Math Basics

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Introduction

Math Basics consists of twelve programs aimed at Grades 1 through 6. The programs help teach the four basic arithmetic operations of addition, subtraction, multiplication, and division for whole numbers and fractions.

Math Facts lets you learn and practice the basic math facts using the digits zero through nine. Take speed trials and print out worksheets. In **Flash Card Math**, you get practice in adding, subtracting, multiplying, and dividing using flash cards. The level of problem difficulty can be varied and, based on performance, the computer will encourage moving to different skill levels. Also has optional timer. **Math Slalom** lets up to four players race down a slalom ski course by answering flash card math problems. Each player can race at his/her own skill level (same levels as **Flash Card Math**). **Missing Numbers** introduces algebra skills - given the answer and one of the other numbers, you fill in the missing value. In **Rocketman**, you are asked to guess number and arithmetic operator in a randomly selected math problem - like Hangman spelling game. **Word Problems** allows you to practice solving all kinds of word problems. Has different difficulties and a built-in calculator.

The next four programs give you the option of solving a randomly generated problem or one you enter. You also have the option of solving the problem yourself or having the computer show you, in a step by step fashion, how to solve the problem. In **Addition Tutor**, you get practice in adding from 2 to 6 numbers (with 1 to 6 digits each). **Subtraction Tutor** provides column subtraction problems. The program gives optional practice in 'borrowing' concepts. **Multiplication Tutor** helps you learn how to multiply numbers with up to five digits. You enter your answers just like you work them on paper - column by column. In **Division Tutor**, you obtain help in solving long division problems. Problems are solved just like you would on paper and remainders are optional. **Fractions** teaches you what fractions are and about different types of fractions (equivalent, like, reciprocal, mixed, simple, …). **Fraction Math** provides instruction and practice in adding, subtracting, multiplying, and dividing fractions.

Math Facts

In this program, your child learns the basic facts of addition, subtraction, multiplication, and division. The program is run by selecting **Math Facts** from the main menu screen. Multiple options are available. The program can operate in two basic modes (selected using the option buttons in the red **Mode** frame): **Study** or **Practice**. Other choices include **Help** or **Exit**. Make your choice by clicking on the desired selection.

Study:

In this mode, you can view addition, subtraction, multiplication, or division facts with any number (factor) you choose. Two options are available. You can choose a single problem type in the **Type** frame. Choose **Addition**, **Subtraction**, **Multiplication**, or **Division** problems. And, you may choose your **Factor Value**, any number from **0** to **9**. Options may be changed at any time.

With **Addition** facts, the sum of your selected factor (the addend) with the numbers from 0 to 9 are displayed. With **Subtraction** facts, the difference between your selected factor (the subtrahend) and itself and the next nine highest numbers are shown. With **Multiplication** facts, the product of your selected factor (multiplier) with the numbers from 0 to 9 are listed. With **Division** facts, the quotients of ten dividends and your factor (divisor) are listed.

Practice:

In this mode, you can practice math facts or print out worksheets of problems to do on paper. Many options are available. First, choose problem type from the **Type** frame. Choose from **Addition**, **Subtraction**, **Multiplication**, and/or **Division** problems (unlike **Study** mode, you may choose more than one problem type). Choose your **Factor Value**, any number from **0** to **9**, or choose **Random** for random factors. These options may be changed at any time.

To practice math facts, click on the **GO** sign in the **Choose** frame. You will be given problems to solve, based on problem type and factor value. For **Addition**, you are given problems using your factor as the addend. For **Subtraction**, you are given problems using your factor as the subtrahend. For **Multiplication**, you are given problems using your factor as the multiplier. For **Division**, you are given problems using your factor as the divisor. Once a problem is presented, enter your answer (use the keyboard or click on the displayed number buttons). A few notes on entering your answer. The primary goal of the **Math Facts** program is to build speed in solving simple problems. As such, you have one chance to enter an answer - there is no erasing. If the answer has more than two digits (the number of digits in the answer is shown using question marks), type your answer from left to right. For example, if the answer is 12, type a 1 then a 2. If your entered answer is correct, another problem is presented. If incorrect, an uh-oh is heard, the problem is stored for later review, and

another problem is presented. You can stop practicing math facts, at any time, by clicking on the **STOP** sign.

There are two other options to consider when practicing math facts. The first is **Timer Options**. There are three choices here. If you select **Timer Off**, you solve problems until you click the **STOP** sign. If you select **On-Count Up**, a timer will appear and the computer will keep track of how long you were solving problems (a maximum of 30 minutes is allowed). If you select **On-Count Down**, a timer will appear, along with an arrow control. The arrow control is used to set how long you want to solve problems (a maximum of 30 minutes is allowed). The timer will then count down, allowing you to solve problems until the allotted time expires. Another option when practicing facts is **Delay**, which is set using the displayed scroll bar. This value is how long the program will wait between different problems (0 to 5 seconds). Note the timer (if it is on) is stopped during delay periods - that is, you arent penalized for using a delay

Once you are done practicing math facts (either you clicked **STOP** or time ran out with the **On-Count Down** option), a **Results** window appears. This window tells you how many problems you solved and how many you got correct (including a percentage score). If the timer was on, you are also told how long you were solving problems and how much time (on average) you spent on each problem. If you received a 100 percent score, an **OK** button appears. Click **OK** and you can then practice more facts or return to **Study** mode. If you missed one or more problems, a **Review** button appears. Click this button and the computer will show you each problem you missed. It will show you the answer you entered and the correct answer. See all missed problems by continually clicking the **Next** button or stop the review process by clicking **Stop**. At this point, you can practice more math facts or return to **Study** mode.

Another choice in **Practice** mode is to **Print Worksheet**. These sheets can be used for personal or classroom study. To print a worksheet, simply click the **Printer** button. The printed worksheet is formed based on **Type(s)** and **Factor Value** options. Each worksheet has 100 problems. If more than one problem type is selected, there are a random number of each problem type. If the **Random** factor is selected, the 100 problems will use all combinations of possible factors. If a non-random factor (**0** through **9**) is selected, each problem will have that factor and a random second factor.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Flash Card Math

This program provides practice in answering basic addition, subtraction, multiplication, and division problems. The program is run by selecting **Flash Card Math** from the main menu screen. You have three choices: **Solve Problems, Print Worksheet**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problems:

Clicking this button (a **GO** sign) will generate random problems, based on selected options. **Problem Type** is selected by clicking on either **Addition**, **Subtraction**, **Multiplication**, or **Division**. Problem **Difficulty Level** (Levels **1** through **6**) is also selected, as is your choice under **Timer On?**. Once all choices are desired, you can begin solving problems.

A word on difficulties. **Flash Card Math** and three other **Math Basics** programs (**Math Slalom**, **Rocketman**, and **Word Problems**) all use the same difficulty levels. Problems generated using the various levels are:

Level 1: Addition-single digit sum, Subtraction-single digit minuend, Multiplication-single digit product, Division-single digit divisor

Level 2: Addition-single digit factors, Subtraction-single digit answer, Multiplication-single digit factors, Division-single digit quotient

Level 3: Addition-largest factor is 15, Subtraction-largest minuend is 30, Multiplication-largest factor is 15, Division-largest divisor is 225

Level 4: Addition-largest factor is 25, Subtraction-largest minuend is 50, Multiplication-largest factor is 25, Division-largest divisor is 625

Level 5: Addition-largest factor is 50, Subtraction-largest minuend is 100, Multiplication-largest factor is 50, Division-largest divisor is 2500

Level 6: Addition-largest factor is 99, Subtraction-largest minuend is 200, Multiplication-largest factor is 99, Division-largest divisor is 10000

You are given a problem. Enter your answer (the computer shows you how many digits are in the answer). You select numbers by typing them or by clicking on the displayed keypad. If correct, a tune is heard and, after a short delay, the next problem is generated. If incorrect, an 'uh-oh' is heard. If the timer is off, you have three tries to get the correct answer - after your final try, the correct answer is given. If the timer is on, you can answer until time (10 seconds) runs out. The fewer tries you need to answer a problem, the higher your score. The program will generate problems until you click the **Stop** button. Once you stop, your final score is given along with an

evaluation of your performance (suggestions for moving to different levels are given if you solved at least five problems). Click **OK** to return to the **Flash Card Math** main screen.

Print Worksheet:

Choosing this option (click the **Printer** button) will print out worksheets that can be used for personal or classroom study. Each worksheet has 100 randomly generated problems of the type specified by **Problem Type** with number size determined by the selected **Difficulty Level**.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Math Slalom

In this program, from one to four kids can compete in basic flash card math skills - the faster you answer, the farther your skier moves down the slalom course. Each player selects the level of problems she/he wishes to answer. Thus, an adult can compete (using very difficult division problems) against a first-grader (doing simple addition). The program is run by selecting **Math Slalom** from the main menu screen. You have four choices: **New Game**, **Options**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

New Game:

In the same order they entered their names (see **Options**), players are given randomly-generated problems to answer. To see a problem, the player clicks on **See Problem** or presses **<Enter>** when asked to. The problem is then displayed. At that point, the player types in the answer to the problem and presses **<Enter>** - remember you must press **<Enter>** in order to get the computer to check your answer. You can erase your answer by clicking **Erase**. If your answer is correct, your skier will move down the screen a distance related to how much time (indicated by the bar at the right of the screen) was left when you answered. If incorrect, you are given another chance. You can continue to answer until time runs out.

A maximum of 10 points can be earned for each problem - more points for faster answers. A total of 75 points must be gained to complete the course. The game ends when one or more skiers finish the course. At that time, a tune is heard and the names of the players who finished are presented. Click **OK**. (Clicking **Stop** will also stop the game, but no results are given).

Options:

Each player solves problems at his/her own level of ability, hence some initial options should be set prior to playing the game. There are four choices for each player (four players maximum). Each child playing should type their name so the computer can keep track of whose turn it is. The child also indicates (by checking the desired boxes) what type(s) of problems they want to solve: addition, subtraction, multiplication, and/or division. Also, select a problem difficulty (these are the same difficulty levels used in other **Math Basics** programs - see **Flash Card Math** for details). Lastly, you choose the clock speed, i.e. the time you want to answer the problem. Each problem is worth a maximum of 10 points. With each tick of the clock, one point is removed from your possible score. With a slow clock, there are about 1.5 seconds between ticks, with a medium clock, about 1 second, and with the fast clock, there is about 0.5 seconds between ticks. Click the **OK** button when all selections are as desired.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basic** main menu screen.

Missing Numbers

This program gives you an introduction to algebra skills. Determine the missing factor or missing digits in a displayed math problem. The program is run by selecting **Missing Numbers** from the main menu screen. You have three choices: **Solve Problems**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problems:

Before choosing this option, you choose problem type(s) and difficulty in the **Type** and **Difficulty** frames. Select as many types as you want and click on a difficulty level (these are the same difficulty levels used in other **Math Basics** programs - see **Flash Card Math** for details). Also decide whether you want the missing number to be a **Single Digit** or a **Whole Number**. After making these choices and clicking **Solve Problems**, a problem is generated and displayed.

In the displayed problem, one of the factors (or a single digit in the factor) is missing and represented by question mark(s). You need to determine what the missing number is. Four choices are provided - click on your choice using the mouse. The little man will throw a ball at your selected answer. If you are correct, a little tune will play and the complete problem is displayed. If you are incorrect, an uh-oh is heard. Keep trying until correct. **Problems Tried** shows you how many problems you have tried and **Your Score** shows your current percentage score. After each problem, click **OK** to continue. Click the **Get Hint** button at the bottom of the screen to get useful problem solving strategies. Click the **Stop** button to return to the opening screen to change options.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Rocketman

This is Hangman with math - decipher a secret code (a randomly generated math problem) by guessing the numbers and operator so you can launch the rocket past the moon. The program helps develop new ways of looking at math problems. The program is run by selecting **Rocketman** from the main menu screen. You have three choices: **New Problem**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

New Problem:

Before choosing this option, you can choose problem type(s) and difficulty in the **Make Choices** frame. Select as many types as you want and click on a difficulty level (these are the same difficulty levels used in other **Math Basics** programs - see **Flash Card Math** for details). After making these choices and clicking **New Problem**, the problem is generated.

The numbers and operators (if more than one problem type selected) in the problem to guess are shown as pound signs (#) at the top of the rocket launch computer. Available guesses are shown below the computer. Guess a number or operator (press it on the keyboard or or click on it). If the guess is correct, that character will be shown in its correct position(s) in the problem. If incorrect, an uh-oh is heard. Keep guessing until you get the complete problem. **Wrong Guesses** shows you how many wrong guesses you have made (there is no penalty for wrong guesses, but try to use as few as possible). **Numbers Left** shows you how many non-repeating numbers are left in the problem - this can be a very useful hint in trying to form the addition, subtraction, multiplication, or division problems - you will learn to rely on this value. In fact, you will develop lots of good strategies in deciphering the code. Once you have formed the complete problem (the launch code), you launch the rocket by clicking the **GO** button. Then, click **OK** to continue. Click the **See Code** button at the bottom of the screen if you want to see the code before guessing it and click the **Stop** button to return to the opening screen to change options.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:
Click **Exit** and you are returned to the **Math Basics** main menu screen.

Word Problems

In this program, you learn how to solve word problems involving addition, subtraction, multiplication, and division skills. The program is run by selecting **Word Problems** from the main menu screen. You have three choices: **Solve Problems**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problems:

Before choosing this option, you should choose problem type(s) and difficulty in the **Make Choices** frame. Select as many types as you want and click on a difficulty level (these are the same difficulty levels used in other **Math Basics** programs - see **Flash Card Math** for details). After making these choices and clicking **Solve Problems**, you are reminded of four important steps in solving word problems:

1. Read the problem
2. Decide what to do (add, subtract, multiply, or divide)
3. Solve the problem
4. Check your answer

Click **OK** and the problems begin. A word problem is printed at the top of the screen. You should read the problem and solve it. There are two ways to give the computer your answer. First, you can just type your answer in the provided space and press <**Enter**>. Secondly, you can use the built-in calculator. The calculator is standard with the four functions: add (**+**), subtract (**-**), multiply (**x**), divide (**/**), the ten number keys, and a few others. You use it just like any calculator. Use the mouse to 'press' keys. You move the displayed number to the answer box (and check it too) by clicking the **A** key. The **C** key clears the calculator while **E** clears the current entry.

However you enter your answer, if it is correct a tune is heard. If incorrect, an 'uh-oh' is heard and you try again. After three tries, the correct answer is given to you - try to get the same answer using the calculator. (You can also click the **Solution Help** button to get answer). Get another problem by clicking **OK**. Stop solving problems by clicking the **Stop** button.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Addition Tutor

In this program, your child learns the basics of addition. The program is run by selecting **Addition Tutor** from the main menu screen. You have three choices: **Solve Problem**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problem:

Prior to solving an addition problem, you set up the problem by selecting the **Problem Mode**. Decide between **You Input Problem** or **Computer Selects Problem**. If you choose **You Input Problem**, you will be asked to enter from 2 to 6 "addends" (the numbers to be added together). Each addend can have a value from 0 to 999999. To do this, type the addends in any of the six spaces provided. If you choose **Computer Selects Problem**, you must make two other choices. Choose **How Many Numbers?** you want to add together - choose from **2** to **6**. Next, choose the largest **Number of Digits** you want in the numbers to be added - select from **1** to **6**. Once a problem is entered or the computer selects one, you can begin solving your addition problem by clicking **Solve Problem**.

The addition problem to be solved will be displayed. (If you input the problem, the addends may have been reordered.) Also displayed are four control buttons: **Solution Help**, **Program Help**, **Stop**, and **Carry**. You solve the problem just like you would on paper. That is, add the given numbers column by column, starting from the right and going to the left. A question mark (**?**) is used to mark the column you are working on. You select numbers by typing them or by clicking on the displayed keypad. If your selection is correct, it will be displayed. If it is wrong, an uh-oh sound will be heard and you must try again. If the sum in any column is larger than 10, you must 'carry' to the next column before continuing. To do this carrying, simply click the **Carry** button or press the **C** key and then the number to carry to the next column. At any time in the solution process, you may click the **Solution Help** button. Doing this tells the computer to show you, in a step-by-step manner, how to solve the remainder of the problem. When the solution is complete, you can click **Print Solution** to obtain a copy of the solved problem. At any time in the solution process, you can click the **Stop** button to return to the **Addition Tutor** menu screen.

Once the problem is finished, you click **Next Problem** to continue. If you input the solved problem, you will be returned to the **Addition Tutor** menu screen. If the computer chose the problem, another problem will be displayed for solution.

Help:

Clicking **Help**, **Program Help** (while solving a problem), or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Subtraction Tutor

In this program, your child learns how to subtract (including borrowing, if desired). The program is run by selecting **Subtraction Tutor** from the main menu screen. You have three choices: **Solve Problem**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problem:

Prior to solving a subtraction problem, you set up the problem by selecting the **Problem Mode**. Decide between **You Input Problem** or **Computer Selects Problem**. If you choose **You Input Problem**, you will be asked to enter a minuend (the top number) and a subtrahend (the bottom number). Each number can have a value from 0 to 999999. To do this, type the numbers in the spaces provided. If you choose **Computer Selects Problem**, you must make two other choices. Choose the largest **Number of Digits** you want in the numbers to be subtracted - select from **1** to **6**. Also, choose whether you want **Borrowing** in your problem. Once a problem is entered or the computer selects one, you can begin solving your subtraction problem by clicking **Solve Problem**.

The subtraction problem to be solved will be displayed. Also displayed are four control buttons: **Solution Help**, **Program Help**, **Stop**, and **Borrow** (if borrowing selected). You solve the problem, column by column, starting from the right and going to the left. A question mark (**?**) is used to mark the column you are working on. You select numbers by typing them or by clicking on the displayed keypad. If your selection is correct, it will be displayed. If it is wrong, an uh-oh sound will be heard and you must try again. If the lower digit is larger than the upper digit, you must 'borrow' 10 from the preceding column before continuing. To do this borrowing, click the **Borrow** button (or press the **B** key) and then enter the new minuend (top number) values as they are requested. For example, if the upper digit in one column is 4 and the lower digit is 6, you first borrow. You decrease the next column's minuend value by 1 (depending on number values, you may also be asked to decrease column values in other columns - just remember to watch for any requested values). You then type a 1 and a 4 to indicate the upper number is 14 after the borrowing. At any time in the solution process, you may click the **Solution Help** button for assistance. Asking for such assistance tells the computer to show you, in a step-by-step manner, how to solve the remainder of the problem. When the solution is complete, you can click **Print Solution** to obtain a copy of the solved problem. To stop solving problems, click the **Stop** button. This will return you to the **Subtraction Tutor** menu screen.

Once the problem is finished, click the **Next Problem** button to continue. If you input the solved problem, you will be returned to the **Subtraction Tutor** menu screen. If the computer chose the problem, another problem will be displayed for solution.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Multiplication Tutor

In this program, your child learns how to multiply two numbers together. The program is run by selecting **Multiplication Tutor** from the main menu screen. You have three choices: **Solve Problem**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problem:

Prior to solving a multiplication problem, you set up the problem by selecting the **Problem Mode**. Decide between **You Input Problem** or **Computer Selects Problem**. If you choose **You Input Problem**, you will be asked to enter a multiplicand (the top number) and a multiplier (the bottom number). Each number can have a value from 0 to 99999. To do this, type the numbers in the spaces provided. If you choose **Computer Selects Problem**, you must make one other choice. Choose the largest **Number of Digits** you want in the numbers to be multiplied - select from **1** to **5**. Once a problem is entered or the computer selects one, you can begin solving your multiplication problem by clicking **Solve Problem**.

The multiplication problem to be solved will be displayed. Also displayed are four control buttons: **Solution Help**, **Program Help**, **Stop**, and **Carry**. Multiply the given numbers, column by column, forming each required subproduct, then sum the subproducts to get the final product. A question mark (**?**) is used to mark the number position you are working on. You select numbers by typing them or by clicking on the displayed keypad. If your selection is correct, it will be printed. If it is wrong, an uh-oh will be heard and you must try again. If the product of any two digits or the sum of digits in any subproduct is larger than 10, you must 'carry' the proper number to the next column before continuing. To do this carrying, click the **Carry** button (or press the **C** key). When multiplying, you then type in the number to carry to the next column. When adding subproducts, the computer fills in the carry value for you (saving you a little time - the computer assumes youve studied the **Addition Tutor** program enough to know adding by now). At any time in the solution process, you may click the **Solution Help** button for help. Asking for help tells the computer to show you, in a step-by-step manner, how to solve the remainder of the problem. When the solution is complete, you can click **Print Solution** to obtain a copy of the solved problem. To stop solving problems, click the **Stop** button. This will return you to the **Multiplication Tutor** menu screen.

Once the problem is finished, you click the **Next Problem** button to continue. If you input the solved problem, you will be returned to the **Multiplication Tutor** menu screen. If the computer chose the problem, another problem will be displayed for solution.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Division Tutor

In this program, your child learns how to do long division. The program is run by selecting **Division Tutor** from the main menu screen. You have three choices: **Solve Problem**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

Solve Problem:

Prior to solving a division problem, you set up the problem by selecting the **Problem Mode**. Decide between **You Input Problem** or **Computer Selects Problem**. If you choose **You Input Problem**, you will be asked to enter a dividend (the number being divided) and a divisor (the number being divided into the dividend). Each number can have a value from 1 to 999999. To do this, type the numbers in the spaces provided. If you choose **Computer Selects Problem**, you must make two other choices. Choose the largest **Number of Digits** you want in the divisor and quotient (the answer) - select from **1** to **4**. Then, select whether you want **Remainders**. Once a problem is entered or the computer selects one, you can begin solving your division problem by clicking **Solve Problem**.

The division problem to be solved will be displayed. Also displayed are several control buttons: **Solution Help**, **Program Help**, **Stop, Carry, Borrow, Digit Down**, and **Remainder**. Divide the given numbers using the five steps of division: 1-Divide, 2-Multiply, 3-Subtract, 4-Digit Down, and 5-Do it again. A question mark (**?**) is used to mark the number position you are working on. You select numbers by typing them or by clicking on the displayed keypad. If your selection is correct, it will be printed. If it is wrong, an uh-oh sound will be heard and you must try again. When first starting to solve a problem, you must tell the computer which digit in the quotient you are solving for. The possible starting columns are marked by boxes. Click the desired starting position. When multiplying numbers, if the product of any two digits is larger than 10, you must carry the proper number to the next column before continuing. To do this, click the **Carry** button (or press **C**). The computer will fill in the carry value (we assume youve had enough practice in the **Multiplication Tutor** program). Likewise, when subtracting if the lower digit is larger than the upper digit, you must borrow 10 from the preceding column before continuing. This is done by clicking the **Borrow** button (or pressing **B**). To speed up the solution process, new column values will be computed and displayed for you; that is, you don't have to enter them like you do in the **Subtraction Tutor** program. To bring a digit down from the dividend, after the subtraction step, just click the **Digit Down** button (or press **D**). If there is a remainder at the end of the solution, click the **Remainder** button (or press **R**), then enter the required numbers. At any time in the solution process, you may click the **Solution Help** button for help. Asking for help tells the computer to show you, in a step-by-step manner, how to solve the rest of the problem. When the solution is complete, you can click **Print Solution** to obtain a copy of the solved problem. To stop solving problems, click the **Stop** button. This will return you to the **Division Tutor** menu screen.

Once the problem is finished, you click the **Next Problem** button to continue. If you input the solved problem, you will be returned to the **Division Tutor** menu screen. If the computer chose the problem, another problem will be displayed for solution.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Fractions

In this program, you learn about all types of fractions. Review material or take a quiz. The program is run by selecting **Fractions** from the main menu screen. You have several choices: **Naming Fractions**, **Equivalent Fractions**, **Simplified Fractions**, **Like Fractions**, **Comparing Fractions**, **Reciprocal Fractions**, **Mixed Fractions**, **Improper Fractions**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

For each exercise, you also choose the mode the program works in. Choose **Review** to get a tutorial on the selected topic. Choose **Practice** to get problems covering material on the selected topic. At any point in any of the exercises, click the **Next** button (a Check Mark) to move to the next screen, click the **Help** button (a Question Mark) to see on-line help, and click the **Stop** button (a Stop Sign) to return to the **Fractions** main menu screen.

Naming Fractions:

This exercise teaches you what a fraction is. In the **Review** mode, you see one of three things. A number of squares, some of which are white, a circle divided into equal parts, some white, or a square divided into equal parts, some white. You are then told how many equal parts there are and how many are white. The fraction of white parts is identified as the fraction numerator and the total number of parts identified as the denominator. You look at as many examples as you want by clicking **Next**. In the **Practice** mode, you are shown a pictorial fraction representation (squares, divided circle, or divided square with a number of white parts) You are asked to type in the numerator and denominator of the corresponding fraction of white parts. Type the requested numbers (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Try as many practice exercises as you want.

Equivalent Fractions:

Here, you learn what equivalent fractions are and how to check if two fractions are equivalent. In the **Review** mode, you are shown two equivalent fractions along with their pictorial representation (a divided circle). Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given one fraction and a fraction with a missing numerator. You are asked to type in the numerator so that the resulting fraction is equivalent to the one given. Type the requested number(s) (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the equivalent fraction is found, pictorial representations of the two fractions are presented. Try as many practice exercises as you want.

Simplified Fractions:

With this topic, you learn what simplified fractions are. In the **Review** mode, you are shown two equivalent fractions with one in simplified form, along with their pictorial representation (again, a divided circle). Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given one fraction and a fraction with a missing numerator and denominator. You are asked to type in the numerator and denominator so that the resulting fraction is the simplified form of the one given. Type the requested numbers (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the simplified fraction is found, pictorial representations of the two fractions are presented. Try as many practice exercises as you want.

Like Fractions:

Here, you learn what like fractions are and about lowest common denominators (LCD). In the **Review** mode, you are shown two fractions and the steps involved in making them like fractions with the LCD. Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given two fractions. You are asked to type in equivalent forms for these fractions, such that they are like fractions with LCD. Type the requested numbers (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Try as many practice exercises as you want.

Comparing Fractions:

In this topic, you learn about the size of fractions and what the symbols < (less than), = (equal to), and > (greater than) mean. In the **Review** mode, you are shown two fractions along with their pictorial representation (a divided circle). The relative size of the fractions is indicated by the symbol (<, =, or >) separating them. Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given two fractions separated by a question mark. You are to type the symbol that indicates the correct size relationship. (You can either type the sign directly or click on the displayed choices.) Choose the requested symbol. If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the correct symbol is found, pictorial representations of the two fractions are presented. Try as many practice exercises as you want.

Reciprocal Fractions:

In this exercise, you learn what reciprocal fractions are (needed to divide fractions). In the **Review** mode, you are shown two fractions, each the reciprocal of the other. Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given one fraction. You are asked to type in the numerator and the denominator of the corresponding reciprocal fraction. Type the requested numbers

(the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Try as many practice exercises as you want.

Mixed Fractions:

Here, you learn what mixed fractions are and how to convert improper fractions to mixed fractions. In the **Review** mode, you are shown an improper fraction and its mixed equivalent fraction along with a divided circle(s) pictorial representation. Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given an improper fraction. You are asked to type in the corresponding mixed fraction values: a whole number, if any, and the fraction's numerator and denominator. Type the requested number(s) (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the mixed fraction is found, a pictorial representation of the equivalent fractions is presented. Try as many practice exercises as you want.

Improper Fractions:

In this last topic, you learn what how to convert mixed fractions to improper fractions. In the **Review** mode, you are shown a mixed fraction and its improper equivalent fraction along with a divided circle(s) pictorial representation. Click the **Next** button to move through the review and see new examples. In the **Practice** mode, you are given a mixed fraction. You are asked to type in the numerator and denominator of the corresponding improper fraction. Type the requested number(s) (the current digit is highlighted in a magenta color). If correct, a tune is heard - if not, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the improper fraction is found, a pictorial representation of the equivalent fractions is presented. Try as many practice exercises as you want.

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

Fraction Math

In this program, you learn how to add, subtract, multiply, and divide both simple and mixed fractions. Review material or take a quiz. The program is run by selecting **Fraction Math** from the main menu screen. You have several choices: **Addition**, **Subtraction**, **Multiplication**, **Division**, **Options**, **Help**, or **Exit**. Make your choice by clicking on the desired button.

For each problem type, you also choose the mode the program works in. Choose **Review** to get a tutorial on the selected fraction operation. Choose **Practice** to get problems covering the selected operation. At any point in any of the exercises, click the **Next** button (a Check Mark) to move to the next screen, click the **Help** button (a Question Mark) to see on-line help, and click the **Stop** button (a Stop Sign) to return to the **Fraction Math** main menu screen.

Addition:

Here, you learn and practice adding simple or mixed fractions. In the **Review** mode, problems are selected at random and the step-by-step addition procedure is outlined. Move from one step to the other by clicking the **Next** button. Review as many problems as you like. In the **Practice** mode, you are given a problem. You are to solve that problem in a step-by-step fashion, as requested by the computer. Type the requested number(s) as they are called for (the current digit is highlighted in a magenta color). If correct, a tune is heard - if incorrect, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the solution is complete, you may press any key for another problem.

Subtraction:

Here, you learn and practice subtracting simple or mixed fractions. In the **Review** mode, problems are selected at random and the step-by-step subtracttion procedure is outlined. Move from one step to the other by clicking the **Next** button. Review as many problems as you like. In the **Practice** mode, you are given a problem. You are to solve that problem in a step-by-step fashion, as requested by the computer. Type the requested number(s) as they are called for (the current digit is highlighted in a magenta color). If correct, a tune is heard - if incorrect, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the solution is complete, you may press any key for another problem.

Multiplication:

Here, you learn and practice multiplying simple or mixed fractions. In the **Review** mode, problems are selected at random and the step-by-step multiplication procedure is outlined. Move from one step to the other by clicking the **Next** button. Review as many problems as you like. In the **Practice** mode, you are given a problem. You are

to solve that problem in a step-by-step fashion, as requested by the computer. Type the requested number(s) as they are called for (the current digit is highlighted in a magenta color). If correct, a tune is heard - if incorrect, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the solution is complete, you may press any key for another problem.

Division:

Here, you learn and practice dividing simple or mixed fractions. In the **Review** mode, problems are selected at random and the step-by-step division procedure is outlined. Move from one step to the other by clicking the **Next** button. Review as many problems as you like. In the **Practice** mode, you are given a problem. You are to solve that problem in a step-by-step fashion, as requested by the computer. Type the requested number(s) as they are called for (the current digit is highlighted in a magenta color). If correct, a tune is heard - if incorrect, an 'uh-oh' sound. Answer until correct or click the **Answer** button to see the correct response. Once the solution is complete, you may press any key for another problem.

Options:

There are two choices. Through these choices, you select the level of difficulty of the fraction problems presented. You first select **Fraction Type**. Decide whether you want to work with **Simple Fractions** (no whole parts - though some small ones may occasionally show up in addition and division problems) or **Mixed Fractions**. Then, select the **Possible Denominators** you want to use (this allows kids familiar with just halves, thirds and quarters to only work with problems with these denominators).. There are 11 possible denominators (**2**-**12**). Click on the corresponding check boxes to select / deselect denominators. Note, one denominator must always selected (checked).

Help:

Clicking **Help** or pressing **<F1>** brings up this screen of information.

Exit:

Click **Exit** and you are returned to the **Math Basics** main menu screen.

No Sound Card

The **Math Basics** programs will work if your computer is not equipped with a sound card. However (of course), you will not hear any sounds and some program action may be faster than expected.