplayer mode, 654–655

partial-panel situations, 544
 accident incident, 557
 approaches, 549–550
 detecting, 544–546
 G1000 for, 550–551
 practice for, 562–563
 working with, 546–548

passing on right, 98

pausing, 133, 457

peak EGT, 202

performance, 160, 309–310
 center of gravity, 600–602
 engines, 310–311
 in flight profiles, 316
 Mooney. *See* Mooney
 rate and angle of climb and descent, 162–163
 settings, 14–16
 short-field, 163–167

- soft runways, 167–170
takeoffs and landings
Baron, 591–593
calculations, 160–162
Cessna 172, 216–217
water surface, 171–172
and weather, 300
weight and balance, 598–600
- performance equation, 49–50
PFD (primary flight display), 249–250, 489–490
moving maps, 493–494
transponder codes, 491
- phonetic alphabet, 102
Picasso, Pablo, 247
- pilot bases in virtual airlines, 674
pilot-controlled lighting, 283
pilot navigation departures, 356
Pilot-Not-Flying (PNP), 664
pilotage, 120, 132–136
pilots
certificates, 19, 25, 576–577
communities, 26–27
testing, 541
Pilot's Operating Handbook (POH), 161
Pilots Share the Ride website, 27
Piper J-3 Cub. See Cub
pitch, 321
in flight profiles, 316
in performance equation, 49–50
vs. power, 435–436
single-engine situations, 624, 637
trim for, 36
pitch ladder, 249
pitch of propeller blades, 311–312
pitot heat, 205, 552
pitot-static instruments
overview, 197
in partial-panel situations, 545–546
pitot tubes
blocked, 546
Cessna 172, 197
in ice conditions, 205, 552
pivotal altitude, 604
plan views, 390
planning trips, 116. See also flight plans
airspace in, 125–130
altitude in, 123–124
charts for, 117
dead reckoning, 119–120, 139–140
flight planner, 121–123
moving loads and burning gas, 130–131
multileg flight using pilotage, 132–136
pilotage, 120
routes, 118–119
wind in, 125
plates, IAP, 26, 388–389, 392
POH (Pilot's Operating Handbook), 161
points, turns around, 68–70
portable GPSs, 121
position lights, 280
positional awareness, 376
positive exchange of flight controls, 663
Post, Wiley, 273
power
in flight profiles, 316
in performance equation, 49–50
vs. pitch, 435–436
and trim setting, 46
power lines, 146
power-off descents
Cessna 172, 218–219
commercial flights, 610–611
Cub, 150–153
procedure, 146–147
power-off dives, 177
power-off stalls, 181–182, 213
power-on stalls, 182–183, 213
Practical Test Standards (PTS), 25, 603
precess with gyros, 195
precision approach path indicator (PAPI), 282
precision approaches, 409, 435–436
preflight procedures, 371–374
pressurized airplanes, 154–155
primary flight display (PFD), 249–250, 489–490
moving maps, 493–494
transponder codes, 491
primary Nav page, GPS, 450–451
primer, 39
private chat in online flying, 679
problem solving emergencies, 145–146
procedure turns (PTs)
requirements, 477–478
VOR approaches, 395–397
precession of propeller, 45, 47
processor requirements, 12–13
ProController software, 681
profile views, 390
profiles, flight
Baron, 582–586
Mooney, 314–317
partial-panel situations, 548
progressive taxiing, 111–112, 701
promo movies, 10
propeller control, 311–312
propeller set in C-GUMPS, 211
propellers
Baron, 583
counter-rotating, 621
deicing, 553
gyroscopic procession, 45, 47
in ice conditions, 552
spinning, 41
synchronizer system, 576
PTS (Practical Test Standards), 603
- Q**
- Qantas trademark infringement, 673
- R**
- rabbits, 92, 283
races in virtual airlines, 676
radar
ATC, 352, 667
failures, 352
virtual controllers, 681, 689–694
weather, 339
radar vectors from ATC, 352
radials, VOR, 224–225
radio magnetic indicator (RMI), 588, 590
radio navigation, 222–223
beacons, 222–223
cross-country flights, 235–244
distance-measuring equipment, 232–233
getting unlost, 244–245
GPS, 233–234
VORs. See VOR (very-high-frequency omnidirectional range) systems
radio towers, 123
radios, 95
ATC, 667
Baron, 577–578
Cessna 172, 198–199, 205, 207–208
communication with. See communication
failures, 553
G1000 glass cockpit, 256–258
Mooney, 317
RAIM (receiver autonomous integrity monitoring), 471
ranking systems for virtual airline pilots, 674–675
rapid descents, 147, 153
rate of climb and descent
Baron, 582–583
performance takeoffs and landings, 162–163
RB (relative bearing) in NDB navigation, 506–507
reading charts, 117
Reagan, Ronald, 703
real magnetic heading, 133
real-world IFR charts, 354–355
real-world weather reports, 298–300
realism settings, 37
realistic distractions, 16
receiver autonomous integrity monitoring (RAIM), 471
rectangular course with wind, 65–67
red lights in cockpit, 275
redline in Baron, 572–574
regions, virtual controller, 691
relative bearing (RB) in NDB navigation, 506–507
rental costs, 22
restarting engines, 625
restricted airspace, 130
retractable gear, 312
retracted flap position, 312
reverse-sensing CDI, 228, 514–515, 517
reverse teardrop hold entry, 368
ridiculous winds, 83–86
right of way near airports, 98
river of air, wind as, 60–61
RMI (radio magnetic indicator), 588, 590
RNAV (area navigation) system, 233, 446–449
roads in power-off descents, 146
rods, 275
roll in single-engine situations, 619, 624
roll indicator, 196
rollout, 54
rotation in spins, 176–177
roundout, 53
routes
in CRAFT acronym, 353, 700

- flight plans*, 361–362
lost communication situations, 559–560
planning, 118–119
 rpms drop, 146
 rudder, 14, 34
 Baron, 580
 crosswinds, 76, 83–84
 differential braking, 42
 forward slips, 77–79
 power-off stalls, 181
 sideslip landings, 81–83
 single-engine situations, 618–619, 621–622, 625
 slow flight, 175
 spin recovery, 177
 takeoff, 45, 76
 taxiing, 43
 in turning, 48–49
 turning tendency compensation, 47
 for yaw, 36
 rudder trim
 Baron, 574
 Mooney, 314, 319
 run-up
 Baron, 579
 Cessna 172, 208–209
 in CIGAR acronym, 45
 run-up area, 132
 running out of gas, 131–132, 245
 runway heading, 360
 “runway in sight” in VOR approaches, 393
 runways
 active, 101, 370
 layout, 88
 lights, 91, 282
 overrun, 170–171
 short-field, 163–167
 signs and markings, 89
 soft, 167–170
 spawning on, 654–655
 saving default settings, 15
 scans, hub-and-spoke system, 336–337
 scattered clouds, 296
 scenery realism, 138
 scrolling knobs, 237
 scud running
 Cub, 301–305
 dangers, 296–297
 G1000, 306
 SDF (simplified directional facility), 405–406
 sea level in altimeter settings, 39
 seatbelts for power-off descents, 152
 sectional charts, 117
 sector files, 691
 securing engines in single-engine situations, 625
 See How It Flies, 32
 selective availability GPS standard, 234
 sensitivity
 CDI, 449, 480
 GPS, 449–450
 ServInfo program, 683
 Session Conditions screen, 650
 Session Info in multiplayer mode, 667
 7110 rules and procedures, 700
 shared airways, 362
 shared cockpit feature, 24
 microphones for, 14
 multiplayer mode, 653–654, 657, 662–664
 shock cooling, 314
 short-field runways
 Baron, 592–593
 Cessna 172, 216
 landings, 166–167
 takeoffs, 163–165
 sideslip landings, 80–83
 signs, airport, 89–90
 SIMCharts for FSX, 355
 simplified directional facility (SDF), 405–406
 simulation of instruments, 252–253
 simulation rate, 82, 459
 single-engine situations, 553–554
 accident incident, 640
 aerodynamics, 618–624
 approaches, 630–635
 crosswind landings, 635–636
 drag, 618–619, 625, 639
 minimum controllable air-speed, 621–624, 638
 p-factor, 620–621
 procedures, 624–630
 takeoff, 636–637
 Telluride challenge, 638
 sink speed, minimum, 180
 sinking sensation with stalls, 176
 Six C’s of night flights, 279
 six-pack failures, 544–551
 skidding in uncoordinated flight, 63
 Skyhawk. *See Cessna 172*
 skyvector.com website, 26, 117
 slant range, 232
 slewing, 19
 slips
 forward, 77–79
 power-off descents, 152
 uncoordinated flight, 63
 slipstream effect, 47
 slow flight, 173
 aerodynamics, 173–174
 Baron, 607
 Cessna 172, 212
 practice flight, 178–181
 spins, 176
 Small Aircraft Transportation System (SATS), 698
 soft runways
 Cessna 172, 216
 landings, 169–170
 takeoffs, 161, 168–169
 softkeys, 255
 sound in multiplayer mode
 settings, 660
 sound cards, 651
 spacing in virtual flying, 707
 spark plugs, 202
 spawning on runway, 654–655
 special-use airspace, 130
 speed
 airspeed. See airspeed controlling, 49
 wind, 90–91
 speed brakes, 313–314
 spinning propellers, 41
 spins, 176–177
 base-to-final accident, 72
 practice flight, 183–184
 spirals, 609–610
 Sport Pilot Certificate, 19, 25
 Sport Pilot Practical Test Standards, 64–65
 spotlights, 218
 squawk codes, 127–128
 in LIST-MD acronym, 336
 online flying, 697
 setting, 372–373
 Squawkbox software, 677
 squawked aircraft, 193
 stall speeds, Cessna 172, 197
 stalls, 31, 174–176
 airspeed in, 184–185
 Baron, 607
 Cessna 172, 213
 departure, 182–183
 power-off, 181–182
 spins, 176–177
 standard terminal arrival route (STAR), 707
 standby communication frequency, 198
 Stanley, Max, 29
 STAR (standard terminal arrival route), 707
 starters, 203
 starting engine
 Cessna 172, 207
 Cub, 40–42
 startup procedure, Cub flight, 103–104
 static instruments, 197
 static ports, blocked, 546
 stations, 600
 statute miles, 119
 steady climbs, 32
 steep spirals, 609–610
 steep turns
 Baron, 606
 Cessna 172, 211
 procedure, 73–75
 steering in taxiing, 42–43
 Stein, Harv, 671
 “step on the ball”, 39
 “step on the sky”, 178
 stopwatch/chronograph, 205
 straight and level flight, 32
 straight-in approaches, 94, 214
 strobe lights, 205, 209, 280
 substitute aircraft in multiplayer mode, 662
 SUSPEND mode, 466
 switch points with VORs, 230
 syncing
 heading, 252, 267
 propeller, 576
 Syrus, Publius, 59
 system failures, 144, 553–554
S
 S-turns, 70–72
 safety checks in C-GUMPS, 211
 Saint-Exupery, Antoine de, 9, 543
 Samson, Charles Rumney, 505
 SATCO virtual network, 677
 satellites, GPS, 233
 SATS (Small Aircraft Transportation System), 698
T
 TAAs (terminal arrival areas), 448
 table of contents, GPS, 452

- tachometers
Cessna 172, 209
Cub, 38
multifunction flight display, 259
- TAF (terminal area forecast), 300
- tail
in ice conditions, 552
in performance equation, 49
- tailwheel airplanes
characteristics, 43–44
vs. nosewheel, 205–206
- Take-off Minimums and Obstacle Departure Procedures, 357
- takeoff configuration, 317
- takeoff distance charts, 162
- takeoff flaps, 312
- takeoff safety speed, 572–574
- takeoffs
accident incident, 55
automatic, 50
Baron, 581–582, 591–593
calculations, 160–162
center of gravity in, 601
Cessna 172, 209–210, 216–217
crosswind, 75–77
Cub, 44–46
G1000 glass cockpit, 266
Post Mills to Lebanon Municipal flight, 104–105
short-field runways, 163–165
single-engine situations, 636–637
soft runways, 168–169
tailwheel vs. nosewheel airplanes, 206
tower controller clearance for, 701
wind shear, 294
- “talk” in five Ts
GPS approaches, 462
holds, 368
ILS approaches, 431
localizer approaches, 426
VOR approaches, 398–399
- TAXI switch, 204
- taxiing
back, 164
Baron, 579
Cessna 172, 208–209
communicating, 96–97
crosswind, 75–77
Cub, 42–43
multiplayer mode, 656
Post Mills to Lebanon Municipal flight, 104, 109
progressive instructions, 111–112, 701
tailwheel airplanes, 44
- taxiways
centerline lights, 92
lights, 91, 283
markings and signs, 90
soft runway takeoffs, 168
- TeamSpeak VoIP system for online flying, 679
- teardrop hold entry, 368
- teardrop turns
for mountain airports, 594
for procedure turns, 397
- Telluride challenge, 638
- temperature
reports, 100
in takeoff calculations, 161
- temporary flight restrictions (TFRs), 130
- terminal area forecast (TAF), 300
- terminal arrival areas (TAAs), 448
- terminal sensitivity, GPS, 449–450
- terminal VORs, 230
- TERPS, 388
- terrain warnings, 262
- testing
pilots, 541
virtual controllers, 682
VORs, 335
- text communication, 695
- TFRs (temporary flight restrictions), 130
- 3D cockpit, 35
- three-point landings, 54
- threshold
lights, 282
runway marking, 89
- throttle
Baron, 580, 583
Cessna 172, 213
Cub, 38, 42
effects, 49–50
in five Ts
GPS approaches, 462
holds, 368
ILS approaches, 431
localizer approaches, 426
VOR approaches, 398–399
- rectangular course, 67
short-field takeoffs, 165
single-engine situations, 624
slow flight, 175
soft runway takeoffs, 168
spin recovery, 177
takeoffs, 44–45
- throttle quadrant
Baron, 577–578
- G1000*, 490
requirements, 13
- thunderstorms, 339
- time
in five Ts
GPS approaches, 461
holds, 368
ILS approaches, 431
localizer approaches, 426
VOR approaches, 398–399
in LIST-MD acronym, 336
Zulu, 101
- time zones, 101
- timed turns, 547
- TIS (traffic information service), 261
- TIT (turbine inlet temperature), 321
- TKE data, 260
- To-From flags for VORs, 226–229
- top-down window in multiplayer mode, 656
- tower controllers
communicating with, 97–98
multiplayer mode, 665–666
online, 701–703
- Tower mode, radar screen, 693
- towers in night flights, 284
- TPA (traffic pattern altitude), 105
- Track (TRK) indicator, 451
- track with wind, 61–62
- tracking by virtual controllers, 692
- traffic information service (TIS), 261
- traffic pattern altitude (TPA), 105
- traffic patterns
entering, 137–138
flying, 92–94
trail position, 319
- training
emergency, 149–153
online flying, 679–680
upset recovery, 178
by virtual airlines, 676
virtual controllers, 681–682
- Trans International Airlines, 673
- transition routes in VOR approaches, 401–402
- transponder codes and signals, 127–128
Cessna 172, 198, 209
in CRAFT acronym, 353, 700
online flying, 697
PFD for, 491
setting, 372–373
- virtual flying*, 693
- trend indicators, 349
- trend vectors, 252
- tricycle-gear airplanes
configuration, 44
vs. tailwheel, 205–206
- trim, 36–37
for airspeeds, 164
Baron, 574
Cub, 46
Mooney, 314, 319
- trim stalls, 183
- trips
dead reckoning, 119–120
planning. *See planning trips*
- TRK (Track) indicator, 242, 451
- troubleshooting emergencies, 145–146
- true airspeed, 124, 184–185
- true emergencies, 144
- true north in planning routes, 118
- “tune” in localizer approaches, 426
- turbine inlet temperature (TIT), 321
- turbocharged engines
cooldown, 328
overview, 310–311
- turbulence
forecasts, 292–293
wake, 178, 702
- turbulent flow with stalls, 176
- turn coordinator
Cessna 172, 196
failures, 545, 547
Garmin G1000 flight, 349
IFR flights, 335, 337
- turning tendencies, 47
- turns
ailerons for, 35–36
Baron, 606
canyon, 612–613
Cessna 172, 211
compass in, 133–135
coordinated, 39
Cub, 39, 47–49
in five Ts
GPS approaches, 461
holds, 368
ILS approaches, 431
localizer approaches, 426
VOR approaches, 398–399
level, 33
for mountain airports, 594
partial-panel situations, 547
around points, 68–70
procedure, 395–397, 477–478

in radio navigation, 238–239
rectangular course, 65–67
S-turns, 70–72
steep, 73–75

twist in five Ts
GPS approaches, 461
holds, 368
ILS approaches, 431
VOR approaches, 398–399

2D cockpit view, 249

two eyes vision, 275

two-pilot crews in virtual air-
 lines, 676

U

uncontrolled airports, 88
IFR at, 424
radio communications, 95–97
traffic patterns, 94

uncontrolled airspace, 129

uncoordinated flight
vs. coordinated, 63
forward slips, 77–79
sideslip landings, 81–83

undercarriage in C-GUMPS, 210

underfueled aircraft accident
 report, 245

UNICOM frequency, 697

United Airlines, 672–673

Universal Time Coordinated
 (UTC), 101

unusual approaches in online
 flying, 705

unusual attitude
practice, 564–565
recovery, 555–556

uphill takeoff accident incident,
 55

upset recovery training, 178

upwind leg in traffic patterns,
 92–94

urgent situations, 144, 147–148

User-Defined Weather setting,
 83

UTC (Universal Time Coordi-
 nated), 101

V

vacuum gauges, 195

vacuum system, 195

vaporization, fuel, 39

VASI (visual approach slope
 indicator), 92

VATSIM (Virtual Air Traffic
 Simulation) network, 26–27,
 677
controller software, 689–690
radar screens, 691–694
voice capability, 679

vector departures, 359–360

vector lines on radar screens, 694

vectored routes in lost commu-
 nication situations, 559

vectors
from ATC, 352
online flying, 704
VOR approaches, 393–395

Ventriolo VoIP system, 679

vertical speed indicator (VSI)
Cessna 172, 197
failures, 546, 548
IFR flights, 334, 337

vertical speed required (VSR),
 260

VFR (visual flight rules) flights,
 294
online, 702
squawk codes, 127–128

“VFR on top”, 364–365

vibration with stalls, 176

Victor airways, 229–232,
 361–362

video card requirements, 12–13

videos, 53

view-limiting devices, 340

views, 34
ATC, 667–668
commands, 17–19
multiplayer mode, 661

virtual air traffic controllers, 677,
 680–681, 687–688
clearance delivery, 698–700
communication, 695–696
departure and approach,
 704–706
en route, 706–708
ground, 700–701
handoffs, 696–697, 703–704
limited coverage, 683–684
microphones, 14
mistakes, 682–683
organizations, 681
preparing for, 690–691
radar screens, 691–694
*for real-world controller train-
 ing*, 707
software requirements,
 689–690
tower, 701–703
training, 681–682

Virtual Air Traffic Simulation
 (VATSIM) network, 26–27, 677
controller software, 689–690
radar screens, 691–694
voice capability, 679

virtual airlines, 671–673
finding, 673–674
hubs and pilot bases, 674
multiplayer mode, 675–676
online flying. *See online flying*
pilot ranking systems,
 674–675

virtual cockpit, 17–18, 35, 587

virtual practice for real-word
 flights, 138

virtual worlds in multiplayer
 mode, 646, 669

visibility
judging, 428
low, 294–296
reports, 100

vision, night, 274–275

visual approach slope indicator
 (VASI), 92

visual approaches
IFR flight to, 370–377
procedure, 518–520

visual checkpoints, 120

visual flight rules (VFR) flights,
 294
online, 702
squawk codes, 127–128

visual flying charts, 26

visual meteorological conditions
 (VMC), 336

voice communications
multiplayer mode, 651,
 658–660
online flying, 679

Voice over IP (VoIP) technol-
 ogy, 679

VOLTS light, 218

volunteers for virtual airlines,
 675

VOR approaches, 390
approach charts, 390–392
five Ts, 397–399
KPAE, 409–419, 422–423
missed, 399, 419–423
names, 403
procedure turns, 395–397
transition routes, 401–402
vectors, 393–395
VOR not on field, 399–401

VOR (very-high-frequency om-
 nidirectional range) systems
changeover points, 230
with G1000 glass cockpits, 268
heading to and from, 226–229

intersections, 231
radials, 224–225
for route planning, 361
testing, 335
Victor airways, 229–232

VOR test facilities (VOTs), 335

VSI (vertical speed indicator)
Cessna 172, 197
failures, 546, 548
IFR flights, 334, 337

VSR (vertical speed required),
 260

W

WAAS (Wide Area Augmenta-
 tion System), 234, 449

wake turbulence, 178, 702

walk arounds, 207

wastegates, 311

water surface, 171–172

Waypoint pages, 452–453

waypoints
adding, 123
bearing to, 451
fly-by and fly-over, 446
G1000 glass cockpits, 254–
 255, 265–266
GPS, 244, 452–453
GPS approaches, 442
names, 472
night flights, 279
in pilotage, 120

weather, 291
airports, 99–101
cloud reports, 296
controls and effects, 297–299
ground controller for, 700
hazards, 292
high winds and turbulence,
 292–293
IFR, 339–340
low visibility and clouds,
 294–296
multiplayer mode, 667
online flying, 678, 694
performance, 300
sources, 25–26, 299–300
VOR approaches, 413
wind shear, 293–294

weather radar, 339

weather underground, 26

weather vaning, 81

websites, 25

weight and balance, 598–600

accident incident, 602
Baron, 607–609
in rate of climb, 572–574
 wet rental rate, 22
 wheeled landings, 54
 white arc on airspeed indicator, 197
 whiz wheels, 125
 Wide Area Augmentation System (WAAS), 234, 449
 wind
 back-course approaches, 539
 in beacon tracking, 223
 combo approaches, 539–541
 crosswind landings, 80–83
 crosswind takeoffs, 75–77
 Cub flight, 63–64
 customizing, 83
 direction, 62, 90–91, 298
 DME arc approach, 538
 G1000 glass cockpits, 270
 ground reference maneuvers, 63
 heading, course, and track, 61–62
 high, 292–293
 with holds, 366, 383–384
 indicators, 90–91
 instrument approach procedures, 437
 maximum demonstrated crosswind, 83–84
 multiplayer mode, 667
 NDB approaches, 537–538
 planning for, 125
 rectangular course, 65–67
 reports, 100
 ridiculous, 83–86
 as river of air, 60–61
 S-turns, 70–72
 turns around points, 68–70
 VOR approaches, 413
 wind correction in GPS, 451
 wind shear, 293–294
 “wind the clock”, 144
 window mode, 17
 windshields in ice conditions, 552–553
 windsocks, 90–91
 wing stalls, 176
 wings
 deicing, 553
 in ice conditions, 552
 Wright, Wilbur, 159
 www.eaa.org website, 26

X

XTE (cross-track error), 260

Y

yaw, 36
 adverse, 81
 single-engine situations, 618–619, 624–625
 from turning tendency, 47
 Yeager, Chuck, 645
 yellow arc on airspeed indicator, 197
 yoke
 for ailerons, 35
 requirements, 13
 in takeoff, 45–46

Z

zero point for pitch control, 36
 Zulu time, 101

WidowPC Computers:

each one, a hand crafted
work of art

Many of the high resolution screenshots in this book
were taken using a WidowPC.

For more information visit www.widowpc.com
or call 1-800-851-7502.

