

TANDY®

Cat No 26-3148

# MATH TUTOR

$$1 + 3 = ?$$

$$9 - 7 = 2$$

$$5 \times 2 = 10$$



$$3 + ? = 5$$



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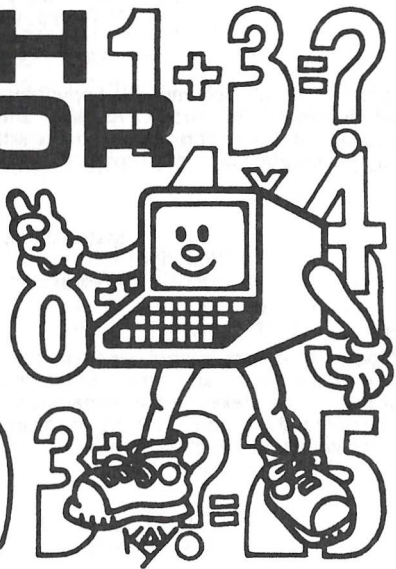
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# MATH TUTOR

$$9 - 7 = 2$$

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10 9 8 7 6 5 4 3 2 1

## Welcome to the Math Tutor

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The **Math Tutor** combines the personal one-on-one attention of a private drill coach with the fun and excitement of a computer game. The **Math Tutor** allows you to select between one of three lesson types: **Arithmetic**, **Fractions** and **Algebra**. And within each lesson type, there are a variety of problems from which you may choose including **Addition**, **Subtraction**, **Multiplication**, **Division** and **Comparison**.

During each lesson, the **Math Tutor** will provide positive reinforcement for correct answers, while giving you a second chance to answer missed problems. You may also choose to manually work out each of the problems on the **Math Tutor Scratch Pad**, or even have the **Math Tutor** answer any of the problems for you!

And at the end of each lesson, the **Math Tutor** will guide you once again through the missed problems, or challenge you to try your hand at **The Math Gallery!**

**Math Tutor's** many options, plus the **Homework** lesson, are sure to provide challenges and fun in mathematics for all ages.



# Getting Started

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## Equipment

**Math Tutor** requires the following equipment:

- Color Computer with a minimum of 16k memory, or
- Color Computer 3 with a minimum of 128k memory
- Television or Monitor

## Setting Up

**WARNING!**

Always be sure the computer is off before inserting or removing a Program Pak™. Failure to do so may cause permanent damage to both the Program Pak™ and the computer.

Insert the **Math Tutor** Program Pak™, label side up, into the slot located on the right side of the computer. Next, connect and turn on the television or monitor. Finally, turn on the computer. After a short delay, the **Math Tutor** title screen will appear on the display. Press any key to begin.



## The Display

The **Math Tutor** display appears as a shooting gallery, much like a shooting gallery you would find at a circus or carnival. The display is divided into three major areas.

A "canopy" is located at the top of the display. Appearing in this area will be the title of the menu, lesson or function you have currently selected. Below the canopy is the "backdrop". Appearing in this area will be menus, problems, prompts and the **Math Gallery!** Below the backdrop is the "valance". This area will display prompts or other information when required by the **Math Tutor**.

## Menus

**Math Tutor's** menus provide you with a quick and easy method of selecting the various lessons and functions. The title of each menu will always appear on the canopy, reminding you of which lesson or function you have currently selected. The backdrop will contain a list of options from which you may select. To select an option, simply press the up or down arrow keys until the red checkmark appears in the box beside the option, then press the ENTER key. To quit, simply press the key described on the valance.

# Lessons

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Each **Math Tutor** lesson contains various problem types. When a lesson is selected, you are shown a list of the problem types that the particular lesson contains. The first menu appearing on the display is **What shall we do?**. It is from this menu that you select a lesson. The selections on the **What shall we do?** menu include **Math Tutor's** three built in lessons, a **Homework** lesson, and **Controls**.

## Math Tutor Lessons

**Math Tutor** lessons include **Arithmetic**, **Fractions** and **Algebra**. The first lesson, **Arithmetic**, presents whole number problems. These lessons include:

- + Addition problems
- Subtraction problems
- X Multiplication problems
- / Division problems
- < = > Comparison problems

The **Fraction** lessons present fraction problems. These lessons include:

- + **Addition problems**
- **Subtraction problems**
- < = > **Comparison problems**

The **Algebra** lesson presents algebra style problems. These lessons include:

- + **Addition problems**
- **Subtraction problems**
- + / - **Mixed problems**

### **The Homework Lesson**

The **Homework** lesson is a lesson you create using combinations of the various **Math Tutor** problems. When you select **Homework**, you are provided with four options, **Load From Tape**, **Do Homework**, **Create Homework**, or **Save to Tape**.

## Loading Homework from Tape

To load a previously saved **Homework** lesson from tape, perform the following steps:

- 1) Select **Homework** on the **What shall we do?** menu.
- 2) Select **Load From Tape** on the **Which operation?** menu. The message **Prepare tape, press a key when ready ...** appears on the display.
- 3) Insert the tape containing the lesson to load into the cassette tape recorder.
- 4) Rewind the tape to the beginning.
- 5) Press the **PLAY** button on the cassette tape recorder.
- 6) Press any key other than **BREAK**.

At this point, the message **Searching Tape For Homework...** will appear on the backdrop. When **Math Tutor** finds a **Homework** lesson, the message **Loading Homework...** will appear. After a few seconds, the **Which operation?** menu will appear, indicating the lesson has been loaded. If an error occurs during loading, the message **Sorry, Load Error.** will appear in the backdrop. To

attempt to load the lesson again, simply repeat the steps 2 through 6.

## Running a Homework Lesson

Select **Do Homework**, after loading or creating a homework lesson to run a **Homework** lesson.

## Create Homework

**Create Homework** allows you to easily create your own custom exercises using any of **Math Tutor's** built in problems. Simply select **Create Homework** from the **Which operation?** menu to begin. Note however, **Create Homework** will erase any previous homework that has been created or loaded from tape. If you select **Create Homework**, and there is homework currently in **Math Tutor's** memory, **Math Tutor** will ask you: **This will replace your current homework ... Continue?.** If you wish to continue, thus erasing **Math Tutor's** memory, press "Y". Press any other key to stop.

For a sample session in creating your own homework, see the chapter **Creating Homework, a Sample Session**.

## **Saving a Homework Lesson on Tape**

Once you have created a homework lesson, you probably would like to save it on tape for future use. To save your homework on tape, perform the following steps:

- 1) Select **Homework** on the **What shall we do?** menu.
- 2) Select **Save To Tape** on the **Which operation?** menu. The message **Prepare tape, press a key when ready ...** appears on the display.
- 3) Insert a blank tape into the cassette tape recorder. Make sure that the tape is positioned passed the leader!
- 4) Press the **PLAY** and **RECORD** buttons on the cassette tape recorder.
- 5) Press any key other than **BREAK**.

At this point, the message **Saving Homework...** will appear on the display. After a few seconds, the **Which operation?** menu will appear, indicating the **Homework** lesson has been saved.

Immediately after saving a **Homework** lesson, you should perform a **Load From Tape** operation. If the lesson loads, then your lesson has been properly saved.

If the lesson does not load, the message **Sorry, Load Error.** will appear on the backdrop, perhaps indicating that the lesson was not properly saved. Try saving the lesson again, followed by repeating the **Load From Tape** operation, paying careful attention to the position of the tape leader before you save the lesson, and the volume control adjustment on your cassette tape recorder before you load the lesson.



# Running a Lesson

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## Starting a Lesson

Starting a lesson is easy. Simply use the up and down arrow keys to select a lesson from the **What shall we do?** menu. Next, select the problem type. **Math Tutor** will then present you with a lesson of problems that you have selected.

## Answering Problems

To answer a problem, first enter the number(s) or operation sign. If you are answering a division problem that contains a remainder, press "R" followed by the remainder. If you would like to change your answer, press the LEFT ARROW key to backspace. When you are satisfied with your answer, press the ENTER key.

## Using the Scratch Pad

**Math Tutor** features a built in "scratch pad" that allows you to manually work problems on the display. To use the **Scratch Pad**, press the S key on the keyboard before entering your answer.

When you enter the **Scratch Pad**, a white line will appear in the upper left hand corner of the backdrop. This is the **Scratch Pad "cursor"**, or pointer to where the characters you enter will be displayed. You may press the up, down, left and right arrow keys to move the cursor anywhere on the backdrop.

When you want to enter a number or letter, simply press the corresponding key. The number or letter will appear at the cursor position, then the cursor will move one position to the left.

When you are finished, press the **BREAK** key to return to the problem and enter your answer.

### **What Next?**

At the end of each lesson, the **What next?** menu will appear. Select **Repeat Lesson** to run the same lesson with a new set of problems. Select **Repeat Errors** if you would like to again answer any problems that were answered incorrectly. Finally, you may select **Math Gallery!** for a more challenging version of the lesson.

## **Math Gallery!**

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**Math Gallery!** presents a more challenging version of each lesson.

When selected, **Math Gallery!** begins by displaying a problem. Next, a balloon is displayed on the right side of the backdrop, then begins drifting to the left.

The object of **Math Gallery!** is to answer the problem before the balloon reaches the left side of the backdrop. However, you must be quick! If you answer the problem correctly, the balloon will "pop" and a new problem will appear on the display. If you answer the problem incorrectly, or not quick enough, the balloon will return to the right side, and a new problem will appear on the display.

After you have answered all the problems, your score will be presented. Any problems not answered are considered in error. Your score will appear in the range of 0 to 100%.

If the problems are too hard, try selecting a lower skill level or setting the gallery speed to **Low**. But if they are too easy, try a higher skill level and **High** speed!

# Setting Controls

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## Setting the Skill Level

You may set the **Skill Level** to one of five settings, **Level I** through **Level V**. Increasing the skill level setting effects the various lessons as follows:

### Arithmetic:

< = >

Increases the range of the numbers. At **Levels IV** and **V**, the numbers may appear as negative values.

+ - X /

Increases the range of the numbers. At **Levels IV** and **V**, the numbers and answers may appear as negative values, and division problems may require that a remainder be entered.

## Fractions :

< = >

Increases the range of the numbers.

+ -

Increases the range of the numbers. At **Level III**, the answers appear in lowest terms. At **Levels IV and V**, the denominators are not common. At **Level III** and above, there may be a delay after selecting a fraction lesson as **Math Tutor** builds a lowest terms lesson.

## Algebra:

All

Increases the range of the numbers. At **Levels IV and V**, the numbers and answers may appear as negative values.

Note that the skill level setting you select does not effect the **Homework** lesson.

## Setting the Gallery Speed

**Gallery Speed** sets the length of time allowed to answer a problem in the **Math Gallery!**. The options include **Low**, **Medium** and **High**.

## Setting the Lesson Size

The **Lesson Size** sets the number of problems that will appear in each lesson. The size can be set to 10, 20, 30, 40 or 50. Note that the lesson size setting does not effect the **Homework** lesson.

## Selecting the Display Format

**Display Format** sets the display mode of the arithmetic addition, subtraction, multiplication and division problems. The options include **Horizontal**, **Vertical** or **Both**. When set to **Both**, the problems alternate between the **Horizontal** and **Vertical** modes.

## Creating Homework, a Sample Session

**Math Tutor** allows you to create your own customized lessons using any combination and order of **Math Tutor** problems. To create a **Homework** lesson, select **Homework** from the main menu, followed by **Create Homework** on the **Which Operation?** menu.

In this sample session we will enter three homework problems, thus creating a **Homework** lesson containing only three problems. When you become familiar with **Create Homework**, you may create a **Homework** lesson with up to fifty problems. We will use the following problems in this sample session:

**Arithmetic:**      $01 + 02 =$

**Fractions:**      $01 / 05 + 02 / 10 =$

**Algebra:**         $09 + 08 - 07 =$

After you select **Create Homework**, the **Which Lesson** menu will appear. To enter the first problem, select **Arithmetic**. The first problem is an addition problem, therefore from the **Which Problem?** menu, select **Add**. Once selected, an arithmetic addition problem will appear on the display along with the message **1st**



**number?** The first number in the addition problem example is 1, so you would press "1" followed by the ENTER key. After you enter the first number, the message **2nd number?** appears on the display. The second number in the addition problem example is 2, so you would press "2" followed again by pressing ENTER. Finally, after entering the second number, the problem is displayed and the message **"Y" for ok.** appears on the display. If the problem is correct, press "Y" ("Yes"). If it is not, press "N" and re-enter it.

When you have entered the addition problem, **Math Tutor** will display a new addition problem. Since the second problem to enter is a fraction problem, you must return to the **Which Lesson?** menu in order to select a fraction. To do so, press the BREAK twice, then select **Fractions**.

Entering a fraction problem is similar to entering an arithmetic problem. After selecting the problem type, addition, simply answer the questions as they appear on the display. The **1st numerator** in the example problem is 1, the **1st denominator** is 5, the **2nd numerator** is 2 and the **2nd denominator** is 10. Once these numbers have been entered, the message **3rd denominator?** **[Optional]** will appear on the display. You may either enter the denominator you desire, or have **Math Tutor** compute the lowest common denominator. To enter your own denominator, simply enter a denominator that is correct for the problem. In this problem,

a denominator of 50 (the result of cross multiplying the fraction) may be entered. If you would like to have **Math Tutor** compute the lowest common denominator, simply press the ENTER key.

The third and final problem in this example is an algebra problem. Like the arithmetic and fraction problems, Math Tutor will ask a series of questions. First, return to the **Which Lesson?** menu and select **Algebra**, then enter the problem by answering the questions as they appear on the display.

### Hints on Creating Homework

If **Math Tutor** determines that a problem you have entered is in error, the message **Out of Range!** will appear on the display. This may indicate that one of the following conditions has occurred:

- 1) The answer to a problem will be  $> 99$  or  $< (-99)$ .
- 2) A fraction term contains a zero denominator.
- 3) A fraction term  $> = 1$  was entered.
- 4) A fraction answer will result in a value  $> = 1$ .
- 5) A zero divisor was entered for a division problem.

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- 2) A fraction term contains a zero denominator.
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## Math Tutor

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