
Index of Games

The **bold** page numbers in index entries are the pages on which the term is defined.

- $2/3$ of the Average Game, **250**, 251
- 3D Chop, **61**

- AKQ, **157**

- Chomp, **2**, 17, 55
- Chop, **1**, 15, 54, 56, 57
- Coin Jack, **157**
- Coin Poker, **149**, 150, 151
- Coin Toss, **147**
- Colonel Blotto, **104**
- Common Side-Blotched Lizard, **172**, 176
- Competing Pubs, **142**
- Coordination Game, **140**, 173, 174, 176
- Cut-Cake, **26**, 81

- Dating Dilemma, **140**, 145, 205, 218, 220
- Divide the Dollar, **256**, 257–260
- Domineering, **34**, 81, 83

- Empty and Divide, **59**, 61
- Euclid's Game, **44**
- Even-Nim, **60**

- General Volunteering Dilemma, **248**

- Hackenbush, 63, **64**, 65–71, 74
- Hawk vs. Dove, **170**, 171–173, 176

- Heap, **61**
- Hex, **2**, 17, 18, 209, 210

- Infinite Nim, **61**
- Investing Dilemma, **249**

- Kayles, **23**

- Moving Knife, **278**

- Newcomb's Paradox, 160
- Nim, **45**, 46–48, 50, 51

- Odd-Nim, **60**
- Odd-Person-Out, **271**

- Pascal's Wager, 160
- Pick-Up-Bricks, **1**, 15, 16, 56
- Prisoner's Dilemma, **134**, 145, 229, 246
- Probabilistic Repeated Prisoner's Dilemma, **229**, 230–232, 234, 236
- Push, **84**

- Rock-Paper-Scissors, 89, **90**, 173
 - Dynamite, **129**
 - Lizard-Spock, **106**
 - Superman-Kryptonite, **129**
 - Weighted, **129**

- S-Pick-Up-Bricks, **60**, 62
- SOS, **24**

Split and Choose, **281**

Stag Hunt, **141**, 145, 218, 220, 249

Tic, **4**

Tragedy of the Commons, **246**

Triangle Solitaire, **188**

Turning Turtles, **61**

Two-Finger Morra, **90**, 106

Volunteering Dilemma, **141**, 145, 218,
220, 249

Voting Scenario, **276**

Wythoff's King, **60**

Wythoff's Queen, **62**

Index

The **bold** page numbers in index entries are the pages on which the term is defined.

- arbitration scheme, **223**
 - egalitarian, 240
 - Kalai-Smorodinsky, 240
 - Nash, **224**, 224, 226, 228
- Arrow's axioms, 292–293
- Arrow's Impossibility Theorem, **292**, 290–298
- Axelrod's Olympiad, 236–237

- balanced Nim position, **48**, 49–50
- best pure response, **143**, 163–167
- best response, 163–167
- binary expansion, **46**, 47, **72**, 72
- Brouwer's Fixed Point Theorem, 193, 196, **197**, 325–327

- chance node, **146**, 147
- closure, 73, 86
- coalition, 251–256, 258–260
- coalitional form, 253, 255
- coalitional game, **255**, 256, 258–260
- combinatorial game, **3**, 4–6, 9, 26, 301
- contradiction, proof by, 16
- convex hull, **124**, 125, 217
- convex set, **124**, 125
- core, **259**, 260
- Cournot Duopoly, 176, 178–181

- demand curve, 177

- depth, **12**, 12, 53
- domination, **92**, 93, **142**, 143, 249–250
 - iterated removal, 92–95, 115, 143, 168, 250
 - S-domination, 259
 - strict, **92**, **142**, 249
- dot product, **123**, 124
- dyadic number, **71**, 72–74

- envy-free division, **280**
- equating results, **113**, 114–115, **167**, 168
- equitable division, **278**
- equivalence
 - class, **43**
 - coalitional game, **272**
 - matrix game, **159**
 - position, **36**, 37–41
 - relation, **37**, 43
 - topological, **199**, 200
- evolutionary stability, 173, 175, 176
- expected payoff, **98**, 99, 135–137, 163
- expected value, **97**, 98
- extensive form, 151, 154

- Fibonacci Sequence, 23
- Fisher's Principle, 184
- fixed point, **192**, 193
- fixed point property, **193**, 194–197, 199, 201, 202, 207, 326–328

- Folk Theorem, 229, **234**, 234–236
- Gale-Shapley algorithm, **287**, 287–289
- game tree, 3–9, 12, 14, 145–154
- golden ratio, 23, 44, 62
- guarantee, **100**, 100–103
- guarantee function, **119**, 120–122
- hyperplane, **123**, 124, 131, 318
- impartial game, **26**, 45–58
- imputation, **257**, 258, 260, 261
- induction, proof by, 10–12
- information set, **148**, 148–149, 152, 154
- instant runoff, **276**
- iterated removal of dominated strategies, 92–95, 115, 143, 168, 250
- linear programming, 309–313
- matrix game, **134**, 139–144
- Matrix-to-Tree Procedure, 153–154
- MEX (minimal excluded value), **52**
- MEX Principle, **53**, 54, 56, 82
- Minimax Theorem, 313
- mixed outcome, **214**, 217–219
- move rule, **3**
- movement diagram, 144–145
- Nash arbitration, **224**, 224, 226, 228
- Nash equilibrium, **166**, 167–169, 187–188
- Nash Equilibrium Theorem, **166**, 167, 187–207, 246
- Nash flow, 202, 204, 205, 328–330
- Nash's axioms, 225
- negative of a Hackenbush position, **65**
- negotiation set, **219**, 220
- Nim-sum, **50**
- nimber, **50**, 51–53
- node, 4, 5, 7, 145, 146, 149
- normal form, 151
- normal-play game, **3**, 25–27
- outcome, **3**, 4–5, 89, 96, 97, 99, 133–139, 213–215, 217–220, 245
- partition, **43**, 44
- partizan game, **26**, 63–83
- payoff, **90**, **134**, 135–137, 139
- payoff matrix, **162**, 163, 215–216
- payoff polygon, 216–217, **218**, 219, 221, 223
- position, **3**, **27**, 147–150, 301–308
 - balanced (Nim), **48**, 49–50
 - dyadic, **75**, 75, 77–79, 81
 - equivalence, **36**, 37–41
 - fractional, 69–71
 - integral, **66**, 67–68
 - negation, **65**
 - sums of, **31**
 - terminal, **3**
 - type of, **28**, 29–30
- probability space, **96**, 96, 97, 99
- random variable, **96**
- S-domination, 259
- saddle point, **94**, 95, 104
- security level, 214, **215**, 216, 219
- Shapley Value, **261**, 261–267
- Shapley's axioms, 263
- Shapley-Shubik Index, **269**, 269
- simplex, **191**, 192, 197, 325
- Simplicity Principle, 77, **78**, 79, 80, 82
- solution concept, 258
- solution point, 223
- Sperner's Lemma, 189–191, **192**, 324–325
- Sprague-Grundy Theorem, 52–53, **53**
- stable set, **260**, 260
- status quo point, **221**, 223
- stochastic game, **108**, 108–109
- strategic form, 151–153
- strategy
 - Alternating Trigger, 241
 - dominated, **92**, 93, **142**, 143, 249–250
 - drawing, 7, 12
 - evolutionarily stable, **175**, 176
 - Grim Trigger, **231**, 232–233
 - mixed, **98**, 99, 101, 102, **162**, 163–166
 - pure, **91**, 98, **142**, **231**
 - strictly dominated, **92**, **142**, 249
 - Tit-for-Tat, 237
 - winning, 7, 12
- strategy space, **198**, 199–202, 204–207, 327–329

- strategy stealing, 16, 18
- sum of positions, **31**
- surreal numbers, 307–308
- symmetric Nash equilibrium, **172**, 173, 175
- symmetry, **15**, 16, 65, 172, 225, 264

- Tree-to-Matrix Procedure, 151, **152**
- type of a position, **28**, 29–30

- utility, 135–139
- utility function, 278

- valuation scheme, **261**
- value, **102**
- von Neumann and Morgenstern's Lottery, 138–139
- von Neumann Minimax Theorem, **102**, 102, 111, 123–128
- von Neumann solution, **102**, 103, 113–115, 118–122
- voting game, **268**

- W-L-D game tree, **5**, 6–9, 12–14
- win rule, **3**
- winning move, **56**, 58, **84**

- Zermelo's Theorem, 9, **12**, 14, 28
- zero-sum matrix game, 89, **90**, 99–102, 111–112, 134