Mathematics

1  Periodicals, societies, congresses, serial publications
3  Collected works (nonserial)
5  Dictionaries and encyclopedias
7  Addresses, essays, lectures

Philosophy
   Cf. QA9.615 Recursive functions. Recursive arithmetic
   Cf. QA248+ Foundations of arithmetic. Set theory
   Cf. QA267+ Machine theory
   Cf. QA681 Foundations of geometry

8  Periodicals, societies, congresses, serial publications
8.4 General works, treatises, and textbooks
8.6 Addresses, essays, lectures
8.7 Study and teaching. Research

Mathematical logic
   9.A1 Periodicals, societies, congresses, serial publications
   9.A5-Z General works, treatises, and textbooks
   9.2 Addresses, essays, lectures
   Study and teaching. Research see QA8.7
   Classical logical systems
      Including reverse mathematics
   9.25 General works
   9.3 Propositional calculus
   9.35 Predicate calculus
   9.37 Infinitary languages
   Nonclassical formal systems
      General works
   9.4 Many-valued logic
   9.45 Modal logic
      Cf. BC199.M6 Logic
   9.47 Intuitionistic mathematics
   9.5 Combinatory logic and lambda calculus
   9.54 Proof systems
   Constructive mathematics
      General works
   9.56 Algorithms
   9.59 Computable functions. Computability theory
   Recursion theory
      Cf. QA267+ Machine theory
   9.6 General works
   9.615 Recursive functions. Recursive arithmetic
   9.62 Hierarchies
   9.63 Unsolvability
   9.64 Fuzzy logic
   Methodology of deductive systems
      Decidability. Gödel's theorem. Gödel numbers
      Completeness
Philosophy
    Mathematical logic -- Continued
9.7 Model theory
9.8 Metamathematics
9.9 Matrix logic
    Algebraic logic
10 General works
10.3 Boolean algebra
    Cf. QA268.5 Switching theory
10.35 Quantum logic
10.4 Information theory in mathematics
10.5 Mathematics as a profession. Vocational guidance
10.7 Social aspects
10.8 War and mathematics

Study and teaching. Research
    For computer-assisted instruction in mathematics see QA20.C65
    For use of electronic computers in mathematics see QA76.95
    Cf. QA135+ Elementary mathematics
11.A1 Periodicals, societies, congresses, serial publications
11.A2-Z To 2000
11.2 2001-
11.5 Computer network resources
    Including the Internet
12 Addresses, essays, lectures
    By region or country
    United States
13 General works
13.5.A-Z By region or state, A-Z
    Subarrange each state by Table Q7
14.A-Z Other regions or countries, A-Z
    Subarrange each country by Table Q7

Special teaching methods and aids
16 General works
    Audiovisual aids
18 General works, treatises, and textbooks
19.A-Z Special types, A-Z
19.A78 Art
19.B55 Blocks (Toys)
19.C45 Charts, diagrams, etc.
19.C8 Cuisenaire rods
19.L58 Literature
19.M34 Manipulatives
19.M6 Motion pictures
Study and teaching. Research
Special teaching methods and aids
Audiovisual aids
Special types, A-Z -- Continued
19.M87  Music
19.O9   Overhead projectors
19.P34  Paper work
         Including folding, cutting, etc.
19.P53  Picture books
19.T4   Television
        Authorship see QA20.M38
20.C34  Calculators
20.C65  Computer-assisted instruction
         Including computer-based experiments
20.E43  Electronic spreadsheets
20.F67  Forums (Discussion and debate)
20.G35  Games
20.G47  Gesture
20.G76  Group guidance
20.H54  Hieroglyphics
20.I53  Individualized instruction
        Intervention, Response to see QA20.R47
20.M33  Magic tricks
20.M38  Mathematical writing. Authorship
20.M63  Mobile communication systems
20.P49  Physical education
20.P67  Portfolios
20.P7   Programmed instruction
         For programmed texts, see QA36.5+ QA101+
20.P73  Project method
20.R43  Reading comprehension
20.R47  Response to intervention
20.T43  Teaching teams
20.U55  Unit method of teaching
20.W46  Whole brain learning
20.3    Awards, prizes, etc. Competitions
        History
21     General
22     Ancient
23     Medieval
        Modern
        General see QA21
24     16th-18th centuries
26     19th-20th centuries
27.A-Z  By region or country, A-Z
Women in mathematics. Women mathematicians
For biography see QA28+

Biography
28
Collective
29.A-Z
Individual, A-Z
   e.g.
   Gauss
   Jacobi
   Napier
30
Directories
   Early works through 1800
30.3
   Egyptian
31
   Greek
      Including translations and commentaries
      For Euclid's Elements for use in schools see QA451
32
   Medieval
33
   1501-1700
35
   1701-1800

General works
36
      Comprehensive treatises
      Textbooks
36.5
         Series of textbooks
            Advanced
37
   1801-1969
37.2
   1970-2000
37.3
      Intermediate (without calculus)
37.3
   1801-1969
39
   1970-2000
39.3
      Intermediate (without calculus)
39.3
   2001-
      Elementary see QA101+
40
   Handbooks, manuals, etc.
   Popular works see QA93
40.5
   Juvenile works
41
   Formulas, notation, abbreviations
41.3
   Nomenclature, terminology
   Communication of mathematical information
41.4
      General works
41.5
      Information services
41.6
      Computer network resources
         Including the Internet
41.7
   Mathematical literature
42
   Language, Authorship
      Cf. QA20.M38 Mathematical writing in mathematics study
         and teaching
43
   Problems, exercises, examinations
### Tables
- Cf. QA281 Interpolation, Extrapolation
- General tables
- Multiplication tables
  - Including squares and cubes, square roots and cube roots, reciprocals
- Factor tables
- Logarithms, Tables of mathematical functions
  - Including trigonometric, hyperbolic, etc.
- General works
- Theory and use of logarithms
- Problem solving
### Instruments and machines
- Including practical mathematics, graphical and numerical calculating
- General works, treatises, and textbooks
- Slide rules
- Computation laboratories
- Calculating machines
  - For works on the use of calculators in mathematics instruction see QA20.C34
- General works
### Electronic computers, Computer science
- Including electronic data processing and computer systems
  - For applications in special fields, see the field, e.g. QD39.3.E46, Electronic data processing in chemistry
  - Cf. QA267+ Machine theory
  - Cf. TK7885+ Computer engineering
### Periodicals, societies, congresses, serial publications
- General works, treatises, and textbooks
### Dictionaries and encyclopedias
- Communication of computer science information
### General works
### Biography
### Directories
### Juvenile works
### Addresses, essays, lectures
### Computer science as a profession, Vocational guidance
### Study and teaching, Research
### General works
### Problems, exercises, examinations
Instruments and machines
Calculating machines
Electronic computers. Computer science
Study and teaching. Research -- Continued

76.3 Certification of electronic data processing personnel
Class here works on certification in general
For works on certification on special topic, prefer
classification with the special topic, e.g.,
QA76.73.J38 Study guide for Java certification

76.33 Computer camps
Laboratories
76.35 General works
76.36.A-Z Individual laboratories, A-Z
76.38 Hybrid computers
76.4 Analog computers
Digital computers
76.5 General works
76.52 Juvenile works
76.525 Microcomputer workstations
76.527 Network computers
For works on computer network management see
TK5105.548+

Computer scheduling
76.529 General works
76.5295.A-Z Special topics, A-Z
76.5295.A34 Affinity scheduling
76.5295.P37 Parallel scheduling
76.53 Time-sharing data processing
Real-time data processing
76.54 General works
76.545 Transaction systems
Online data processing
Including general online information services and general
videotex systems
76.55 General works
76.57.A-Z Special systems, A-Z
76.57.A43 America Online
76.57.A77 AT&T WorldNet
76.57.C65 CompuServe
76.57.D44 DElPHI
76.57.E88 eWorld (Online service)
76.57.G45 GEnie (Videotex system)
76.57.G48 GNN
76.57.M52 Microsoft Network
76.57.M55 Minitel
76.57.P75 Prodigy (Online service)
76.57.P77 ProfNet
Instruments and machines
Calculating machines
Electronic computers. Computer science
Digital computers
Online data processing
Special systems, A-Z -- Continued

76.57.S68 SOURCE (Videotex system)
76.57.T44 TÉLÉTEL (Videotex system)
76.57.U43 UMI Online (Videotex system)

76.575 Multimedia systems
Cf. QA76.76.159 Interactive multimedia

76.58 Parallel processing. Parallel computers
76.585 Cloud computing
76.59 Mobile computing
76.5913 Semantic computing
76.5915 Ubiquitous computing
76.592 Wearable computers

Programming
For computer programs and other software see QA76.75+

76.6 General works
76.612 Constraint programming
76.615 Declarative programming
76.618 Evolutionary programming
76.62 Functional programming
Including functional programming languages

76.623 Genetic programming
76.624 Generative programming
76.6245 Generic programming
76.625 Internet programming. Intranet programming
76.63 Logic programming
76.635 Microprogramming
76.64 Object-oriented programming and programs
Including OPEN method

76.642 Parallel programming
76.65 Visual programming
76.66 Systems programming

Programming languages

76.7 General works
76.73.A-Z Individual languages, A-Z
Some entries in the following list appear to be out of alphabetical order because filing rules for initialisms and acronyms changed in 1981. This list is incomplete. Beginning in 2013 entries are printed for new programming languages. Generally create Cutters for new entries after .x25 using current filing rules.
Instruments and machines
Calculating machines
Electronic computers. Computer science
Digital computers
Programming languages
Individual languages, A-Z -- Continued

<table>
<thead>
<tr>
<th>Code</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.73.A12</td>
<td>ABAP</td>
</tr>
<tr>
<td>76.73.A24</td>
<td>ALGOL</td>
</tr>
<tr>
<td>76.73.A27</td>
<td>APL</td>
</tr>
<tr>
<td>76.73.A35</td>
<td>Ada</td>
</tr>
<tr>
<td>76.73.A67</td>
<td>AppleScript</td>
</tr>
<tr>
<td>76.73.A8</td>
<td>Assembly languages, Assemblers</td>
</tr>
<tr>
<td></td>
<td>Class here general works on Assembly languages and assemblers, including works on assembling</td>
</tr>
<tr>
<td></td>
<td>For works on a specific assembly language, see the language, e.g., for X86 assembly language see QA76.73.X16</td>
</tr>
<tr>
<td>76.73.A84</td>
<td>AutoLISP</td>
</tr>
<tr>
<td>76.73.A95</td>
<td>AWK</td>
</tr>
<tr>
<td>76.73.B155</td>
<td>B</td>
</tr>
<tr>
<td>76.73.B3</td>
<td>BASIC</td>
</tr>
<tr>
<td>76.73.B78</td>
<td>BSV 753</td>
</tr>
<tr>
<td>76.73.C15</td>
<td>C</td>
</tr>
<tr>
<td>76.73.C153</td>
<td>C++</td>
</tr>
<tr>
<td>76.73.C154</td>
<td>C#</td>
</tr>
<tr>
<td>76.73.C25</td>
<td>COBOL</td>
</tr>
<tr>
<td>76.73.C56</td>
<td>Clipper</td>
</tr>
<tr>
<td>76.73.C58</td>
<td>CoffeeScript</td>
</tr>
<tr>
<td>76.73.C75</td>
<td>CSP</td>
</tr>
<tr>
<td>76.73.C87</td>
<td>Curl</td>
</tr>
<tr>
<td>76.73.D138</td>
<td>D</td>
</tr>
<tr>
<td>76.73.D14</td>
<td>D*</td>
</tr>
<tr>
<td>76.73.D23</td>
<td>Dart</td>
</tr>
<tr>
<td>76.73.D25</td>
<td>DRL</td>
</tr>
<tr>
<td>76.73.D95</td>
<td>Dylan</td>
</tr>
<tr>
<td>76.73.E27</td>
<td>EasyLanguage</td>
</tr>
<tr>
<td>76.73.E38</td>
<td>ELAN</td>
</tr>
<tr>
<td>76.73.E75</td>
<td>ERLANG</td>
</tr>
<tr>
<td>76.73.F16</td>
<td>F</td>
</tr>
<tr>
<td>76.73.F23</td>
<td>FOCUS</td>
</tr>
<tr>
<td>76.73.F25</td>
<td>FORTRAN</td>
</tr>
<tr>
<td>76.73.F74</td>
<td>FRED</td>
</tr>
<tr>
<td>76.73.G25</td>
<td>GW-BASIC</td>
</tr>
<tr>
<td>76.73.G63</td>
<td>Go</td>
</tr>
<tr>
<td>76.73.H37</td>
<td>Haskell</td>
</tr>
<tr>
<td>76.73.H6</td>
<td>HP-GL/2</td>
</tr>
<tr>
<td>76.73.H96</td>
<td>HyperTalk</td>
</tr>
</tbody>
</table>
Instruments and machines
Calculating machines
Electronic computers. Computer science
Digital computers
Programming languages
Individual languages, A-Z -- Continued

76.73.I22
INFORMIX-4GL

76.73.J2
J#

76.73.J38
Java

76.73.J39
JavaScript

76.73.J63
Job Control Language

76.73.J7
JR

76.73.K63
Kodu

76.73.K67
KornShell

76.73.L23
LISP

76.73.L62
LogiQL

76.73.L63
LOGO

76.73.L66
LotusScript

76.73.L82
Lua

76.73.M15
M

76.73.M29
Mathematica

76.73.M35
Maude

76.73.M39
MDX

76.73.M53
Microsoft Visual Basic
  Including Microsoft Visual Basic for applications

76.73.M6
ML

76.73.N39
MySQL see QA76.73.S67

76.73.O115
Objective-C

76.73.O213
OpenCL

76.73.P224
PHP

76.73.P25
PL/1

76.73.P32
packetC

76.73.P67
PostScript
  Class here works on designing or writing compilers
  for PostScript
  For works on using PostScript to control the page
  appearance of paper documents, see Z52.5 or
  Z250.8

76.73.P75
Processing

76.73.P76
Prolog

76.73.P98
Python

76.73.R25
RPG

76.73.R3
R (Computer program language)

76.73.R33
Racket

76.73.R83
Ruby

76.73.S15
S
Instruments and machines
Calculating machines
Electronic computers. Computer science
Digital computers
Programming languages
   Individual languages, A-Z -- Continued
76.73.S27       SAS (Computer program language)
76.73.S28       Scala
76.73.S34       Scheme
76.73.S345      Scratch
76.73.S35       SDL
76.73.S59       SPARK
76.73.S62       SPARQL
76.73.S67       SQL. MySQL
76.73.S95       Swift
76.73.T44       Tcl
76.73.T97       TypeScript
76.73.U63       UPC
76.73.V27       VBScript
76.73.W65       Wolfram language
76.73.X16       X86 assembly language
76.73.X57       XPath
76.73.X58       XSLT
76.73.Z2        Z

Computer software
   For individual programs, see the type of program, e.g.
   QA76.76.T49 Text editors
   For application programs, see the field, e.g. HF5548.4.L67
   Lotus 1-2-3
76.75       Periodicals. Societies. Serials
76.751      Congresses
76.752      Dictionaries
76.753      Catalogs
76.754      General works
76.755      Handbooks, tables, etc.
76.756      Addresses, essays, lectures
76.758      Software engineering
   Including software reengineering
76.76.A-Z    Special topics, A-Z
76.76.A64    AngularJS
76.76.A63    Application program interfaces
76.76.A65    Application software
   Including composite applications
(76.76.A87)  Assemblers
   See QA76.73.A8, Assembly languages. Assemblers
   see QA76.73.A8
76.76.A98    Automatic differentiations
Instruments and machines
Calculating machines
Electronic computers. Computer science
Computer software
Special topics, A-Z -- Continued

76.76.C47 Certification of software
76.76.C54 Children's software
76.76.C64 Compatibility of software
76.76.C65 Compilers
  Including compilers of individual computer
  programming languages
76.76.C66 Component software
  Composite applications see QA76.76.A65
76.76.C672 Computer games
  Class here works on programming computer games
  For general works on computer games as well as
  works on specific computer games and actual
  software see GV1469.15+
76.76.C68 Computer viruses
76.76.C69 Configuration management
76.76.C73 Costs
76.76.D47 Development
76.76.D49 Device drivers
  Including individual device drivers
76.76.D57 Disassemblers
  Including decompilers
76.76.D63 Documentation of software
  Ecosystems, Software see QA76.76.S62
76.76.E93 Evaluation of software
76.76.E95 Expert systems
76.76.F34 Failures of software
  File conversion software see QA76.9.F48
  Frameworks see QA76.76.S63
76.76.F75 Free computer software
  Cf. QA76.76.O62 Open source software
76.76.G46 Generators
76.76.H85 Human factors
(76.76.H92) Hypermedia systems
  see QA76.76.I59
76.76.H94 Hypertext systems
  Including hypertext document markup languages, e. g.
  HTML (Document markup language), XML
  (Document markup language), etc.
76.76.I55 Install programs
76.76.I57 Integrated software
76.76.I58 Intelligent agents
Instruments and machines
Calculating machines
Electronic computers. Computer science
Computer software
Special topics, A-Z -- Continued
76.76.I59 Interactive media. Hypermedia
               Cf. QA76.575 Multimedia systems
Measurement, Software see QA76.76.S65
76.76.M52 Microsoft .NET Framework
76.76.M54 Middleware
               Including object monitors
Object-oriented programs see QA76.64
76.76.O62 Open source software
(76.76.O63) Operating systems
               see QA76.77+
76.76.P37 Patterns, Software
76.76.P74 Productivity
76.76.P76 Protection of software
76.76.Q35 Quality control
76.76.R42 Refactoring of software
76.76.R44 Reliability
76.76.R47 Reusability
76.76.S27 SAP NetWeaver Gateway
76.76.S37 Screen savers
76.76.S375 Self-adaptive software
76.76.S46 Shareware
76.76.S62 Software ecosystems
Software failures see QA76.76.F34
76.76.S63 Software frameworks
               For special frameworks, see the framework, e.g.,
               Microsoft .NET Framework QA76.76.M52
76.76.S64 Software maintenance
               Including Year 2000 date conversion
76.76.S65 Software measurement
76.76.S66 Software support
76.76.S69 Spyware
76.76.S73 Standards for software
76.76.S95 Systems software
76.76.T45 Teleprocessing monitors
76.76.T47 Termination
76.76.T48 Testing of software
76.76.T49 Text editors
               For works on how to use text editors to produce paper
               documents, see Z52, Z253.3+, or Z253.53+
76.76.T55 Threads
76.76.T83 Translators
76.76.U84 Utilities
Instruments and machines
Calculating machines
Electronic computers. Computer science
Computer software

Special topics, A-Z -- Continued

Verification and validation of software
Viruses see QA76.76.C68

Windows
Class here works on window functionality
For works on individual Microsoft Windows
operating systems see QA76.774.A+
Year 2000 date conversion see QA76.76.S64

Firm-ware
Operating systems

General works
Individual operating systems. By system, A-Z
Android
Berkeley BSD
BSD, Free see QA76.774.F74
DOS
FreeBSD
iOS
Linux
Mac OS
Macintosh OS see QA76.774.M33
Microsoft Windows 7
Microsoft Windows 8
Microsoft Windows 10
Microsoft Windows Me
Microsoft Windows NT
Microsoft Windows server
Microsoft Windows Vista
Microsoft Windows XP
Solaris
Ubuntu
UNIX
Vista see QA76.774.M56
Windows 7 see QA76.774.M43
Windows 8 see QA76.774.M434
Windows 10 see QA76.774.M435
Windows ME see QA76.774.M48
Windows NT see QA76.774.M53
Windows server see QA76.774.M55
Windows Vista see QA76.774.M56
Windows XP see QA76.774.M58

Special computers, computer systems, and microprocessors. By name, A-Z
Instruments and machines
Calculating machines
Electronic computers. Computer science
   Special computers, computer systems, and microprocessors. By name, A-Z -- Continued

76.8.A54  AN/FSQ-7
76.8.B38  BeagleBone Black
76.8.C46  Chromebook
76.8.E53  ENIAC
76.8.I12  IBM 360
76.8.I63  iPad
76.8.I64  iPhone
76.8.K56  Kindle Fire
76.8.M3   Macintosh
   Including MacBook
76.8.R15  Raspberry Pi
76.8.S25  Samsung
   Including Samsung Galaxy series smartphones
76.8.U6   Univac
76.8.U7   Ural
76.84     Fourth generation computers
76.85     Fifth generation computers
76.87     Neural computers. Neural networks
76.875    Artificial immune systems. Immunocomputers
76.88     Supercomputers. High performance computing
   Including heterogeneous computing
76.884    Biocomputers
76.885    Petaflops computers
76.887    Molecular computers. DNA computers
76.889    Quantum computers
76.89     Pen-based computers
76.893    Tablet computers
76.9.A-Z  Other topics, A-Z
76.9.A23  Abstract data types
   Cf. HF5548.37 Security measures in electronic data processing departments
   Cf. TK5105.8855 Internet access control
76.9.A3   Adaptive computing
76.9.A43  Algorithms
76.9.A48  Ambient intelligence
76.9.A73  Architecture, Computer
76.9.A93  Auditing
   Class here works on the auditing of electronic data processing systems and activities
   For works dealing with the auditing of electronic data processing departments see HF5548.35
Instruments and machines
Calculating machines
Electronic computers. Computer science
Other topics, A-Z -- Continued

76.9.A94 Augmented reality
76.9.A95 Automatic hypothesis formation
76.9.A96 Automatic theorem proving
76.9.A97 Autonomic computing
76.9.B22 B method
76.9.B32 Backup processing
76.9.B38 Batch processing
76.9.B45 Big data
76.9.B84 Bulletin boards
Camps, Computer see QA76.33
Children and computers see QA76.9.C659
Civilization and computers see QA76.9.C66

76.9.C55 Client/server computing
76.9.C58 Computational grids
Computer algorithms see QA76.9.A43
Computer architecture see QA76.9.A73
76.9.C62 Computer arithmetic
Computer camps see QA76.33
76.9.C63 Computer capacity
Computer literacy
Computer logic see QA76.9.L63
Computer mathematics see QA76.9.M35
76.9.C643 Computer organization
76.9.C65 Computer simulation
Cf. T57.62+ Industrial engineering
Cf. TA343 Engineering mathematics
Computer system failures see QA76.9.F34
76.9.C659 Computers and children
Cf. LC40.5.C66 Computer-assisted home schooling
76.9.C66 Computers and civilization. Social aspects of computers
Computers and family see QA76.9.F35
Computers and older people see QA76.9.O43
Computers and women see QA76.9.W65
76.9.C67 Constraint databases
Conversion of computer files see QA76.9.F48
76.9.C68 Conversion of computer systems
76.9.C72 Cookies (Computer science)
Crowdsourcing see QA76.9.H84
76.9.C92 Cyberinfrastructure
Data analysis, Quantitative see QA76.9.Q36
76.9.D26 Database design
Instruments and machines
Calculating machines
Electronic computers. Computer science
Other topics, A-Z -- Continued

76.9.D3  Database management
          Cf. QA76.9.D37 Data warehousing
76.9.D314 Database security
76.9.D32 Databases
          Including online databases and non-relational databases
          Cf. QA76.9.W43 Web databases
76.9.D33 Data compression
76.9.D337 Data entry
76.9.D338 Data integration
76.9.D3385 Data logging. Event logging
          Class here general works on software generated lists of events
          For works on data logging equipment and logs used in a specific field, see the field, e.g., QH324.9.B5
          Biotelemetry
          For data loggers see TK7895.D28
76.9.D34 Data marts
76.9.D343 Data mining
          Including OLAP technology
76.9.D345 Data preparation
76.9.D348 Data recovery
76.9.D35 Data structures
          Cf. QA76.9.C72 Cookies (Computer science)
76.9.D37 Data warehousing
76.9.D43 Debugging in computer science
          Including structured walkthrough
76.9.D5 Distributed processing
76.9.D6 Documentation
          Cf. QA76.76.D63 Software documentation
76.9.E25 Economic aspects
76.9.E53 End-user computing
76.9.E57 Entertainment computing
76.9.E58 Environmental aspects
76.9.E77 Error messages
          Ethical aspects see QA76.9.M65
76.9.E94 Evaluation of computer performance
76.9.E95 Evaluation of data processing activities
          Event logging see QA76.9.D3385
          Expert systems see QA76.76.E95
76.9.F34 Failures of computer systems
          Cf. QA76.76.F34 Software failures
76.9.F35 Computers and family
76.9.F38 Fault-tolerant computing
Instruments and machines
Calculating machines
Electronic computers. Computer science
Other topics, A-Z -- Continued

76.9.F48  File conversion
       Including individual file conversion software, e.g. Adobe Acrobat
76.9.F5  File organization
76.9.F53  File processing
76.9.F67  Formal methods
76.9.G37  Garbage collection
76.9.G68  Government policy
       Granular computing see QA76.9.S63
       Graphical user interfaces see QA76.9.U83
       Grids, Computational see QA76.9.C58
76.9.H35  Hard disk management
76.9.H36  Hashing
76.9.H84  Human computation. Crowdsourcing
       Cf. Q337+ Distributed artificial intelligence
76.9.H85  Human-computer interaction
76.9.I52  Information visualization
76.9.I55  Input design
76.9.I58  Interactive computer systems
76.9.K48  Keyboarding
       Class here works on keyboarding computer formats, such as punched cards or punched tape
       For works on keyboarding eye-readable reports and displays see Z49+
76.9.L38  Lattice theory
76.9.L63  Logic, Computer
76.9.M3  Management
76.9.M35  Mathematics, Computer
76.9.M45  Memory management
76.9.M65  Moral and ethical aspects
76.9.M68  Multilingual computing
76.9.N37  Natural computation
76.9.N38  Natural language processing
       Cf. P98+ Linguistics
76.9.N47  Netcentric computing
       Non-relational databases see QA76.9.D32
76.9.O35  Object-oriented methods
       Cf. QA76.64 Object-oriented programming
       OLAP technology see QA76.9.D343
76.9.O43  Computers and older people
76.9.O59  Olympiads
       Online databases see QA76.9.D32
       Organization, Computer see QA76.9.C643
Instruments and machines
Calculating machines
Electronic computers. Computer science
Other topics, A-Z -- Continued

76.9.P75  Psychological aspects
76.9.Q36  Quantitative research. Quantitative data analysis
76.9.Q4   Question-answering systems
          Religious aspects see BL255.5
76.9.R45  Remote job entry
76.9.R48  Reversible computing
          Security, Computer see QA76.9.A25
          Security, Data base see QA76.9.D314
76.9.S54  Self-stabilization
          Social aspects of computers see QA76.9.C66
76.9.S63  Soft computing
          Including granular computing
          Software maintenance see QA76.76.S64
76.9.S8   Standards
          Cf. QA76.76.S73 Standards for software
76.9.S84  Structured techniques
          Structured walkthrough see QA76.9.D43
76.9.S88  System design
          System failures see QA76.9.F34
76.9.S9   Systems migration
76.9.T43  Technical support
          Cf. QA76.76.S66 Software support
76.9.T48  Text processing
76.9.T7   Transborder data flow
76.9.U83  User interfaces
          Including graphical user interfaces
76.9.V5   Virtual computer systems
          Visualization, Information see QA76.9.I52
76.9.W43  Web databases
76.9.W65  Computers and women
76.95    Use of electronic computers in mathematics
          For works on the use of calculators in mathematics
          instruction see QA20.C34
          For works on computer-assisted instruction in
          mathematics see QA20.C65

Miscellaneous geometrical instruments
          Cf. T375+ Drawing instruments

77       General works
81       Planimeters
          Mechanical aids in higher analysis
85       General works
90       Graphic methods (General). Nomography
93       Popular works
Mathematical recreations
  For Rubik's Cube, Rubik's Revenge, Rubik's Snake, etc.
  see QA491

Miscellany and curiosas
Elementary mathematics. Arithmetic
  Including basic mathematical concepts for the elementary grades
  Cf. QA248+ Foundations of arithmetic

Textbooks
  Through 1845
  1846-1900
  1901-1960
  1961-2000
  2001-

Special aspects of the subject as a whole

Counting
  Class here works dealing with counting, including counting
  books and other forms of materials
  For works dealing with numeration, the concept of
  numbers, and numeration systems see QA141+

Elementary operations
  e.g. addition, subtraction, multiplication, division

Fractions
  Including proportion, ratio

Roots
  Including square root, cube root

Study and teaching
  Cf. LC4621 Education of children with mental disabilities

General works, treatises, and textbooks
  Through 1960
  1961-2000
  2001-

Teaching fractions

Problems, exercises, examinations

Numeration, number concept, numeration systems
  Cf. QA241+ Theory of numbers
  Cf. QA297+ Numerical analysis

General works, treatises, and textbooks

Number concept (Elementary)
  Cf. BF456.N7 Numbers. Mathematics (Psychology)

History
  Cf. GN476.15 Primitive numeration
  Cf. P211+ History of writing

Juvenile works
Elementary mathematics. Arithmetic
Numeration, number concept, numeration systems --
Continued

141.35
Decimal system
Class here expository and historical works on the decimal system
For tables, arithmetic, and other works with values expressed mainly in the decimal system, see the special class numbers that are provided for particular fields, e.g. QA101 Arithmetic. For tables, arithmetic, etc., for other special systems, see QA141.4+

141.4
Binary system
Duodecimal system
141.5.A1
Periodicals, societies, congresses, serial publications
141.5.A2-Z
General works, treatises, and textbooks
141.6
Octal system
141.8.A-Z
Other special systems, A-Z
141.8.Q5
Quinary system
141.8.S4
Sexadecimal system
141.8.S5
Sexagesimal system
141.8.T45
Ternary system
(145)
Algebra and arithmetic
see QA101+

Algebra
150
Periodicals, societies, congresses, serial publications
151
History
Textbooks
Elementary
152
Through 1970
152.2
1971-2000
152.3
2001-
Advanced
154
Through 1970
154.2
1971-2000
154.3
2001-
154.8
Early works to 1800
155
General works and treatises
Including higher algebra
155.15
Juvenile works
155.2
Addresses, essays, lectures
155.5
Special aspects of the subject as a whole
155.7.A-Z
Special topics, A-Z
155.7.E4
Electronic data processing
157
Problems, exercises, examinations
Study and teaching. Research
159
General works
159.2
Outlines, syllabi, etc.
Algebra -- Continued

161.A-Z  
Miscellaneous elementary topics, A-Z

161.B48  
Binomial coefficients

161.B5   
Binomial theorem

161.E95  
Exponents

161.F3   
Factors

Logarithms see QA59

161.P59  
Polynomials

162  
Abstract algebra

Cf. QA10.3 Boolean algebra

Combinatorics. Combinatorial analysis

164  
General works

164.5   
Problems, exercises, etc.

164.8   
Enumeration problems. Generating functions

Cf. QA353.G44 Special functions

164.9   
Identities

Permutations. Combinations. Partitions

Graph theory

Cf. QA612.18 Map-coloring problem

166  
General works

166.14  
Bipartite graphs

166.145  
Cayley graphs

166.15  
Directed graphs

166.16  
Perfect graphs

166.165  
Quantum graphs

166.17  
Random graphs

166.175  
Fuzzy graphs

166.18  
Hamiltonian graph theory

166.185  
Intersection graph theory

166.19  
Eulerian graph theory

166.195  
Topological graph theory

166.197  
Graph labelings

Cf. QA612.18 Map-coloring problem

166.2   
Trees

166.22  
Paths and cycles

166.23  
Hypergraphs

166.24  
Reconstruction

166.242  
Representations of graphs

166.243  
Graph connectivity

166.245  
Graph algorithms

166.247  
Graph coloring

Design and configurations

166.25  
General works

166.3   
Block designs

166.4   
Hadamard matrices

166.6   
Matroids. Greedoids
Algebra
  Combinatorics. Combinatorial analysis
    Design and configurations -- Continued
  166.7  Packing and covering
  166.75 Polyominoes
  166.8  Tessellation and tiling
        Combinatorial geometry
  167  General works
  167.2  Finite geometries
  169  Homological algebra
    Including functors, categories
  (171)  Group theory
    see QA174+
  Ordered sets
  171.48  General works
  171.485 Partially ordered sets
  171.49  Semilattices
  171.5  Lattice theory
    Cf. QD921+ Crystal lattices
  Ordered algebraic structures
  172  General works
  172.4  Ordered groups
  Group theory
    Cf. QA172.4 Ordered groups
    Cf. QA385+ Continuous groups
    Cf. QA387 Topological groups. Lie groups
    Cf. QA613.7 Topological transformation groups
    Cf. QA614.97 Pseudogroups and deformations of structures
    Cf. QC174.17.G7 Quantum theory
    Cf. QD455.3.G75 Physical chemistry
  174  Periodicals, societies, congresses, serial publications
  174.2  General works
  174.5  Juvenile works
  Study and teaching. Research
  174.6  General works
  174.62.A-Z  Special topics, A-Z
  174.62.C65  Computer-assisted instruction
  174.7.A-Z  Special topics, A-Z
  174.7.D36  Data processing
  174.7.S96  Symmetry
  175  Permutation groups
  176  Representations of groups
  177  Finite groups
  177.4  Formal groups
  178  Infinite groups
  179  Linear algebraic groups
# Algebra

Group theory -- Continued

180  Abelian groups
181  Groupoids
181.5  Quasigroups
182  Semigroups
182.5  Combinatorial group theory
183  Geometric group theory

# Linear and multilinear algebra. Matrices

Cf. QA243 Bilinear forms

General works, treatises, and textbooks

184  To 2000
184.2  2001-
184.5  Problems, exercises, examinations
185.A-Z  Special topics, A-Z
185.C65  Computer-assisted instruction
185.D37  Data processing
186  Vector spaces
187  Linear dependence

# Matrices

188  General works
191  Determinants
192  Elimination
193  Eigenvalues and eigenvectors
195  Proximity matrices
196  Quaternions
196.5  Random matrices
196.7  Sylvester equations
197  Triangularization
199  Clifford algebras
199.5  Multilinear algebra. Tensor products

Cf. QA433 Vector and tensor analysis

# Theory of equations

200  General works
201  Invariants
205  Exterior algebra. Ausdehnungslehre

Cf. QA119 Elementary mathematics

211  General works, treatises, and textbooks
212  Roots. Symmetric functions
214  General resolution of equations
    Including simultaneous equations
215  Cubic, quadratic, biquadratic, and other particular equations
218  Numerical solutions
219  Graphic algebra
Algebra -- Continued
Approximation theory
  Cf. QA297+ Numerical analysis
221  General works
223  Radial basis functions
224  Spline theory
Number theory
241  General works, treatises, and textbooks
241.5  Geometry of numbers
241.7  Probabilistic number theory
242  Divisibility. Linear congruences. Factorization. Quadratic residues. Diophantine analysis
  Arithmetical algebraic geometry
242.5  General works
242.6  Arakelov theory
243  Forms
  Including quadratic, bilinear forms
244  Higher congruences, residues. Fermat's theorem
245  Cyclotomy. Application of functions to arithmetic
246  Distribution of primes. Special numerical functions, etc.
246.5  Sequences of integers
  Exponential and character sums
246.7  General works
246.8.A-Z  Special sums, A-Z
246.8.G38  Gaussian
246.8.K58  Kloosterman
246.8.T75  Trigonometric
  Algebraic fields. Algebraic numbers
247  General works
  Modular fields. Finite fields
247.3  General works
247.35  Modular arithmetic
247.4  Differential and difference algebra
247.45  Division algebras
247.5  Transcendental numbers. Irrational numbers
  Foundations of arithmetic. Set theory. Transfinite numbers
248  General works
248.3  Elementary textbooks
248.5  Fuzzy sets
  Recursive functions. Recursive arithmetic see QA9.6+
251  Universal algebra
  Cf. QA184+ Linear and multilinear algebra
251.3  Commutative rings and algebras
251.35  Group rings
251.38  Local rings
251.4  Noncommutative rings and algebras
251.5  Associative rings and algebras
Algebra -- Continued

Nonassociative rings and algebras

252
General works

252.3
Lie algebras. Lie superalgebras
   Cf. QA387 Lie groups

252.5
Jordan algebras

255
Complex numbers

(263)
Matrices
   see QA188+

Machine theory. Abstract machines. Abstract automata
   Cf. QA9.6+ Recursive functions
   Cf. QA75.5+ Electronic computers
   Cf. QA402.3+ Control theory

267
General works, treatises, and textbooks

267.3
Formal languages
   Cf. P98+ Language data processing

267.5.A-Z
Special types of machines, A-Z
   Cellular automata
267.5.C45
   Fuzzy automata
267.5.F89
   Probabilistic automata
267.5.P7
   Sequential machines
267.5.T45
   Temporal automata

267.7
Computational complexity. Kolmogorov complexity

268
Coding theory

268.5
Switching theory
   Cf. QA10.3 Boolean algebra
   Cf. TK7868.S9 Switching circuits

Game theory

269
General works
   Cf. T57.92 Industrial engineering

270
Games of strategy

271
Games of chance

272
Differential games

272.4
Cooperative games

272.5
Noncooperative games

Probabilities
   Cf. T57.3+ Industrial engineering
   Cf. TA340 Engineering mathematics

273.A1
Periodicals, societies, congresses, serial publications

273.A3
Dictionaries and encyclopedias

273.A35
Philosophy

273.A4
History

273.A5-Z
General works, treatises, and textbooks

273.15
Popular works

273.16
Juvenile works

273.18
Addresses, essays, lectures

273.19.A-Z
Special topics, A-Z
Probabilities
Special topics, A-Z -- Continued

273.19.E4
Electronic data processing
Study and teaching. Research

273.2
General works

273.25
Problems, exercises, examinations

273.26
Computer-assisted instruction

273.27
Programmed instruction

273.3
Handbooks, tables, formulas, etc.

273.4
Axioms and foundations

273.43
Probability theory on algebraic and topological structures

273.45
Combinatorial probabilities

273.5
Geometric probability. Stochastic geometry. Random sets

273.6
Distributions. Characteristic functions

273.67
Limit theorems

Stochastic processes
  Cf. T57.33 Renewal theory
  Cf. T57.35+ Renewal theory
  Cf. T57.9 Queueing theory

274.A1
Periodicals, societies, congresses, serial publications

274.A5-Z
General works, treatises, and textbooks

274.12
Problems, exercises, etc.

274.13
Axioms and foundations

Stochastic analysis
  General works

274.2
Stochastic integrals

274.223
Stochastic inequalities

274.225
Stochastic sequences

274.23
Stochastic differential equations

274.25
Stochastic partial differential equations

274.27
Stochastic integral equations

274.28
Random operators

274.29
White noise theory

274.3
Stationary processes

274.4
Gaussian processes

274.42
Point processes

274.45
Random fields

274.46
Random measures

274.5
Martingales. Semimartingales

274.6
Learning models

Markov processes. Markov chains

274.7
General works

274.73
Random walks

274.75
Diffusion processes. Brownian motion processes
  Cf. QC183 Constitution and properties of matter and anti-matter

274.755
Jump processes
Probabilities
   Stochastic processes
   Markov processes. Markov chains -- Continued
274.76  Branching processes
274.8   Queuing theory
274.9   Self-similar processes
275     Theory of errors. Least squares
Mathematical statistics
   Including statistical inference and fundamental concepts of
   statistics
   For special applications of statistics, see the field of application,
   e.g. HD1421+ Agricultural statistics; LB2846 Educational
   statistics; TA340 Statistical methods in engineering
276.A1  Periodicals, societies, congresses, serial publications
276.A12 Collected works (nonserial)
276.A2-Z General works
276.12   Elementary texts
   Including descriptive statistics
276.13   Juvenile works
276.14   Dictionaries and encyclopedias
276.15   History
   Biography
276.156  Collective
276.16   Addresses, essays, lectures
276.17   Statistics as a profession. Vocational guidance
   Study and teaching. Research
276.18   General works
276.19   Outlines, syllabi
276.2    Problems, exercises, examinations
276.22   Computer-assisted instruction
276.23   Geometrical models
276.25   Handbooks, tables, formulas, etc.
   Including tables of random numbers
276.3    Graphic methods
Data processing
   Class here works on the use of data processing and computers
   in mathematical statistics in general
   For the application of statistical data processing and statistical
   analysis programs in special fields see the field, e.g.
   HF5415.125, Marketing; T57.5, Industrial engineering
276.4    General works
276.45.A-Z Special programs or languages, A-Z
276.45.M53 Microsoft Excel
276.45.M56 Minitab
276.45.R3 R (Computer program language)
276.45.S27 SAS (Computer program language)
### Mathematical statistics
- **Data processing**
  - Special programs or languages, A-Z -- Continued
- **276.45.S28** SCA statistical system
- **276.45.S83** Statistica
- **276.5** Fuzzy statistics
- **276.6** Sampling theory and methods
- **276.7** Sampling distribution
- **276.74** Tolerance regions. Confidence intervals
- **276.8** Estimation theory
  - Including measurement uncertainty
- **276.9** Minimum message length. Minimum description length

### Testing of hypotheses
- **277** General works
- **277.3** Chi-square test
- **277.5** Observed confidence levels

### Multivariate analysis
- **278** General works
- **278.2** Regression analysis. Correlation analysis
- **278.3** Path analysis. Structural equation modeling
- **278.4** Paired and multiple comparisons
- **278.5** Factor analysis. Principal components analysis.
  - Correspondence analysis
- **278.6** Latent structure analysis
- **278.65** Discriminant analysis
- **278.7** Order statistics
- **278.75** Ranking and selection
- **278.8** Nonparametric methods
  - Analysis of variance and covariance. Analysis of means.
  - Experimental design
- **279** General works
- **279.2** Prediction analysis

### Decision theory
- **279.4** General works
- **279.5** Bayesian statistics
- **279.6** Fuzzy decision making
- **279.7** Multistage decision procedures. Sequential analysis

### Time series analysis
- **280** Time series analysis

### Interpolation. Extrapolation
- Cf. QA47+ Mathematical tables
- Cf. QA221+ Approximation theory
- Cf. QA297+ Numerical analysis

### Sequences
- Cf. QA246.5 Sequences of integers
295 Series
   Including infinite products and other infinite processes
297 Numerical analysis
   Cf. QA221+ Approximation theory
297.3 General works, treatises, and textbooks
297.5 Problems, exercises, etc.
   Numerical approximation
   For numerical solution to differential equations, including
   initial value problems and boundary value problems
   see QA370+
   Cf. QA71+ Instruments and machines
   Cf. QA90 Graphic methods. Nomography
   Cf. QA218 Numerical solutions of algebraic equations
   Cf. QA275 Least squares
   Cf. QA281 Interpolation. Extrapolation
297.55 Relaxation methods
297.6 Smoothing. Curve fitting
297.65 Rounding
297.7 Roundoff errors
297.75 Interval analysis
297.8 Iterative methods
298 Numerical simulation. Monte Carlo method
   Cf. T57.62+ Industrial engineering
299 Numerical differentiation
   Numerical integration
299.3 General works
299.4.A-Z Special formulas, A-Z
299.4.C83 Cubature formulas
299.4.G3 Gaussian quadrature formulas
Analysis
   Including calculus, functional analysis, functions, differential
   equations
299.6 Periodicals, societies, congresses, serial publications
   Foundations
299.8 General works
299.82 Nonstandard analysis
300 General works, treatises, and textbooks
300.5 Addresses, essays, lectures
301 Problems, exercises, examinations
302 Early works through 1800
   Calculus
   Cf. QA431 Calculus of differences
   General works, treatises, and textbooks
303 Through 2000
303.2 2001-
303.3 Study and teaching. Research
303.5.A-Z Special topics, A-Z
### Analysis

#### Calculus

- **Special topics, A-Z -- Continued**
  - 303.5.C65 Computer-assisted instruction
  - 303.5.D37 Data processing

#### Differential calculus

- 304 General works
- 305 Problems, exercises, examinations
- 306 Miscellaneous special topics

#### Integral calculus

- 308 General works
- 309 Problems, exercises, examinations
- 310 Tables of integrals
- 311 Miscellaneous special topics
  - Measure and integration
    - Including Lebesgue integrals

#### Fractional calculus

- 312 General works
- 312.5 Fuzzy measure theory
- 313 Ergodic theory
  - Cf. QA329.2 Linear operators
  - Cf. QA611.5 Topology

#### Functional analysis

- 314 Fractional calculus
- 315 General works
- 316 Miscellaneous special topics
  - Periodicals, societies, congresses, serial publications
- 320 General works
- 321 Addresses, essays, lectures
- 321.5 Nonlinear functional analysis
- 322 Topological linear spaces
- 322.2 Normed linear spaces. Banach spaces
- 322.4 Inner product spaces. Hilbert spaces
- 322.5 Indefinite inner product spaces
- 323 Function spaces
- 324 Theory of distributions
- 325 Measures, integration, derivatives
- 326 Topological algebras. Banach algebras
  - Operator theory
    - 329 General works
    - 329.2 Linear operators
    - 329.4 Differential operators
    - 329.42 Partial differential operators
    - 329.5 Narrow operators
    - 329.6 Integral operators
Analysis
Functional analysis
  Operator theory -- Continued
    329.7 Pseudodifferential operators
    329.8 Nonlinear operators
    329.9 General works
  Fixed point theory
    Cf. QA612.24 Fixed points and coincidences
Theory of functions
  331 General works, treatises, and advanced textbooks
    331.3 Elementary textbooks
    331.5 Functions of real variables
    331.7 Functions of complex variables
    Riemann surfaces
      Including multiform, uniform functions
  333 General works
    335 Fuchsian groups
    337 Teichmüller spaces
  341 Algebraic functions
  342 Logarithmic, circular, and exponential functions
  343 Elliptic functions. Elliptic integrals. Modular functions
  345 Abelian functions. Theta functions
    Including hyperelliptic functions
  Special functions
    Cf. QA406 Spherical harmonics
    Cf. QA408 Bessel functions
    Cf. QA409 Lamé functions
  351 General
    353.A-Z Other special functions, A-Z
      353.A9 Automorphic. Fuchsian
      353.C17 C-functions
      353.C64 Concave functions
      353.E5 Entire functions
      Fuchsian see QA353.A9
    353.G3 Gamma
    353.G44 Generating functions
      Cf. QA164.8 Combinatorial analysis
    353.H9 Hypergeometric
    353.K47 Kernel functions
    353.P4 Periodic functions
    353.T7 Transcendental functions
  355 Miscellaneous special topics
  360 Geometric principles of analysis. Mapping of regions.
    Conformal representation
      Cf. QA646 Differential geometry
  Differential equations
    370 Periodicals, societies, congresses, serial publications
Analysis
Differential equations -- Continued

371 General works, treatises, and textbooks
Study and teaching. Research
371.3 General works
371.32 Outlines, syllabi, etc.
371.35 Computer-assisted instruction
371.5.A-Z Special topics, A-Z
371.5.D37 Data processing
372 Ordinary differential equations (linear and nonlinear)
372.5 Differential-algebraic equations
373 Differential-difference equations
374 Partial differential equations (first order)
377 Partial differential equations (second and higher orders)
377.3 Evolution equations
Cf. QC20.7.E88 Mathematical physics
377.5 Degenerate differential equations
378 Initial value problems
378.5 Inverse problems
379 Boundary value problems
380 Bifurcation theory
381 Differential forms and invariants
Cf. QA614.46 Pfaffian systems
Continuous groups (of transformations). Infinitesimal
transformations
385 General works
387 Topological groups. Lie groups
Cf. QA613.7 Topological transformation groups
Cf. QA613.8 Hopf algebras
Cf. QA614.97 Pseudogroups and deformations of
structures
Analytical methods used in the solution of physical problems
Including mathematical physics (mathematical theory only)
Cf. QC19.2+ Mathematical physics
Cf. TA329+ Engineering mathematics and engineering
analysis
401 General works, treatises, and textbooks
System analysis
Cf. T57.6+ Industrial engineering
Cf. TA168 Systems engineering
402 General works
402.2 Decomposition method
Control theory (General and linear)
Cf. TJ212+ Automatic control
402.3 General works
402.35 Nonlinear control theory
402.37 Stochastic control theory
Analysis
Analytical methods used in the solution of physical problems
-- Continued
Mathematical optimization. Programming
  Cf. T57.7+ Industrial engineering
402.5 General works
402.6 Transportation problems
  Including assignment and location problems
Harmonic analysis (General)
  Including abstract harmonic analysis
403 General works
403.3 Fourier analysis
403.5 General works
404 Fourier series
404.5 Orthogonal series. Orthogonal functions and polynomials
Potential theory. Pluripotential theory
  Cf. QA825+ Analytic mechanics
404.7 General works
405 Harmonic functions
406 Laplace and Legendre functions (Spherical harmonics)
408 Bessel functions (Cylindrical harmonics)
409 Lamé functions (Ellipsoidal harmonics)
411 Toroidal and other harmonics
425 Dirichlet's problem and analogous problems
427 Nonlinear theories. Nonlinearity
431 Difference equations and functional equations. Integral
equations. Calculus of differences
432 Operational calculus. Laplace transformation
433 Vector and tensor analysis. Spinor analysis. Scalar field
theory
Geometry
  Cf. QA681 Foundations of geometry
440 Periodicals, societies, congresses, serial publications
441 Dictionaries and encyclopedias
442 Philosophy
443 Collected works (nonserial)
443.5 History
444 Early works through 1800
445 General works, treatises, and textbooks
445.5 Juvenile works
446 Addresses, essays, lectures
447 Special aspects of the subject as a whole
448.A-Z Special topics, A-Z
448.D38 Data processing
  Elementary geometry
Geometry

Elementary geometry -- Continued

451 Euclid's Elements for use in schools
   For commentaries, Greek texts, and translations see QA31

Other textbooks (Plane and solid)
453 General works
455 Plane
457 Solid
459 Problems, exercises, examinations
460.A-Z Special propositions, A-Z
460.P8 Pythagorean theorem

Study and teaching. Research
461 General works, treatises, and textbooks
   Special teaching methods and aids
462 General works
462.2.A-Z Special types, A-Z
462.2.C65 Computer-assisted instruction
462.2.G34 Games
463 Laboratory manuals
464 Practical geometry. Geometrical drawing
   Cf. QA497 Higher geometrical drawing (Plane)
   Cf. QA501+ Descriptive geometry
465 Measurement
   Famous problems
466 General works
467 Circle squaring
468 Trisection of the angle
469 Duplication of the cube
471 Projective geometry
   Cf. QA554 Projective methods (Analytic geometry)

Modern geometry. Inversions
473 General works
474 Plane
475 Solid
477 Affine geometry

Special topics in plane geometry
481 Axioms. Postulates. Logic
   Cf. QA681 Foundations of geometry
482 Straight lines, angles, triangles, etc.
483 Curves. Ovals
484 Circle
485 Conics
491 Special topics in solid geometry
   Including Rubik's Cube, Rubik's Revenge, Rubik's Snake, etc.
497 Higher geometrical drawing (Plane)
Geometry -- Continued

Descriptive geometry
  Cf. T351+ Mechanical drawing
501  General works, treatises, and textbooks
501.5  Problems, exercises, examinations
Parallel projection
  General works
  Orthogonal projection on two planes
503  General works
505  Isometric projection
507  Oblique projection
Central projection
  General works
511  Perspective
    Class here geometrical works only
    Cf. NA2710 Architecture
    Cf. NC748+ Drawing
    Cf. T369 Mechanical drawing
519  Shades and shadows
    Class here geometrical works only
    Cf. NC755 Drawing
520  Spherical projection
    Cf. GA110+ Map projection
521  Miscellaneous special topics
529  Geometry and trigonometry (combined)
Trigonometry
  General works, treatises, and textbooks
531  Plane
533  Spherical
535  Problems, exercises, examinations
538  Miscellaneous special topics
Analytic geometry
  General works, treatises, and textbooks
551  Data processing
551.5  Plane. Conic sections
552  Solid
553  Projective methods
554  Problems, exercises, examinations
555  Coordinates
556  Equipollence
556.5  Straight line and circle. Triangle
557  Conics
559  Curves
559.5  Quadric surfaces
561  Maxima and minima
563  Algebraic geometry
  General works, treatises, and textbooks
564
Geometry
Algebraic geometry -- Continued
Higher algebraic curves
565  General works, treatises, and textbooks
567  Plane curves
567.2.A-Z Special curves, A-Z
567.2.C82 Cubic
567.2.E44 Elliptic
567.2.I84 Isothermic
567.2.M63 Modular
567.2.O76 Orthogonal
567.2.Q35 Quartic
567.2.Q54 Quintic
567.2.S56 Smooth affine
Higher algebraic surfaces
571  General works, treatises, and textbooks
573  Special surfaces
581  Skew algebraic curves
582  Tropical geometry
Transformations, correspondences, and general methods
for algebraic configurations
Including collineation, correlation
601  General works, treatises, and textbooks
602  Cremona transformations. Quadratic transformations
603  Classification of curves and surfaces. Groups of points
and curves
605  Applications of transcendental functions to curves and
surfaces
607  Enumerative geometry. Systems of curves and surfaces
608  Connexes, complexes, congruences. Line geometry
For algebraic configurations in hyperspace see
QA691+
609  Conformal geometry
Topology
611.A1 Periodicals, societies, congresses, serial publications
611.A3 History
611.A34-Z General works, treatises, and textbooks
611.13 Juvenile works
611.15 Addresses, essays, lectures
611.17 Study and teaching. Research
611.19 General works
611.2 Fuzzy topology
611.21 Imbeddings
611.23 Compactifications. Compact spaces
Geometry

Topology -- Continued

611.234 Realcompactness. Realcompactification. Realcompact spaces

611.24 Proximity spaces
611.25 Uniform spaces. Quasi-uniform spaces
611.28 Metric spaces
611.29 Isometries, contractions, expansions
611.3 Other miscellaneous topological spaces
  For linear topological spaces see QA322
611.35 CW complexes
611.5 Topological dynamics
  Including those special aspects relating to ergodic theory
  Cf. QA614.8+ Differentiable dynamical systems
611.7 Fixed point theorems
  Cf. QA329.9 Nonlinear operators

Algebraic topology. Combinatorial topology
  Cf. QA166+ Graph theory

612 General works

612.14 General works
612.18 Map-coloring problem
612.19 Four-color problem
  Knot theory. Link theory
612.2 General works
612.23 Braids
612.24 Fixed points and coincidences
  Cf. QA329.9 Fixed point theory

Homology and cohomology theories
  Cf. QA169 Homological algebra

612.3 General works
612.32 Intersection homology theory
612.33 K-theory. KK-theory
612.36 Sheaves
612.5 Retracts
  Fiber spaces. Fiber bundles. Fiberings
612.6 General works
612.63 Vector bundles

Homotopy theory

612.7 General works
612.72 Homotopy equivalences
612.76 Loop spaces
612.77 H-spaces
612.78 Homotopy groups
612.782 Steenrod algebra
612.79 Obstruction theory
Geometry

Topology

Algebraic topology. Combinatorial topology -- Continued

612.8  
Spectral sequences

Manifolds and cell complexes

613  
General works
613.2  
Topological manifolds
613.4  
PL-topology

Differential topology

613.6  
General works
613.618  
Characteristic classes
613.619  
Vector fields
613.62  
Foliations
613.64  
Differentiable mappings
613.65  
Diffeomorphisms
613.658  
Surgery. Handlebodies
613.659  
Symplectic and contact topology
613.66  
Cobordism
613.7  
Topological transformation groups

   Cf. QA387 Topological groups

613.8  
Hopf algebras

   Cf. QA387 Topological groups

Global analysis. Analysis on manifolds

614  
General works

Differentiable manifolds

614.3  
General works
614.4  
Jets
614.42  
Stratified sets
614.44  
Supermanifolds
614.46  
Pfaffian systems. Pfaffian problem

Calculus on manifolds

614.5  
General works
614.58  
Differentiable mappings and singularities. Catastrophes
614.7  
Critical point theory
614.73  
Harmonic maps

Differentiable dynamical systems

   Cf. QA611.5 Topological dynamics
   Cf. QA871 Analytic mechanicals

614.8  
General works
614.813  
Attractors
614.82  
Flows
614.83  
Hamiltonian systems
614.833  
Nonholonomic dynamical systems
614.835  
Random dynamical systems
614.84  
Shadowing systems
614.85  
Symbolic dynamics
Geometry

Topology

Global analysis. Analysis on manifolds -- Continued

614.86
Fractals. Fractal analysis

Partial differential equations and differential operators on manifolds

614.9
General works

614.92
Index theorems

614.95
Spectral geometry

614.97
Pseudogroups and deformations of structures

Cf. QA387 Lie groups

Infinitesimal geometry

615
General works, treatises, and textbooks

Of curves

621
General works

623
Kinematic geometry. Roulettes

624
Curvature

626
Rectification and quadrature

628
Transcendental curves

Of surfaces

631
General works

634
Curvature

636
Areas and volumes

638
Transcendental surfaces

639
Differential geometry of congruences, etc.

Convex geometry

639.5
General works

640
Convex sets and geometric inequalities

640.3
Convex polyhedra. Convex polytopes

640.5
Convexity spaces

Discrete geometry

640.7
General works

640.72
Aperiodic tilings

640.77
Rigidity

Differential geometry

Including general theory of surfaces

641
General works, treatises, and textbooks

642
Problems, exercises, examinations

643
Curves on surfaces

644
Minimal surfaces. Nets of plane curves

645
Surfaces determined by relations of curvature, etc.

646
Conformal and other representations of surfaces

Cf. GA110+ Map projection

Cf. QA360 Mapping of regions, conformal representation

648
Deformation of surfaces

648.5
Web geometry
Geometry
  Differential geometry -- Continued
  649  Miscellaneous special topics
  660  Projective differential geometry
  665  Symplectic geometry. Contact geometry
       Global differential geometry
       Cf. QA614+ Global analysis. Analysis on manifolds
  670  General works
  671  Global Riemannian geometry
  671.5  Spin geometry
  672  Integral geometry
  681  Foundations of geometry
  685  Non-Euclidean geometry
  689  Generalized spaces
       Hyperspace
  691  General works
  699  Popular works. Fiction
       Including Flatland, fourth dimension
Analytic mechanics
  Class here mathematical works only
  Cf. QC120+ Descriptive and experimental mechanics
  Cf. TA349+ Applied mechanics
  801  Periodicals, societies, congresses, serial publications
  801.2  Collected works (nonserial)
  801.5  Dictionaries and encyclopedias
  801.6  Philosophy
  802  History
       Including general history of mechanics
  803  Newton's Principia and commentaries
  804  Early works through 1800
  805  General works, treatises, and advanced textbooks
  807  Elementary textbooks
  807.5  Addresses, essays, lectures
  808  Special aspects of the subject as a whole
  808.2  Continuum mechanics
       Cf. QC155.7 Fluid dynamics
  808.5  Relativistic mechanics
  808.8  Study and teaching
  809  Problems, exercises, examinations
  810  Handbooks, tables, formulas, etc.
Statics
  Cf. TA351 Engineering
  821  General works, treatises, and textbooks
  823  Composition and resolution of forces at a point
       Attractions and potential
       Cf. QA404.7+ Potential theory
       Cf. QC570+ Electrostatics
Analytic mechanics
Statics
Attractions and potential -- Continued
825
General works, treatises, and textbooks
827
Ellipsoids and other special systems
831
Rigid bodies. Forces and couples in three dimensions.
   Equilibrium
835
Chains and flexible surfaces. Catenary
839
Geometry of masses. Center of mass. Moments of inertia
Kinematics
   Including composition of motions and displacements, relative
   motions, moving axes, theory of screws
   Cf. QA623 Roulettes
   Cf. QC231 Kinematics (Physics)
   Cf. TJ175 Kinematics of machinery
841
General works
842
Relativistic kinematics
Dynamics
   Cf. QC133+ Descriptive and experimental mechanics
   Cf. UF820+ Motion of projectiles (Ballistics)
843
Periodicals, societies, congresses, serial publications
845
General works, treatises, and advanced textbooks
846
Elementary textbooks
Dynamics of a particle
   Cf. QB349+ Celestial mechanics
   Cf. QC174.17.P7 Problem of many bodies (Quantum
   theory)
851
General works, treatises, and textbooks
852
Special aspects of the subject as a whole
   Including resistance, friction
853
Orbital and constrained motion
855
Motion of surfaces
Rigid dynamics
861
General works, treatises, and textbooks
862.A-Z
   Special systems, A-Z
862.G9
   Gyroscope
862.P4
   Pendulum
862.P5
   Pistons
862.P76
   Projectiles
862.T7
   Top
863
Miscellaneous special topics
Theory of vibrations. Oscillations
   Cf. QA935+ Vibrations of elastic bodies
865
General works
867
Harmonic motion
867.5
Nonlinear oscillations
Analytic mechanics
Dynamics -- Continued

871 General methods in dynamics
Including Lagrange's equations, Hamilton's equations, least
action, stability of systems

Mechanics of deformable bodies
Fluid mechanics
Cf. QC120+ Descriptive and experimental mechanics
Cf. TA357+ Applied fluid mechanics

901 General works, treatises, and textbooks
903 Problems, exercises, examinations
Hydrostatics

905 General works, treatises, and textbooks
907 Miscellaneous special topics
Including floating bodies, etc.
Cf. VM761+ Stability of ships

Fluid dynamics. Hydrodynamics
Cf. TC160+ Hydraulics

911 General works, treatises, and textbooks
912 Relativistic fluid dynamics
913 Kinematics of fluids. Irrotational motions
920 Magnetohydrodynamics. Magnetofluid dynamics
Cf. QC717+ Ion flow dynamics
Cf. QC718.5.M36 Plasma physics
Cf. QC809.M3 Cosmic physics

922 Two-phase flow. Multiphase flow
922.5 Uniform flow
924 Jets and cavities
925 Rotating fluids. Vortex motion
Cf. QB410 Rotating masses of gravitating fluid
925.5 Burbles
927 Wave propagation in fluids. Theory of wave motion
Cf. QC223 Mathematical theory of sound
929 Viscous fluids
929.5 Non-Newtonian fluids
Cf. QC189.5+ Rheology
930 Gas dynamics. Aerodynamics
Cf. QC120+ Descriptive and experimental
mechanics
Cf. TL570+ Aeronautics

Elasticity. Plasticity
Cf. QC191 Special properties of matter
Cf. TA418+ Mechanical properties of materials

931 General works, treatises, and textbooks
932 Micropolar elasticity
Analytic mechanics
Elasticity, Plasticity -- Continued

933
Thermoelasticity
Cf. TA418.24+ Temperature dependent properties of materials

934
Torsion
Vibrations of elastic bodies. Wave propagation in elastic solids

935
General works

937
Impact

939
Surface waves