

# ***Do Math***

## ***You Can Do Anything!!!***

*Resources:* \_\_\_\_\_

*ABOUT TEACHING MATHEMATICS A K-8 Resource, by Marilyn Burns*

*Website:* [www.mathsolutions.com](http://www.mathsolutions.com)

*Elementary School Mathematics: WHAT PARENTS SHOULD KNOW ABOUT ESTIMATION and PROBLEM SOLVING (Second Editions), by Barbara J. Reys*

*FAMILY MATH, by Jean Kerr Stenmark, Virginia Thompson, and Ruth Cossey*

*Website:* <http://www.lawrencehallofscience.org/equals/>

*MATH CURSE, by Jon Scieszka and Lane Smith*

*G is for Googol – A Math Alphabet Book, by David M. Schwartz*

*MATHEMATICS PENTATHLON*

*Website:* <http://www.mathpentath.org/>

*24 GAME*

*[www.24game.com](http://www.24game.com)*

***Manipulatives & Activities That Help ... children learn MATH***

*Presented by Deb Romanek, Director, Mathematics Education*

*Nebraska Department of Education*

*301 Centennial Mall So, Lincoln, NE 68509-4987*

*402-471-2503 or [deb.romanek@nebraska.gov](mailto:deb.romanek@nebraska.gov)*

*NDE Math Website:* <http://www.education.ne.gov/math/index.html>

# WHAT IS FAMILY MATH?

It's NOT a teacher  
standing in front  
and *Lecturing*.



It's doing  
activities and  
playing games.

It's parents and kids  
doing and learning  
math together.

It's using beans  
and buttons and  
pennies to solve  
math problems.

It's organizing  
information in  
new ways.



It's working and  
talking with  
others.

It's sorting things  
and learning about  
logic.

It's finding out  
that calculators  
can free our  
minds for solving  
harder problems.



It's exploring  
shapes and  
geometry.



It's estimating and  
developing  
number sense.

It's finding that  
**math** is a  
**TREASURE** we  
all can share!



**S A M P L E**  
**FAMILY MATH**  
**SESSION I**

<u>Time</u>	<u>Activity</u>	<u>Reference Page In Family Math</u>
7:00 p.m.	Name Tags – Write Your Own Sign In Sheets (Venn Diagram) Estimation Contest	284 59
7:10 p.m.	Welcome & Introduction Opener – Value of Words	33
7:20 p.m.	Double Digit	111
8:00 p.m.	Cookie Break	
8:10 p.m.	Create a Puzzle Useful Math Skills	187 271-273
8:20 p.m.	Evaluation	
8:30 p.m.	Closure	

## *Value of Words*

How much is your name worth?

<b>A</b> 2¢	<b>F</b> 12¢	<b>K</b> 22¢	<b>P</b> 5¢	<b>U</b> 15¢
<b>B</b> 4¢	<b>G</b> 14¢	<b>L</b> 24¢	<b>Q</b> 7¢	<b>V</b> 17¢
<b>C</b> 6¢	<b>H</b> 16¢	<b>M</b> 26¢	<b>R</b> 9¢	<b>W</b> 19¢
<b>D</b> 8¢	<b>I</b> 18¢	<b>N</b> 1¢	<b>S</b> 11¢	<b>X</b> 21¢
<b>E</b> 10¢	<b>J</b> 20¢	<b>O</b> 3¢	<b>T</b> 13¢	<b>Y</b> 23¢
				<b>Z</b> 25¢

PLEASE - Calculate the value of your *first name* using this pattern.

How much is your friend's name worth?

Find a name with a value more than yours.

Find a name with a value less than yours.

In your class, whose name do you think is worth the most?

Can you find a word worth exactly \$1.00?

## *Double Digit*

Tens	Ones
1	
2	
3	
4	
5	
6	
7	
Total	

## *Double Digit*

Tens	Ones
1	
2	
3	
4	
5	
6	
7	
Total	

## *Double Digit*

Tens	Ones
1	
2	
3	
4	
5	
6	
7	
Total	

## *Double Digit*

Tens	Ones
1	
2	
3	
4	
5	
6	
7	
Total	

# MATH USED IN JOBS

Name \_\_\_\_\_

## Ranking Sheet

Rank the 10 math skills according to how many people in the following occupations said they used the skill. Place number 1 by the math skill used most often, number 2 by the skill used second most frequently, and so on through number 10, which is the math skill used the least.

Use Of	Your Answer	Actual Answer	Percentage
Fractions			
Basic geometric concepts			
Calculators			
Formulas			
Decimals			
Averaging			
Ratio and proportion			
Estimation			
Per cent			
Statistical graphs			

### Occupations

Accountant	Electronics Technician	Nurse
Accounting systems Analyst	(Civil) Engineer	Oceanographer (Biological)
Administrator: Shopping Mall	(Electronics) Engineer	Optician
Advertising Agent	(Industrial) Engineer	Orthopedic Surgeon
Airline Passenger Service Agent	(Petroleum) Engineer	Painting Contractor
Airplane Mechanic	Environmental Analyst	Payroll Supervisor
Airplane Pilot	Farm Advisor	Personnel Administrator
Air Traffic Controller	Fire Prevention Officer	Pharmacist
Appraiser (Land)	Fire Fighter	Photographer
Architect	Forestry Land Manager	Physical Therapist
Artist (Graphic)	Forestry Recreation Manager	Plumber
Attorney	Geologist (Environmental)	Police Officer
Auditor	Highway Patrol Officer	Political Campaign Manager
Auto Mechanic	Hydrologist	Printer
Bank Teller	Income Tax Preparer	Psychologist (Experimental)
Biologist (Environmental)	Insurance Agent	Publishing: Order Manager
Carpenter	Insurance Claims Supervisor	Publishing: Production Manager
Carpet Cleaner	Interior Decorator	Purchasing Agent
Cartographer	Investment Counselor	Radio Technician
Chiropractor	Landscape Architect	Real Estate Agent
Computer Programmer	Librarian	Roofer
Computer Systems Engineer	Machinist	Savings Counselor
Contractor (General)	Manager: Appliance Store	Sheet Metal/Heating Specialist
Controller (Hospital)	Manager: Temp. Employment Service	Social Worker
Counter Clerk (Building Materials)	Marketing Rep. (Computers)	Stock Broker
Data Processor	Masonry Contractor	Surveyor
Dentist	Medical Lab Technician	Technical Researcher
Dietician	Meteorologist	Title Insurance Officer
Doctor (G.P.)	Motorcycle Sales and Repair	Travel Agent
Drafter	Navigator	T.V. Repair Technician
Economist	Newspaper: Circulation	Urban Planner
Electrician	Newspaper: Production	Veterinarian
Electrical Engineer	Newspaper: Reporter	Waitress/Waiter
		Wastewater Treatment Operator

# MATH USED IN JOBS

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Calculators			
Formulas			
Decimals			
Averaging			
Ratio and proportion			
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Per cent			
Statistical graphs			

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Airline Passenger Service Agent	(Petroleum) Engineer	Painting Contractor
Airplane Mechanic	Environmental Analyst	Payroll Supervisor
Airplane Pilot	Farm Advisor	Personnel Administrator
Air Traffic Controller	Fire Prevention Officer	Pharmacist
Appraiser (Land)	Fire Fighter	Photographer
Architect	Forestry Land Manager	Physical Therapist
Artist (Graphic)	Forestry Recreation Manager	Plumber
Attorney	Geologist (Environmental)	Police Officer
Auditor	Highway Patrol Officer	Political Campaign Manager
Auto Mechanic	Hydrologist	Printer
Bank Teller	Income Tax Preparer	Psychologist (Experimental)
Biologist (Environmental)	Insurance Agent	Publishing: Order Manager
Carpenter	Insurance Claims Supervisor	Publishing: Production Manager
Carpet Cleaner	Interior Decorator	Purchasing Agent
Cartographer	Investment Counselor	Radio Technician
Chiropractor	Landscape Architect	Real Estate Agent
Computer Programmer	Librarian	Roofer
Computer Systems Engineer	Machinist	Savings Counselor
Contractor (General)	Manager: Appliance Store	Sheet Metal/Heating Specialist
Controller (Hospital)	Manager: Temp. Employment Service	Social Worker
Counter Clerk (Building Materials)	Marketing Rep. (Computers)	Stock Broker
Data Processor	Masonry Contractor	Surveyor
Dentist	Medical Lab Technician	Technical Researcher
Dietician	Meteorologist	Title Insurance Officer
Doctor (G.P.)	Motorcycle Sales and Repair	Travel Agent
Drafter	Navigator	T.V. Repair Technician
Economist	Newspaper: Circulation	Urban Planner
Electrician	Newspaper: Production	Veterinarian
Electrical Engineer	Newspaper: Reporter	Waitress/Waiter
		Wastewater Treatment Operator



## Does math make good homework?

Sure! Here's how to make it work for you!

Marilyn Burns

INSTRUCTOR, September 1986

For both students and teachers, math homework can become drudgery—pages of assignments with no direct tie to a child's world, no appeal to discovery and imagination.

Is there a better way? Can math make the sort of homework parents' respect, kids enjoy, and you savor?

The answer is an emphatic *yes*.

Is your class studying measurement?

Ask kids to measure all family members' feet and bring back their findings. Are you working on division? Suggest that students figure out how many towels—or forks, or pillows—their families have per head.

As you develop homework strategies for the year ahead, remember that the math assignments children bring home communicate strongly with parents about your goals. When you assign work that promotes problem-solving and involves a wide range of activities, you give parents the message that their children's thinking and reasoning abilities are being addressed. Problem-solving activities also offer experiences that parents themselves find interesting as they help with their children's math learning.

Early in the year, send parents a set of suggestions for helping kids with math homework. Here's some of the advice offered to parents in a new book, *Family Math* (see box):

1. Let your child know that you believe he or she can succeed.
2. Be ready to talk with your child about mathematics, and listen to what he or she says. Ask your child to explain the *meaning* of each part of a problem.
3. Be more concerned with the *processes* of doing mathematics than getting a correct answer. The answer to a particular problem has little importance, but knowing *how* to find answers is a lifetime skill.
4. Try not to tell your child how to solve the problem. It's better to ask questions and help your child find his or her own methods of working it through.
5. Practice estimation with your child whenever possible. Estimation helps the thinking about a problem that *precedes* the doing, and it helps kids

answers make sense.

6. Provide a special place for study. Allow your child to help gear the place to his or her learning style.
7. Encourage group study, especially as your children grow older.
8. Expect that homework will be done, and look at completed homework regularly, but keep your comments positive. Praise your child for asking questions about the work.
9. Try not to drill your child on math content or create hostilities by insisting that math work be done at any one specific time or in a specific way.
10. Don't expect that all homework will be easy for your child or be disappointed that it seems difficult.
11. Let your child see you enjoying mathematics. Include recreational mathematics in your family routine. Try to introduce math ideas (with a light touch!) at the dinner table, while traveling, or while at the grocery store.

Suggest that parents of younger children help with "how many" counting activities—household searches for the number of doors, doorknobs, TVs, radios, chairs, beds, and so on. Or send young students home with a paper showing two blank clock faces and instructions to work with parents to draw in the times when the child usually goes to bed and gets up. The idea is to involve the child in his or her environment and enlist parent support in a way that conveys the intrinsically interesting qualities of math.

Ask children to interview their parents to find out when they actually use arithmetic in their daily lives. Parents may mention check-book balancing, grocery shopping, cooking, figuring discounts, restaurant tipping, and calculating gas mileage.

Next, students and parents sort the situations they've listed three different ways. First they sort the situations as to when they occur—at work, at home, or at play. This helps students see that arithmetic skills are needed in a variety of ways. Second, parents indicate for each entry whether they generally do that arithmetic mentally, with a calculator, or by using paper and pencil. This helps kids see the need to learn their basic facts and to learn to calculate

is needed—such as for a checkbook, or whether an estimate will do—such as for tipping at a restaurant. This shows the importance of knowing how and when to estimate.

Here are more homework ideas to broaden kids' understanding and prepare them for future learning:

*Geometry* Assign students the task of looking for geometric shapes at home. They investigate floors, wall-papered walls, fabric designs, tabletops, doors, mirrors, to find shapes, sizes, symmetry, congruence, and similarity. Kids make a list and illustrate it to show what they find. Or ask students to search their homes for as many examples as possible of one shape.

*Measurement* Ask kids to find out whether measurements are standard in their homes. Are doorknobs all the same distance from the floor? Are the seats of the chairs the same height? Are kitchen tabletops the same length? Bathroom sinks the same depth? Doors a standard height?

*Average/Predictions and Probability* Ask students to figure how many times, on the average, their home telephone rings after school. How many hours after dinner is the TV usually on? How many minutes in a half-hour TV shows are usually devoted to commercials? About how many different commercials are included in a half-hour show?

Students can collect statistical information over a period of days to investigate questions such as these. Ask them to chart findings, figure averages, or make predictions for other days and times.

*Problems with money* Assign students the task of finding as many ways as they can to make change for a dollar bill. Younger children can be asked to find ways to make change for a quarter or half dollar. Older students can find how to use 100 coins to make \$5 without using any nickels.

Ask the students to try to find words that are as close in value to a dollar as they can get. (*Wednesday* is worth exactly a \$1, and so are *quarter*, *elephants*, *thirty*, *mitten* and *writing*. More than 500 words in the English language are worth exactly \$1.)

understand whether their

*Teaching math games* Suggest that students teach their parents games they learn in school so kids can get help with strategies. For example, the game of Nim is easy to play, yet challenging to analyze, and provides the opportunity to develop logical thinking. A collection of objects is needed—13 to start with. Two players take turns, each removing one or two objects each turn. Whoever gets stuck having to take the last object loses. Another game is suggested in “Target addition” on page 94.

*Back in the classroom* There is less motivation for a child to put a great deal of effort into an assignment that won’t be collected, corrected, and returned until several days later. By the time the assignment is returned, the student’s involvement is drastically reduced and the teaching moment has been lost.

Students receive more immediate feedback when they review the assignments cooperatively in small groups. For example, when practice pages of skills have been assigned, students compare answers, discuss difference, and turn in one joint assignment that each signs. While the groups are getting started, check

in their heads. Third, the list should be sorted by whether an accurate answer that students have completed the assignment and assist groups with difference they cannot reconcile. Students who did not do the assignment learn some of what they missed from the group discussion. You can also get more out of math homework by using it for further exploration. Say the students’ homework required them to write a word problem for each of five practice exercises. When small groups are reviewing homework the next day, ask each child to read his or her best problem aloud so others in their group can try to figure out which exercise fits the situation. Or say students were assigned to look for ways to make change for \$1. The next day, ask kids in small groups to compare and discuss how they can be sure when they’ve found all possible ways.

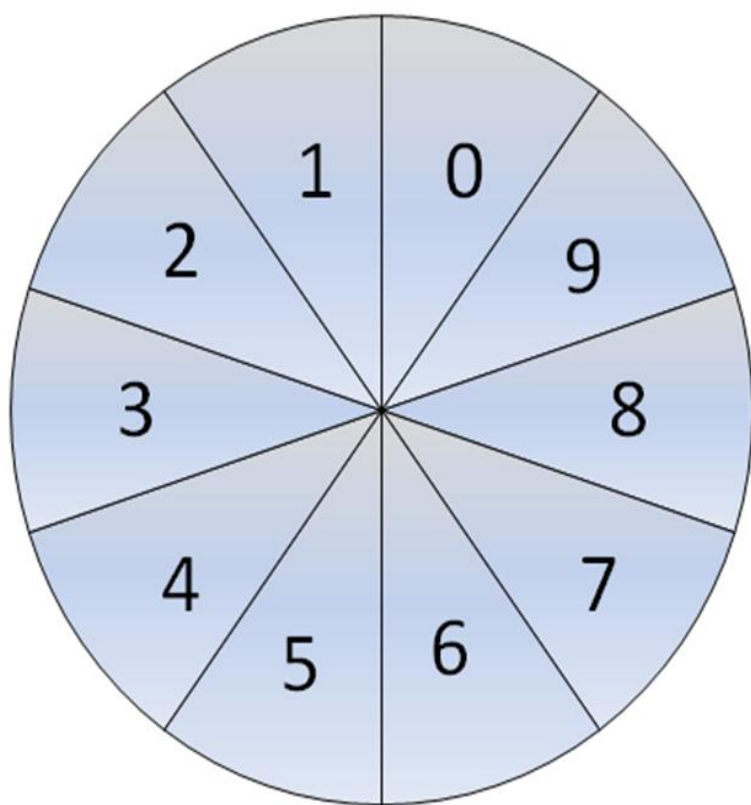
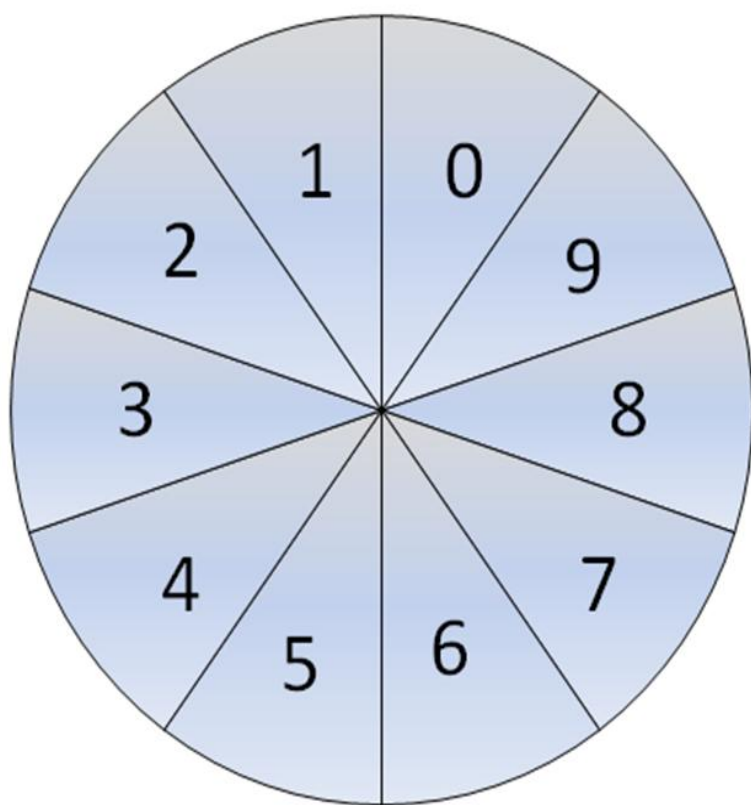
If you’ve directed students to measure the diameter and circumference of three circular objects at home, then you can discuss their findings the next as your class investigates the relationship between diameter and circumference.

If you’ve asked younger children to

count the number of chairs at home or draw in their bedtimes on blank clock faces, you can compare their answers in a lesson on ordering the next day. Finally, it’s a good idea to check with students, once in a while, to find out how much time a math homework assignment took, what they feel they learned, what they enjoyed and didn’t enjoy, what reactions they received from their families. It is from discussions such as these that students get a sense that they have an active role in play in their own learning.

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**Marilyn Burns** is the creator of The Math Solution in-service courses for teachers. She is also the author of the *The I Hate Mathematics! Book* (1975) and *Math for Smarty Pants* (1982), both published by Little, Brown.



**HOW TO PLAY:** Object of the game is to make 24.

You can add, subtract, multiply and divide. Use all four numbers on a card, but use each number only once. There is at least one solution to every card.

[www.24game.com](http://www.24game.com)

$\frac{1}{2}$  6 3 1

1 5 10 .5

9 3 2 -6

8 -5 -2 -6

24 8 2 6

10 6 2 11

2 4 3 1 Example:  $4 \times 3 = 12$   $12 \times 2 = 24$   $24/1 = 24$

2 3 4 4

# Answers to Parents'—and Teachers'—Questions About Calculators

*By James J. Landheer, coordinator of mathematics curriculum and instruction, East Hartford (Conn.) Public Schools*

Under attack because your first graders use calculators? Here are my responses to the 10 questions I'm most frequently asked by teachers and parents about calculators.

## **1. At what age should children/students begin using calculators?**

The earlier, the better. Preschoolers enjoy pushing the buttons and watching the numbers appear. A child's natural curiosity will lead to exploring number recognition, counting, and concepts of larger and smaller. Formal instruction can start in kindergarten.

## **2. What type of calculator should my child/student use?**

Purchasing a calculator is much like buying a bicycle. A child starts with a tricycle, moves on to a small two-wheeler with training wheels, then up to a 10-speed racer. In other words, calculators change as a child grows—depending on physical and cognitive needs, interest, and finances.

## **3. If my child/students use calculators, will they ever learn their basic facts?**

No normal student should require a machine to do mental arithmetic. However, studies have shown that using calculators enhances young children's ability to learn basic facts.

## **4. I've gotten along fine without calculators. Why should my child/students need them?**

In one word: progress. Progress has allowed the tractor to replace

horse-drawn plow, electricity to replace oil lamps, and calculators to replace tedious paper and pencil computations. "Shopkeeper arithmetic" is no longer practical as the sole basis of math instruction. We must prepare students for *their* future, not *our* past.

## **5. How much instruction do children need to use a calculator?**

The more complicated calculators require more instruction. If students use calculators only minimally, they miss opportunities for greater problem solving, better applications, and more involvement in how mathematics is done in the real world.

## **6. Why should students use calculators in class and not be allowed to use them on tests?**

More tests are allowing students to use calculators to solve problems. Some states now use calculators as part of their standardized testing and more will move to that in the near future.

## **7. Will using calculators decrease students' computational speed?**

Students need to learn how to determine which type of computation—estimation, mental arithmetic, paper and pencil computation, or calculator use—is appropriate to solving a problem. It takes longer to write down  $450 + 530$  then compute the sum, than it does to add the two numbers in your head. Likewise, it would make sense to multiply 4,326 by 674 on a calculator instead of using paper and pencil.

## **8. Do calculators artificially enhance students' mathematical power?**

Calculators eliminate tedious computation and allow greater involvement in the learning process. First graders understand that addition allows them to find the cost of two shopping items, but their number facts are restricted to sums less than 10. The calculator allows them to explore the same concept with greater numbers than they are able to compute on their own. Likewise, in the past many trigonometric function problems revolved around standard angle measure measurements of 30, 45, 60, and 90 degrees. Calculators allow for the full realm of everyday problems.

## **9. Does a school/district need a policy concerning calculators?**

All teachers, not just those who teach math, must understand that calculators are tools to use to solve problems and should, as any other tool, be used throughout the school. In math, they should be included in the curriculum. In other disciplines, calculators should be used as the need arises.

## **10. How should calculators be used in the classroom?**

Calculators are instructional and problem solving tools. Teachers can use calculators with overhead projection devices. There should be a calculator for each student. If instruction on a particular topic includes calculators, then evaluating student learning should also include calculators. Calculator use must be incorporated into all phases of student activity.

# Mathematics-Based Literature Guide



The books in this guide were recommended by Everyday Mathematics teachers who have used them to enrich their students' mathematics experience. They are intended primarily for grades K-3. This list is by no means comprehensive.

Special thanks to teachers Sharon Draznin (second grade, Washington School, Evanston, IL), Claire Hiller (first grade, Orrington School, Evanston, IL), Beth Storey (kindergarten, Northside Christian School, Mounds View, MN), and Joan Siber (kindergarten, Ralph M. Captain School, Clayton, MO) for their contributions to this guide.

## Addition & Subtraction

- Adams, Pam  
*There Was an Old Lady Who Swallowed a Fly*
- Becker, John  
*Seven Little Rabbits*
- Bone, Hildegard  
*\*My 1-2-3 Pop-Up Book*
- Carle, Eric  
*Rooster's off to See the World*
- Dunrea, Olivier  
*Deep Down Underground*
- Gerstein, Mordicai  
*Roll Over*
- Gisler, David  
*Addition Annie*
- Hawkins, Colin & Jacqui Hawkins  
*I know an Old Woman*
- Hawkins, Collin  
*\*Adding Animals*  
*\*Take Away Monsters*
- Hayes, Sara  
*Nine Ducks Nine*
- Hindley, Judy  
*Mrs. Mary Malarky's Seven Cats*
- Kherdian, David  
*The Cats' Midsummer Jamboree*
- Krahn, Fernando  
*\*The Family Minus*
- Marshall, Ray & Korky Paul  
*\*Pop-Up Numbers #1 Addition*  
*\*Pop-Up Numbers #2 Subtraction*
- Nelson, JoAnne  
*One and One Make Two*
- Rees, Mary  
*Ten In A Bed*
- Shade, Susan & Joe Buller  
*Hello! Hello!*
- Westcott, Nadine Bernard  
*I Know an Old Lady Who Swallowed a Fly*

## Attributes

- Ahlberg, Janet & Allan Ahlberg  
*The Baby's Catalogue*
- Anno, Mitsumasa  
*Anno's Aesop*  
*Anno's Flea Market*
- Dorros, Arthur  
*Alligator Shoes*
- Ehlert, Lois  
*Color Farm*
- Fey, James  
*Long, Short, High, Low, Thin, Wide*
- Freeman, Don  
*Corduroy*
- Handford, Martin  
*Find Waldo Now*
- Hoban, Tana  
*Exactly the Opposite*  
*Is it Red? Is it Yellow? Is it Blue?*  
*Of Colors and Things*
- Hobeman, Mary Ann  
*A House is a House For Me*
- Lobel, Arnold  
*Frog and Toad Are Friends*
- Ockenga, Starr  
*World of Wonders, A Trip Through Numbers*
- Parnall, Peter  
*Feet!*
- Reid, Margarette S.  
*The Button Box*
- Spier, Peter  
*CRASH! BANG! BOOM! People*
- Young, Ed  
*Seven Blind Mice*

## Estimation

- Aardema, Verna  
*Bringing the Rain to Kapiti Plain*
- Adler, David  
*Base Five*  
*Roman Numerals*

- Anno, Mitsumasa  
*Anno's Counting House*
- Asch, Frank  
*Popcorn*
- Asimov, Isaac  
*\*How Did We Find Out About Numbers?*
- Carroll, Lewis  
*The Walrus and the Carpenter*
- Charosh, Mannis  
*\*Number Ideas Through Pictures*
- Clark, Ann Nolan  
*Tia Maria's Garden*
- DePaola, Tomie  
*Pancakes for Breakfast*
- Froman, Robert  
*\*Less Than Nothing is Really Something*
- Gantschev, Ivan  
*The Train to Grandma's*
- Hoban, Tana  
*Count and See*
- Hutchins, Pat  
*One Hunter*
- Kaufman, Joe  
*\*Big and Little*
- Keats, Ezra Jack  
*Apt. 3*
- Krinsky, Stephen  
*Big Time Bears*
- Linn, Charles F.  
*\*Estimation*
- Lobel, Arnold  
*Ming Lo Moves The Mountain*
- Martin, Jr., Bill  
*The Happy Hippopotami*
- Mason, Lura  
*A Book of Boxes*
- McGraw, Sheila & Paul Cline  
*My Mother's Hands*
- McKissack, Patricia  
*A Million Fish... More or Less*
- Munsch, Robert  
*Something Good*
- Parker, Tom  
*In One Day*

- Rankin, Laura  
*The Handmade Alphabet*
- Schenk deRegniers, Beatrice  
*So Many Cats*
- Sharmat, Marjorie Weisman  
*The Three Hundred Twenty-Ninth Friend*
- Shaw, Charles  
*It Looked Like Spilt Milk*
- Simon, Leonard & Jeanne Benedict  
*\*The Day the Numbers Disappeared*
- Tolstoi, Alexie  
*The Great Big Enormous Turnip*
- Turkle, Brinton  
*Do Not Open*
- Ueno, Noriko  
*Elephant Buttons*
- Walsh, Ellen Stoll  
*Mouse Count*

## Fractions

- Dennis, J. Richard  
*Fractions Are Parts of Things*
- Froman, Robert  
*Angles are as Easy As Pie*
- Mathews, Louise  
*\*Gator Pie*
- McMillan, Bruce  
*Eating Fractions*
- Moncure, Jane Belk  
*How Many Ways Can You Cut a Pie?*
- Nelson, JoAnne  
*\*Half and Half*
- Shelby, Anne  
*Portluck*
- Silverstein, Shel  
*Giraffe and a Half*

## Geometry

- Adler, David  
*\*3D, 2D, 1D*
- Birch, David  
*The King's Chessboard*

**Birmingham, Duncan**  
"M" is for Mirror

**Budney, B.**  
A Kiss is Round

**Carle, Eric**  
Secret Birthday Message

**Charosh, Mannis**  
Straight Lines, Parallel Lines,  
Perpendicular Lines  
The Ellipse

**Eberts, Marjorie & Margaret  
Gisler**  
Pancakes, Crackers, & Pizza:  
A Book of Shapes

**Ehlert, Lois**  
Color Zoo

**Emberly, Ed**  
Ed Emberly's Picture Pie:  
A Book of Circle Art  
The Wing on a Flea

**Froman, Robert**  
Angles are Easy as Pie  
Rubber Bands, Baseballs and  
Doughnuts

**Gardner, Beau**  
What Is It?

**Greenes, Carole**  
The Magic Shapes

**Grifalconi, Ann**  
The Village of Round and  
Square Houses

**Hoban, Tana**  
Big Ones, Little Ones  
Circles Around Us  
Circles, Triangles and Squares  
Shapes Around Us

**Jonas, Ann**  
Round Trip

**Juster, Norton**  
The Dot and the Line

**McDermott, Gerald**  
Arrow to the Sun

**Nesbit, E.**  
Melisande

**Phillips, Jo**  
Exploring Triangles

**Rees, John J.**  
Shapes

**Srivastava, Jane**  
Spaces, Shapes and Sizes

**Sullivan, Janet**  
Round is a Pancake

**Testa, Fulvio**  
If You Look Around You

**Tompert, Ann**  
Grandfather Tang's Story

**Tucker, Sian**  
The Shapes Game

## Graphing

**Carlson, Nancy**  
Harriet's Halloween Candy

**Candill, Rebecca**  
A Pocketful of Cricket

**Geringer, Laura**  
A Three Day Hat

**Papy, Frederique**  
Graph Games

**Rice, Eve**  
Peter's Pockets

**Slobodkina, Esphyr**  
Caps for Sale

## Large Numbers & Place Value

**Anno, Mitsumasa**  
Socrates and the Three Little  
Pigs

**Base, Graeme**  
The Eleventh Hour

**Birch, David**  
The King's Chessboard

**Gag, Wanda**  
Millions of Cats

**Greene, Carol**  
The Thirteen Days of Halloween

**Kasza, Keiko**  
The Wolf's Chicken Stew

**King, Clive**  
Me and My Million

**MacCarthy, Patricia**  
Ocean Parade

**Martin, Jr., Bill**  
The Happy Hippopotamus

**McKissack, Patricia**  
A Million Fish... More or Less

**Munsch, Robert**  
Moir's Birthday

**Rosenberg, Amye**  
One to One Hundred Busy  
Counting Book

**Schwartz, David M.**  
How Much is a Million?  
If You Made a Million

**Trivas, Irene**  
Emma's Christmas

## Logic

**Anno, Mitsumasa**  
Anno's Hat Tricks  
Topsy-Turvy  
Upside-Downers

**Froman, Robert**  
Venn Diagrams

**Shannon, George**  
More Stories to Solve: Fifteen  
Folktales from Around the  
World  
Stories to Solve: Folktales from  
Around the World

## Measurement

**Adams, Pam**  
Ten Beds Tall

**Allen, Pam**  
Who Sank the Boat?

**Anno, Mitsumasa**  
The King's Flower

**Briggs, Raymond**  
Jim and the Beanstalk

**Calmenson, Stephanie**  
The Principal's New Clothes

**Cagle, Kathy**  
The Biggest Nose

**Carle, Eric**  
Papa, Please Get the Moon  
for Me  
The Very Hungry Caterpillar

**Dahl, Roald**  
Esio Trot

**Eastman, Philip D.**  
Big Dog, Little Dog

**Farber, Norma**  
As I Was Crossing Boston  
Common

**Fujikawa, Gyo**  
The Crow and the Pitcher,  
The Sun and the Wind,  
The Wonderful Porridge  
Pot, and Why Evergreens  
Keep Their Leaves in Fairy  
Tales and Fables

**Gachter, Fred**  
Little Elephant and Big Mouse

**Galdone, Paul**  
The Three Billy Goats Gruff

**Ginsburg, Mirra**  
Mushroom in the Rain

**Grimes, Nikki**  
Something On My Mind

**Hall, Crowell**  
Telltale the Rabbit

**Kaufman, Joe**  
Big and Little

**Kellogg, Steven**  
Much Bigger Than Martin

**Kitchen, Bert**  
Animal Alphabet

**Leaf, Munro**  
The Story of Ferdinand

**Lionni, Leo**  
Inch by Inch

**Lopshire, Robert**  
The Biggest, Smallest, Fastest,  
Tallest Things You've Ever  
Heard Of

**Lord, John Vernon**  
The Giant Jam Sandwich

**McMillan, Bruce**  
Super, Super, Superwords

**Morimoto, Junko**  
The Inch Boy

**Myller, Rolf**  
How Big is a Foot?

**Nelson, JoAnne**  
How Tall are You?

**Nesbit, E.**  
Melisande

**Smith-Moore, J. J.**  
Sally Small

**Tryon, Leslie**  
Albert's Alphabet

## Miscellaneous

**Reimer, Luetta & Wilbert Reimer**  
Mathematicians Are People Too  
Studio D.  
Crazy Creature Number Puzzles

## Money

**Day, Alexandra**  
Frank and Earnest

**Hoban, Tana**  
Twenty-six Letters and  
Ninety-nine Cents

**Leedy, Loreen**  
The Monster Money Book

**Lobel, Arnold & Anita Lobel**  
On Market Street

**Mathis, Sharon Bell**  
The Hundred Penny Box

**Merrill, Jean**  
The Toothpaste Millionaire

**Nelson, JoAnne**  
The Magic Money Machine

**Schwartz, David A.**  
If You Made a Million

**Silverstein, Shel**  
Smart in Where the Sidewalk  
Ends

**Viorst, Judith**  
Alexander, Who Used to Be Rich  
Last Sunday

**Williams, Vera B.**  
A Chair for My Mother

**Zemach, Harve & Margot Zemach**  
A Penny A Look





## Multiplication & Division

- Aker, Suzanne  
*What comes in Twos, Threes and Fours?*
- Anno, Mitsumasa  
*Anno's Mysterious Multiplying Jar*
- Dubanevich, Arlene  
*Pigs in Hiding*
- Hutchins, Pat  
*The Doorbell Rang*
- Marshall, Ray & Korky Paul  
*Pop-Up Numbers #3 Multiplication*  
*Pop-Up Numbers #4 Division*
- Mathews, Louise  
*Bunches and Bunches of Bunnies*
- Williams, Vera B.  
*A Chair For My Mother*

## Number Concepts & Relationships

- Adler, Irving  
*Mathematics*
- Adler, Irving & Ruth Adler  
*\*Numbers Old and New*
- Anno, Mitsumasa  
*Anno's Math Games*  
*Anno's Math Games II*  
*Anno's Math Games III*
- Bang, Molly  
*Ten, Nine, Eight*
- Becker, John  
*Seven Little Rabbits*
- Carona, Philip  
*Numbers*
- Clark, Ellen  
*\*Understanding Numbers*
- Dragonwagon, Crescent  
*I Hate My Brother Harry*
- Galdone, Paul  
*The Three Bears*
- James, Elizabeth, & Carol Barkin  
*\*Probability*  
*\*What Do You Mean By "Average"?*
- Juster, Norton  
*The Phantom Tollbooth*
- Larriek, Nancy  
*Cats Are Cats*
- Lottridge, Celia Barker  
*One Watermelon Seed*
- Luce, Mamie  
*\*Infinity: What Is It?*  
*\*Sets: What Are They?*  
*\*Ten: Why is it Important?*
- McGovern, Ann  
*Stone Soup*
- Ormerod, Jan  
*101 Things to do with a Baby*
- Reed, Mary and Edith Osswald  
*\*Numbers*

- Sitomer, Mindell & Harry Sitomer  
*How Did Numbers Begin?*  
*\*Zero is Not Nothing*
- Srivastava, Jane  
*\*Number Families*
- Thornhill, Jan  
*The Wildlife 1, 2, 3, A Nature Counting Book*
- Watson, Clyde  
*Binary Numbers*
- Zaslavsky, Claudia  
*Zero: Is It Something? Is It Nothing?*

## Numeration & Counting

- Aker, Suzanne  
*What comes in 2's, 3's and 4's?*
- Alain, B.  
*\*One, Two, Three, Going to Sea*
- Anno, Mitsumasa  
*Anno's Counting Book*
- Aylesworth, James  
*One Crow*
- Baum, Arline & Joseph Baum  
*\*One Bright Morning*
- Berenstain, Stan & Janice  
*Berenstain Bears on Wheels*
- Bishop, Claire Huchet  
*The Five Chinese Brothers*  
*Twenty-Two Bears*
- Blumenthal, Nancy  
*Count-A-Saurus*
- Brown, Marc, ed.  
*Hand Rhymes*
- Bucknall, Caroline  
*One Bear All Alone*
- Burningham, John  
*Hey! Get Off Our Train*
- Calemenson, Stephanie  
*\*Ten Items or Less*
- Carle, Eric  
*My Very First Book of Numbers*  
*One, Two Three to the Zoo*  
*Rooster's Off to See the World*
- Carter, David A.  
*How Many Bugs in a Box?*
- Cave, Kathryn & Chris Riddell  
*Out for the Count: A Counting Adventure*
- Clifton, Lucille  
*Everett Anderson's 1, 2, 3*
- Crews, Donald  
*Ten Black Dots*
- Christlow, Eileen  
*Five Little Monkeys Jumping on the Bed*  
*Five Little Monkeys Sitting on a Tree*
- Crowther, Robert  
*The Most Amazing Hide-and-Seek Counting Book*
- Dee, Ruby  
*Two Ways to Count to Ten*
- Demi  
*Demi's Count the Animals 1, 2, 3*
- Du Bois, William P.  
*The Twenty-one Balloons*
- Dunbar, Joyce  
*Ten Little Mice*
- Duvoisin, Roger  
*\*Two Lonely Ducks*
- Ehlert, Lois  
*Fish Eyes*
- Eichenberg, Fritz  
*Dancing in the Moon*
- Elkin, Benjamin  
*Six Foolish Fishermen*
- Emberly, Barbara  
*One Wide River to Cross*
- Estes, Ebanor  
*Hundred Dresses*
- Feelings, Muriel  
*Moja Means One: A Swahili Counting Book*
- Garne, S. T. & Lisa Erte  
*One White Sail*
- Giganti, Paul, Jr.  
*Each Orange Had Eight Slices*  
*How Many Snails?*
- Greenes, Carol  
*Opossums in a Tree*
- Grossman, Virginia  
*Ten Little Rabbits*
- Hague, Kathleen  
*Numbears: A Counting Book*
- Hamm, Diane Johnston  
*How Many Feet in the Bed?*
- Hammond, Franklin  
*Ten Little Ducks*
- Haskins, Jim  
*Count Your Way Through Africa*  
*Count Your Way Through Canada*  
*Count Your Way Through China*  
*Count Your Way Through Germany*  
*Count Your Way Through India*  
*Count Your Way Through Israel*  
*Count Your Way Through Italy*  
*Count Your Way Through Japan*  
*Count Your Way Through Korea*  
*Count Your Way Through Mexico*  
*Count Your Way Through Russia*  
*Count Your Way Through the Arab World*
- Hawkins, Colin & Jacqui Hawkins  
*When I Was One*

- Hayes, Sarah  
*Nine Ducks Nine*
- Hill, Eric  
*\*S. S. Happiness Crew Book of Numbers*
- Hindley, Judy  
*Mrs. Mary Malarky's Seven Cats*
- Hoban, Russell  
*\*Ten What?*
- Hooker, Yvonne  
*One Green Frog*
- Hooks, William  
*\*The Seventeen Gerbils of Class 4A*
- Howard, Katherine  
*I Can Count to One Hundred. Can You?*
- Harada, Joyce  
*It's the 0-1-2-3 Book*
- Hulme, Joy  
*Sea Squares*
- Ifrab, Georges  
*\*From One to Zero - A Universal History of Numbers*
- Ipcar, Dablov Zorach  
*\*Brown Cow Farm*  
*\*Ten Big Farms*
- Johnston, Tony  
*Whale Song*
- Kahl, Virginia  
*\*How Many Dragons are Behind the Door?*
- Keats, Ezra Jack  
*Over in the Meadow*
- Kherdian, David  
*The Cats' Midsummer Jamboree*
- Kitamura, Satoshi  
*When Sheep Cannot Sleep*
- Kitchen, Bert  
*Animal Numbers*
- Koelling, Caryl  
*Cory's Counting Book*
- Kredenser, Gail & Stanley Mack  
*One Dancing Drum*
- LeSieg, Theo  
*Ten Apples Up on Top!*
- Lionni, Leo  
*Frederick*





Mack, Stanley  
*Ten Bears in My Bed: A Goodnight Countdown*

Martin, Bill  
*\*Monday, Monday, I Like Monday*  
*\*Ten Little Squirrels*

Mathews, Louise  
*Bunches & Bunches of Bunnies*

Mayer, Marianna & Gerald  
 McDermott  
*The Brambleberrys Animal Book of Counting*

McFadzean, Anita  
*One Special Star*

McKee, Craig and Margaret  
 Holland  
*The Teacher Who Could Not Count*

McLerran, Alice  
*The Mountain That Loved a Bird*

McMillan, Bruce  
*One, Two, One Pair!*

Milne, A. A.  
*\*Pooh's Counting Book*

Moncure, Jane  
*My Six Book*

Moore, Inga  
*Six-Dinner Sid*

Moss, Jeffrey  
*\*Five People in My Family*

Nelson, JoAnne  
*Count by Twos*

O'Brien, Thomas Clement  
*Odds and Evens*

O'Donnell, Elizabeth Lee  
*The Twelve Days of Summer*

Pallotta, Jerry  
*The Icky Bug Counting Book*

Peek, Merle  
*Roll Over!: A Counting Song*

Peppe, Rodney  
*Circus Numbers*

Pomerantz, Charlotte  
*One Duck, Another Duck*



Quackenbush, Robert M.  
*\*Poems for Counting*

Reiss, John J.  
*Numbers*

Rockwell, Norman  
*\*Counting Book*

Samson, Sheila White  
*Moon to Sun: An Adding Book*  
*On the River: An Adding Book*  
*The World from My Window*

Scarry, Richard  
*Richard Scarry's Best Counting Book Ever*

Scott, Ann Herbert  
*One Good Horse: A Cowpuncher's Counting Book*

Seignobosc, Françoise  
*\*Jean-Marie Counts Her Sheep*

Selfridge, Oliver  
*\*Fingers Come in Fives*

Sendak, Maurice  
*One Was Johnny*  
*Seven Little Monsters*

Serfozo, Mary  
*Who Wants One?*

Sesame Street  
*The Count's Counting Book*  
*\*The Counting Book*

Seuss, Dr.  
*One Fish, Two Fish, Red Fish, Blue Fish*  
*The 500 Hats of Bartholomew Cubbins*

Sheppard, Jeff  
*The Right Number of Elephants*

Shub, Elizabeth  
*\*The Twelve Dancing Princesses*

Slobodkin, Esphyr  
*Caps for Sale*

Slobodkin, Louis  
*\*One is Good, but Two are Better*

Thaler, Mike  
*Seven Little Hoppers*

Thornhill, Jan  
*The Wildlife 1-2-3: A Nature Counting Book*

Trivas, Irene  
*Emma's Christmas: An Old Song Resung and Pictured*

Tudor, Tasha  
*I is One*

Wadsworth, Olive  
*Over in the Meadow*

Wahl, John and Stacey Wahl  
*I Can Count the Petals of a Flower*

Watson, Amy  
*\*The Folk Art Counting Book*

Weiss, Makom  
*\*Six Hundred Sixty-six Jellybeans! All That?*

Wildsmith, Brian  
*One, Two, Three*

Wood, Audrey & Don Wood  
*Piggies*

Woodward, James  
*One to Ten, Count Again*

Wylie, Joanne  
*A More or Less Fish Story*  
*How Many Monsters?*

Zaslavsky, Claudia  
*Count on Your Fingers, African-Style*

Ziefert, Harriet  
*A Dozen Dogs: A Read-and-Count Story*  
*Where's The Halloween Treat?*

Zimmerman, H. Werner  
*Alphonse Knows: Zero Is Not Enough*

Zolotow, Charlotte  
*\*One Step, Two*

## Patterns

Carle, Eric  
*Animals, animals*

Cleveland, David  
*April Rabbits*

Dahl, Roald  
*Esio Trot*

Emberley, Ed  
 ABC

Hoban, Tana  
*Look Up, Look Down*

Hutchins, Pat  
*Don't Forget the Bacon!*  
*Rosie's Walk*

Kalin, Robert  
*Jump, Frog, Jump*

Mahy, Margaret  
*17 Kings and 42 Elephants*

Martin, Bill Jr.  
*Brown Bear, Brown Bear, What Do You See?*

McClintock, Mike  
*A Fly Went By*

Provensen, Alice and Martin  
*A Peaceable Kingdom, The Shaker ABCEDARIUS*

Shaw, Charles Green  
*It Looked Like Spilt Milk*

Silverstein, Shel  
*A Giraffe and a Half*

Xiong, Bilia  
*Nine-In-One Grr! Grr!*

Anno, Mitsumasa  
*All in a Day*  
*Anno's Counting Book*

Behn, Harry  
*\*All Kinds of Time*

Carle, Eric  
*The Grouchy Ladybug*

Clifton, Lucille  
*Everett Anderson's Nine Month Long Year*

Coleridge, Sara  
*January Brings the Snow*

Combs, Ann  
*How Old Is Old?*

Galdone, Paul  
*The Little Red Hen*

Gibbons, Gail  
*Clocks and How They Go*  
*Sun up, Sun down*  
*The Seasons of Arnold's Apple Tree*

Gray, Nigel  
*A Country Far Away*

Hawkins, Collin  
*What Time Is It, Mr. Wolf?*

Hutchins, Pat  
*\*Clocks and More Clocks*

Lloyd, David  
*The Stopwatch*

Provensen, Alice & Martin  
*The Year at Maple Farm*

Sendak, Maurice  
*Chicken Soup with Rice*

Shulevitz, Uri  
*One Monday Morning*

Simon, Carly  
*Amy the Dancing Bear*

Slobodkin, Louis  
*\*The Late Cuckoo*

Ungerer, Tomi  
*Moon Man*

Ward, Cindy  
*Cookie's Week*

Williams, Vera B.  
*Three Days on a River in a Red Canoe*

Zolotow, Charlotte  
*Over and Over*

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