

DATA MANAGEMENT RESOURCES

for grades 5 - 9



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A. CHILDREN'S LITERATURE:

1. Burns, M. (1975). *The I hate mathematics book* . Toronto, ON: Little, Brown and Company.
 - The *I hate mathematics book* combines humor and cartoons to make math fun and easy. Several mathematical topics are covered including surveying, predicting, and recording. Teachers may use this book as a way to integrate Math, Art, and Language Arts.
2. Froman, R. (1974). *A game of functions* . NY: Thomas Y. Crowell Company.
 - This book could be used to teach data management from Grades 4 to 8. The author shows how everyday occurrences are a function of one another and thus can be graphed to give a picture of the

event. The author also describes how Mathematics can be taken outdoors for a truly concrete learning experience. Teachers could use this book as a resource for students or as a resource to plan creative Math lessons.

3. Hart-Davis, A. (1989). *Mathematical eye*. London: Unwin Hyman Limited.

- *Mathematical eye* would be appropriate for the upper middle years student. This book contains chapters on graphs, percentages, and statistics. The author uses practical and humorous examples to illustrate concepts. This is a good resource for both teachers and students.

4. Highland, E. H., & Highland, H. J. (1970). *The how and why wonder book of Mathematics*. NY: Grosset & Dunlap.

- This book contains many interesting mathematical topics and would be a beneficial addition to any classroom library collection. The who, what, where, when, and why of math are answered in this book. A section on graphs is also presented.

5. James, E. & Barkin, C. (1978). *What do you mean by "average"?* New York: Lothrop, Lee & Shepard Company.

- This is a delightful Mathematics book that explains, describes, and gives examples using a fictional story format. The topics include: mean, median, mode, sampling, percentages, and graphing. A teacher could use this book as an instructional tool, for assignment ideas, or as an aid to help those students difficulty grasping certain Math concepts. *What do you mean by "average"?* is written for the middle years student.

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B. SOFTWARE:

1. Visions Technologies. (1977). *Claris workshop for teachers*. Available: CCT Software Plus publication (1997). #1 - 12760 Bathgate Way. Richmond, BC. V6V 1Z4. 1-800-663-7731 (Phone) or 604-273-6534 (Fax). <http://www.cct-online.com>).

- Contents: School (MAC \$48.95, WIN \$48.95), lab pack (MAC \$181.95, WIN \$181.95), and site license (MAC \$419.95, WIN \$419.95).
- System Requirements: MAC (3.5 disk), Windows (3.5 disk).
- Grade Level: 3 to Adult
- Description: Guide to ClarisWorks. Covers versions 4.0, 3.0, and 2.1 word processing, drawing, painting, spreadsheet, database, and communications.

2. Wings for Learning/Sunburst Communications. (1992). *Data and decisions bar grapher* (Version 1.0). Available: Wings for Learning/Sunburst Communications. 1600 Green Hills Road. Scotts Valley, CA. 95967. 1-800-321-7411 or 1-408-438-5502.

- Contents: Teachers Kit \$89.00. Group Kit (4 students) \$17.00. (5.25") or (3.5") disks, instructional manual.
- System Requirements: Apple IIe, IIc, IIGS/128K/1 disk drive.
- Grade Level: 5 to 8.
- Description: A data base management program. The students gather data about everyday situations, organize, and display the data using tables and graphs.

3. Knowledge Tree. (1977). *DatasweetPc/Datasweet 2*. Available: CCT Software Plus Publication. 1 - 12760 Bathgate Way. Richmond, BC. V5V 1Z4. 1-800-663-7731. (Fax) 604-273-6534. <http://www.cct-online.com>.

- Contents: School \$99.95. Site license.
- System Requirements: COS (3.5 disk), Windows Acorn.
- Grade Level: 2 to 4.
- Description: Teaches the creation of databases, graphing, plotting, and spreadsheets. Includes electronic calculators.

4. Lois Edwards Educational Design and Sunburst. (1996). *Graphers*. Available: Sunburst Communications. Gage Educational Publishing Company. 164 Commander Blvd. Scarborough, ON. M1S 3C7. 1-800-667-1115. Fax: (406) 293-0846. <http://www.nysunburst.com>).

- Contents: Price for single \$69.96. Price for 5 computers \$139.95. Offers spoken instruction for non-readers.
- System Requirements: MAC (4MB), PWR MAC (8MB), WINDOWS (4MB)
- Grade Level: Kindergarten to 4.
- Description: Includes over 30 sets of pictures that represent data students collect by counting or taking surveys. Students can organize data and construct, modify, and interpret graphs. They can write their discoveries in the on-screen notebook and print both the notebook and the graphs. Graphs include pictographs, bar graphs, grid plots, circle graphs, and loop and line graphs.

5. Sunburst Communications Publications. *Hot dog stand: The works*. Available: Gage Educational Publishing Company. 164 Commander Blvd. Scarborough, ON. M1S 3C7. 1-800-667-1115. Fax: (406) - 293-0846. <http://www.nysunburst.com>).

- Contents: Price for single \$89.95. Price for 5 computers \$179.95.
- System Requirements: MAC CD (8MB), WIN CD (8MB). Macintosh version requires a 13" monitor.
- Grade Level: 5 to Adult.
- Description: Students manage a hot dog concession stand. The students make decisions based on specific data. They keep records, determine prices, and plan marketing strategies. Topics include estimation, data gathering, data analysis, creating and interpreting graphs, and translating information into different forms.

6. Dugdale, S., & Kibbey, D. (1996). *Interpreting Graphs*. Available: Sunburst Communications Publications. Gage Educational Publishing Company. 164 Commander Blvd. Scarborough, ON. M1S 3C7. 1-800-667-1115. Fax: (406) - 293-0846. <http://www.nysunburst.com>).

- Contents: Price for single \$65.00. Price for 5 computers \$130.00.
- System Requirements: DOS 5.25 (256K), DOS 3.5 (256k), APPLE 5.25. DOS version requires a color graphics adapter. Network version available.
- Grade Level: 7 to 12.
- Description: As students match line graphs to descriptions of physical events, they learn to interpret graphic models in real world situations.

7. *Super solvers outnumbered*. Available: The Learning Company. 6493 Kaiser Drive. Fremont, CA. 94555. 1-800-852-2255.

- Contents: Teacher's guide and student activities. School version (DOS \$69.00 & MAC \$79.00), lab pack (DOS \$159.00 & MAC \$159.00), site license, CD-ROM.
- System Requirements: DOS, MAC Hybrid CD-ROM. Windows CR-ROM..
- Grade Level: 3 to 6.
- Description: Through a game format, *Super solvers outnumbered* builds basic math and problem solving skills through the use of problems concerning whole number operations, graphs, charts, and maps. Sometimes it is just basic drill work. Students solve math word problems to advance in the game from beginner to advanced. Aside from the game, the teacher's guide provides classroom extensions for whole number operations, graphs, charts, and maps that are interesting and useful, but not essential to the program.

8. *Tabletop Jr.* (1996). Available: Broderbund. Software Plus Publications. 1 - 12760 Bathgate Way. Richmond, BC. V6V 1Z4. 1-800-663-7731. Fax: (604) 273-6534. <http://www.cctswp.com>.

- Contents: School version (WIN \$89.95 & MAC \$89.95), lab pack (WIN \$179.95 & MAC \$179.95), network, site license.
- System Requirements: MAC 3.5, Windows 3.5.
- Grade Level: Kindergarten to 6.
- Description: Students develop the Mathematical skills of attributes, place value, and plotting while working with data such as, for example, pizzas or party hats among other things.

9. *Tabletop Sr.* (1996). Available: Broderbund. Software Plus Publications. 1 - 12760 Bathgate Way. Richmond, BC. V6V 1Z4. 1-800-663-7731. Fax: (604) 273-6534. <http://www.cctswp.com>.

- Contents: School version (WIN \$89.95 & MAC \$89.95), lab pack (WIN \$179.95 & MAC \$179.95), network, site license.
- System Requirements: MAC 3.5, Windows 3.5.
- Grade Level: 4 to 12.
- Description: Aside from exploring and analyzing data, students represent data as mobile icons that can be arranged into box plots, cross tabulations, histograms, scatterplots, and Venn diagrams.

10. *Tangible Math: Function Investigator*. Available: Logal Software Inc. 125 CambridgePark Drive. Cambridge, MA. 02140. 1-800 LOGAL-US or (617) 491-5855. Fax: (617) 491-5855. <http://www.logal.com/>.

- Contents: Teacher's guide and 3.5 disk. Single \$199.00. Network \$1195.00.
- System Requirements: MAC, POWERMAC, or WIN. Macintosh/PowerMac requires 13" or larger color monitor, 4 meg RAM, hard drive. Windows required 385 or higher, 4 meg RAM, Windows 3.0 or higher, VGA monitor, hard drive.
- Grade Level: Middle school data analysis, High School Algebra II and Precalculus.
- Description: *Function Investigator* is an advanced program for connecting data, expressions, and graphs. This tool would be especially applicable for those comfortable using computers and graphic organizers. In middle years, this program may be used as either a whole or small group activity. The teacher's guide assists in leading the investigation into different areas of functions and graphs. Students can perform graph analysis displaying roots, undefined points, relative maxima and minima, color code graph sections, interpolations, reflections, and transformations on graphs. To analyze data, students construct tangents, normals, chord between two points, integral calculating. It combines mathematical expressions and graphic displays.

11. *Tangible Math: Mathematical toolbox*. Available: Logal Software Inc. 125 CambridgePark Drive. Cambridge, MA. 02140. 1-800 LOGAL-US or (617) 491-5855. Fax: (617) 491-5855. <http://www.logal.com/>.

- Contents: Teacher's guide and 3.5 disks with 25 reproducible activity master. Electronic files. Single \$199.00. Network \$1195.00. Additional disks \$79.00
- System Requirements: MAC, POWERMAC, or WIN. Macintosh/PowerMac requires 13" or larger color monitor, 4 meg RAM, hard drive. Windows required 385 or higher, 4 meg RAM, Windows 3.0 or higher, VGA monitor, hard drive.
- Grade Level: Middle school and High School.
- Description: *Mathematical toolbox* would be useful and interesting for middle years students. The classroom activities advance from introductory to advanced. The student activities, guide accompaniment, apply and use the program as a learning tool. Through individual, whole class, or small group instruction and use, the students use classification, sets, graphs, measurements, and spacial operations to develop objects and analyze the date with bar charts, pie charts, and Venn diagrams. The program and guide are applicable to middle and upper grades.

12. *Probability Lab* (Version 1.0). (1996). Available: MECC. 3490 Lexington Ave. St. Paul, MN. 55112. (612) 481-3500.

- Contents: Two 5.25" or two 3.5" disks and instructional manual \$59.00. Additional backup disks \$15.00
- System Requirements: Apple IIe, IIGS/128K/1 disk drive. Network Compatible.
- Grade Level: 7 to 12.
- Description: This is a utility that students and teachers can use to design and run probability experiments through random generation of number, coin, die, cards, spinner, or marble experiments.

13. BBN Laboratories Incorporated. (1996). *Statistics Workshop*. Available: Sunburst Communication Publications. Gage Educational Publishing Company. 164 Commander Blvd. Scarborough, ON. M1S 3C7. 1-800-667-1115. Fax: (406) - 293-0846. <http://www.nysunburst.com>).

- Contents: Price for single \$129.95. Price for 5 computers \$259.95.
- System Requirements: MAC (2.5MB). Will not work on Power MAC. Network version available..
- Grade Level: 6 to College.
- Description: Students enter data, create various graphs, and generate and analyze statistics. Graphs include scatter plots, histograms, and plot boxes.

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C. THE INTERNET:

1. <http://lib.stat.cmu.edu/DASL>

- This site is an excellent resource for data management topics. Not only does this site provide ideas for data management, it gives examples and actual classroom applications to aid in developing data management concepts and skills.

2. <http://unite.ukans.edu/UNITERResource/Rmathematics346.html>

- Here is a site that allows you, as a teacher, to pick the grade level that you want to research. The site provides different data management examples and offers practical lesson plan ideas.

3. <http://forum.swarthmore.edu/workshops/sum9/6data.collections/datalibrary/>

- This site allows teachers to search by grade level and/or topic. Key words that may help searchers get to specific data management resources are "data", "graphs", and "graphing".

4. <http://www.statcan.ca/start.html>

- Provides valuable resources for raw data on graphing.

5. <http://mathcentral.uregina.ca>

This site allows searchers to look for lesson plans and ideas according to Grade level or mathematics strand. It also contains links to a teacher's talk forum and upcoming conferences.

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D. VIDEOTAPES:

*** All the videotapes listed are suitable for Grades 1 through 9 and are available from Media Publications, 1174 Winnipeg Street, Regina, SK. S4R 1J6. (306) 359-0977.

1. Mathwork:

- *Statistics: Sampling* (Cat #V2481), running time 14:34.
- *Statistics: Collecting Data* (Cat #V2490), running time 14:51.
- *Using Graphs* (Cat #V2491), running time 14:37.
- *Probability: Possible outcomes* (Cat #V2492), running time 14:53.
- *Statistics: Analyzing data* (Cat #V2495), running time 14:49.

2. Solve It:

- *Drawing and interpreting tables and diagrams* (Cat #V2575), running time 14:58.
- *Understanding mean, median, and mode* (Cat #V2577), running time 14:51.

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E. PUBLISHED BOOKS:

1. McKillip, W. D., Davis, E.J., Cooney, T. J., & Wilson, J.W. (1978). *Mathematics instruction in the elementary grades*. Silver Burdett.

- This is a textbook not specifically designed for data management as it covers all mathematical concepts. As clear data management examples are provided throughout the text, it serves as an excellent refresher on data management skills. The text, however, does not provide any practice problems but does outline various data management projects suitable for the classroom. Rather, it provides examples and ideas for data management activities that can be done with students.

2. Newmark, J. (1990). *Mathematics for elementary school teachers*. NY: University of New York.

- The text covers a wide range of mathematical concepts all of which provide historical notes, definitions, and clear examples. Newmark includes several data management ideas and activities that can be implemented in the classroom. He provides activities for enrichment which include a problem solving approach.

3. Harling, P. (1990). *100 ideas for primary mathematics: Cross-curricular approach*. Hodder and Sloughton.

- This book focuses on data management skills and is an excellent resource for younger middle years students or those engaged in remedial work. The ideas provided use a cross-curricular approach to teaching mathematics.

4. Corwin, R. (1989). *Used numbers*. Dale Seymour Publications.

- This book highlights important mathematical ideas and definitions which make it a user-friendly referencebook. As it is written in an easy-to-understand format, it could benefit those teachers searching for a refresher on data management skills. Although the author does not provide specific activities, he does provide themes for teaching data management.

5. *Statistics, probability, and graphing: Kindergarten through grade nine*. (1989). Hands On Inc.

- This book provides activities for primary to middle-upper years. The activities are listed in a lesson plan format, complete with set and closure. Hands On Inc believes in the use of manipulatives thus

their all of their lessons are experientially based.

6. Tanner, J., Musteller, F., Kruskal, Lehmann, E., Link, R, and Rism, G. (1989). *Statistics: A guide to the unknown* . Wadsworth and Brooks and Cole.

- This is a book not specifically designed for teachers. It is for those searching for in-depth knowledge of statistics and data management. Unless you are concerned with knowing all the "in's" and "out's" of statistics you may choose not to use this book as a reference for data management ideas.

7. Riedesel, C. A. (1990). *Teaching elementary school mathematics* (5th ed.). Prentice Hall.

- Although this book contains information that can be found in many other data management books, it features student activity pages that can be quality-copied for classroom use.

8. Shutle, A., Haynes, H., Choate, S. (1986). *Applying mathematics* . Ladlaw Brothers Pub.

- This is a textbook for students which is designed for use in the classroom. Features unique to this text are the math crosswords and the focus on problem solving skills.

9. *Daily mathematics: Critical thinking and problem solving* . (1995). McDougal and Little Co.

- Although this book is not arranged according to mathematical topic, great data management problems can be found merely by flipping through the pages. The problems are fun and would be a great way to start the day.

10. *Curricular evaluation standards for school mathematics 5: Agenda series K-8* . (1992). National Council of Teachers of Mathematics.

- The data management portion of this book is broken down into four detailed activities. The four sections include ideas for role plays, connections to literature, and problem solving. Each of these activities would take several lessons to complete.

11. Moretti, G., Stephens, M., Goodnon, J., & Hoogeboom, S. (1987). *The problem solver 6* . Creative Publications.

- The book focuses on teaching strategies. It takes the curricular material and challenges teachers to come up with interesting and unique approaches to teach it. Each section includes a problem and asks teachers to think of ways to "solve it". The authors also provide suggestions for teaching methods. There is also an excellent section for use when reviewing the creation of tables and diagrams with students. There is an entire series of *Problem Solver* texts for the elementary grades.

12. *Minds on math* . (1996). Addison-Wesley Publications.

- This is a textbook for students. It would be a great supplement for anyone using the Houghton-Mifflin series. This series describes the use of manipulatives, problem-solving approaches, and provides clearly explained examples. Chapters feature interesting pictures and facts which center around a mini-theme for each chapter.

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Obtained from Math Central

<http://MathCentral.uregina.ca/>