Index

associative law *see* law – associative law
Augustine, Aurelius, 23–4, 114, 496
axiom of infinity, 393

behaviourism (behaviourist), 133, 221–2, 273, 334, 350, 358
Broad, C. D., 62
Brouwer, L. E. J., 107, 487
Busch, Wilhelm, 431

calculation, 54, 168, 172, 176, 179, 181–2, 185, 222, 249, 253, 258, 278, 286, 291, 343, 372–4, 376, 382–5, 391, 398–400, 404, 413, 420, 425, 427, 438, 444, 446, 449, 452, 454–5, 458, 460, 463, 468, 471, 473–4, 480–1, 494, 503
calculus, 3, 23, 33, 35, 39, 52–4, 65, 79, 81–2, 90, 104, 110, 119–20, 134, 139, 146, 153, 157–8, 161, 165, 181, 185, 188, 191, 196–8, 203–4, 209–11, 228, 231, 241–2, 253, 258–62, 286–8, 308, 372, 376–9, 384–7, 393–4, 400, 404–7, 409, 424–31, 437–8, 444, 449, 451, 454, 457–8, 460, 462, 466, 469, 470–2, 474, 476–7, 479–81, 484, 487, 490, 493–5, 499–503
Cantor, Georg, 494
cardinal numbers, 53, 248, 260–2, 339, 352, 365, 376, 378, 383, 392–4, 396, 399, 402, 407, 429, 437–9, 445–6, 449, 452–3, 455, 462, 469–71, 476, 481, 488, 490–3, 498–9, 502–3
Carnap, Rudolf, 82
Carroll, Lewis, 59
colour (coloured), 7, 19, 23–5, 27–8, 31, 33–5, 37, 40–5, 56, 63, 78–9, 83, 85, 89, 91–2, 95, 99, 123, 125, 134–9, 148, 152–3, 158, 163, 184, 187–8, 196–7, 202, 208, 232, 235, 238, 242, 244, 248, 250–1, 253, 268, 270–1, 274–5, 279, 287, 320–2, 328–30, 334, 337–45, 348–9, 351, 359, 365, 369, 391, 394–7, 412–14, 421
command, 6, 8, 10, 12–15, 17, 19, 20, 34, 38–40, 71–5, 77, 108, 110, 112, 132, 136–7, 146, 148, 150–2, 162–3, 189, 193–4, 219–20, 226, 252, 254–6, 266, 268, 275–8, 282–3, 286, 380, 441; *see also* order
commutative law *see* law – commutative law
consistency proof, 379–80
contradiction, 79, 105, 126, 181, 193, 329, 340–1, 380–1, 388–90, 421, 470, 500

Dedekind, Richard, 489, 491
deduction (deduce), 102, 127, 152, 207, 210, 233, 290, 308, 404, 456; *see also* derivation
definition, 10, 13, 24, 28, 30–1, 34, 38–42, 44–6, 54, 56–7, 102, 108, 119, 129, 134–5, 137, 157, 189, 194–8, 201, 207, 230–1, 253, 255–7, 261, 321, 322, 331, 374, 377–9, 386–9, 393, 400–1, 405, 408, 414–15, 427, 444–5, 461, 463–4, 469–71, 476–7, 481, 485, 491–2, 494
derivation (derive), 24, 40, 127, 203–4, 220, 222, 224, 231, 255, 278, 308, 377, 407, 412–13, 427, 432, 456–8, 460–1, 475, 480, 486, 494, 503; *see also* deduction
Dirichlet, Lejeune, 388
disjunction, 86, 91–2, 242, 244–5, 254–6, 279, 378, 470, 483, 486
distributive law *see* law – distributive law
Driesch, Hans, 349
Drury, Maurice O'Connor, 115

Eddington, Arthur, 96, 364
Einstein, Albert, 208, 488
elementary proposition, 82, 203
entailment, 230–2, 234, 256; *see also* inference
Ernst, Paul, 317
Euclid (Euclidean), 105–6, 184, 255, 323–6, 329, 331, 345, 414, 437, 496, 500–1
Euler, Leonhard, 434
excluded middle *see* law – law of the excluded middle
existence proof (proof of existence), 427–8, 434–5, 474

COPYRIGHTED MATERIAL

expectation (expect), 3, 14, 18–19, 34, 38, 40, 70–1, 73–4, 87, 94, 102, 118, 151, 156, 165, 171, 178, 180, 202, 223, 237, 259, 263–71, 273, 275–80, 284–9, 292, 309, 348, 381, 421, 430, 455, 460
explanation (explain), 3–4, 8–11, 13, 15, 23, 26–41, 44–8, 50, 54, 58, 65, 88–9, 92–6, 103–4, 106, 116, 118–19, 129, 130, 132–6, 138–9, 141–2, 145, 152–4, 156, 158, 163, 168, 181, 184–5, 189, 191, 195, 198–200, 206–7, 209, 211, 219, 221, 243, 245, 249, 251, 253, 256, 258, 261–2, 272–4, 276, 282–6, 294, 302, 306–9, 312, 316, 320, 328–9, 331, 356, 367–8, 373, 378, 384, 388–9, 401, 405–6, 415, 432, 448, 459, 462, 469–71, 478, 483–5, 489, 498

Fermat's theorem, 211, 420, 502
Frazer, Sir James George, 309, 317
Frege, Gottlob, 3, 34, 39, 55, 81, 160–1, 206, 210, 247–8, 258, 282–3, 383, 393–4, 399, 415, 475–8, 491, 494
Freud, Sigmund, 433

Galton, Sir Francis, 101
game, 3, 5, 7, 23–5, 34, 35, 45–7, 53–8, 61, 63–4, 79, 81, 90–2, 97, 101, 104, 106–7, 110–11, 113–14, 116–20, 124, 126, 130, 133, 134–6, 139–40, 145–7, 149, 150–2, 156–62, 177, 181, 184, 185–9, 192–200, 202, 204, 206, 211, 238, 253, 260–1, 286, 290, 292, 302, 313, 371–4, 380, 385–7, 393, 395, 401, 420, 424, 428, 430, 432, 437, 447, 454, 458, 479, 485, 494, 499–500; *see also* language-game
generality, 44, 50, 57, 86, 91–2, 204, 208, 238, 242–3, 246–51, 253, 254–8, 271, 383, 402, 415, 419, 444, 452–3, 455–7, 460, 462, 467, 469–71, 474, 483, 485–6, 488, 492–4
geometry (geometrical), 44, 50, 56, 100, 103, 105, 122–4, 126–7, 129, 150, 184, 202, 206, 237, 243, 253, 323–5, 330, 334–5, 345, 366, 382, 384, 386, 390–1, 415, 422, 431, 437–9, 466, 490, 494
gesture, 6, 8, 13, 24, 27, 37, 38–40, 45–6, 71–2, 87, 130, 138–9, 154–5, 184, 251, 317, 396
Goethe, Johann Wolfgang von, 429, 504
Goldbach's conjecture, 419, 432
grammar (grammatical), 10, 14, 18, 26, 28–9, 31–2, 35–6, 38, 44, 45, 48, 50–4, 59, 61–4, 67, 73, 79–81, 86, 91–2, 95, 100, 105–6, 107, 115–18, 120–5, 127, 137, 141–50, 152–3, 156, 158, 161, 163, 165, 178, 181, 183–9, 191, 195–6, 202–3, 206–9, 238–9, 242, 246–7, 249–50, 253, 255–6, 259, 270, 276, 285, 287–8, 290, 297, 302, 304–8, 311–15, 320–4, 329, 332, 334–5, 340–2, 345, 352, 354–5, 357–8, 360, 365–8, 372, 380–1, 383–6, 391, 393–5, 397–8, 407, 409–11, 413, 416, 420, 423–4, 426, 430, 432, 439, 442, 450, 453, 455, 457, 475, 477, 483–4, 486, 491–3, 499, 504–5

Hardy, G. H., 485
Hertz, Heinrich, 310
Hilbert, David, 376
hypothesis (hypothetical), 15, 19, 30, 69, 92, 94–6, 98, 103, 111, 115–17, 133, 162, 176, 180, 199, 205, 214, 290, 292, 295, 297, 318, 321, 324, 331, 334, 348–50, 357–8, 364, 371, 383, 386, 418–20, 426

idealism (idealists), 161, 346, 351, 348, 354, 373
indirect proof, 381
induction (inductive), 98, 234, 400, 423, 427, 443–4, 446, 448–50, 453–4, 456–8, 460–1, 464, 469, 471, 474, 478, 480
inference, 229, 231, 233, 236–8, 293, 452–3, 456; *see also* entailment
intention, 10, 21, 118–19, 143, 145, 153, 170, 213, 216–18, 221, 223, 225, 227, 280–2, 458, 481
interpretation (interpret), 3, 14–16, 38, 43, 48, 56, 120, 123, 127, 137, 152, 176, 266, 278, 282, 287, 326, 349, 364, 393, 420, 444, 477
James, William, 29, 37

Kant, Immanuel, 451
Kepler, Johannes, 210
Kronecker, Leopold, 352

Lagrange, Joseph-Louis, 210
language-game, 3, 7, 63–4, 156, 159, 162, 290, 292
law, 26, 62, 94, 99–102, 104, 107, 115, 126–7, 144, 147, 190–1, 197, 203, 210, 216, 249, 257, 261, 292, 304, 307, 313, 365, 377, 401, 405, 410, 418, 424–6, 428, 435, 444, 448, 452, 460–4, 468–9, 480–1, 487, 489, 491, 494, 497–504
  associative law, 444, 461, 463, 480
  commutative law, 463, 480
  distributive law, 452
  law of the excluded middle, 80, 107, 424, 435, 448, 487
Lichtenberg, Georg Christoph, 311, 490

Liebig, Justus von, 477
logic (logical), 3, 12–14, 24, 35, 44, 46, 50, 53, 55–7, 61–2, 71–2, 78, 80, 82–3, 90–3, 95, 99, 101–12, 111, 122–3, 130–1, 160, 189, 195, 198, 201, 203–7, 209, 223, 229–31, 233, 237–9, 242–4, 248–50, 252–3, 257–8, 281, 293, 308–9, 312, 321, 323–4, 327, 332, 339–41, 345, 351, 356–7, 363, 365, 367, 369, 374, 376–7, 379, 381, 383–7, 393, 401, 407–8, 413, 415, 419–21, 425, 435, 437, 439–40, 456, 465, 469–70, 475, 478, 483–4, 486–7, 491–4, 496, 502

Mach, Ernst, 322, 336–7
mathematics (mathematical), 2, 31, 48, 52, 54, 63, 82, 90, 92, 139, 162, 209–10, 231, 308, 348, 357, 370–3, 375–9, 383–4, 386, 389, 391, 394, 402, 405, 410–11, 414, 417–18, 420–6, 428–9, 430, 432–5, 437, 441, 444, 453, 458, 462, 473, 477, 482, 485–8, 490, 493–5, 500, 502, 504–5
meaning (mean), 2–7, 9–10, 15, 17, 21, 23–38, 40–2, 44–6, 48, 50–2, 54, 56–61, 63–6, 72, 74–6, 78–85, 88–90, 95–6, 98, 107–8, 110, 113–25, 127, 130–2, 134–8, 142, 145, 147–8, 151–8, 160, 163, 168, 170, 177, 180, 184–5, 191, 195–6, 198–9, 200–1, 206–7, 210–11, 219, 223, 226–8, 231, 233–4, 243, 245, 253–4, 258, 269–70, 272–4, 276, 278, 281–3, 285–8, 290, 292, 296, 300, 303, 305–8, 312, 315, 317, 321, 325–7, 329, 331, 336–7, 340, 343–4, 349, 354, 357–60, 363, 366–7, 373, 378–81, 383–6, 389, 391, 393, 395, 401–3, 407–8, 413–14, 424–5, 428, 430, 432, 439, 441–2, 450, 452–3, 455, 456–7, 460, 462, 467, 471, 483, 486, 489, 491–5, 498, 500–1, 503–4
  meaning-body, 37, 125
mechanics, 82, 101, 373
memory, 8, 33–5, 67, 86, 111, 132, 136–9, 151, 166, 167, 171, 225, 279, 284, 289, 293, 312, 327–8, 336, 347, 351, 361–5, 441
mental image, 14, 19, 26, 33–4, 40, 52, 69, 78–9, 111, 118, 127, 132, 135, 138, 157, 170–1, 173, 179, 190, 210, 225–7, 266–7, 270, 272–3, 275, 281, 284, 296, 298, 327, 330, 354–5, 359, 363, 384, 503–4
metalogic, 2, 3, 13, 158, 220, 223, 305
metamathematics, 372, 376
metaphilosophy, 54
metaphysics, 2, 320
metapsychology, 357
minima visibilia, 329, 338

negation, 37, 85–90, 117, 122–6, 130, 146, 154, 176–7, 187, 191, 235, 308, 341, 373, 380, 427, 429, 444, 467, 470, 484
Nicod, Jean, 156

order, 3, 10, 15–16, 40–3, 75, 130, 132, 136–8, 142, 162, 216, 275, 278, 282, 441; *see also* command
ostensive definition, 30, 38–41, 45–6, 134–5, 386, 408
ostensive explanation, 27, 38–9, 41, 44, 46, 132–4, 142, 184–5, 276

pain, 2, 17, 29, 41, 78, 83–6, 94, 163, 166–7, 174–6, 265, 280, 290–2, 295, 356–62, 441
  headache, 111, 361
  stomach ache, 2, 174, 280–2, 286, 295, 297
  toothache, 18, 93, 95, 111, 114, 120, 156, 163, 166, 279, 281, 289–91, 349, 356–62
periodicity, 443, 450–1, 453, 466–7, 471–2, 476, 479
phenomenology, 91, 319–20, 322, 337
philosopher (philosophers), 35, 273, 291, 301–2, 306, 309, 312–13, 315–16, 425, 432
philosophy (philosophical, philosophize), 23, 48, 50–1, 54, 56–8, 111, 148–50, 160–1, 178, 191, 202–3, 206, 258–9, 299–300, 302, 304–17, 349, 352, 355, 357–60, 365, 376, 405, 419, 424–5, 433, 444, 495, 500
physics, 92, 95–7, 101, 103, 307–8, 320, 322, 324, 373, 383, 393, 418, 420, 429
  physicists, 96, 324, 359
Plato, 23, 35, 54, 170, 176, 195, 270, 312, 317
probability, 98–104, 312, 398
proof by induction, 448–9
proof of relevance, 378–9
psychology (psychological), 3, 13, 34, 46, 65, 106, 111, 124, 126, 130–1, 134, 148, 160, 165, 172, 176, 180, 209, 218, 221–3, 238, 251, 286, 292, 322–3, 332, 351, 357, 375, 380, 394, 431, 435, 437, 453

Ramsey, Frank P., 34, 62, 198, 308, 340, 382–5, 387–9, 484
realism, 161, 355, 373
reality, 14, 19, 23, 32, 38, 45, 50, 52, 56, 59, 67, 70–1, 93–6, 122, 129, 135, 138, 141–3, 148, 156, 158–9, 170–1, 181, 184, 186–7, 190, 198, 202, 217, 226, 228, 232, 258–9, 266–8, 270, 272, 274, 277–8, 281, 283, 286–98, 291, 309, 314–15, 317, 321–2, 325, 327, 328, 334, 348, 351–4, 367, 385–7, 395, 402, 415, 421, 423, 428–9, 453, 466, 471, 475, 484, 497

recursive proof, 445–6, 452, 454, 462, 464, 468, 471–3, 480–1
Riemann, Bernhard, 420
rule (rules), 3, 18, 24, 25, 28, 29, 32, 43–5, 47, 50, 52–5, 57, 59, 61–4, 74, 80–1, 88, 90–2, 95, 97, 101–2, 106–7, 110–11, 115–19, 121–6, 132–4, 140, 142, 144–53, 158, 181, 184–203, 206, 214, 216–20, 222, 224, 231–2, 234–5, 238, 241–2, 245, 249, 251–62, 270, 274, 276, 278–9, 302, 305–7, 313, 320, 322, 326–8, 340–1, 345, 354, 363, 366–7, 373–4, 376–81, 383–4, 386, 389, 394–5, 397, 400–2, 404–10, 412–16, 420, 427, 429–32, 435, 437–8, 444, 447–8, 453–6, 458–61, 463–4, 466–72, 474, 476–8, 481, 483, 485–7, 492, 494, 497, 499–501, 503–5
Russell, Bertrand, 59, 156, 197–8, 203, 208, 231, 247–9, 376–7, 382–5, 393, 401, 407–8, 414–15, 421, 425, 476–8, 494

Schopenhauer, Arthur, 281, 300
science, 2, 57, 95, 199, 201–2, 300, 302, 314, 391, 419–20, 426, 429
sense, 2, 3, 6–10, 12–13, 15–17, 19, 21, 24–6, 28–30, 32, 34–9, 41–6, 48, 51–4, 56–61, 63–5, 67, 69, 71, 76, 78–80, 82–5, 89, 92, 94, 96, 98–101, 105–8, 110, 112, 116, 118–21, 123–7, 129–30, 133, 137–9, 144–5, 147–9, 151–2, 154–8, 161–3, 166, 173–4, 176–7, 180, 184, 186–93, 195, 197–8, 201, 203–4, 206–11, 214, 217–20, 222, 225–7, 230–1, 233–7, 239, 241–2, 248, 251, 254–6, 258, 260, 262, 264, 267–8, 270, 272, 275–82, 285–7, 289–90, 292, 294–7, 300–1, 305, 308, 310, 314–15, 317, 320–6, 328–45, 347–50, 352–61, 363–6, 368–9, 371–4, 379, 381–4, 386, 388–391, 394, 396, 398–400, 402–4, 406–8, 410–16, 418–21, 423–32, 434–5, 437–41, 444–6, 449, 453–6, 458–64, 468–9, 471–2, 474, 476, 478, 481, 483–93, 495–8, 500–4; *see also* meaning
sense data, 320, 347–8, 351, 358–9
set theory, 48, 489, 493–6
Shakespeare, William, 194
Sheffer, Henry M., 419, 476–8
Skolem, Thoralf, 445, 460–1, 463, 480
Socrates, 35, 54, 56, 170, 270
solipsism, 166, 351, 354, 358
Spengler, Oswald, 204, 307, 378
Sraffa, Piero, 190
syllogism, 204

tautology, 79, 126, 249, 377, 388–90, 400–9, 416, 492
thought (thinking), 5, 11, 14, 18, 23–4, 31–2, 43, 52, 54, 57, 62, 67, 71–3, 75–6, 80, 82, 87–90, 98, 102, 117–20, 124–6, 135, 141, 148, 156, 160, 164–9, 172–82, 196, 200, 207, 210, 214, 218, 222–3, 225–8, 233–4, 246–7, 249, 257–8, 262, 264–5, 268, 274, 280–4, 286–8, 290, 296–7, 300, 302–3, 307, 311, 314, 317–18, 322, 327, 331, 336–7, 340–1, 348, 352, 371, 373, 382–3, 397, 415, 418, 426, 433, 450, 456, 466, 483, 486–7, 492, 495, 498
time, 16, 21, 74, 84, 91–3, 102, 104, 109, 113–16, 118, 124–7, 156, 158, 166, 180, 186, 193, 197–201, 204, 208, 217, 227, 236, 239, 253, 279, 289, 296, 307, 309, 312, 314–15, 341–2, 347–8, 351, 353, 356–7, 361–5, 368, 379, 386, 398, 414, 426, 430, 434–5, 441, 484, 493, 496, 503
Tolstoy, Leo, 300
Tractatus Logico-Philosophicus, 82, 141, 158, 203, 340, 408
truth-function, 61, 82, 91–3, 230–2, 476

understanding (understand), 1–3, 5–10, 12–17, 18–21, 23–4, 27, 29–32, 35, 37–9, 40–3, 46, 48, 55–7, 59–60, 69, 76, 82, 85, 88–9, 92, 100–1, 108–14, 116–17, 119–27, 129–30, 132–5, 139, 142, 146, 148, 152, 163, 165–6, 176–7, 180–1, 190–1, 197–8, 200, 207–8, 210–11, 216, 230, 235, 247, 249, 251–2, 256, 261–2, 266, 272, 278, 281–3, 287, 290–2, 300, 304, 307–8, 312, 316, 321–2, 324, 326, 328, 331–2, 334, 340–1, 343, 349–50, 352, 354, 362–4, 368, 378, 380–2, 388, 391, 393, 401, 403, 412, 416, 419, 423, 428, 431, 439, 447, 452, 455, 459, 470, 473–6, 478, 483–4, 490, 499–504
  misunderstanding, 3, 9, 30–2, 46, 54, 56, 58, 90, 149, 202, 267, 270, 274, 290, 324, 364, 413, 420, 491

verification, 41, 69, 81, 94, 112, 137, 187, 207–9, 211, 242, 290, 325, 354, 356, 363, 378, 418–19, 483–4, 487–8
visual space, 237, 242, 245, 255, 287, 322–5, 327–35, 337–8, 345, 351–2, 358, 361, 363, 365, 395, 414, 421, 500

Whitehead, Alfred North, 376
word-language, 38–9, 45, 78, 87, 114, 129–30, 139, 155, 184, 191–2, 247, 317, 401, 407–8, 414, 428, 455, 457, 462, 470, 483