

A BASIC LIBRARY LIST  
FOR  
TWO-YEAR COLLEGES

January 1971

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## INTRODUCTION

The Basic Library List, [page 1 ], published by CUPM in 1965, was intended to define a minimal college mathematics library. More recently an ad hoc committee assisted by two-year college, four-year college, and university teachers prepared the present basic library list for two-year colleges. The aims of this list are quite similar to those of the Basic Library List, namely:

1. To provide the student with introductory material in areas of mathematics new to him
2. To provide the interested student with material collateral to the material he is studying in courses
3. To provide the student with material somewhat more advanced than he is likely to encounter in his course work
4. To provide the faculty with reference material, but generally below graduate level
5. To provide the general reader with elementary material in the field of mathematics
6. To provide trainees in various occupations, such as nurses, farmers, technologists, etc., with material designed for their particular needs

A further word concerning item 4 is in order. It is recognized that many faculty members at two-year colleges are still engaged in graduate study; however, it is felt that it is not the responsibility of the two-year college library to provide them reference material for their graduate courses. The reason for this is two-fold: first, such material should be available to them at the institution where they are pursuing graduate work; second, inclusion of such material in a two-year college library might place too heavy a financial strain on the two-year college.

The list is intended as a basic list from which the library can expand according to the needs and interests of the faculty and the students. Needs at different schools will, of course, differ, and the library should reflect the local needs; in this regard see the comment under Sections 6 through 11. There has been a concerted effort to keep the list small; one means of doing this has been to combine under one heading books of a somewhat different character. Alternate choices are listed so that a library can utilize its present holdings to the full. In the interest of keeping the list small, many books of merit have had to be omitted; it is also possible that, despite assiduous searching, the committee has overlooked books which should have been included. Furthermore, books which have been included in the list have been included because of their value as library books; no judgment is made as to their utility as texts for courses.

Some books are mentioned at more than one place in the list. This is not accidental. Since some schools will want to purchase only those portions pertinent to their programs, the committee wanted to be sure that relevant books were covered in each section.

The matter of library books in various remedial areas, i.e., arithmetic, elementary algebra, and the like, has been discussed at length by the committee. It is clear that these subjects are taught at the two-year college level, and that the character of the texts used there varies considerably from those used at lower levels. Despite this, we feel that for reference use by students the two-year college is well advised to include among its books those texts used by the local high schools or texts covering comparable material.

The library committee worked on this list during a two-year period ending in 1970; therefore, books with first publication dates after 1969 are generally not included in the list. Finally, it must be recognized that the list covers a considerable range of sophistication beginning at quite an elementary level. The exposition in some of the more elementary books differs from the sort of presentation one expects at more advanced levels in being more discursive and less axiomatic. The mathematics may occasionally appear not to be in the best tradition of formal practice; however, these books fill a very real need for the audience intended and any solecisms encountered are not so serious as to remove the books from consideration.

After preliminary versions of this list were written, the ad hoc committee sought the advice and comments of some 30 reviewers. The reviewers were chosen so that specialists in each of the areas represented in the list would be able to comment. The list thus reflects not only the competencies of the committee but also the informed views of the reviewers.

These recommendations contain about 510 volumes, of which approximately 170 volumes are to be chosen; this does not include journals or series in Sections 22 and 23.

The symbol \* indicates that the book has been listed more than once.

## 1. HISTORICAL, GENERAL, AND RECREATIONAL

History--Both of the following:

- 1.1 Bell, Eric T. Men of Mathematics. New York, Simon and Schuster, Inc., 1961.

- 1.2 Boyer, Carl B. A History of Mathematics. New York, John Wiley and Sons, Inc., 1968.

And at least one of the following:

- 1.3a Eves, Howard. Introduction to the History of Mathematics, 3rd ed. New York, Holt, Rinehart and Winston, Inc., 1969.
- 1.3b Smith, D. E. History of Mathematics, 2 vols. New York, Dover Publications, Inc. Vol. I, General Survey of the History of Elementary Mathematics; Vol. II, Special Topics of Elementary Mathematics.
- 1.3c Struik, D. J., ed. A Source Book in Mathematics: Twelve Hundred to Eighteen Hundred. Cambridge, Massachusetts, Harvard University Press, 1969.
- 1.3d van der Waerden, B. L. Science Awakening. New York, Oxford University Press, 1961; New York, John Wiley and Sons, Inc., paper.

General--All of the following:

- 1.4 Courant, Richard and Robbins, Herbert. What is Mathematics? New York, Oxford University Press, 1941.
- 1.5 Eves, Howard and Newsom, Carroll V. Introduction to the Foundations and Fundamental Concepts of Mathematics, rev. ed. New York, Holt, Rinehart and Winston, Inc., 1965.
- 1.6 Klein, Felix. Elementary Mathematics from an Advanced Standpoint. Vol. 1, Arithmetic, Algebra, Analysis. New York, Dover Publications, Inc., 1968.
- 1.7 National Council of Teachers of Mathematics. Enrichment Mathematics for the Grades (27th Yearbook) and Enrichment Mathematics for the High Schools (28th Yearbook). Washington, D. C., National Council of Teachers of Mathematics, 1963.
- 1.8 Rademacher, Hans and Toeplitz, Otto. The Enjoyment of Mathematics: Selections from Mathematics for the Amateur. Princeton, New Jersey, Princeton University Press, 1965.
- 1.9 Sawyer, Walter W. Mathematician's Delight. Baltimore, Maryland, Penguin Books, Inc., 1943.
- 1.10 Steinhaus, Hugo. Mathematical Snapshots, 2nd ed. New York, Oxford University Press, 1969.

And at least two of the following:

- 1.11a Cadwell, James H. Topics in Recreational Mathematics. New York, Cambridge University Press, 1966.
- 1.11b Court, Nathan A. Mathematics in Fun and in Earnest. New York, Mentor Press, 1961. Out of print.
- 1.11c Kac, Mark and Ulam, Stanislaw M. Mathematics and Logic: Retrospect and Prospects. New York, Frederick A. Praeger, Inc., 1968.
- 1.11d Kasner, Edward and Newman, James R. Mathematics and the Imagination. New York, Simon and Schuster, Inc., 1940.
- 1.11e Lockwood, Edward H. and Prag, A. A Book of Curves. New York, Cambridge University Press, 1961.
- 1.11f Ogilvy, C. Stanley. Tomorrow's Math: Unsolved Problems for the Amateur. New York, Oxford University Press, 1962.
- 1.11g Pedoe, Daniel. Gentle Art of Mathematics. New York, The Macmillan Company, 1963; Baltimore, Maryland, Penguin Books, Inc., 1969, paper.
- 1.11h Sawyer, Walter W. Prelude to Mathematics. Baltimore, Maryland, Penguin Books, Inc., 1955.
- 1.11i Stein, Sherman K. Mathematics: The Man-Made Universe, An Introduction to the Spirit of Mathematics, 2nd ed. San Francisco, California, W. H. Freeman and Company, 1969.

And one of the following:

- 1.12a Kline, Morris. Mathematics in Western Culture. New York, Oxford University Press, 1964.
- 1.12b Scientific American Editors. Mathematics in the Modern World. San Francisco, California, W. H. Freeman and Company, 1968.

Mathematical Recreations--At least one of the following:

- 1.13a Ball, W. W. R. and Coxeter, H. S. M. Mathematical Recreations and Essays, rev. ed. New York, The Macmillan Company, 1962.
- 1.13b Kraitchik, Maurice. Mathematical Recreations, 2nd ed. New York, Dover Publications, Inc., 1953.

And at least one of the following (problems and puzzles):

- 1.14a Bakst, Aaron. Mathematical Puzzles and Pastimes, 2nd ed. New York, Van Nostrand Reinhold Company, 1965.
- 1.14b Gamow, George and Stern, Marvin. Puzzle-Math. New York, Viking Press, Inc., 1958.
- 1.14c Gardner, Martin, ed. Scientific American Book of Mathematical Puzzles and Diversions. New York, Simon and Schuster, Inc., 1964.
- 1.14d Gardner, Martin, ed. Second Scientific American Book of Mathematical Puzzles and Diversions. New York, Simon and Schuster, Inc., 1965.
- 1.14e Gardner, Martin. Unexpected Hanging and Other Mathematical Diversions. New York, Simon and Schuster, Inc., 1968.
- 1.14f Graham, Lloyd A. Ingenious Mathematical Problems and Methods. New York, Dover Publications, Inc., 1959.
- 1.14g Graham, Lloyd A. Surprise Attack in Mathematical Problems. New York, Dover Publications, Inc., 1968.
- 1.14h Mott-Smith, Geoffrey. Mathematical Puzzles for Beginners and Enthusiasts, 2nd ed. New York, Dover Publications, Inc., 1954
- 1.14i Phillips, Hubert C. My Best Puzzles in Mathematics. New York, Dover Publications, Inc., 1961.

Various Topics (about mathematics and mathematicians)--All of the following:

- 1.15 Committee on Support of Research in the Mathematical Sciences. The Mathematical Sciences: A Collection of Essays. Cambridge, Massachusetts, MIT Press, 1969.
- 1.16 Cundy, Henry M. and Rollett, A. P. Mathematical Models, 2nd ed. New York, Oxford University Press, 1961.
- 1.17 Hadamard, Jacques. Psychology of Invention in the Mathematical Field. New York, Dover Publications, Inc., 1945.
- 1.18 Hardy, G. H. Mathematician's Apology, rev. ed. New York, Cambridge University Press, 1967.
- 1.19 Newman, James R. The World of Mathematics, 4 vols. New York, Simon and Schuster, 1962. Vol. I, Men and Numbers; Vol. II, World of Laws and the World of Chance; Vol. III, Mathematical Way of Thinking; Vol. IV, Machines, Music and Puzzles.

- 1.20 Pólya, Gyorgy. How to Solve It, 2nd ed. New York, Doubleday and Company, Inc., 1957.
- 1.21 Pólya, Gyorgy. Mathematical Discovery on Understanding, Learning and Teaching Problem Solving, 2 vols. New York, John Wiley and Sons, Inc., 1962.

#### Sets and Collections of Books

- 1.22 New Mathematical Library, 22 vols. New York, Random House/Singer School Division.

Numbers: Rational and Irrational (NML 1). Ivan Niven

\*What is Calculus About? (NML 2). W. W. Sawyer

An Introduction to Inequalities (NML 3). E. Beckenbach and R. Bellman

\*Geometric Inequalities (NML 4). Nicholas D. Kazarinoff

The Lore of Large Numbers (NML 6). P. J. Davis

Uses of Infinity (NML 7). Leo Zippin

Geometric Transformations (NML 8). I. M. Yaglom, translated by Allen Shields

Continued Fractions (NML 9). Carl D. Olds

\*Graphs and Their Uses (NML 10). Oystein Ore

Hungarian Problem Book I and II (NML 11 and 12). Translated by E. Rapaport

Episodes from the Early History of Mathematics (NML 13). A. Aaboe

Groups and Their Graphs (NML 14). I. Grossman, et al.

The Mathematics of Choice (NML 15). Ivan Niven

From Pythagoras to Einstein (NML 16). K. O. Friedrichs

The MAA Problem Book II (NML 17).

\*First Concepts of Topology (NML 18). W. G. Chinn and N. E. Steenrod.

Geometry Revisited (NML 19). H. S. M. Coxeter and S. L. Greitzer.



Invitation to Number Theory (NML 20). Oystein Ore

Geometric Transformations II (NML 21). I. M. Yaglom,  
translated by Allen Shields

Elementary Cryptanalysis--A Mathematical Approach (NML 22).  
Abraham Sinkov

## 2. FINITE MATHEMATICS

Although Finite Mathematics is not well defined, it is generally understood to encompass modern problems in elementary set theory, logic, probability, linear programming, and theory of games solved by methods not involving the calculus. In the following list, all the books deal with these topics.

At least two of the following:

- 2.1a Crouch, Ralph B. Finite Mathematics and Statistics for Business. New York, McGraw-Hill Book Company, 1968.
- \*2.1b Kaye, Norman J. Elementary Quantitative Techniques for Business Problem Solving. Belmont, California, Dickenson Publishing Company, Inc., 1969.
- 2.1c Kemeny, John G., et al. Finite Mathematics with Business Applications. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1962.
- \*2.1d Kemeny, John G., et al. Introduction to Finite Mathematics, 2nd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 2.1e Marcus, Marvin. A Survey of Finite Mathematics. Boston, Massachusetts, Houghton Mifflin Company, 1969.
- 2.1f Richardson, William H. Finite Mathematics. New York, Harper and Row, Publishers, 1968.
- 2.1g Wheeler, Ruric E. and Peeples, W. D. Modern Mathematics for Business Students. Belmont, California, Brooks/Cole Publishing Company, 1969.

### 3. PREPARATION FOR CALCULUS

The following list is at the level of Mathematics 0 [page 75] or Mathematics A [page 216]. It is intended to provide reference material for courses leading to the calculus but does not include programmed materials or books for remedial work.

At least two of the following:

- 3.1a Dolciani, Mary P., et al. Modern Introductory Analysis. Boston, Massachusetts, Houghton Mifflin Company, 1970.
- 3.1b Golightly, Jacob F. Precalculus Mathematics--Algebra and Trigonometry. Philadelphia, Pennsylvania, W. B. Saunders Company, 1968.
- 3.1c Horner, Donald R. Precalculus: Elementary Functions and Relations. New York, Holt, Rinehart and Winston, Inc., 1969.
- 3.1d Hu, Sze-Tsen. Elementary Functions and Coordinate Geometry. Chicago, Illinois, Markham Publishing Company, 1969.
- 3.1e Knight, Ronald A. and Hoff, William E. Introduction to the Elementary Functions. Belmont, California, Dickenson Publishing Company, Inc., 1969.
- 3.1f Marcus, Marvin and Minc, Henryk. Elementary Functions and Coordinate Geometry. Boston, Massachusetts, Houghton Mifflin Company, 1969.

At least two of the following:

- 3.2a Allendoerfer, Carl B. and Oakley, Cletus O. Principles of Mathematics, 3rd ed. New York, McGraw-Hill Book Company, 1969.
- 3.2b Good, R. A. Introduction to Mathematics. New York, Harcourt Brace Jovanovitch, Inc., 1966.
- 3.2c Haag, Vincent H. and Western, Donald W. Introduction to College Mathematics, 2nd ed. New York, Harcourt Brace Jovanovitch, Inc., 1968.
- 3.2d Meserve, Bruce E., et al. Principles of Advanced Mathematics, rev. ed. New York, Random House/Singer School Division, 1970.
- 3.2e Pownall, Malcolm W. A Prelude to the Calculus. New York, McGraw-Hill Book Company, 1967.
- 3.2f Shanks, Merrill E., et al. Pre-Calculus Mathematics, 2nd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1968.

- 3.2g Rosenbloom, Paul C. and Schuster, Seymour. Prelude to Analysis. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1966.
- 3.2h Zwier, Paul J. and Nyoff, Larry R. Essentials of College Mathematics. New York, Holt, Rinehart and Winston, Inc., 1969.

#### 4. CALCULUS

General Calculus. There are many good calculus books available. Several of these should be in the library. The following represent some of the various possible approaches.

- 4.1a Bers, Lipman. Calculus. New York, Holt, Rinehart and Winston, Inc., 1969.
- 4.1b Crowell, Richard H. and Slesnick, William E. Calculus with Analytic Geometry. New York, W. W. Norton and Company, Inc., 1968.
- 4.1c de Leeuw, Karel. Calculus. New York, Harcourt Brace Jovanovitch, Inc., 1966.
- 4.1d Johnson, Richard E. and Kiokemeister, F. L. Calculus with Analytic Geometry, 4th ed. Boston, Massachusetts, Allyn and Bacon, Inc., 1964.
- 4.1e Protter, Murray H. and Morrey, Charles B., Jr. Calculus with Analytic Geometry: A First Course, 2nd ed. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1963.
- 4.1f Sherwood, George E. and Taylor, Angus E. Calculus, 3rd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1954.
- 4.1g Thomas, George B., Jr. Calculus and Analytic Geometry, 4th ed. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1968.

Honors Calculus--One or more of the following:

- 4.2a Apostol, Tom M. Calculus, 2 vols. Waltham, Massachusetts, Blaisdell Publishing Company. Vol. I, One-Variable Calculus with an Introduction to Linear Algebra, 2nd ed., 1967; Vol. II, Multi-Variable Calculus and Linear Algebra, with Applications to Differential Equations and Probability, 2nd ed., 1969.

- 4.2b Courant, Richard. Differential and Integral Calculus, 2 vols. (translated by E. J. McShane) New York, John Wiley and Sons, Inc. Vol. I, 2nd ed., 1937; Vol. II, 1936.
- 4.2c Hardy, G. H. A Course of Pure Mathematics. New York, Cambridge University Press, 1959.
- 4.2d Spivak, Michael. Calculus. New York, The Benjamin Company, Inc., 1967.

Background--At least one of the following:

- 4.3a Boyer, Carl B. History of the Calculus and Its Conceptual Development. New York, Dover Publications, Inc., 1959.
- \*4.3b Khinchin, Alexander Y. Eight Lectures on Mathematical Analysis. Lexington, Massachusetts, D. C. Heath and Company, 1965.
- \*4.3c Sawyer, W. W. What is Calculus About? New York, Random House, Inc., 1961.
- 4.3d Selected Papers on Calculus, Tom Apostol, editor. Belmont, California, Dickenson Publishing Company, Inc., 1969.
- 4.3e Toeplitz, Otto. Calculus: A Genetic Approach. (edited by G. Köthe, translated by L. Lange) Chicago, Illinois, University of Chicago Press, 1963.

See also 1.22.

Calculus of Several Variables--At least one of the following:

- 4.4a Fadell, Albert G. Vector Calculus and Differential Equations, vol. III. New York, Van Nostrand Reinhold Company, 1968.
- 4.4b Osserman, Robert. Two-Dimensional Calculus. New York, Harcourt Brace Jovanovitch, Inc., 1968.
- 4.4c Williamson, Richard, et al. Calculus of Vector Functions. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1968.

Advanced Calculus--At least one of the following:

- 4.5a Apostol, Tom M. Mathematical Analysis: A Modern Approach to Advanced Calculus. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1957.

- 4.5b Buck, R. Creighton. Advanced Calculus, 2nd ed. New York, McGraw-Hill Book Company, 1965.
- 4.5c Kaplan, Wilfred. Advanced Calculus. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1952.
- 4.5d Kreider, Donald L., et al. Introduction to Linear Analysis. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1966.
- 4.5e Taylor, Angus E. Advanced Calculus. Waltham, Massachusetts, Blaisdell Publishing Company, 1955.

## 5. STATISTICS AND PROBABILITY

General--At least one of the following:

- 5.1a Huff, Darrell and Geis, Irving. How to Lie with Statistics. New York, W. W. Norton and Company, Inc., 1954.
- 5.1b Levinson, Horace C. Chance, Luck and Statistics, 2nd ed. New York, Dover Publications, Inc., 1963.
- 5.1c Moroney, M. J. Facts From Figures. Baltimore, Maryland, Penguin Books, Inc., 1956.

Elementary Statistics--At least one of the following:

- 5.2a Blackwell, David. Basic Statistics. New York, McGraw-Hill Book Company, 1969.
- 5.2b Dixon, Wilfrid J. and Massey, F. J., Jr. Introduction to Statistical Analysis, 3rd ed. New York, McGraw-Hill Book Company, 1969.
- 5.2c Freund, John E. Modern Elementary Statistics, 3rd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 5.2d Hodges, Joseph L. and Lehmann, E. L. Basic Concepts of Probability and Statistics, 2nd ed. San Francisco, California, Holden-Day, Inc., 1970.
- 5.2e Hoel, Paul G. Elementary Statistics, 2nd ed. New York, John Wiley and Sons, Inc., 1966.

- 5.2f Mode, Elmer B. Elements of Probability and Statistics, 3rd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1966.
- 5.2g Mosteller, Frederick, et al. Probability with Statistical Applications, 2nd ed. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1970.
- 5.2h Wallis, Wilson A. and Roberts, Harry V. Statistics: A New Approach. New York, The Macmillan Company, 1956.
- 5.2i Wolf, Frank L. Elements of Probability and Statistics. New York, McGraw-Hill Book Company, 1962.

Mathematical Statistics--At least one of the following:

- 5.3a Brunk, H. D. Introduction to Mathematical Statistics, 2nd ed. Waltham, Massachusetts, Blaisdell Publishing Company, 1965.
- 5.3b Hoel, Paul G. Introduction to Mathematical Statistics, 3rd ed. New York, John Wiley and Sons, Inc., 1970.
- 5.3c Hogg, Robert V. and Craig, A. T. Introduction to Mathematical Statistics, 3rd ed. New York, The Macmillan Company, 1970.
- 5.3d Meyer, Paul L. Introductory Probability and Statistical Applications, 2nd ed. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1970.
- 5.3e Mood, Alexander M. and Graybill, F. A. Introduction to the Theory of Statistics, 2nd ed. New York, McGraw-Hill Book Company, 1963.

Elementary Probability--At least one of the following:

- 5.4a Berman, Simeon M. Elements of Probability. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.
- 5.4b Gangolli, R. A. and Ylvisaker, Donald, Discrete Probability. New York, Harcourt Brace Jovanovitch, Inc., 1967.
- 5.4c Gnedenko, Boris V. and Khinchin, Alexander Y. Elementary Introduction to the Theory of Probability, 5th ed. (translated by Leo F. Boron) New York, Dover Publications, Inc., 1961.
- 5.4d Goldberg, Samuel. Probability: An Introduction. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1960.

- 5.4e Scheerer, Anne C. Probability on Discrete Sample Spaces with Applications. Scranton, Pennsylvania, Intext Educational Publishers, 1969.
- 5.4f Thompson, W. A., Jr. Applied Probability. New York, Holt, Rinehart and Winston, Inc., 1969.

#### Intermediate Probability

- 5.5 Feller, William. Introduction to Probability Theory and Its Applications, vol. I, 3rd ed. New York, John Wiley and Sons, Inc., 1968.

And at least one of the following:

- 5.6a Breiman, Leo. Probability and Stochastic Processes, with a View Towards Applications. Boston, Massachusetts, Houghton Mifflin Company, 1969.
- 5.6b Parzen, Emanuel. Modern Probability Theory and Its Applications. New York, John Wiley and Sons, Inc., 1960.
- 5.6c Rozanov, Y. A. Introductory Probability Theory. (translated by M. Silverman) Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1969.

Other Approaches--At least one of the following:

- 5.7a Chernoff, Herman and Moses, L. E. Elementary Decision Theory. New York, John Wiley and Sons, Inc., 1959.
- 5.7b Kraft, Charles H. and van Eeden, Constance. Nonparametric Introduction to Statistics. New York, The Macmillan Company, 1968.
- 5.7c Savage, I. Richard. Statistics: Uncertainty and Behavior. Boston, Massachusetts, Houghton Mifflin Company, 1968.

Applied Statistics--At least one of the following:

- 5.8a Chorafas, Dimitris N. Statistical Processes and Reliability Engineering. New York, Van Nostrand Reinhold Company. Out of print.
- 5.8b Cochran, W. G. and Cox, G. M. Experimental Designs, 2nd ed. New York, John Wiley and Sons, Inc., 1957.

- 5.8c Grant, Eugene L. Statistical Quality Control, 3rd ed. New York, McGraw-Hill Book Company, 1964.
- 5.8d Hays, William L. Statistics for Psychologists. New York, Holt, Rinehart and Winston, Inc., 1963.
- 5.8e Mainland, Donald. Elementary Medical Statistics, 2nd ed. Philadelphia, Pennsylvania, W. B. Saunders Company, 1963. Out of print.
- 5.8f Scheffler, William C. Statistics for the Biological Sciences. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.
- 5.8g Schlaifer, Robert. Introduction to Statistics for Business Decisions. New York, McGraw-Hill Book Company, 1961.
- 5.8h Wasserman, W. and Neter, J. Fundamental Statistics for Business and Economics. Boston, Massachusetts, Allyn and Bacon, Inc., 1966.
- 5.8i Wine, Russell L. Statistics for Scientists and Engineers. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.
- 5.8j Yates, Frank. Sampling Methods for Censuses and Surveys, 3rd ed. New York, Hafner Publishing Company, Inc., 1960.

Tables--At least one of the following:

- \*5.9a Burington, Richard S. and May, Donald C., Jr. Handbook of Probability and Statistics with Tables, 2nd ed. New York, McGraw-Hill Book Company, 1969.
- \*5.9b Chemical Rubber Company. Handbook of Tables for Probability and Statistics, 2nd ed. Cleveland, Ohio, The Chemical Rubber Company, 1968.
- 5.9c Owen, Donald B. Handbook of Statistical Tables. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1962.

## 6. VOCATIONAL MATHEMATICS

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.



The listings are reference materials for general shop courses. The books in 6.2 are somewhat more general than the ones in 6.3. For further books that may be useful under this heading, see also those listed in Section 8--Technology.

- 6.1     Grazda, Edward E., et al. Handbook of Applied Mathematics, 4th ed. New York, Van Nostrand Reinhold Company, 1966.

At least one of the following:

- 6.2a     Levine, Samuel. Vocational and Technical Mathematics in Action. New York, Hayden Book Company, 1969.
- 6.2b     Slade, Samuel and Margolis, L. Mathematics for Technical and Vocational Schools, 5th ed. New York, John Wiley and Sons, Inc., 1968.

And at least one of the following:

- 6.3a     McMackin, Frank J. and Shaver, John H. Mathematics of the Shops, 3rd ed. New York, Van Nostrand Reinhold Company, 1968.
- 6.3b     Wolfe, J. H. and Phelps, E. R. Practical Shop Mathematics, 2 vols., 4th ed. New York, McGraw-Hill Book Company. Vol. 1, Elementary, 1959; Vol. 2, Advanced, 1960.

## 7.     BUSINESS

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.

At least two of the following:

- 7.1a     Bush, Grace A. and Young, John E. Foundations of Mathematics with Applications to the Social and Management Sciences. New York, McGraw-Hill Book Company, 1968.
- \*7.1b     Kaye, Norman J. Elementary Quantitative Techniques for Business Problem Solving. Belmont, California, Dickenson Publishing Company, Inc., 1969.
- 7.1c     Locke, Flora M. and Dehr, D. College Mathematics for Business. New York, John Wiley and Sons, Inc., 1969.

- 7.1d Roueche, Nelda W. Business Mathematics: A Collegiate Approach. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1969.
- 7.1e Snyder, Llewellyn R. Essential Business Mathematics, 5th ed. New York, McGraw-Hill Book Company, 1967.

Mathematics of Finance--At least two of the following:

- 7.2a Cissell, Robert and Cissell, Helen. Mathematics of Finance, 3rd ed. Boston, Massachusetts, Houghton Mifflin Company, 1969.
- 7.2b Curtis, Arthur B. and Cooper, J. (Revised by W. McCallion) Mathematics of Accounting, 4th ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1961.
- 7.2c Freund, John E. College Mathematics with Business Applications. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1969.
- 7.2d Hart, William L. Mathematics of Investment, 4th ed. Lexington, Massachusetts, D. C. Heath and Company, 1958.
- 7.2e Rider, P. R. and Fisher, C. H. Mathematics of Investment. Ann Arbor, Michigan, Ulrich's Books, Inc., 1951.
- 7.2f Rosenberg, R. Robert. College Mathematics, 4th ed. New York, McGraw-Hill Book Company, 1967.

Mathematics of Management--At least one of the following:

- 7.3a Corcoran, A. Wayne. Mathematical Applications in Accounting. New York, Harcourt Brace Jovanovitch, Inc., 1968.
- 7.3b Dean, Burton V., et al. Mathematics for Modern Management. New York, John Wiley and Sons, Inc., 1963.
- 7.3c Goetz, Billy E. Quantitative Methods: A Survey and Guide for Managers. New York, McGraw-Hill Book Company, 1965.
- 7.3d Springer, Clifford H., et al. Mathematics for Management Sciences. Homewood, Illinois, Richard D. Irwin, Inc. Vol. I, Basic Mathematics, 1965; Vol. II, Advanced Methods and Models, 1965; Vol. III, Statistical Inference, 1966; Vol. IV, Probabilistic Models, 1968.
- 7.3e Stern, Mark E. Mathematics for Management. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1963.

Every library should have the following:

- 7.4 Minrath, William R. Handbook of Business Mathematics, 2nd ed. New York, Van Nostrand Reinhold Company, 1967.

## 8. TECHNOLOGY

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.

Engineering Technology--At least one of the following:

- 8.1a Blakeley, Walter R. Calculus for Engineering Technology. New York, John Wiley and Sons, Inc., 1968.
- 8.1b Placek, Ronald J. Technical Mathematics with Calculus. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1968.
- 8.1c Rice, Harold S. and Knight, Raymond M. Technical Mathematics with Calculus, 2nd ed. New York, McGraw-Hill Book Company, 1966.
- 8.1d Washington, Allyn J. Basic Technical Mathematics with Calculus, 2nd ed. Menlo Park, California, The Cummings Publishing Company, 1970.

Electronics and Electricity--At least two of the following:

- 8.2a Adams, Lovincy J. and Journigan, R. P. Applied Mathematics for Electronics. New York, Holt, Rinehart and Winston, Inc., 1967.
- 8.2b Barker, Forrest I. and Wheeler, Gershon J. Mathematics for Electronics. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1968.
- 8.2c Herrick, Clyde N. Mathematics for Electronics. Columbus, Ohio, Charles E. Merrill Publishing Company, 1967.
- 8.2d Korneff, Theodore. Introduction to Electronics. New York, Academic Press, Inc., 1966.
- 8.2e National Radio Institute Staff. Mathematics for Electronics and Electricity. New York, Holt, Rinehart and Winston, Inc. Out of print.

- 8.2f Nunz, Gregory J. and Shaw, William L. Electronics Mathematics, 2 vols. New York, McGraw-Hill Book Company, 1967. Vol. 1, Arithmetic and Algebra; Vol. 2, Algebra, Trigonometry and Calculus.
- 8.2g Singer, Bertrand B. Basic Mathematics for Electricity and Electronics, 2nd ed. New York, McGraw-Hill Book Company, 1965.
- 8.2h Westlake, John H. and Noden, Gordon E. Applied Mathematics for Electronics. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1968.
- 8.2i Zelinger, G. Basic Matrix Analysis and Synthesis. Elmsford, New York, Pergamon Press, Inc., 1966.

Chemical Technology--One of the following:

- 8.3a Bard, Allen J. Chemical Equilibrium. New York, Harper and Row, Publishers, 1966.
- 8.3b Freiser, Henry and Fernando, Quintus. Ionic Equilibria in Analytic Chemistry. New York, John Wiley and Sons, Inc., 1963.
- 8.3c Margolis, Emil J. Chemical Principles in Calculations of Ionic Equilibria. New York, The Macmillan Company, 1966.
- 8.3d Robbins, Omer, Jr. Ionic Reactions and Equilibria. New York, The Macmillan Company, 1967.

One of the following:

- 8.4a Andersen, Laird B. and Wenzel, L. A. Introduction to Chemical Engineering. New York, McGraw-Hill Book Company, 1961.
- 8.4b Anderson, H. V. Chemical Calculations. New York, McGraw-Hill Book Company, 1955.
- 8.4c Hamilton, L. F., et al. Calculations of Analytic Chemistry, 7th ed. New York, McGraw-Hill Book Company, 1969.
- 8.4d Nyman, Carl J. and King, George B. Problems for General Chemistry and Qualitative Analysis. New York, John Wiley and Sons, Inc., 1966.
- 8.4e Peters, M. S. Elementary Chemical Engineering. New York, McGraw-Hill Book Company, 1954.

Health Sciences--At least one of the following:

- 8.5a Asperheim, Mary K. Pharmacology for Practical Nurses, 2nd ed. Philadelphia, Pennsylvania, W. B. Saunders Company, 1967.
- 8.5b Lipsey, Sally Irene. Mathematics for Nursing Science. New York, John Wiley and Sons, Inc., 1965.
- 8.5c Sackheim, George I. Programmed Mathematics for Nurses, 2nd ed. New York, The Macmillan Company, 1961.
- 8.5d Sisson, Harriet E. Applied Pharmaceutical Calculations. Minneapolis, Minnesota, Burgess Publishing Company, 1966.

#### Other Technologies

Standard reference books and handbooks in other specialized technologies and vocations, e.g., mechanical engineering, agricultural engineering, etc., should be in the library. Since most of these books deal more with the specific field than with the mathematics involved in that field, it is felt that the choice of such books should be left to those intimately involved in the field, rather than to members of the mathematics staff.

#### 9. DATA PROCESSING

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.

Overview--At least two of the following:

- 9.1a Allen, Paul. Exploring the Computer. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1967.
- 9.1b Boore, William F. and Murphy, G. R. Computer Sampler: Management Perspectives on the Computer. New York, McGraw-Hill Book Company, 1968.
- 9.1c Davis, Gordon B. Computer Data Processing. New York, McGraw-Hill Book Company, 1969.
- 9.1d Moursund, David G. How Computers Do It. Belmont, California, Wadsworth Publishing Company, Inc., 1969.

- 9.1e Sanders, Donald H. Computers in Business: An Introduction. New York, McGraw-Hill Book Company, 1968.
- 9.1f Swanson, Robert W. Introduction to Business Data Processing and Computer Programming. Belmont, California, Dickenson Publishing Company, Inc., 1967.
- 9.1g Wheeler, Gershon J. and Jones, Donlan F. Business Data Processing: An Introduction. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1966.
- 9.1h Withington, Frederick G. Use of Computers in Business Organizations. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1966.

Unit Record Operations--At least one of the following:

- 9.2a Claffey, William J. Principles of Data Processing. Belmont, California, Dickenson Publishing Company, Inc., 1967.
- 9.2b Levy, Joseph. Punched Card Data Processing. New York, McGraw-Hill Book Company, 1967.
- 9.2c Micallef, Benjamin A. Electronic Accounting Machine Fundamentals. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1968.
- 9.2d Salmon, Lawrence J. IBM Machine Operation and Wiring, 2nd ed. Belmont, California, Wadsworth Publishing Company, Inc., 1966.

Assembly Language--At least one of the following:

- 9.3a Cashman, Thomas J. and Shelly, Gary B. IBM System/360 Assembler Language. Fullerton, California, Anaheim Publishing Company, 1969.
- 9.3b Chapin, Ned. 360 Programming in Assembly Language. New York, McGraw-Hill Book Company, 1968.
- 9.3c Computer Usage Company. Programming the IBM System-360. New York, John Wiley and Sons, Inc., 1966.
- 9.3d Golden, James T. and Leichus, Richard M. IBM 360 Programming and Computing. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 9.3e Struble, George L. Assembler Language Programming: The IBM System-360. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.

COBOL--At least one of the following:

- 9.4a Raun, Donald L. Introduction to COBOL Computer Programming for Accounting and Business Analysis. Belmont, California, Dickenson Publishing Company, Inc., 1966.
- 9.4b Wendel, Thomas M. and Williams, William H. Introduction to Data Processing and COBOL. New York, McGraw-Hill Book Company, 1969.

## 10. COMPUTING--PROGRAMMING LANGUAGES

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.

It is assumed that one or more books will be obtained concerning the particular computing systems which are available to the institution. Consequently, no books have been listed which apply to a particular system. This is not meant to indicate that no machines are referred to in the listed books, but rather that the book would not be listed if its applications were only to a particular system. While books are listed for the more widely used programming languages, it is presumed that primary attention would be given to books concerning those languages used within the institution. It should be noted that additional books on computing are listed in Section 9; in particular, books on assembler languages and COBOL are listed therein.

Introductory--At least one of the following:

- 10.1a Forsythe, A. I., et al. Computer Science: A First Course. New York, John Wiley and Sons, Inc., 1969.
- 10.1b Hull, Thomas E. and Day, D. D. F. Introduction to Computers and Problem Solving. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.

And at least one of the following:

- 10.2a Arden, Bruce W. Introduction to Digital Computing. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1963.
- 10.2b Galler, Bernard A. Language of Computers. New York, McGraw-Hill Book Company, 1962.

- 10.2c Rice, John K. and Rice, John R. Introduction to Computer Science: Problems, Algorithms, Languages, Information and Computers. New York, Holt, Rinehart and Winston, Inc., 1969.

Digital Computing--General References--At least one of the following:

- 10.3a Bartee, Thomas C. Digital Computer Fundamentals, 2nd ed. New York, McGraw-Hill Book Company, 1966.
- 10.3b Conway, Richard W., et al. Theory of Scheduling. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1967.
- 10.3c Desmonde, William H. Computers and Their Uses. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.
- 10.3d Klerer, Melvin and Korn, Granino A. Digital Computer User's Handbook. New York, McGraw-Hill Book Company, 1967.
- 10.3e Maisel, Herbert. Introduction to Electronic Digital Computers. New York, McGraw-Hill Book Company, 1969.
- 10.3f Schriber, Thomas J. Fundamentals of Flowcharting. New York, John Wiley and Sons, Inc., 1969.

Programming Languages--At least one for each language available in the institution.

#### FORTRAN IV

- 10.4a Dimitry, Donald L. and Mott, Thomas H., Jr. Introduction to FORTRAN IV Programming. New York, Holt, Rinehart and Winston, Inc., 1966.
- 10.4b McCammon, Mary. Understanding FORTRAN. New York, Thomas Y. Crowell Company, 1968.
- 10.4c McCracken, Daniel D. Guide to FORTRAN Programming. New York, John Wiley and Sons, Inc., 1961.
- 10.4d Organick, Elliot I. FORTRAN IV Primer. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1966.
- 10.4e Rule, Wilfred P. FORTRAN IV Programming. Boston, Massachusetts, Prindle, Weber and Schmidt, Inc., 1968.



## PL/I

- 10.5a Bates, Frank and Douglas, Mary L. Programming Language: One. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 10.5b Lecht, Charles Philip. The Programmer's PL/I: A Complete Reference. New York, McGraw-Hill Book Company, 1968.
- 10.5c Pollack, S. V. and Sterling, T. D. Guide to PL-I. New York, Holt, Rinehart and Winston, Inc., 1969.
- 10.5d Sprowls, R. Clay. Introduction to PL/I Programming. New York, Harper and Row, Publishers, 1969.
- 10.5e Weinberg, Gerald M. PL/I Programming Primer. New York, McGraw-Hill Book Company, 1966.

## BASIC

- 10.6 Kemeny, John G. and Kurtz, T. E. Basic Programming. New York, John Wiley and Sons, Inc., 1967.

## COBOL--See 9.4

## Analog and Hybrid Computing--At least one of the following:

- 10.7a Johnson, Clarence L. Analog Computer Techniques, 2nd ed. New York, McGraw-Hill Book Company, 1963.
- 10.7b Korn, Granino A. and Korn, Theresa M. Electronic Analog and Hybrid Computers. New York, McGraw-Hill Book Company, 1964.
- 10.7c Stice, James E. and Swanson, Bernet S. Electronic Analog Computer Primer. Waltham, Massachusetts, Blaisdell Publishing Company, 1965.

## 11. TEACHING

The books under this heading are specific to a particular program offered in various two-year colleges. If that program is not offered, there may be no need for the library to purchase these books.

The chief function of the two-year college with reference to teacher training seems to be the providing of the subject matter foundations for future teachers. Library books for this purpose are found elsewhere in this publication. It is only at the elementary school teacher level that there appears to be a call for special courses and related library books in the junior college. The following list suggests a few books dealing with pedagogy at both the elementary and secondary levels for the use of teachers who might use the college's facilities or students who are interested in teaching careers.

#### Elementary School Teacher Preparation in Mathematics

At least one of the following:

- 11.1a Brumfiel, Charles F. and Krause, Eugene F. Elementary Mathematics for Teachers. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.
- 11.1b Fehr, Howard F. and Hill, Thomas J. Contemporary Mathematics for Elementary Teachers. Lexington, Massachusetts, D. C. Heath and Company, 1966.
- 11.1c Garstens, Helen L. and Jackson, Stanley B. Mathematics for Elementary School Teachers. New York, The Macmillan Company, 1967.
- \*11.1d School Mathematics Study Group. Studies in Mathematics. Vol. IX, A Brief Course in Mathematics for Elementary School Teachers. Pasadena, California, A. C. Vroman, Inc., 1963.

And at least one of the following:

- 11.2a Moise, Edwin E. The Number Systems of Elementary Mathematics: Counting, Measurements and Coordinates. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1965.
- 11.2b National Council of Teachers of Mathematics. Topics in Mathematics for Elementary School Teachers (29th Yearbook) and More Topics in Mathematics for Elementary School Teachers (30th Yearbook). Washington, D. C., National Council of Teachers of Mathematics. 29th Yearbook, 1964; 30th Yearbook, 1969.
- 11.2c Peterson, John A. and Hashisaki, Joseph. Theory of Arithmetic, 2nd ed. New York, John Wiley and Sons, Inc., 1967.

And at least one of the following:

- 11.3a Keedy, Mervin L. and Nelson, Charles W. Geometry, A Modern Introduction. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1965.

- 11.3b Ringenberg, Lawrence A. Informal Geometry. New York, John Wiley and Sons, Inc., 1967.
- 11.3c Smart, James R. Introductory Geometry: An Informal Approach. Belmont, California, Brooks/Cole Publishing Company, 1967.

Teaching of Mathematics--At least one of the following:

- 11.4a Fehr, Howard F. and Phillips, Jo M. Teaching Modern Mathematics in the Elementary School. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1967.
- 11.4b Riedesel, C. Alan. Guiding Discovery in Elementary School Mathematics. New York, Appleton-Century-Crofts, 1967.

And at least one of the following:

- 11.5a Johnson, Donovan A. and Rising, Gerald R. Guidelines for Teaching Mathematics. Belmont, California, Wadsworth Publishing Company, Inc., 1967.
- 11.5b Willoughby, Stephen S. Contemporary Teaching of Secondary School Mathematics. New York, John Wiley and Sons, Inc., 1967.

And at least one of the following:

- 11.6a Butler, D. H. and Wren, F. L. The Teaching of Secondary Mathematics, 5th ed. New York, McGraw-Hill Book Company, 1969.
- 11.6b Dubisch, Roy. Teaching of Mathematics, 2nd ed. New York, John Wiley and Sons, Inc., 1963.

## 12. NUMERICAL ANALYSIS

Introductory Texts--At least one of the following:

- 12.1a Dodes, Irving A. and Greitzer, S. L. Numerical Analysis with Scientific Applications. New York, Hayden Book Company, Inc., 1964.
- 12.1b Dorn, William S. and Greenberg, Herbert J. Mathematics and Computing: With FORTRAN Programming. New York, John Wiley and Sons, Inc., 1967.

Texts Combined with Introductory Programming--At least one of the following:

- 12.2a James, Merlin L., et al. Applied Numerical Methods for Digital Computation with FORTRAN. Scranton, Pennsylvania, Intext Educational Publishers, 1967.
- 12.2b McCormick, John M. and Salvadori, M. G. Numerical Methods in FORTRAN. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.
- 12.2c McCracken, Daniel D. and Dorn, William S. Numerical Methods and FORTRAN Programming. New York, John Wiley and Sons, Inc., 1964.

Intermediate Texts--At least one of the following:

- 12.3a Conte, Samuel D. Elementary Numerical Analysis: An Algorithmic Approach. New York, McGraw-Hill Book Company, 1965.
- 12.3b Fox, Leslie and Mayers, D. F. Computing Methods for Scientists and Engineers. New York, Oxford University Press, 1968.
- 12.3c Macon, Nathaniel. Numerical Analysis. New York, John Wiley and Sons, Inc., 1963.
- 12.3d Moursund, David G. and Duris, C. S. Elementary Theory and Application of Numerical Analysis. New York, McGraw-Hill Book Company, 1967.
- 12.3e Stiefel, E. L. An Introduction to Numerical Mathematics. (translated from the German by W. C. Rheinboldt) New York, Academic Press, Inc., 1963.

Intermediate Numerical Linear Algebra Texts--At least one of the following:

- 12.4a Forsythe, George E. and Moler, C. B. Computer Solution of Linear Algebraic Systems. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 12.4b Fox, Leslie. Introduction to Numerical Linear Algebra. New York, Oxford University Press, 1965.

Advanced Texts--At least one of the following:

- 12.5a Fröberg, Carl E. Introduction to Numerical Analysis, 2nd ed. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.
- 12.5b Henrici, Peter K. Elements of Numerical Analysis. New York, John Wiley and Sons, Inc., 1964.
- 12.5c Householder, Alston S. Principles of Numerical Analysis. New York, McGraw-Hill Book Company, 1953.
- 12.5d Isaacson, Eugene and Keller, H. B. Analysis of Numerical Methods. New York, John Wiley and Sons, Inc., 1966.
- 12.5e Ralston, Anthony. First Course in Numerical Analysis. New York, McGraw-Hill Book Company, 1965.

Some books with a reference character--At least one of the following:

- 12.6a Carnahan, Brice, et al. Applied Numerical Methods. New York, John Wiley and Sons, Inc., 1969.
- 12.6b Handscomb, David C., ed. Methods of Numerical Approximation. Elmsford, New York, Pergamon Press, Inc., 1966.
- 12.6c Kelly, Louis G. Handbook of Numerical Methods and Applications. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1967.
- 12.6d Mathematical Methods for Digital Computers. Edited by A. Ralston and H. S. Wilf. New York, John Wiley and Sons, Inc. Vol. I, 1960; Vol. II, 1967.

### 13. MATHEMATICS FOR THE PHYSICAL SCIENCES

General Works--At least one of the following:

- 13.1a Boas, M. L. Mathematical Methods in Physical Sciences. New York, John Wiley and Sons, Inc., 1966.
- 13.1b Collins, R. E. Mathematical Methods for Physicists and Engineers. New York, Van Nostrand Reinhold Company, 1968.
- 13.1c Page, Chester H. Physical Mathematics. New York, Van Nostrand Reinhold Company, 1955. Out of print.

## Engineering Case Studies

- 13.2 Noble, Ben. Applications of Undergraduate Mathematics in Engineering. New York, The Macmillan Company, 1967.

### Applied Algebra--At least one of the following:

- 13.3a Hall, George G. Applied Group Theory. New York, American Elsevier Publishing Company, Inc., 1967.
- 13.3b Hohn, Franz E. Applied Boolean Algebra, 2nd ed. New York, The Macmillan Company, 1966.

### Applied Analysis--At least one of the following:

- 13.4a Brouwer, Dirk and Clemence, Gerald M. Methods of Celestial Mechanics. New York, Academic Press, Inc., 1961.
- 13.4b Churchill, Ruel V. Operational Mathematics. New York, McGraw-Hill Book Company, 1958.
- 13.4c Lanczos, Cornelius. Applied Analysis. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1956.
- 13.4d Lawden, Derek F. Mathematics of Engineering Systems, 2nd ed. New York, Barnes and Noble, Inc., 1959.
- 13.4e Sokolnikoff, Ivan S. and Redheffer, R. M. Mathematics of Physics and Modern Engineering, 2nd ed. New York, McGraw-Hill Book Company, 1966.
- 13.4f Urwin, Kathleen M. Advanced Calculus and Vector Field Theory. Elmsford, New York, Pergamon Press, Inc., 1966.
- 13.4g Von Kármán, T. and Biot, M. A. Mathematical Methods in Engineering: An Introduction to the Mathematical Treatment of Engineering Problems. New York, McGraw-Hill Book Company, 1960.
- 13.4h Wylie, Clarence R. Advanced Engineering Mathematics, 3rd ed. New York, McGraw-Hill Book Company, 1966.

## Operations Research

- 13.5 Kaufmann, Arnold. The Science of Decision Making. (translated by R. Audley) New York, McGraw-Hill Book Company, 1968.

And at least one of the following:

- 13.6a Hillier, Frederick S. and Lieberman, Gerald J. Introduction to Operations Research. San Francisco, California, Holden-Day, Inc., 1967.
- 13.6b Kaufmann, Arnold and Faure, R. Introduction to Operations Research. (translated by H. C. Sneyd) New York, Academic Press, Inc., 1968.
- 13.6c Sasieni, Maurice W., et al. Operations Research: Methods and Problems. New York, John Wiley and Sons, Inc., 1959.

See also 14.10

#### 14. MATHEMATICS FOR THE SOCIAL AND LIFE SCIENCES

General Books--At least one of the following:

- 14.1a Kemeny, John G. and Snell, J. Laurie. Mathematical Models in the Social Sciences. Waltham, Massachusetts, Blaisdell Publishing Company, 1962.
- 14.1b Lazarfeld, Paul T. and Henry, Neil W., eds. Readings in Mathematical Social Science. Cambridge, Massachusetts, MIT Press, 1968.
- 14.1c Massarik, F. and Ratoosh, P., eds. Mathematical Explorations in Behavioral Sciences. Homewood, Illinois, Richard D. Irwin, Inc., 1965. Out of print.

Elementary Mathematics for Social and Biological Sciences--At least one of the following:

- 14.2a Gelbaum, Bernard R. and March, James G. Mathematics for the Social and Behavioral Sciences. Vol. 1, Probability, Calculus and Statistics. Philadelphia, Pennsylvania, W. B. Saunders Company, 1969.
- \*14.2b Kemeny, John G., et al. Introduction to Finite Mathematics, 2nd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1957.

Economics--At least one of the following:

- 14.3a Archibald, George C. and Lipsey, Richard G. An Introduction to a Mathematical Treatment of Economics. London, Weidenfeld and Nicholson, 1967.
- 14.3b Beach, E. F. Economic Models. New York, John Wiley and Sons, Inc., 1957.
- 14.3c Boot, Johannes. Mathematical Reasoning in Economics and Management Sciences: Twelve Topics. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 14.3d Bushaw, Donald W. and Clower, Robert W. Introduction to Mathematical Economics. Homewood, Illinois, Richard D. Irwin, Inc., 1957. Out of print.

Sociology--At least one of the following:

- 14.4a Bartos, Otomar J. Simple Models of Group Behavior. New York, Columbia University Press, 1967.
- 14.4b Berger, Joseph, et al. Types of Formalization in Small Group Research. Boston, Massachusetts, Houghton Mifflin Company, 1963.
- 14.4c Coleman, James S. Introduction to Mathematical Sociology. New York, Free Press, 1964.

Psychology--At least one of the following:

- 14.5a Atkinson, Richard C., et al. Introduction to Mathematical Learning Theory. New York, John Wiley and Sons, Inc., 1965.
- 14.5b Luce, Robert D., et al. Handbook of Mathematical Psychology, 3 vols. New York, John Wiley and Sons, Inc., 1963-1965.
- 14.5c Luce, Robert D., et al. Readings in Mathematical Psychology, 2 vols. New York, John Wiley and Sons, Inc., 1963.
- 14.5d Miller, George. Mathematics and Psychology. New York, John Wiley and Sons, Inc., 1964.

Political Science--At least one of the following:

- 14.6a Alker, Hayward R., Jr. Mathematics and Politics. New York, The Macmillan Company, 1965.



- 14.6b Riker, William H. Theory of Political Coalitions. New Haven, Connecticut, Yale University Press, 1962.
- 14.6c Saaty, Thomas L. Mathematical Models of Arms Control and Disarmament. New York, John Wiley and Sons, Inc., 1968.
- 14.6d Tullock, Gordon. Toward a Mathematics of Politics. Ann Arbor, Michigan, University of Michigan Press, 1967.

Biological Sciences--At least one of the following:

- 14.7a Keyfitz, Nathan. Introduction to the Mathematics of Population. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1968.
- 14.7b Lotka, Alfred J. Elements of Mathematical Biology. New York, Dover Publications, Inc., 1957.
- 14.7c Nahikian, Howard M. Modern Algebra for Biologists. Chicago, Illinois, University of Chicago Press, 1964.

Game Theory--At least one of the following:

- 14.8a Luce, Robert D. and Raiffa, H. Games and Decisions. New York, John Wiley and Sons, Inc., 1957.
- 14.8b Owen, Guillermo. Game Theory. Philadelphia, Pennsylvania, W. B. Saunders Company, 1968.
- 14.8c Rapoport, Anatol. Fights, Games, and Debates. Ann Arbor, Michigan, University of Michigan Press, 1960.
- 14.8d Rapoport, Anatol. Two-Person Game Theory: The Essential Ideas. Ann Arbor, Michigan, University of Michigan Press, 1966.
- 14.8e Williams, John D. Compleat Strategyst. New York, McGraw-Hill Book Company, 1965.

Programming--At least one of the following:

- 14.9a Dantzig, George B. Linear Programming and Extensions. Princeton, New Jersey, Princeton University Press, 1963.
- 14.9b Gass, Saul I. Linear Programming, 2nd ed. New York, McGraw-Hill Book Company, 1969.

- 14.9c Glicksman, Abraham M. Linear Programming and the Theory of Games. New York, John Wiley and Sons, Inc., 1963.
- 14.9d Haley, K. B. Mathematical Programming for Business and Industry. New York, St. Martin's Press, Inc., 1967.
- 14.9e Vajda, S. Mathematical Programming. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1961.

Mathematical Topics of Special Interest to the Social and Life Sciences--At least two of the following:

- 14.10a Allen, Roy G. Mathematical Economics, 2nd ed. New York, St. Martin's Press, Inc., 1959.
- 14.10b Ash, R. B. Information Theory. New York, John Wiley and Sons, Inc., 1965.
- 14.10c Beckenbach, Edwin F., ed. Applied Combinatorial Mathematics. New York, John Wiley and Sons, Inc., 1964.
- 14.10d Goldberg, Samuel. Introduction to Difference Equations. New York, John Wiley and Sons, Inc., 1958.
- 14.10e Harary, Frank, et al. Structural Models: An Introduction to the Theory of Directed Graphs. New York, John Wiley and Sons, Inc., 1965.
- 14.10f Pierce, J. R. Symbols, Signals and Noise: The Nature and Process of Communication. New York, Harper and Row, Publishers, 1962.
- 14.10g Saaty, Thomas L. Optimization in Integers and Related Extremal Problems. New York, McGraw-Hill Book Company, 1970.

See also 13.5 and 13.6

## 15. ANALYSIS AND DIFFERENTIAL EQUATIONS

Differential Equations--At least one of the following:

- 15.1a Agnew, Ralph P. Differential Equations, 2nd ed. New York, McGraw-Hill Book Company, 1960.
- 15.1b Boyce, William and DiPrima, R. C. Elementary Differential Equations and Boundary Value Problems, 2nd ed. New York, John Wiley and Sons, Inc., 1969.

- 15.1c Coddington, Earl A. Introduction to Ordinary Differential Equations. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1961.
- 15.1d Ford, Lester R. Differential Equations, 2nd ed. New York, McGraw-Hill Book Company, 1955.
- 15.1e Rainville, Earl D. and Bedient, Phillip E. Short Course in Differential Equations, 4th ed. New York, The Macmillan Company, 1969.
- 15.1f Ross, S. L. Differential Equations. Waltham, Massachusetts, Blaisdell Publishing Company, 1964.
- 15.1g Spiegel, Murray R. Applied Differential Equations, 2nd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.
- 15.1h Tenenbaum, Morris and Pollard, Harry. Ordinary Differential Equations. New York, Harper and Row, Publishers, 1963.

Partial Differential Equations--At least one of the following:

- 15.2a Berg, Paul W. and McGregor, James L. Elementary Partial Differential Equations. San Francisco, California, Holden-Day, Inc., 1966.
- 15.2b Broman, Arne. Introduction to Partial Differential Equations: From Fourier Series to Boundary Value Problems. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1970.
- 15.2c Churchill, Ruel V. Fourier Series and Boundary Value Problems, 2nd ed. New York, McGraw-Hill Book Company, 1963.

Infinite Series--At least one of the following:

- 15.3a Green, James A. Sequences and Series. (edited by W. Ledermann) New York, Dover Publications, Inc., 1958.
- 15.3b Knopp, Konrad. Infinite Sequences and Series. (translated by F. Bagemihl) New York, Dover Publications, Inc., 1956.

Fourier Series--At least one of the following:

- \*15.4a Jackson, Dunham. Fourier Series and Orthogonal Polynomials. LaSalle, Illinois, Open Court Publishing Company, 1941.

- 15.4b Rogosinski, W. Fourier Series, 2nd ed. New York, Chelsea Publishing Company, Inc., 1959.
- 15.4c Seeley, Robert T. Introduction to Fourier Series and Integrals. New York, The Benjamin Company, Inc., 1966.
- 15.4d Tolstov, Georgy P. Fourier Series, 2nd ed. (translated by Richard A. Silverman) Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1962.

#### Real Variables

- \*15.5 Boas, Ralph P., Jr. A Primer of Real Functions. New York, John Wiley and Sons, Inc., 1960.

And at least one of the following:

- 15.6a Randol, Burton. Introduction to Real Analysis. New York, Harcourt Brace Jovanovitch, Inc., 1969.
- 15.6b Royden, H. L. Real Analysis, 2nd ed. New York, The Macmillan Company, 1968.
- 15.6c Rudin, Walter. Principles of Mathematical Analysis, 2nd ed. New York, McGraw-Hill Book Company, 1964.

Complex Variables--At least one of the following:

- 15.7a Ahlfors, Lars V. Complex Analysis, 2nd ed. New York, McGraw-Hill Book Company, 1966.
- 15.7b Churchill, Ruel V. Complex Variables and Applications, 2nd ed. New York, McGraw-Hill Book Company, 1960.
- 15.7c Knopp, Konrad. Theory of Functions, Parts I and II. Problem Books I and II. (translated by F. Bagemihl) New York, Dover Publications, Inc., 1947. Part I, Elements of the General Theory of Analytic Functions; Part II, Applications and Continuations of the General Theory.

General--At least one of the following:

- 15.8a Gelbaum, Bernard and Olmsted, John. Counterexamples in Analysis. San Francisco, California, Holden-Day, Inc., 1964.

- 15.8b Smirnov, Vladimir I. Course of Higher Mathematics, 5 vols. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1964. Vol. I, Elementary Calculus; Vol. II, Advanced Calculus; Vol. III, Part 1, Linear Algebra; Vol. III, Part 2, Complex Variables, Special Functions; Vol. IV, Boundary Value Problems, Integral Equations and Partial Differential Equations; Vol. V, Integration and Functional Analysis.

16. ALGEBRA

Theory of Equations--At least one of the following:

- 16.1a Conkwright, N. B. Introduction to the Theory of Equations. Waltham, Massachusetts, Blaisdell Publishing Company, 1957.
- 16.1b Dickson, Leonard E. A New First Course in the Theory of Equations. New York, John Wiley and Sons, Inc., 1939.
- 16.1c MacDuffee, Cyrus C. Theory of Equations. New York, John Wiley and Sons, Inc., 1954.
- 16.1d Uspensky, James V. Theory of Equations. New York, McGraw-Hill Book Company, 1948.

Elementary Linear Algebra--At least one of the following:

- 16.2a Beaumont, Ross A. Linear Algebra. New York, Harcourt Brace Jovanovitch, Inc., 1965.
- 16.2b Curtis, Charles W. Linear Algebra: An Introductory Approach, 2nd ed. Boston, Massachusetts, Allyn and Bacon, Inc., 1968.
- 16.2c Shields, Paul C. Elementary Linear Algebra. New York, Worth Publishers, Inc., 1968.
- 16.2d Zelinsky, Daniel. First Course in Linear Algebra. New York, Academic Press, Inc., 1968.

Intermediate Linear Algebra--At least one of the following:

- 16.3a Finkbeiner, Daniel T. Introduction to Matrices and Linear Transformations, 2nd ed. San Francisco, California, W. H. Freeman and Company, 1966.

- 16.3b Hohn, Franz E. Elementary Matrix Algebra, 2nd ed. New York, The Macmillan Company, 1964.
- 16.3c Schneider, Hans and Barker, George P. Matrices and Linear Algebra. New York, Holt, Rinehart and Winston, Inc., 1968.
- 16.3d Staib, John H. Introduction to Matrices and Linear Transformations. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1969.

Advanced Linear Algebra--At least one of the following:

- 16.4a Halmos, Paul R. Finite-Dimensional Vector Spaces, 2nd ed. New York, Van Nostrand Reinhold Company, 1958.
- 16.4b Hoffman, Kenneth and Kunze, Ray. Linear Algebra, 2nd ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1971.
- 16.4c Mostow, George D. and Sampson, Joseph H. Linear Algebra. New York, McGraw-Hill Book Company, 1969.
- 16.4d Nering, Evar D. Linear Algebra and Matrix Theory, 2nd ed. New York, John Wiley and Sons, Inc., 1970.

Applied Linear Algebra

- 16.5 Noble, Ben. Applied Linear Algebra. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1969.

Introductory Abstract Algebra--At least one of the following:

- 16.6a Andree, Richard V. Selections from Modern Abstract Algebra. New York, Holt, Rinehart and Winston, Inc., 1958.
- 16.6b Weiss, Marie J. and Dubisch, Roy. Higher Algebra for the Undergraduate, 2nd ed. New York, John Wiley and Sons, Inc., 1962.

Elementary Abstract Algebra

- 16.7 McCoy, Neal H. Introduction to Modern Algebra, rev. ed. Boston, Massachusetts, Allyn and Bacon, Inc., 1968.

And at least one of the following:

- 16.8a Dean, Richard A. Elements of Abstract Algebra. New York, John Wiley and Sons, Inc., 1966.
- 16.8b Fraleigh, John B. First Course in Abstract Algebra. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1967.

Intermediate Abstract Algebra--At least one of the following:

- 16.9a Birkhoff, Garrett and MacLane, Saunders. Survey of Modern Algebra, 3rd ed. New York, The Macmillan Company, 1965.
- 16.9b Herstein, I. N. Topics in Algebra. Waltham, Massachusetts, Blaisdell Publishing Company, 1964.
- 16.9c Lewis, D. J. Introduction to Algebra. New York, Harper and Row, Publishers, 1965.
- 16.9d Paley, Hiram and Weichsel, Paul M. First Course in Abstract Algebra. New York, Holt, Rinehart and Winston, Inc., 1966.

Advanced Abstract Algebra

- 16.10 van der Waerden, B. L. Modern Algebra. (translated by T. J. Benac) New York, Frederick Ungar Publishing Company, Inc. Vol. I, 1949; Vol. II, 1950.

## 17. NUMBER THEORY

General and Historical--At least one of the following:

- 17.1a Fraenkel, Abraham A. Integers and Theory of Numbers. New York, Academic Scripta Mathematica Studies (Yeshiva University: Scripta Mathematica Studies, No. 5), 1955.
- 17.1b Ogilvy, C. Stanley and Anderson, John T. Excursions in Number Theory. New York, Oxford University Press, 1966.
- 17.1c Ore, Oystein. Number Theory and Its History. New York, McGraw-Hill Book Company, 1948.

Elementary--At least one, preferably two, of the following:

- 17.2a Barnett, I. A. Elements of Number Theory. Boston, Massachusetts, Prindle, Weber and Schmidt, Inc., 1969.
- 17.2b Davenport, H. Higher Arithmetic: Introduction to the Theory of Numbers, 3rd ed. New York, Hillary House Publishers, 1968.
- 17.2c Dudley, Underwood. Elementary Number Theory. San Francisco, California, W. H. Freeman and Company, 1969.
- 17.2d Jones, Burton W. Theory of Numbers. New York, Holt, Rinehart and Winston, Inc., 1955.
- 17.2e McCoy, Neal H. Theory of Numbers. New York, The Macmillan Company, 1965.
- 17.2f Stewart, Bonnie M. Theory of Numbers, 2nd ed. New York, The Macmillan Company, 1964.
- 17.2g Uspensky, James V. and Heaslet, M. A. Elementary Number Theory. New York, McGraw-Hill Book Company, 1939.

Advanced--At least one of the following:

- 17.3a LeVeque, William J. Topics in Number Theory, vol. 1. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1956.
- 17.3b Nagell, Trygve. Introduction to Number Theory, 2nd ed. New York, Chelsea Publishing Company, Inc., 1964.
- 17.3c Niven, Ivan and Zuckerman, H. S. Introduction to the Theory of Numbers, 2nd ed. New York, John Wiley and Sons, Inc., 1966.

Larger Reference Works--At least one of the following:

- 17.4a Dickson, Leonard E. History of the Theory of Numbers, 3 vols. New York, Chelsea Publishing Company, Inc.
- 17.4b Hardy, Godfrey H. and Wright, E. M. Introduction to the Theory of Numbers, 4th ed. New York, Oxford University Press, 1960.
- 17.4c Shanks, Daniel. Solved and Unsolved Problems in Number Theory, vol. 1. New York, Spartan Books, Inc., 1962.
- 17.4d Sierpiński, Wacław. Elementary Theory of Numbers. (translated from the Polish by A. Hulanicki) Polska Academia Nauk Monografie Matematyczne, Tom. 42. New York, Hafner Publishing Company, 1964.



## 18. LOGIC, FOUNDATIONS, AND SET THEORY

### Philosophy

- 18.1 Barker, Stephen F. Philosophy of Mathematics. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.

### General

- 18.2 Wilder, Raymond L. Introduction to the Foundations of Mathematics, 2nd ed. New York, John Wiley and Sons, Inc., 1965.

And at least one of the following:

- 18.3a Fraenkel, Abraham A. Set Theory and Logic. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1966.
- 18.3b Meschkowski, Herbert. Evolution of Mathematical Thought. (translated by J. H. Gayl) San Francisco, California, Holden-Day, Inc., 1965.
- 18.3c Nagel, Ernest and Newman, James R. Gödel's Proof. New York, New York University Press, 1958.
- 18.3d Stoll, Robert R. Sets, Logic and Axiomatic Theories. San Francisco, California, W. H. Freeman and Company, 1961.
- 18.3e Vilenkin, N. Ya. Stories About Sets. New York, Academic Press, Inc., 1968.

Elementary Logic--At least one of the following:

- 18.4a Dinkines, Flora. Elementary Concepts of Modern Mathematics. Part 2, Introduction to Mathematical Logic. New York, Appleton-Century-Crofts, 1964.
- 18.4b Exner, Robert M. and Roskopf, Myron S. Logic in Elementary Mathematics. New York, McGraw-Hill Book Company, 1959.
- 18.4c Kenelly, John W. Informal Logic. Boston, Massachusetts, Allyn and Bacon, Inc., 1967.
- 18.4d Suppes, P. and Hill, S. First Course in Mathematical Logic. Waltham, Massachusetts, Blaisdell Publishing Company, 1964.

Mathematical Logic--At least one of the following:

- 18.5a Copi, Irving M. Symbolic Logic, 3rd ed. New York, The Macmillan Company, 1967.
- 18.5b Kalish, Donald and Montague, Richard. Logic: Techniques of Formal Reasoning. New York, Harcourt Brace Jovanovitch, Inc., 1964.
- 18.5c Quine, Willard Van Orman. Mathematical Logic, rev. ed. New York, Harper and Row, Publishers, 1951.
- 18.5d Suppes, P. C. Introduction to Logic. New York, Van Nostrand Reinhold Company, 1957.
- 18.5e Tarski, Alfred. Introduction to Logic and to the Methodology of Deductive Sciences, 3rd ed. New York, Oxford University Press, 1965.

Elementary Set Theory--At least one of the following:

- 18.6a Breuer, Joseph. Introduction to Theory of Sets. (translated by H. Fehr) Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1958.
- 18.6b Dinkines, Flora. Elementary Concepts of Modern Mathematics. Part 1, Elementary Theory of Sets. New York, Appleton-Century-Crofts, 1964.
- 18.6c Kamke, E. Theory of Sets. (translated by F. Bagemihl) New York, Dover Publications, Inc., 1950.
- \*18.6d Lipschutz, Seymour. Set Theory and Related Topics. (Schaum's Outline Series) New York, McGraw-Hill Book Company, 1964.

Advanced Set Theory

- 18.7 Halmos, Paul R. Naive Set Theory. New York, Van Nostrand Reinhold Company, 1960.

Number Systems--At least one of the following:

- 18.8a Cohen, Leon W. and Ehrlich, Gertrude. Structure of the Real Number System. New York, Van Nostrand Reinhold Company, 1963.

- 18.8b Feferman, S. Number Systems: Foundations of Algebra and Analysis. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1964.
- 18.8c Hamilton, Norman T. and Landin, J. Set Theory: The Structure of Arithmetic. Boston, Massachusetts, Allyn and Bacon, Inc., 1961.

Foundations of Computer Science--At least one of the following:

- 18.9a Arbib, Michael A. Brains, Machines and Mathematics. New York, McGraw-Hill Book Company, 1964.
- 18.9b Knuth, Donald E. Art of Computer Programming. Vol. 1, Fundamental Algorithms. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1968.
- 18.9c Minsky, Marvin. Computation: Finite and Infinite Machines. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1967.

## 19. GEOMETRY

General--All of the following:

- 19.1 Coxeter, H. S. M. Introduction to Geometry. New York, John Wiley and Sons, Inc., 1961.
- 19.2 Eves, Howard. Survey of Geometry. Boston, Massachusetts, Allyn and Bacon, Inc. Vol. I, 1963; Vol. II, 1965.
- 19.3 Hilbert, David and Cohn-Vossen, Stephan. Geometry and the Imagination. (translated by P. Nemenyi) New York, Chelsea Publishing Company, Inc., 1952.

Elementary Geometry--At least one of the following:

- 19.4a Moise, Edwin E. Elementary Geometry from an Advanced Standpoint. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1963.
- 19.4b Prenowitz, Walter and Jordan, Meyer. Basic Concepts of Geometry. Waltham, Massachusetts, Blaisdell Publishing Company, 1965.

- 19.4c Wylie, Clarence R. Foundations of Geometry. New York, McGraw-Hill Book Company, 1964.

Vector Geometry--At least one of the following:

- 19.5a Hausner, Melvin. Vector Space Approach to Geometry. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1965.
- 19.5b Schuster, Seymour. Elementary Vector Geometry. New York, John Wiley and Sons, Inc., 1962.

Non-Euclidean Geometry--At least one of the following:

- 19.6a Kulczycki, Stefan. Non-Euclidean Geometry. Elmsford, New York, Pergamon Press, Inc., 1961.
- 19.6b Wolfe, Harold E. Introduction to Non-Euclidean Geometry. New York, Holt, Rinehart and Winston, Inc., 1945.

Projective and Affine Geometry--At least one of the following:

- 19.7a Blumenthal, Leonard M. Modern View of Geometry. San Francisco, California, W. H. Freeman and Company, 1961.
- 19.7b Coxeter, H. S. M. Projective Geometry. Waltham, Massachusetts, Blaisdell Publishing Company, 1964.
- 19.7c Fishback, William T. Projective and Euclidean Geometry. New York, John Wiley and Sons, Inc., 1969.

Differential Geometry--At least one of the following:

- 19.8a O'Neill, Barrett. Elementary Differential Geometry. New York, Academic Press, Inc., 1966.
- 19.8b Willmore, Thomas James. Introduction to Differential Geometry. New York, Oxford University Press, 1959.

Special Topics--Any of the following:

- 19.9a Albert, A. Adrian and Sandler, Reuben. Introduction to Finite Projective Planes. New York, Holt, Rinehart and Winston, Inc., 1968.

- 19.9b Dorwart, Harold L. Geometry of Incidence. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1965.
- 19.9c Jeger, Max. Transformation Geometry. (Mathematical Studies Series, Vol. I) New York, American Elsevier Publishing Company, 1966.
- 19.9d Kaplansky, Irving. Linear Algebra and Geometry: A Second Course. Boston, Massachusetts, Allyn and Bacon, Inc., 1969.
- \*19.9e Kazarinoff, Nicholas D. Geometric Inequalities. New York, Random House, Inc., 1961.
- 19.9f Weyl, Hermann. Symmetry. Princeton, New Jersey, Princeton University Press, 1952.
- 19.9g Yaglom, I. M. and Boltyanskii, V. G. Convex Figures. New York, Holt, Rinehart and Winston, Inc. Out of print.

## 20. TOPOLOGY

Intuitive Approaches to Topology--At least one of the following:

- 20.1a Arnold, Bradford Henry. Intuitive Concepts in Elementary Topology. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1962.
- 20.1b Bing, R. H. Elementary Point Set Topology. Slaughter Memorial Paper No. 8. Washington, D. C., Mathematical Association of America, 1960.
- 20.1c Fréchet, Maurice and Fan, Ky. Initiation to Combinatorial Topology. (translated from the French by Howard Eves) Boston, Massachusetts, Prindle, Weber and Schmidt, Inc., 1967.
- 20.1d Lietzmann, Walter. Visual Topology. New York, American Elsevier Publishing Company, 1965.

A somewhat more rigorous approach with many of the classical theorems:

- \*20.2 Chinn, William G. and Steenrod, Norman E. First Concepts of Topology. New York, Random House/Singer School Division, 1966.

Algebraic Topology--At least one of the following:

- 20.3a Aleksandrov, P. S. Combinatorial Topology, 3 vols. Baltimore, Maryland, Graylock Press. Vol. I, Introduction, Complexes, Coverings, Dimensions, 1956; Vol. II, Betti Groups, 1957; Vol. III, Homological Manifolds, Duality, Classification, and Fixed Point Theorems, 1960.
- 20.3b Blackett, Donald W. Elementary Topology: Combinatorial and Algebraic Approach. New York, Academic Press, Inc., 1967.
- 20.3c Massey, William S. Algebraic Topology: An Introduction. New York, Harcourt Brace Jovanovitch, Inc., 1967.
- 20.3d Wallace, Andrew Hugh. Introduction to Algebraic Topology. Elmsford, New York, Pergamon Press, Inc., 1957.

General Topology--At least one of the following:

- 20.4a Baum, John D. Elements of Point Set Topology. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1964.
- 20.4b Bushaw, Donald. Elements of General Topology. New York, John Wiley and Sons, Inc., 1963. Out of print.
- 20.4c Kuratowski, Kazimierz. Introduction to Set Theory and Topology. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc., 1962. Out of print.
- 20.4d Mendelson, Bert. Introduction to Topology, 2nd ed. Boston, Massachusetts, Allyn and Bacon, Inc., 1968.
- 20.4e Pervin, William J. Foundations of General Topology. New York, Academic Press, Inc., 1964.

Graph Theory

- \*20.5 Ore, Oystein. Graphs and Their Uses. New York, Random House, Inc., 1963.

## 21. TABLES AND DICTIONARIES

The library should contain at least one mathematical dictionary and one or more sets of tables, both numerical and functional.

Following is a list of several such dictionaries and tables; there are others equally good available.

Abramowitz, Milton and Stegun, Irene A., eds. Handbook of Mathematical Functions with Formulas, Graphs and Mathematical Tables. New York, Dover Publications, Inc., 1964.

Burington, Richard S. Handbook of Mathematical Tables and Formulas, 4th ed. New York, McGraw-Hill Book Company, 1965.

\*Burington, Richard S. and May, Donald C., Jr. Handbook of Probability and Statistics with Tables, 2nd ed. New York, McGraw-Hill Book Company, 1969.

\*Chemical Rubber Company. Handbook of Tables for Probability and Statistics, 2nd ed. Cleveland, Ohio, Chemical Rubber Company, 1968.

Chemical Rubber Company. Standard Mathematical Tables, 19th ed. Cleveland, Ohio, Chemical Rubber Company, 1971.

Davis, Harold T. Tables of Mathematical Functions, 2 vols. San Antonio, Texas, Trinity University Press, 1963.

Davis, Harold T. and Fisher, Vera. Tables of Mathematical Functions, vol. 3. San Antonio, Texas, Trinity University Press, 1962.

Dwight, Herbert B. Mathematical Tables of Elementary and Some Higher Mathematical Functions, 3rd ed. New York, Dover Publications, Inc., 1961.

Dwight, Herbert B. Tables of Integrals and Other Mathematical Data, 4th ed. New York, The Macmillan Company, 1961.

James, Glenn and James, Robert C. Mathematics Dictionary, 3rd ed. New York, Van Nostrand Reinhold Company, 1968.

Karush, William. Crescent Dictionary of Mathematics. New York, The Macmillan Company, 1962.

Larsen, Harold. Rinehart Mathematical Tables, Formulas and Curves, enl. ed. New York, Holt, Rinehart and Winston, Inc., 1953.

Marks, Robert W. New Mathematics Dictionary and Handbook. New York, Grosset and Dunlap, Inc., 1964.

Newman, J. R. The Universal Encyclopedia of Mathematics. New York, New American Library, Inc., 1965.

Nielsen, Kaj L. Logarithmic and Trigonometric Tables to Five Places, rev. ed. New York, Barnes and Noble, Inc., 1961.

The Universal Encyclopedia of Mathematics. New York, Simon and Schuster, Inc., 1964.

Weintraub, S. Tables of Cumulative Binomial Probability Distribution for Small Values of p. New York, Free Press, 1963.

## 22. JOURNALS

The American Mathematical Monthly. Mathematical Association of America, Inc., 1225 Connecticut Avenue, N.W., Washington, D. C. 20036 Ten issues per year.

The Arithmetic Teacher. National Council of Teachers of Mathematics, 1201 Sixteenth Street, N.W., Washington, D. C. 20036 Eight issues per year.

The Mathematical Gazette. G. Bell and Sons, Ltd., Portugal Street, London, W.C. 2, England. Five issues per year.

Mathematics Magazine. Mathematical Association of America, Inc., 1225 Connecticut Avenue, N.W., Washington, D. C. 20036 Five issues per year.

The Mathematics Teacher. National Council of Teachers of Mathematics, 1201 Sixteenth Street, N.W., Washington, D. C. 20036 Eight issues per year.

The Two-Year College Mathematics Journal. Prindle, Weber and Schmidt, Inc., 53 State Street, Boston, Massachusetts 02109 Two issues per year.

## 23. SERIES AND COLLECTIONS

A number of excellent series of monographs on various topics in mathematics exist. Quality varies somewhat within each series. Listing of a series here by no means implies that every book in every series should be purchased, for some volumes cover topics not appropriate to the two-year college.

Blaisdell Scientific Paperbacks. Waltham, Massachusetts, Blaisdell Publishing Company, Inc. A series of six pamphlets that are translations of the Russian series "Popular Lectures in Mathematics." Out of print.



Korovkin, P. P. Inequalities. 1961

Kostovskii, A. N. Geometrical Constructions Using Compasses. 1961

Smogorzhevskii, A. S. The Ruler in Geometrical Constructions. 1961

\*Sominskii, I. S. The Method of Mathematical Induction. 1961

Uspenskii, V. A. Some Applications of Mechanics to Mathematics. 1961

\*Vorobev, N. N. Fibonacci Numbers. 1961

Carus Mathematical Monographs. Washington, D. C., Mathematical Association of America, Inc.

No. 1. Calculus of Variations. G. A. Bliss

No. 2. Analytic Functions of a Complex Variable.  
D. R. Curtiss

No. 3. Mathematical Statistics. H. L. Rietz

No. 4. Projective Geometry. J. W. Young

\*No. 6. Fourier Series and Orthogonal Polynomials.  
Dunham Jackson

No. 7. Vectors and Matrices. C. C. MacDuffee

No. 8. Rings and Ideals. N. H. McCoy

No. 9. The Theory of Algebraic Numbers. Harry Pollard

No. 10. The Arithmetic Theory of Quadratic Forms.  
B. W. Jones

No. 11. Irrational Numbers. Ivan Niven

No. 12. Statistical Independence in Probability, Analysis  
and Number Theory. Mark Kac

\*No. 13. A Primer of Real Functions. R. P. Boas, Jr.

No. 14. Combinatorial Mathematics. H. J. Ryser

No. 15. Non-Commutative Rings. I. N. Herstein

No. 16. Dedekind Sums. Hans Rademacher and Emil Grosswald

Mathematics: Its Content, Methods, and Meaning, 3 vols. Edited by A. D. Aleksandrov, et al. Translated by S. H. Gould. Cambridge, Massachusetts, MIT Press.

MAA Studies in Mathematics. Washington, D. C., Mathematical Association of America, Inc.

Vol. 1. Studies in Modern Analysis. R. C. Buck, editor

Vol. 2. Studies in Modern Algebra. A. A. Albert, editor

Vol. 3. Studies in Real and Complex Analysis.  
I. I. Hirschman, Jr., editor

Vol. 4. Studies in Global Geometry and Analysis.  
S. S. Chern, editor

Vol. 5. Studies in Modern Topology. P. J. Hilton, editor

Vol. 6. Studies in Number Theory. W. J. LeVeque, editor

Vol. 7. Studies in Applied Mathematics. A. H. Taub, editor

Schaum's Outline Series. New York, McGraw-Hill Book Company.

Advanced Calculus. Murray R. Spiegel

Analytic Geometry. Joseph H. Kindle

Calculus, 2nd ed. Frank Ayres, Jr.

College Algebra. Murray R. Spiegel

Complex Variables. Murray R. Spiegel

Descriptive Geometry. Minor C. Hawk

Differential Equations. Frank Ayres, Jr.

Elementary Algebra. Barnett Rich

Finite Mathematics. Seymour Lipschutz

First Year College Mathematics. Frank Ayres, Jr.

General Topology. Seymour Lipschutz

Group Theory. B. Baumslag and B. Chandler

Laplace Transforms. Murray R. Spiegel

Linear Algebra. Seymour Lipschutz

Mathematical Handbook of Formulas and Tables. Murray R. Spiegel

Mathematics of Finance. Frank Ayres, Jr.

Matrices. Frank Ayres, Jr.

Modern Algebra. Frank Ayres, Jr.

Numerical Analysis. Francis Scheid

Plane Geometry with Coordinate Geometry. Barnett Rich

Projective Geometry. Frank Ayres, Jr.

Real Variables. Murray R. Spiegel

\*Set Theory and Related Topics. Seymour Lipschutz

Statistics. Murray R. Spiegel

Theory and Problems of Probability. Seymour Lipschutz

Trigonometry. Frank Ayres, Jr.

Vector Analysis. Murray R. Spiegel

School Mathematics Study Group. Studies in Mathematics. Pasadena, California, A. C. Vroman, Inc.

Euclidean Geometry Based on Ruler and Protractor Axioms  
(SM-1)

Protractor Axioms (SM-2)

Structure of Elementary Algebra (SM-3)

Geometry (SM-4)

Concepts of Informal Geometry (SM-5)

Number Systems (SM-6)

Intuitive Geometry (SM-7)

Concepts of Algebra (SM-8)

\*Brief Course in Mathematics for Elementary School Teachers  
(SM-9)

Applied Mathematics in the High School (SM-10)

Mathematical Methods in Science (SM-11)

A Brief Course in Mathematics for Junior High School Teachers  
(SM-12)

Inservice Course for Primary School Teachers (SM-13)

Introduction to Number Systems (SM-14)

Calculus and Science (SM-15)

Some Uses of Mathematics (SM-16)

Mathematical Concepts of Elementary Measurement (SM-17)

Puzzle Problems and Games Project (SM-18)

Reviews of Recent Research in Mathematics Education (SM-19)

Slaught Memorial Papers. (not all available) Washington, D. C.,  
Mathematical Association of America, Inc.,

No. 3 Proceedings of the Symposium on Special Topics in  
Applied Mathematics.

No. 5 The Conjugate Coordinate System for Plane Euclidean  
Geometry. W. B. Carver

No. 6 To Lester R. Ford on His Seventieth Birthday. A  
collection of 14 articles.

No. 7 Introduction to Arithmetic Factorization and Con-  
gruences from the Standpoint of Abstract Algebra.  
H. S. Vandiver and M. W. Weaver

No. 11 Papers in Analysis. A collection of 23 articles.

No. 12 Differentiation of Integrals. A. M. Bruckner

Topics in Mathematics. Lexington, Massachusetts, D. C. Heath and Company.

Configuration Theorems. B. I. Argunov and L. A. Skorniyakov, 1963

What is Linear Programming? A. S. Barsov, 1964

Equivalent and Equidecomposable Figures. V. G. Boltyanskii, 1963

Mistakes in Geometric Proofs. Ya. S. Dubnov, 1963

Proof in Geometry. A. I. Fetisov, 1963

Induction in Geometry. L. I. Golovina and I. M. Yaglom, 1963

Computation of Areas of Oriented Figures. A. M. Lopshits, 1963

Areas and Logarithms. A. I. Markushevich, 1963

Summation of Infinitely Small Quantities. I. P. Natanson, 1963

Hyperbolic Functions. V. G. Shervatov, 1963

How to Construct Graphs. G. E. Shilov, 1963

Simple Maxima and Minima Problems. I. P. Natanson, 1963  
(The above two are bound as one volume.)

\*The Method of Mathematical Induction. I. S. Sominskii, 1963

Algorithms and Automatic Computing Machines. B. A. Trakhtenbrot, 1963

\*Fibonacci Numbers. N. N. Vorobev, 1963

An Introduction to the Theory of Games. E. S. Venttsel, 1963

Translations from the Russian: A Survey of Recent East European Mathematical Literature. Lexington, Massachusetts, D. C. Heath and Company.

Multicolor Problems. E. B. Dynkin and V. A. Uspenskii, 1963

Problems in the Theory of Numbers. E. B. Dynkin and V. A. Uspenskii, 1963

Random Walks. E. B. Dynkin and V. A. Uspenskii, 1963

\*Eight Lectures on Mathematical Analysis. Alexander Y. Khinchin, 1965

Convex Figures and Polyhedra. L. A. Lyusternik, 1966

Infinite Series. A. I. Markushevich, 1967