DOCUMENT RESUME

ED 133 953 EC 092 861

TITLE Basic Number Facts: 1 2 3.
INSTITUTION Florida Learning Resources System/CROWN, Jacksonville.
NOTE 44p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Arithmetic; Elementary Education; *General Education; Instructional Materials; *Learning Activities; *Sequential Programs; Teaching Guides

ABSTRACT

The teaching guide outlines developmentally sequenced activities for learning the basic computational skills. Sections cover sequential steps for the addition, subtraction, multiplication, and division of whole numbers; information on developing building kits and sample worksheets; the use of number sheets (sample sheets are provided); and the use of teaching machines for math. The bulk of the document focuses on individual and group activities for learning number facts. Each activity or game is described in terms of materials needed, construction of materials (where applicable), and activity directions. Also included is a list of commercial materials. (SBH)

BASIC NUMBER FACTS

FLRS/CROWN
SERVING:

CLAY, DUVAL, NASSAU AND ST.JOHNS COUNTIES

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STUDENT PROGRAM

- C O N T E N T S -

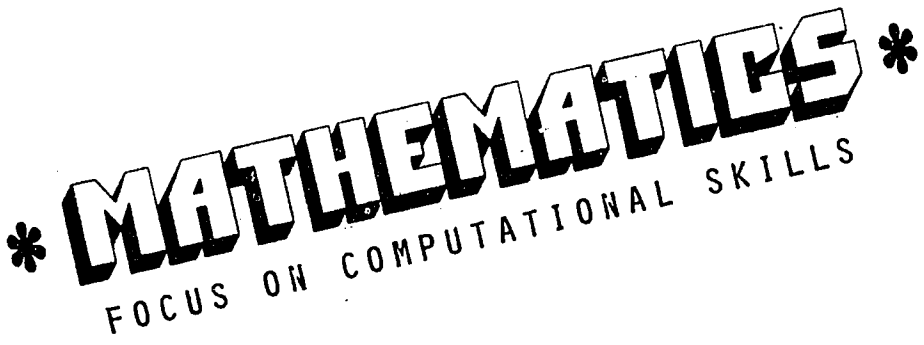
BASIC NUMBER FACTS

SEQUENCE OF SKILLS

(WHAT COMES FIRST?)

Special care must be given to teaching the basic skills in a consistent sequential order. Before a student can proceed successfully to a next step he must have fully mastered the preceeding skills. For example, before a student can proceed successfully to adding three numbers that produce a sum less than 10 he should have mastered the basic facts.

The following pages outline the most common developmental sequence for learning the basic computational skills.



FUNCTION
Whole Numbers: Addition

SEQUENTIAL STEP OR CATEGORY

1. Add two one-digit numbers (basic facts - see page) ex. 2 +6

2. Add three numbers that produce a sum of less than 10. ex. 3 2 +2

3. Add three one-digit numbers whose sum is 10 or more. ex. 3 4 +7

4. Add two numbers up to two digits each, no regrouping. ex. 13 + 4

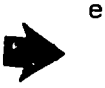
5. Add two numbers with carrying into the ten's place only. ex. 14 + 7

6. Add two numbers with carrying into the hundred's place only (not into the ten's). EX. 173 + 72

7. Add two numbers with carrying into the ten's and hundred's places. ex. 184 + 97

8. Add more than two numbers with carrying into both the ten's and hundred's places. ex. 253 74 +145

9. Add numbers of more than three digits with carrying all the way. ex. 4,566 3,587 +1,432



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FUNCTION
Whole Numbers: Subtraction

SEQUENTIAL STEP OR CATEGORY

1. Subtract two one-digit numbers. ex. 6
   -4

2. Subtract using the basic facts. (see page) *ex. 4
   -0

3. Subtract two two-digit numbers without regrouping (no borrowing). *ex. 67
   -23

4. Subtract two three-digit numbers without regrouping (no borrowing). *ex. 798
   -267

5. Subtract two two- and three-digit numbers where the tens are regrouped to get more ones (borrowing from the ten's only). *ex. 984
   - 69

6. Subtract two three-digit numbers where the hundred's only are regrouped (borrowing from the hundred's only, not the ten's). *ex. 349
   - 69

7. Subtract two four-digit numbers where the hundred's only are regrouped.
   *ex. 8426
   -4515

8. Subtract two three-digit numbers where both the tens and hundred's are regrouped.
   *ex. 943
   -675

9. Subtract two four-digit numbers where both the ten's and hundred's are regrouped.
   *ex. 5842
   -3564

10. Subtract two four- and five-digit numbers (regrouping all the way).
    *ex. 93242
    - 5756

FUNCTION
Whole numbers: Multiplication

SEQUENTIAL STEP OR CATEGORY

1. Multiply two one-digit numbers (memorizing the multiplication tables through the nines - see page). ex. 4 x7

2. Multiply a number by a one digit number. ex. 31 x 2

3. Multiply a number by a one-digit number, with carrying into the ten's place only. ex. 42 x 3

4. Multiply a two-digit number by a one-digit number with carrying into the ten's and hundred's places. ex. 86 x 4

5. Multiply a number by a one-digit number, with carrying into the ten's, hundred's, thousand's places, and so on. ex. 4,679 x 5

6. Multiply with multiples of ten (introduction of zero as a place holder). ex. 145 x 20

7. Multiply with multiples of one hundred. ex. 598 x200

8. Multiply with multiples of one thousand. ex. 5,235 x3,000

9. Multiply a two-digit number by a two-digit number. ex. 46 x 25

10. Multiply any number by a two-digit number. ex. 3,586 x 27

11. Multiply any two numbers. ex. 2,497 x1,587

12. Multiply any two numbers containing one or more zeros. ex. 34,057 x 3,005

FUNCTION
Whole Numbers: Division

SEQUENTIAL STEP OR CATEGORY

1. Divide a two-digit number by a one-digit number with a one-digit number or 10 in the quotient (basic facts through 9-90 - see page) nor remainder.
   * ex. $3\overline{)9}$

2. Divide a two-digit number by a one-digit number with a two-digit number in the quotient, no remainder. ex. $2\overline{)48}$
   *

3. Divide a three-digit number by a one-digit number, no remainder.
   * ex. $3\overline{)569}$

4. Divide a number up to four digits by a one-digit number.
   * ex. $2\overline{)4,768}$

5. Divide a number up to four digits by a two-digit number, no remainder.
   * ex. $25\overline{)1,075}$

6. Divide a number up to four digits by a number up to two digits, with remainder.
   * ex. $26\overline{)2,373}$

7. Divide any number by a number up to three digits with remainder.
   * ex. $243\overline{)2,246}$

8. Divide any two numbers and express the remainder as a fraction.
   * ex. $2\overline{)5}$ answer: $2\frac{1}{2}$

9. Divide two numbers and express the answer in decimal form.
   * ex. $2\overline{)5}$ answer: 2.5

BUILDING KITS

* THE IDEA IS TO: have a large selection of worksheets and activities for the students to use in practicing number facts.

* MATERIALS: One box or file cabinet drawer per function e.g., one for addition, one for subtraction, etc.

Discarded workbooks or old texts (at least five different series)*

Scissors

optional: shirtboard (or 8 x 11 board)
rubber cement or glue
laminating film

make your own

* PROCEDURE:

1. Use one box or file cabinet drawer for each function.
2. Following the Computational Skills list (pages through) cut from old books at least 50 worksheets for each sequential step for the functions to be studied e.g., 50 different sheets on adding three numbers that produce a sum of less than 10.
3. Label the sections of the file with the sequential steps named for the function and file the chosen practice sheet accordingly. [*optional:* Sheet may be mounted and/or laminated on 8 x 11 tag board for durability.]

YOU NOW HAVE A KIT!!!

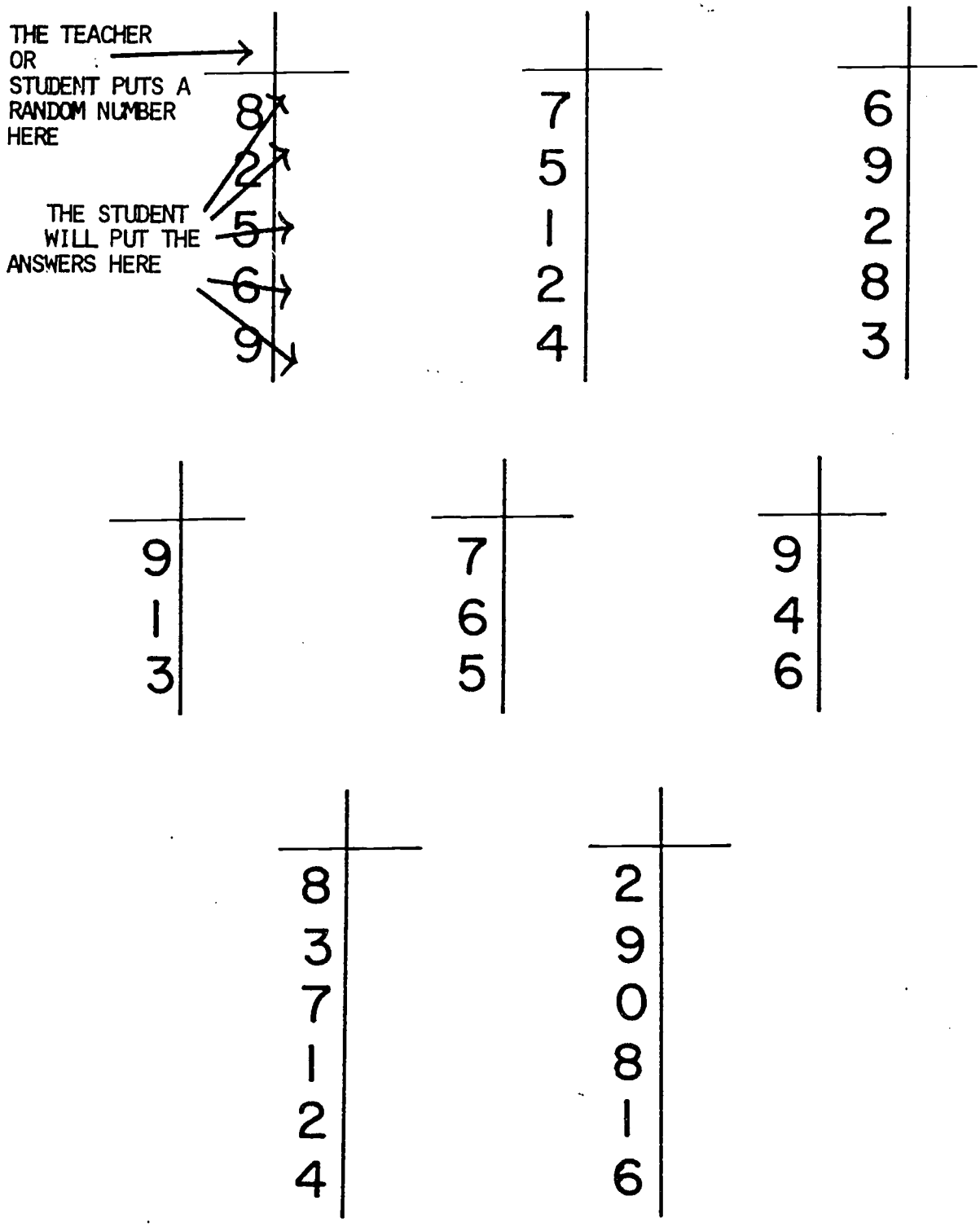
YOU MAY WANT TO ADD INTEREST ACTIVITIES AS FOUND ON PAGE OR YOUR OWN DITTO SHEETS.

* Where to get the stuff
Old workbooks and/or textbooks might be found in the back cupboards of your class or school storage closet.

The textbook warehouse has a nice supply of old textbooks.

KITS

CIRCLE THE FUNCTION → + − X ÷ YOU WANT PRACTICED



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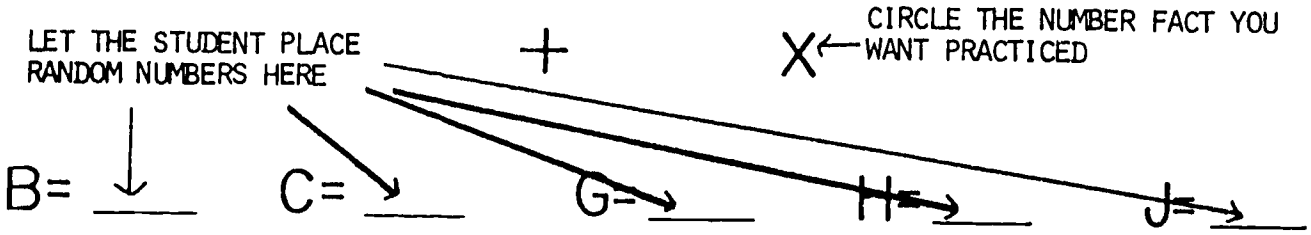
CIRCLE THE NUMBER FACT YOU WANT PRACTICED → + X

LET STUDENT PLACE RANDOM NUMBERS HERE

HE WILL PUT THE ANSWERS IN THE REMAINING SPACES

*	7	5	1	6

*	9	5	2	4

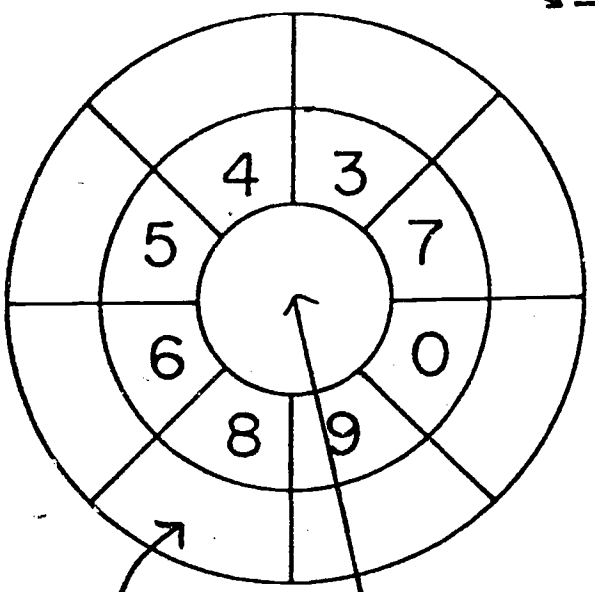


HE WILL FILL IN THE ANSWERS

B C	G B	J H	C B
H B	J C	G H	B J
C J	G C	C H	J G
G J	H C	J B	B G
H G	B H	H J	C C

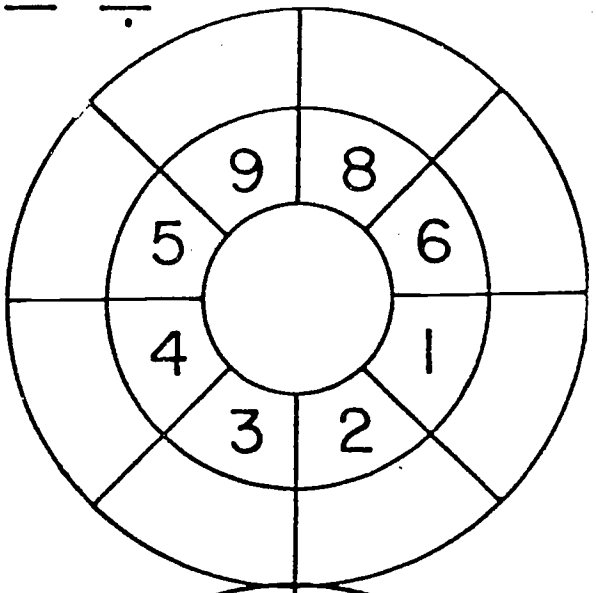
CIRCLE THE NUMBER FACT YOU WANT PRACTICED

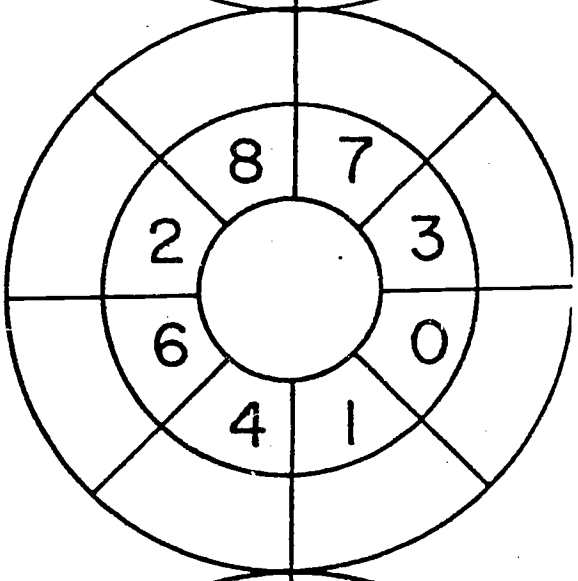
→ + X − ÷

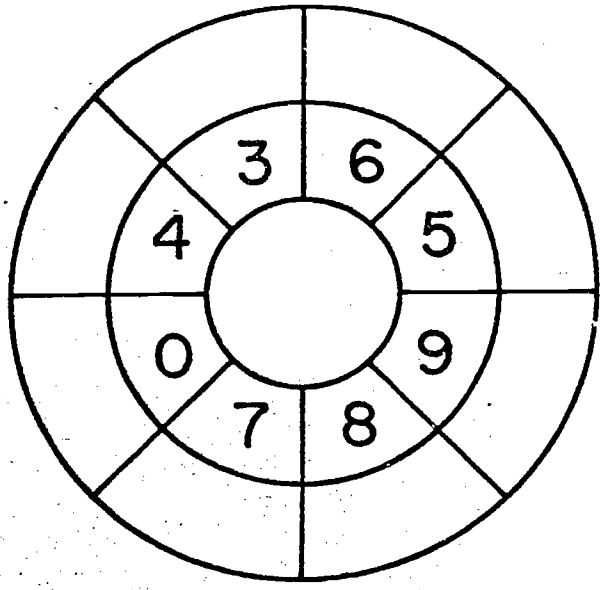


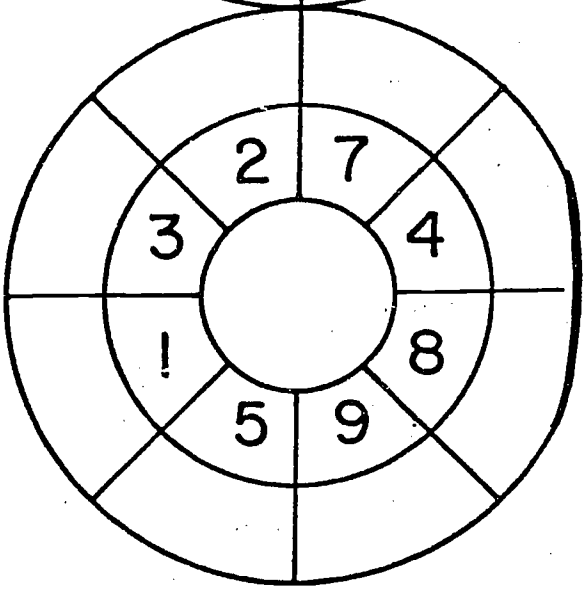
LET THE STUDENT PUT A RANDOM NUMBER IN THE CENTER.

HE WILL FILL IN THE ANSWERS IN THE OUTSIDE SPACES.









USE OF NUMBER CHARTS

A number chart presents the basic facts of any function (addition, subtraction, multiplication, division) in a systematic format - starting with the smallest facts and moving to the largest. The following pages give a sample of number charts for each function. You may want to fill in the answers for some activities or as a "crutch" for students to use.

✶ACTIVITIES WITH NUMBER CHARTS✶

(1) Have the student answer as many of the facts as he can, looking at one after another in a row. No more than 15 seconds should be allowed for each response. Those that he knows can be covered with plain paper, leaving only those to be studied. As he masters more facts he can cover them. (A review of all facts known should be done periodically - every other day, etc.)

(2) Cover all the facts with individual sheets of plain paper. Uncover one at a time (starting from the top left and moving left to right) and assist the student in memorizing the fact. Keep proceeding always going back to review. (As a general rule average students usually can master 5 - 10 facts the first day and approximately 4 facts daily with the review of previous facts.)

Students are rewarded and motivated by seeing on the number chart their success in mastering the skills.

(3) Student does the "test" each day and tries to beat the clock. Start off with 5 minute time limit. Once all students have done it in 5 minutes, go for 4 minutes. When student have worked down to 1 minute, facts are learned!

Chart their progress:

I DID _____ FACTS CORRECTLY IN _____ MINUTES.

BASIC ADDITION COMBINATIONS

0 +0	0 +1	0 +2	0 +3	0 +4	0 +5	0 +6	0 +7	0 +8	0 +9
1 +0	1 +1	1 +2	1 +3	1 +4	1 +5	1 +6	1 +7	1 +8	1 +9
2 +0	2 +1	2 +2	2 +3	2 +4	2 +5	2 +6	2 +7	2 +8	2 +9
3 +0	3 +1	3 +2	3 +3	3 +4	3 +5	3 +6	3 +7	3 +8	3 +9
4 +0	4 +1	4 +2	4 +3	4 +4	4 +5	4 +6	4 +7	4 +8	4 +9
5 +0	5 +1	5 +2	5 +3	5 +4	5 +5	5 +6	5 +7	5 +8	5 +9
6 +0	6 +1	6 +2	6 +3	6 +4	6 +5	6 +6	6 +7	6 +8	6 +9
7 +0	7 +1	7 +2	7 +3	7 +4	7 +5	7 +6	7 +7	7 +8	7 +9
8 +0	8 +1	8 +2	8 +3	8 +4	8 +5	8 +6	8 +7	8 +8	8 +9
9 +0	9 +1	9 +2	9 +3	9 +4	9 +5	9 +6	9 +7	9 +8	9 +9

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BASIC SUBTRACTION COMBINATIONS

$\frac{0}{-0}$	$\frac{1}{-0}$	$\frac{2}{-0}$	$\frac{3}{-0}$	$\frac{4}{-0}$	$\frac{5}{-0}$	$\frac{6}{-0}$	$\frac{7}{-0}$	$\frac{8}{-0}$	$\frac{9}{-0}$
$\frac{1}{-1}$	$\frac{2}{-1}$	$\frac{3}{-1}$	$\frac{4}{-1}$	$\frac{5}{-1}$	$\frac{6}{-1}$	$\frac{7}{-1}$	$\frac{8}{-1}$	$\frac{9}{-1}$	$\frac{10}{-1}$
$\frac{2}{-2}$	$\frac{3}{-2}$	$\frac{4}{-2}$	$\frac{5}{-2}$	$\frac{6}{-2}$	$\frac{7}{-2}$	$\frac{8}{-2}$	$\frac{9}{-2}$	$\frac{10}{-2}$	$\frac{11}{-2}$
$\frac{3}{-3}$	$\frac{4}{-3}$	$\frac{5}{-3}$	$\frac{6}{-3}$	$\frac{7}{-3}$	$\frac{8}{-3}$	$\frac{9}{-3}$	$\frac{10}{-3}$	$\frac{11}{-3}$	$\frac{12}{-3}$
$\frac{4}{-4}$	$\frac{5}{-4}$	$\frac{6}{-4}$	$\frac{7}{-4}$	$\frac{8}{-4}$	$\frac{9}{-4}$	$\frac{10}{-4}$	$\frac{11}{-4}$	$\frac{12}{-4}$	$\frac{13}{-4}$
$\frac{5}{-5}$	$\frac{6}{-5}$	$\frac{7}{-5}$	$\frac{8}{-5}$	$\frac{9}{-5}$	$\frac{10}{-5}$	$\frac{11}{-5}$	$\frac{12}{-5}$	$\frac{13}{-5}$	$\frac{14}{-5}$
$\frac{6}{-6}$	$\frac{7}{-6}$	$\frac{8}{-6}$	$\frac{9}{-6}$	$\frac{10}{-6}$	$\frac{11}{-6}$	$\frac{12}{-6}$	$\frac{13}{-6}$	$\frac{14}{-6}$	$\frac{15}{-6}$
$\frac{7}{-7}$	$\frac{8}{-7}$	$\frac{9}{-7}$	$\frac{10}{-7}$	$\frac{11}{-7}$	$\frac{12}{-7}$	$\frac{13}{-7}$	$\frac{14}{-7}$	$\frac{15}{-7}$	$\frac{16}{-7}$
$\frac{8}{-8}$	$\frac{9}{-8}$	$\frac{10}{-8}$	$\frac{11}{-8}$	$\frac{12}{-8}$	$\frac{13}{-8}$	$\frac{14}{-8}$	$\frac{15}{-8}$	$\frac{16}{-8}$	$\frac{17}{-8}$
$\frac{9}{-9}$	$\frac{10}{-9}$	$\frac{11}{-9}$	$\frac{12}{-9}$	$\frac{13}{-9}$	$\frac{14}{-9}$	$\frac{15}{-9}$	$\frac{16}{-9}$	$\frac{17}{-9}$	$\frac{18}{-9}$

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BASIC MULTIPLICATION COMBINATIONS

0 x0	1 x0	2 x0	3 x0	4 x0	5 x0	6 x0	7 x0	8 x0	9 x0
0 x1	1 x1	2 x1	3 x1	4 x1	5 x1	6 x1	7 x1	8 x1	9 x1
0 x2	1 x2	2 x2	3 x2	4 x2	5 x2	6 x2	7 x2	8 x2	9 x2
0 x3	1 x3	2 x3	3 x3	4 x3	5 x3	6 x3	7 x3	8 x3	9 x3
0 x4	1 x4	2 x4	3 x4	4 x4	5 x4	6 x4	7 x4	8 x4	9 x4
0 x5	1 x5	2 x5	3 x5	4 x5	5 x5	6 x5	7 x5	8 x5	9 x5
0 x6	1 x6	2 x6	3 x6	4 x6	5 x6	6 x6	7 x6	8 x6	9 x6
0 x7	1 x7	2 x7	3 x7	4 x7	5 x7	6 x7	7 x7	8 x7	9 x7
0 x8	1 x8	2 x8	3 x8	4 x8	5 x8	6 x8	7 x8	8 x8	9 x8
0 x9	1 x9	2 x9	3 x9	4 x9	5 x9	6 x9	7 x9	8 x9	9 x9

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BASIC DIVISION COMBINATIONS

$0\overline{)0}$	$0\overline{)1}$	$0\overline{)2}$	$0\overline{)3}$	$0\overline{)4}$	$0\overline{)5}$	$0\overline{)6}$	$0\overline{)7}$	$0\overline{)8}$	$0\overline{)9}$
$0\overline{)1}$	$1\overline{)1}$	$1\overline{)2}$	$1\overline{)3}$	$1\overline{)4}$	$1\overline{)5}$	$1\overline{)6}$	$1\overline{)7}$	$1\overline{)8}$	$1\overline{)9}$
$0\overline{)2}$	$2\overline{)2}$	$2\overline{)4}$	$2\overline{)6}$	$2\overline{)8}$	$2\overline{)10}$	$2\overline{)12}$	$2\overline{)14}$	$2\overline{)16}$	$2\overline{)18}$
$0\overline{)3}$	$3\overline{)3}$	$3\overline{)6}$	$3\overline{)9}$	$3\overline{)12}$	$3\overline{)15}$	$3\overline{)18}$	$3\overline{)21}$	$3\overline{)24}$	$3\overline{)27}$
$0\overline{)4}$	$4\overline{)4}$	$4\overline{)8}$	$4\overline{)12}$	$4\overline{)16}$	$4\overline{)20}$	$4\overline{)24}$	$4\overline{)28}$	$4\overline{)32}$	$4\overline{)36}$
$0\overline{)5}$	$5\overline{)5}$	$5\overline{)10}$	$5\overline{)15}$	$5\overline{)20}$	$5\overline{)25}$	$5\overline{)30}$	$5\overline{)35}$	$5\overline{)40}$	$5\overline{)45}$
$0\overline{)6}$	$6\overline{)6}$	$6\overline{)12}$	$6\overline{)18}$	$6\overline{)24}$	$6\overline{)30}$	$6\overline{)36}$	$6\overline{)46}$	$6\overline{)48}$	$6\overline{)54}$
$0\overline{)7}$	$7\overline{)7}$	$7\overline{)14}$	$7\overline{)21}$	$7\overline{)28}$	$7\overline{)35}$	$7\overline{)42}$	$7\overline{)49}$	$7\overline{)56}$	$7\overline{)63}$
$0\overline{)8}$	$8\overline{)8}$	$8\overline{)16}$	$8\overline{)24}$	$8\overline{)32}$	$8\overline{)40}$	$8\overline{)48}$	$8\overline{)56}$	$8\overline{)64}$	$8\overline{)72}$
$0\overline{)9}$	$9\overline{)9}$	$9\overline{)18}$	$9\overline{)27}$	$9\overline{)36}$	$9\overline{)45}$	$9\overline{)54}$	$9\overline{)63}$	$9\overline{)72}$	$9\overline{)81}$

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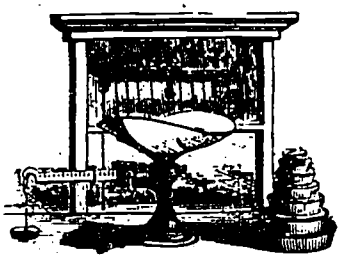
TEACHING MACHINES FOR MATH

Current research indicates that students are highly motivated, learn rapidly and retain computational skills with the help of computer assisted instruction (CAI), or more commonly refered to as TEACHING MACHINES. Basically, these machines operate on the same principle:

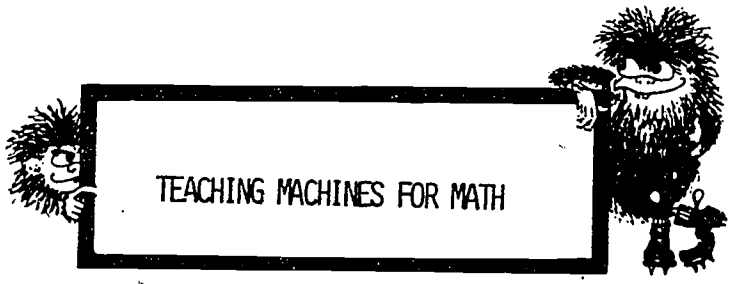
- student is presented with a problem on t.v.-type screen or adding machine-type tape
- student answers problem by pushing the button he wants
- machine provides feedback, indicating whether or not the student was correct

If you or your school is considering purchasing one of these super machines, you may want to consider the following points:

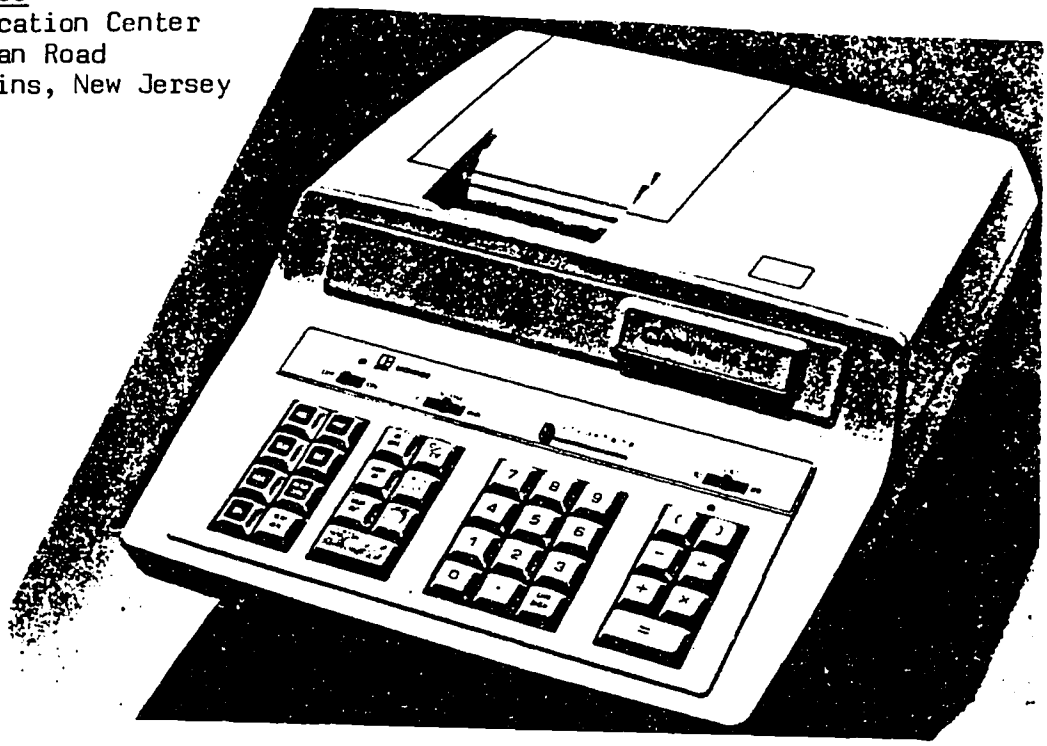


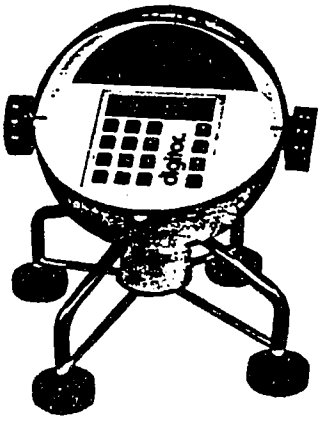
1. Consider cost effectiveness.
2. How does it compare (cost and function) with a Diagnostic Skills Computational Kit (such as Houghton-Mifflin)?
3. Does it provide a written record of student responses? If so, can space be arranged for individual work?
4. Does it have a variety of functions? (addition, subtraction with and without regrouping, multiplication, decimals, fractions, etc.)
5. Does it generate <u>random</u> problems in the specific function?
6. Is it durable? Ask the salesman what would happen if it dropped off a table. Let him demonstrate!
7. Are there any removable, breakable or sharp parts?
8. Does it have a three-prong plug? Is current/voltage clearly marked and available in your school?
9. Can it be secured on a table to make it stationary or stable?

On the following page is a sample of some of the "Teaching Machines" currently in the market.



CLASSMATE 88
Monroe Education Center
The American Road
Morris Plains, New Jersey
07950





DIGITOR
Centurion Industries Incorporated
2549 Middlefield Road
Redwood City, California
94063

GAMES AND ACTIVITIES

FOR NUMBER FACTS

There are many positives to using the game format to learning number facts:

1. Research has proven we learn information faster when in game format.
2. Game provide a variety of ways to "drill" the same information.
3. Game are highly motivating.

CAUTION

Make sure the game rules are not so difficult they make the student concentrate more on the rules than on the number facts of the game.

for your math program

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*CUT APARTS - (For functions: addition, subtraction, multiplication or division.)
Grades 1-3

MATERIALS

Two (2) sheets of paper at least 8½ x 11 (use heavier paper such as oak tag or poster board, etc.)
Pencil
Scissors
Envelope

CONSTRUCTION

(1) Divide the two pieces of paper into 12 even squares. (see the next page for sample)
(2) On one sheet write a number fact in each square.
(3) On the other sheet write an answer in each square foe the number facts on the first sheet.

(2)

2 +3	3 +3	3 +7
9 +3	6 +3	4 +3
0 +3	3 +7	5 +3
1 +3	+5 3	6 +3

(3)

3	6	9
10	8	4
5	12	7
10	9	8

ACTIVITY DIRECTION

Materials: Scissors
Envelope
Two sheets as constructed above.

The student is to cut the answer from sheet #2 and place it on the correct number fact on sheet #1.

OPTIONAL: A third sheet can be provided with the number facts and correct to serve as a self-check for the student.

When the student has finished the cut out squares , they can be stored in the envelope and used again.

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*SURPRISE BOX - (For functions: addition, subtraction, multiplication or division)
Grades 1-8

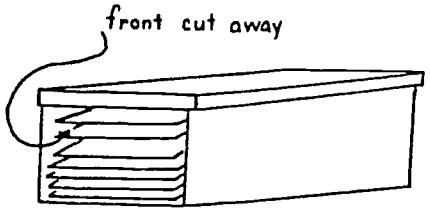
MATERIALS

One box (5" x 12" x 10") covered with bright paper or paint and labled "Surprise Box

20 - 150 unused workbook sheets, ditto sheets or game sheets, (see page) on the function or fact being suudied.

CONSTRUCTION

Cut the front of the box off to allow students to reach in and select a sheet.



ACTIVITY DIRECTIONS

Dependent on your classroom rules students may:

(1) Select a sheet from the surprise box during their free time.

(2) Select a sheet as a reward.

OPTIONAL: Sheets can be mounted and answers placed on back of cards. The cards can be laminated for durability.

*SECRET DOOR - (For functions: addition, subtraction, multiplication or division.)
Grades 1-3

MATERIALS
One sheet of paper at least 8½ x 11 (use heavier paper such as oak tag or poster board, etc.)
Scissors
Pencils

CONSTRUCTION
(1) Fold the paper in half lengthwise first and then into fourths the opposite way.

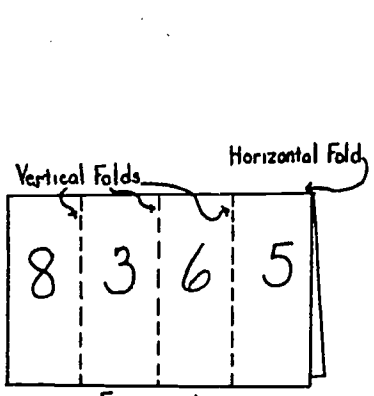


Figure 1

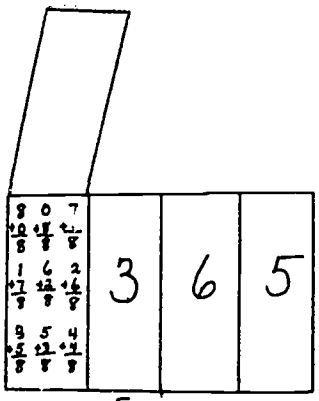


Figure 2

(2) Unfold the paper until it is just left folded in half lengthwise.

(3) Cut the paper up the vertical folds just to the horizontal fold.

(4) Place a number on the front of each vertical door.

ACTIVITY DIRECTIONS
The student is to write under the Secret Door all the combinations which equal the number on the front of the door.

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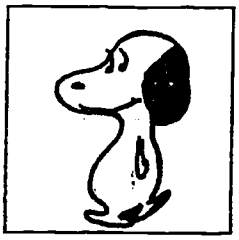
*SNOOPY'S SLOTS - (For functions: addition, subtraction, multiplication or division.)
Grades 1-6

MATERIALS
Tag oak or poster board
Scissors
Pen
optional: hole punch

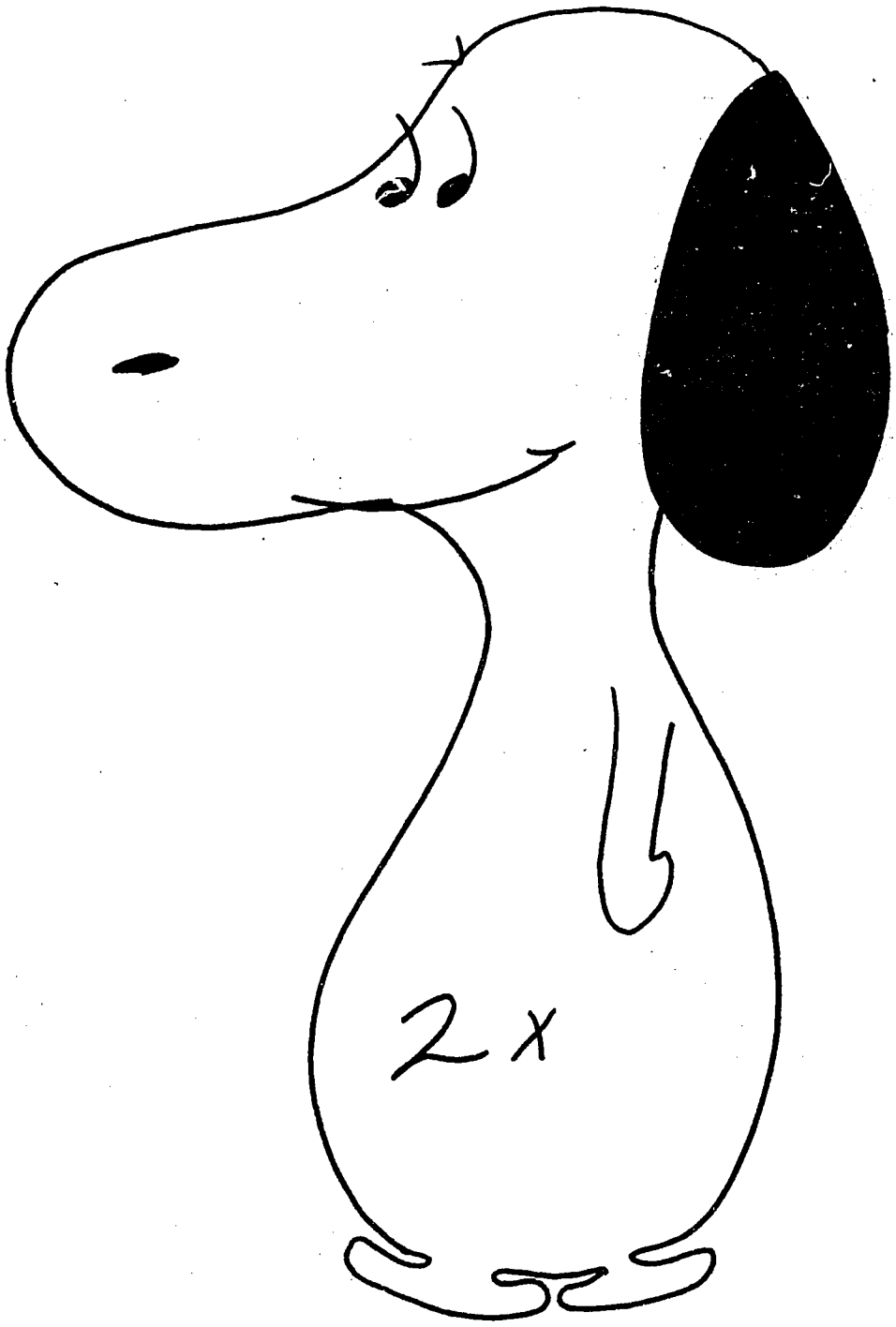
CONSTRUCTION
(1) Using the stencil on page or any other figure you desire, trace it on the board and cut it out.



(2) Punch holes with the pen or hole punch (10 to 20) arounde the figure.

(3) In the middle of the figure write a single number and a function.

(4) Next to each hole write a number.



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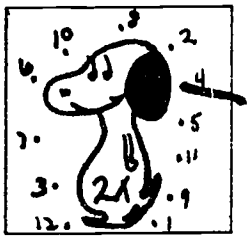
(5) Putting the pen in a hole to mark the spot, turn the figure over and on the back of the figure next to where the pen is in the hole write the answer for each one.



ACTIVITY DIRECTIONS

The student puts his pencil in one of the holes on the front, says the answer and checks his response by turning the figure over to see the answer next to the hole.

*FIND THE 10's (or 12's, 15's, etc.)
(For functions: addition, subtraction, multiplication or division.)
Grades 2-6

MATERIALS
One sheet of paper 8½ x 11 (or heavier materials if desired)
Pen
optional: Laminating materials

CONSTRUCTION
Using random numbers, make 10-20 rows of twelve numbers across the page.

example:

1.	4	8	3	7	6	2	4	7	5	1	9	4
2.	1	8	2	4	5	5	1	7	6	4	8	3
3.	9	2	5	7	3	8	8	2	3	6	5	2
4.	4	1	2	4	4	6	5	4	9	1	4	7
5.	7	6	1	8	3	2	1	4	3	6	7	3
6.	3	2	8	5	7	9	4	3	7	2	5	5
7.	8	6	4	3	7	1	9	4	2	1	8	5
8.	2	4	6	2	1	5	7	5	5	6	9	3
9.	6	9	8	2	1	7	2	3	3	9	1	6
10.	4	3	2	9	7	3	6	5	7	8	3	2

ACTIVITY DIRECTIONS
The student is to circle those numbers that when addition, subtraction, multiplication or division (dependent on what you choose) equal the number you say. e.g. "Circle all the numbers that when multiplied equal 24. (See above example for demonstration.)

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✱RIDDLES (For functions: addition, subtraction, multiplication or division)
Grades 3-8

MATERIALS
Paper (notebook or heavier if desired)
Pen
optional: Laminating material
Riddle book

CONSTRUCTION
1. Place a riddle at the top of the page.
2. Below the riddle place one blank space for each letter in the riddle's answer.

What is black and white and read all over?
— — — — — — — — — — — —.

3. Write the letters of the alphabet A-Z on the remainder of the paper putting a number fact next to each one.

4. Under each blank space in the riddle's answer place the answer of a problem whose corresponding letter will be the correct letter for the space.

example:

What is black and white and read all over?								
21	8 12	24	36	54	21	54	12	0
A 7 x3	B 2 x3	C 1 x7	D 9 x9	E 6 x2	F 8 x8	G 3 x1	H 4 x5	I 5 x7
J 9 x5	K 4 x4	L 7 x6	M 2 x9	N 2 x4	O 7 x7	P 9 x6	Q 9 x3	R 0 x9
S 6 x6	T 8 x9	U 2 x8	V 4 x7	W 6 x4	X 6 x3	Z 1 x1		

ACTIVITY DIRECTIONS
The student is to answer the problems, then place the letter of the answer on the blank above the corresponding number.

*INCIDENTAL OPPORTUNITIES - (For functions: addition, subtraction, multiplication or division)
Grades 1-8

MATERIALS
Dependent on need and situation.

ACTIVITY DIRECTIONS
Take advantage of using math skills in everyday activities.

ADDITION - Have the students count the number of boys in the class and number of girls and add them together.

SUBTRACTION - Give the total number in the class and the total number of girls and have them subtract to find the total number of boys.

ADDITION & SUBTRACTION - Similar activities can be done counting and computing the number of different colored books in the class, the number of windows, squares on the floor and the ceiling -- the students can think up lots once you get started.

MULTIPLICATION - Have the students compute the amcunt of money needed altogether for one row of students to each have a 5¢ piece of candy.

DIVISION - Have the student compute how much each student in the class will have to pay for a field trip if the total cost is $50.00.

✱CROSS WORD PUZZLE FACTS - (For functions: addition, subtraction, multiplication or division.)
Grades: 2-6

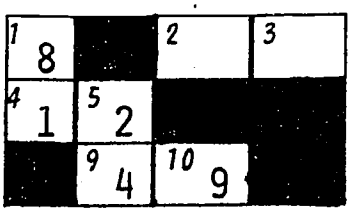
MATERIALS
One sheet of paper 8½ x 11 (preferably a heavier materials for durability)

CONSTRUCTION
Design a cross word puzzle using the number facts being studied.

example:

ACROSS
1. 4 x 2
4. 4 x 3
9. 7 x 7

DOWN
1. 9 x 9
5. 6 x 4



(Design it as large as you wish/have the students design their own)

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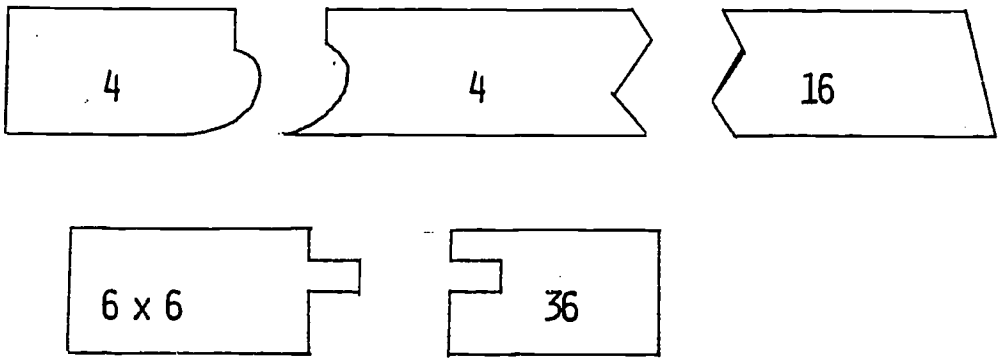
*JIGSAW PUZZLES - (For functions: addition, subtraction, multiplication or division)
Grades: 2-4

MATERIALS
Poster board or cardboard box material
Scissors
Pen

CONSTRUCTION
1. Cut unique shapes that will make a simple 2 or 3 piece puzzle.
2. Put the number fact problem on one piece(s) and the answer on the other.



Older students can make up their own.

*FLASH CARD RELAY - (For functions: addition, subtraction, multiplication or division)
Grades: 2-6

MATERIALS
One set of flash cards (or a partial set of those number facts being studied)

ACTIVITY DIRECTIONS
1. Divide the group into two or more "teams" lined up behind a line facing the blackboard.
2. Give the first member of each team a piece of chalk and an eraser.
3. The leader holds up the first card.
4. The first player on each team races to the board and writes the answer and races back and gives the chalk and eraser to the next player.
5. The first one back in line with the correct answer scores for his team.
6. The leader holds up the next card. The second player on each team races to the board, erases the previous answer, writes the new answer and races back to hand the chalk and eraser to the next player.

The game continues until a certain number of points are gained by a team.

*BOILING POT - (For functions: addition, subtraction, multiplication or division)
Grades: 2-4

MATERIALS
One set of flash cards (or a partial set of those number facts being studied)

ACTIVITY DIRECTIONS
1. The leader calls two students' names and holds up a flash card.
2. The last student to answer or who answers incorrectly must go into "The Boiling Pot". (a circle in the middle of the room or in the corner)
3. The leader calls one student's name and holds up the next flash card so the student in the Boiling Pot and the new student called can see the card.
4. Between these two students, the last one to answer or the one who answers incorrectly must go to the Boiling Pot.

(Care must be taken not to let anyone OVERBOIL - three tries in the Boiling Pot is enough)

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*TRAVELING - (For functions: addition, subtraction, multiplication or division)
Grades: 2-6

MATERIALS

One set of flash cards or a partial set of just those number facts being studied.

ACTIVITY DIRECTIONS

1. The first student in the row stands next to the second student.
2. The leader holds up a flash card.
3. The first of the two students to answer the question correctly travels to stand next to the third student in the row.
4. Students keep track of how many desks they travel (or place it on the board). The winner is the one who travels the furthest. He can be the next leader to hold the cards.

*CONCENTRATION - (For functions: addition, subtraction, multiplication or division)
Grades: 2-6

ACTIVITY DIRECTIONS

1. The leader (the first student) will begin with a simple rhythm at first by clapping hands and/or snapping fingers and saying a number fact.

   example: Snap, Clap -- six and three

2. The second student in the row or circle must repeat the rhythm and say the answer to the given number fact.

   example: Snap, Clap -- nine

3. The second student, if correct with rhythm and answer starts a new rhythm and number fact that the third student must duplicate with correct answer.

Any student missing must move away from the group. The last one left is the winner.

✱ UP THE LADDER - (For functions: addition, subtraction, multiplication, or division)
Grades: 2-6

MATERIALS
Blackboard
Chalk
Eraser

CONSTRUCTION
Draw on the board as many "ladders" as the number of teams you desire to divide the groups into.

6	9	2	20
5	7	7	4
4	3	9	8
2	4	6	16
7	5	4	12
+4	-6	x8	÷ 4

On each rung place a number and on the bottom rung place the sign of the function desired.

VARIATIONS:
(1) All the ladders can be the same function or (1)+, (2)x, (3)-, etc.
(2) The first rungs of the ladder can be all the same, e.g., x6 (for the fact being studied)

ACTIVITY DIRECTIONS
The first student in each team races to the board and writes the answer to each fung next to the rung. A point is scored for his team for each rung answered correctly.

6	10
5	9
4	8
2	6
7	11
+4	

= 5 points

The leader changes the numbers (all or just the bottom rung) and the next team mate races to the board.

The winning team is the one with the most points at the end of the game or the first to reach a set number of points (20).

* POSTMAN - (For function: addition and subtraction)
Grades: 1-2

MATERIALS
10 cards or sheets of paper at least 10" x 8"
10 envelopes (or rectangular shapes to represent envelopes)

CONSTRUCTION
On each card write one number from 1 - 10.
On each envelope write an addition or subtraction problem whose answer is between 1 - 10, e.g., 3+4.

ACTIVITY DIRECTIONS
1. 10 students are chosen to be the houses. They are each given one of the cards numbered 1 - 10.
2. A postman is chosen - he takes the stack of envelopes with the addition or subtraction problems on them and delivers them to the correct house (the student whose "house number" is the correct answer for the problem on the envelope).

The postman can choose the next postman.

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*OVER THE RIVER - (For functions: addition, subtraction, multiplication or division)
Grades: 1-6

MATERIALS
One set of flash cards or a partial set of just those facts being studied.

ACTIVITY DIRECTIONS
1. Divide the group in two teams - one group lined up on each side of the room.
2. The leader holds up the first flash card so the first player on each team can see it.
3. The last person to say the correct answer must cross over the river and join the other team at the end of the line.
4. The next flash card is help up for the next players on each team.

The team with the most players when the game time is up is the winner.

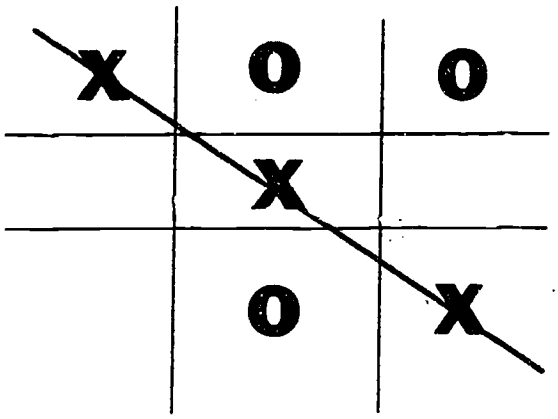
HUMAN TIC-TAC-TOE (For functions: addition, subtraction, multiplication or division)
Grades: 4-8

MATERIALS
One set of flash cards or a partial set of just those facts being studied.

ACTIVITY DIRECTIONS
Make
1. Make a giant tic-tac-toe board on the floor.
2. Divide the group into two teams - the X's and the O's.
3. The leader holds up the first flash card so the first player in each team can see it.
4. The first of these players to say the correct answer can go stand in a position in the giant tic-tac-toe board.
5. The next flash card is help up for the next players in line again. The first with the correct answer takes the place they want in the tic-tac-toe board.

The game proceeds until one of the teams wins the tic-tac-toe game.

The Grand Winner Team is the team that wins the most tic-tac-toe games in a given time.



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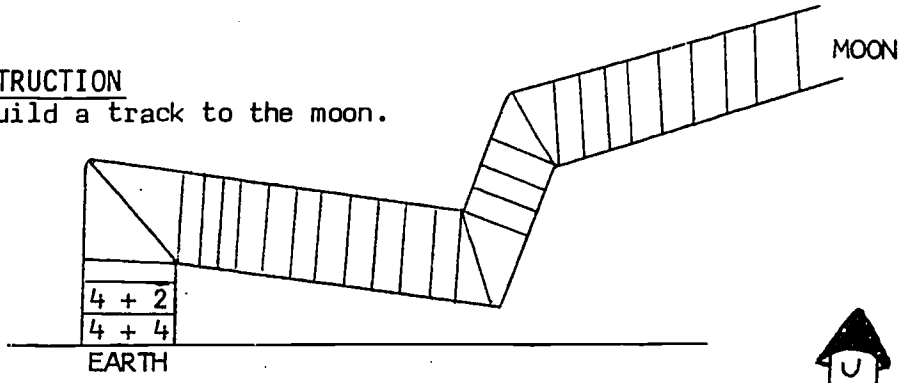
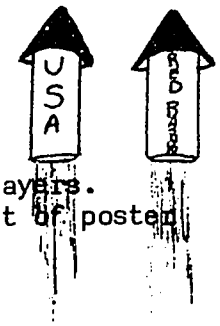
* ROCKET TO THE MOON (A Good Game For a Math Learning Center)
(For functions: addition, subtraction, multiplication or division)
Grades: 4-8

MATERIALS
One piece of oak tag or poster board 18" x 24".
One die or numbered spinner.
Pens (various colors).

CONSTRUCTION
1. Build a track to the moon.





2. On each phase of the track write one problem.
3. Build 2-4 rockets depending on the number of players.
4. A simple spinner can be made by cuting this shape out of poster board:

Put a number on each side and a hole in the center just big enough for a pencil.

To operate this, slip the pencil through the hole - hold the pencil up, spin it and let it go - the side on the table will be the number of steps advanced by the player.

ACTIVITY DIRECTIONS
1. The first player spins the spinner and moves the number of steps shown.
2. The player answers the problem he lands on. If he is unable to answer the problem he must go back to the original spot.
3. The next player takes his turn in the same way.

The winner of the game is the player to reach the moon first.

VARIATION: The number of different kinds of games like this are only limited to imagination. You can make a similar game board for:

.....GOING TO THE STORE
.....GOING TO THE FARM
.....GOING TO THE ROCK CONCERT TO SEE ELTON JOHN

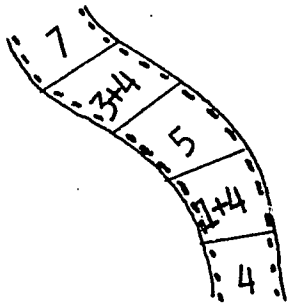
✱VISUALS FOR COMPUTATIONAL SKILLS - (For functions: addition, subtraction, multiplication or division)
Grades: 1-6

MATERIALS
Transparency pen or pencil
Filmstrip machine

CONSTRUCTION
Using the blank filmstrip write:

FIRST FRAME:	PROBLEM	4÷2
SECOND FRAME:	ANSWER	2
THIRD FRAME:	PROBLEM	8÷2
FOURTH FRAME:	ANSWER	4..etc.

The type of facts and the numbers shown are entirely up to you!



ACTIVITY DIRECTIONS
The leader shows the filmstrip and the students record and check their answers on their own sheets.

VARIATION: You can build the filmstrip with ten or more problems in a row and then the answers.

COMMERCIAL MATERIALS

TEXTS
Copies of state adopted texts for Mathematics are housed at the Duval County Media Center, 31 Warren Street, Jacksonville, Florida for your examination. Included are the textbooks from:

TARGET SERIES
Mafex

THE LEARNING SKILLS SERIES
Webster McGraw-Hill

SULLIVAN PROGRAM MATH
Webster

FIELD MATHEMATIC PROGRAM
Field

HOLT SCHOOL MATHEMATIC PROGRAM
Holt, Rinehart and Winston

MATHEMATICS FOR INDIVIDUAL ACHIEVEMENT
Houghton-Mifflin

GAMES (Flash cards and duplicating materials)
Large school supply companies such as Newtons and All Florida in Jacksonville, Florida have a wealth of games varying in price for teaching basic computational skills, In their catalogues you will find pictured and described such games as:

SUBTRACTION FACTS FARM.....approximate cost....$8.95

LEARNING HOW TO MULTIPLY....approximate cost....$7.95

IMMA WHIZ.....approximate cost....$1.80

MATH FACTS GAMES (A kit)....approximate cost...$20.00