SUCCESS WITH MATH™

Decimals: Addition and Subtraction

User's Manual

CBS SOFTWARE

Setting up your Computer

Following manufacturer's instructions, hook up your computer to a monitor or TV. Make sure your disk drive or program recorder is connected.

For Disk:

1. Insert the program disk into the disk drive and close the drive door.
2. Turn your computer and monitor on. Adjust the volume on your monitor.
3. a. Apple® and Atari® disk drives will automatically boot disks.
   b. Commodore 64™ users type **LOAD "CBS MATH", 8** and press [**RETURN**]. Then type **RUN** and press [**RETURN**] again.

For Cassette:

(Note: Cassette programs can take 15 minutes or more to load):

1. Insert the program cassette into the program recorder following cassette label instructions.
2. Turn computer and monitor on. Adjust the volume on your monitor.

Atari® Users

3. Make sure BASIC cartridge is in computer.
4. Type **CLOAD** to load the program and push down PLAY button on your program recorder. Press [**RETURN**].
5. Once program has loaded, type **RUN** and press [**RETURN**].

Commodore 64™ Users

3. Type **LOAD** and press [**RETURN**].
4. *New Models Only—*
Wait for program to be found and press [C=].
5. After program has loaded, "Ready" will appear on screen. Type **RUN** and press [**RETURN**].

Developed by Don Ross.
Programmed by David and Joseph Stampleman.
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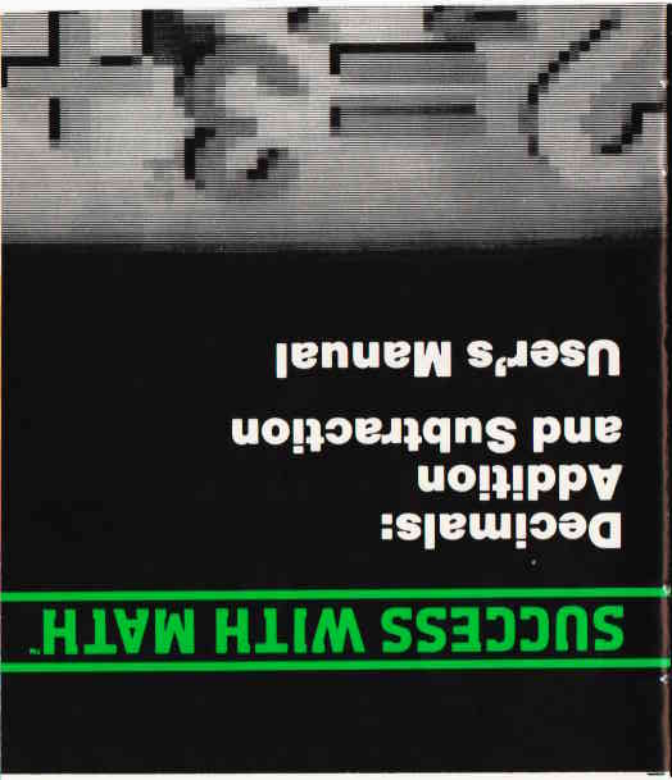

Program Descriptions

Adding Decimals
All problems are generated randomly so that new problems are presented each time the program is run.

Program Objective

This SUCCESS WITH MATH™ program provides comprehensive practice in addition (with carrying) and subtraction (with or without borrowing) of decimals of

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decimals.

Both the Addition and Subtraction sections begin with a Main Menu, offering the user four options:

1) See the general instructions,
2) Practice the line-up stage,
3) Try a set of problems, or
4) Leave the program.

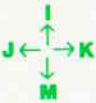
The general instructions take the user through the step-by-step processes of adding and subtracting decimals of unequal length. To practice lining up decimal numbers correctly and to become familiar with the various function keys used in this procedure, the user should select option 2. Once the user feels comfortable with lining up decimals, he/she may proceed on to the first set of problems.

(up to 6 digits). The user may also design the size of each problem depending on the size of the numbers. For example: a user choosing to add three numbers of a maximum of four digits each might get a problem like this:

.279 + 7 + 8.07

+

S = Stop with evaluation
A = Advance to next number
C = Check number line-up
R = Review instructions



Program Objective

This SUCCESS WITH MATH™ program provides comprehensive practice in addition (with carrying) and subtraction (with or without borrowing) of decimals of unequal length. Emphasis is placed on improving the user's understanding of place value as it pertains to decimals.

Both the Addition and Subtraction sections begin with a Main Menu, offering the user four options:

1) See the general instructions,
2) Practice the line-up stage,
3) Try a set of problems, or
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The general instructions take the user through the step-by-step processes of adding and subtracting decimals of unequal length. To practice lining up decimal numbers correctly and to become familiar with the various function keys used in this procedure, the user should select option 2. Once the user feels comfortable with lining up decimals, he/she may proceed on to the first set of problems.

Program Descriptions

Adding Decimals

All problems are generated randomly so that new problems are presented each time the program is run. The user may select the number of problems in each set as well as the maximum size of each decimal number (up to 6 digits). The user may also design the size of each problem depending on the size of the numbers. For example: a user choosing to add three numbers of a maximum of four digits each might get a problem like this:

.279 + 7 + 8.07

+

S = Stop with evaluation
A = Advance to next number
C = Check number line-up
R = Review instructions

I
J ← → K
M

Before solving can begin, the numbers must first be correctly lined up in relation to their decimal points, including implied ones, as indicated by the highlighted arrow. The first number to be moved is highlighted, although the user may choose to line up the numbers in any order by using the **A** key. The directional keys **I**, **M**, **J** and **K** are used to move each number up, down, left and right, respectively. Once the user decides that a number is correctly positioned, he/she should press the **C** key.

Once all the numbers are correctly lined up, our example would look like this:

```
   .279
  7
+ 8.07
  .
```

Press Z to fill in the zeros. Press return to continue without them.

If the user presses **Z**, the computer will fill in all non-significant zeros to the right of the decimal point. The problem would then look like this:

```
   .279
  7.000
+ 8.070
  .
```

The square, called a cursor, locates the position of the next keyboard entry. Addition is carried out one digit at a time. The sum of each column is entered followed by the carry above the next column. *The user must enter the carry even if it is zero.*

```
  ▌
 .279
7.000
+ 8.070
  .   9
```

User enters 9 in first column; cursor moves to top of next column for the carry.

```
  0
 .279
7.000
+ 8.070
  .  ▌9
```

User enters 0 above second column; cursor moves to bottom of second column for next digit.

This procedure continues until the problem is completed.

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```
   .279
  7
+ 8.07
  ---
   .
```

Press Z to fill in the zeros. Press return to continue without them.

If the user presses **Z**, the computer will fill in all non-significant zeros to the right of the decimal point. The problem would then look like this:

The square, called a cursor, locates the position of the next keyboard entry. Addition is carried out one digit at a time. The sum of each column is entered followed by the carry above the next column. *The user must enter the carry even if it is zero.*

```
     ▮
   .279
  7.000
+ 8.070
 -------
   .  9
```

User enters 9 in first column; cursor moves to top of next column for the carry.

```
     0
   .279
  7.000
+ 8.070
 -------
   . ▮9
```

User enters 0 above second column; cursor moves to bottom of second column for next digit.

This procedure continues until the problem is completed.

Subtracting Decimals

All problems are generated randomly so that new problems are presented each time the program is run. The user may select the number of problems in each set as well as the maximum size of each decimal number (up to 6 digits). The user also has a choice of problems with or without borrowing. For example: a user choosing to subtract numbers of a maximum of three digits each might get a problem like this:

4.6 – 2.57

C = Check number line-up
S = Stop
R = Review instructions

J← →K
↓
M

Before solving can begin, the subtrahend (highlighted) must first be positioned under the minuend so that the decimal points, including any implied ones, are vertically lined up with the decimal point indicated by the highlighted arrow. The directional keys **M**, **J**, and **K** are used to move each number down, left and right

Once the numbers are correctly lined up, our example would look like this:

```
  4.6
– 2.57
-------
     .
```

Press Z to fill in the zeros.

After the user presses **Z**, the computer will fill in all non-significant zeros to the right of the decimal point. The problem would then look like this:

```
  4.60
– 2.57
-------
     .
```

B = Borrow
S = Stop
R = Review instructions

The cursor locates the position of the next keyboard entry. Subtraction is carried out one digit at a time. The cursor continues to move after each correct entry. If

Subtracting Decimals

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Before solving can begin, the subtrahend (highlighted) must first be positioned under the minuend so that the decimal points, including any implied ones, are vertically lined up with the decimal point indicated by the highlighted arrow. The directional keys **M**, **J**, and **K** are used to move each number down, left and right, respectively. Once the user decides that the subtrahend is correctly positioned, he/she should press the **C** key.

Once the numbers are correctly lined up, our example would look like this:

```
  4.6
- 2.57
  .
```

Press Z to fill in the zeros.

After the user presses **Z**, the computer will fill in all non-significant zeros to the right of the decimal point. The problem would then look like this:

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  4.60
- 2.57
  .
```

B = Borrow
S = Stop
R = Review instructions

The cursor locates the position of the next keyboard entry. Subtraction is carried out one digit at a time. The cursor continues to move after each correct entry. If borrowing is necessary, as in this case, the user must first press **B**.

```
  4.60
- 2.57
  .
```

User presses B; the cursor moves one column to the left and crosses out the digit to be borrowed from.

User enters new value of the digit borrowed from.

```
   5
 4.60
- 2.57
  .
```

User enters 5; cursor moves back to first column for the amount borrowed.

User then enters the amount borrowed which replaces the cursor.

```
   51
 4.60
- 2.57
  .
```

User enters 1; cursor moves to bottom of first column.

```
   51
 4.60
- 2.57
  .3
```

User enters 3; cursor moves to next column.

This procedure continues until the problem is completely solved.

In both Addition and Subtraction, all errors are called out and explained as they occur and the user may then try a new solution. The program tracks type and number of errors made and displays the totals on the screen after the solution is reached.

It is important to note that the user must enter the correct answer for each step before the program will continue on to the next step in the solving process. *The user always succeeds in solving the problem and knows exactly where errors have been made.*

Other Programs in the Success with Math™ series from CBS Software:

Addition and Subtraction—
Grade Levels 1 to 4

Multiplication and Division—
Grade Levels 2 to 8

Fractions: Addition and Subtraction—
Grade Levels 5 to 8

Fractions: Multiplication and Division—
Grade Levels 5 to 8

Decimals: Multiplication and Division—
Grade Levels 5 to 8

Linear Equations—
Grade Levels 7 to 11

Quadratic Equations—
Grade Levels 9 to 12

User then enters the amount borrowed which replaces the cursor.

```
   51
  4.60
- 2.57
   .
```

User enters 1; cursor moves to bottom of first column.

```
   51
  4.60
- 2.57
  .3
```

User enters 3; cursor moves to next column.

This procedure continues until the problem is completely solved.

In both Addition and Subtraction, all errors are called out and explained as they occur and the user may then try a new solution. The program tracks type and number of errors made and displays the totals on the screen after the solution is reached.

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User enters new value of the digit borrowed from.

```
  5
 4.60
-2.57
```

User enters 5; cursor moves back to first column for the amount borrowed.

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