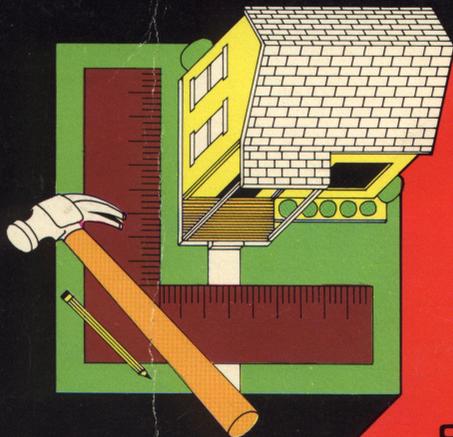


# HANDYMAN



CAT. NO.  
26-3154

**Radio Shack**

**TRS-80**



**COLOR  
COMPUTER**

TM

# Handyman

**Radio Shack<sup>®</sup>**

 A DIVISION OF TANDY CORPORATION  
FORT WORTH, TEXAS 76102

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## Introduction

Soaring prices may necessitate your performing interior and exterior home improvements. Or, you may delight in finding that the only way to get things done is to do them yourself.

Whatever your reason, for every improvement you make to your home, you are rewarded with the satisfaction of knowing that you have saved money, done a job well that other people might have thought you couldn't do yourself and increased the value of your property.

Handyman converts your 4K or 16K TRS-80 Color Computer into a multi-purpose calculator. Designed to help you find the right materials at the right prices, Handyman helps to save your time and money.

Caution, a hammer-flattened thumb is beyond the preventive capability of Handyman. But when you need a quick calculation and have several prices of paneling, paint and wallpaper to choose from, comparisons are made faster than by hand calculations.

The number of insulation bags to fill an attic to a specific depth can be a complex calculation. With Handyman, you need only enter attic dimensions, insulation depth desired and volume covered by one bag. Handyman calculates the number of bags required and the total price for the project, and gives you the option of comparing prices.

Examples are given throughout this manual to aid you in discovering the diverse uses of Handyman. Experiment as you please.

## Getting Started

Make sure that your Color Computer is turned off. Insert the Handyman Program Cartridge into the slot on the right side of the computer. Turn the computer on by pressing the button at the left rear of your machine. Turn your television's volume on a quarter of the way so that you can hear the "BEEP" that warns you when an error has been made. The Main Menu contains:

- 1 WALLS AND ROOMS calculates the wall areas of rooms and the amount of material needed. You can compare prices for paneling, wallpaper, tile, wallboard and insulation.
- 2 FLOORS AND CEILINGS calculates the area and the amount of material needed for floors and ceilings. Price comparisons can be made for carpeting, flooring, floor tile, ceiling tile, paint, wallboard and insulation.
- 3 LAWN CARE calculates lawn area and the amount of material needed. Price comparisons can be made for seed, fertilizer and lawn covering.
- 4 FILLERS AND ADDITIVES calculates volume of an object, the volume of material, and makes price comparisons for sand, gravel, concrete, soil, and pool additives.
- 5 AREA CALCULATOR calculates flat surface areas.
- 6 VOLUME CALCULATOR calculates three-dimensional areas.

## Responding to Questions

The cursor is the block that is positioned after each question you are to answer. Each time you type a character, the cursor moves to the next question to be answered.

When Handyman asks a Yes or No question, the program will respond only to the **(Y)**, **(N)** or **(ENTER)** keys. Pressing **(ENTER)** is the same as pressing **(Y)**.

When other questions with two alternatives are presented, Handyman will respond to the first letters of the two alternatives or will respond to **(ENTER)**. Pressing **(ENTER)** is the same as pressing the first alternative. RECTANGULAR OR CYLINDRICAL? is answered by either **(R)**, **(ENTER)** or **(C)**.

If you are entering whole numbers, you do not need to enter the zeros. For \$5.00, simply type **(5)** and press **(ENTER)**. For \$5.25, type **(5)****(.)****(2)****(5)** and press **(ENTER)**.

For measurement figures in feet with fractions, such as six and one-half feet, the fraction must be converted to a decimal figure. For six and one-half feet, type **(6)****(.)****(5)** and press **(ENTER)**. The chart on the next page will supply you with all necessary conversions up to two feet.

## Inches as Decimal Fractions of a Foot

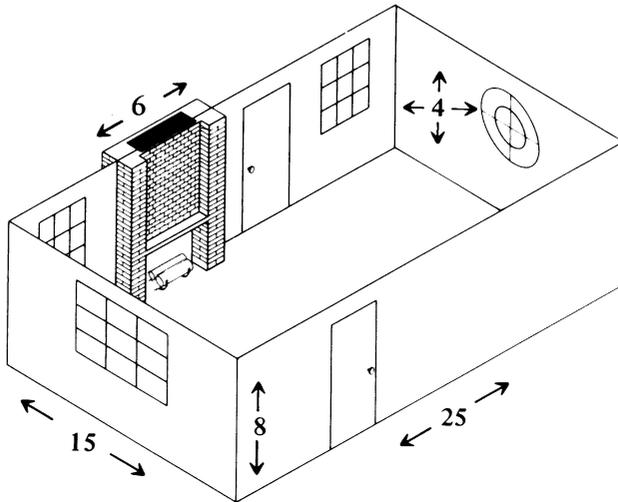
<b>IN</b>	<b>FT</b>
1	= 0.08
2	= 0.17
3	= 0.25
4	= 0.33
5	= 0.42
6	= 0.50
7	= 0.58
8	= 0.67
9	= 0.75
10	= 0.83
11	= 0.92
12	= 1.00

<b>IN</b>	<b>FT</b>
13	= 1.08
14	= 1.17
15	= 1.25
16	= 1.33
17	= 1.42
18	= 1.50
19	= 1.58
20	= 1.67
21	= 1.75
22	= 1.83
23	= 1.92
24	= 2.00

## 1. Walls and Rooms

To insure starting with zero in all totals, press the Reset button on the back right side of the computer. This restarts the program and clears all previous totals.

The WALLS AND ROOMS function is selected by pressing **1** at the Main Menu. TOTAL AREA (for rooms only) is shown at the top of the screen. The example below is used to illustrate an actual calculation.



You are asked if the area is to ADD OR SUBTRACT?. Press **(A)** (or **(ENTER)**).

The length of the room is now requested. Type **(2)(5)** (for 25 feet) and press **(ENTER)**. For the WIDTH?, type **(1)(5)** and press **(ENTER)**. For the HEIGHT?, type **(8)** and press **(ENTER)**. COVERING CEILING? is a Yes, **(Y)** or No, **(N)** question. For this example, press **(N)**.

The next three questions are about openings — doors, windows and double-sized windows that need to be excluded from the area total. These openings are standard sizes that will be subtracted from the room area as it is computed.

Although adjustments can easily be made for irregular sizes, Handyman figures the area of a door as 21 square feet, a window as 12 square feet and a double-sized window as 24 square feet.

For NUMBER OF DOORS? type **(2)** and press **(ENTER)**. Just pressing **(ENTER)** is the same as entering zero for these questions. For NUMBER OF SINGLE WINDOWS?, type **(2)** and press **(ENTER)**. For NUMBER OF DOUBLE WINDOWS, type **(1)** and press **(ENTER)**.

The screen shows ANOTHER AREA? (asking if you want to add or subtract an area from this room).

This is your opportunity to subtract odd window sizes, built-in bookcase units or fireplaces. Additional areas to be covered (a portion of the ceiling) can be added at this point.

The example room has a round stained glass window and a fireplace. You do not need to cover these areas so when ANOTHER AREA? appears, press **(Y)**. The screen changes and the question RECTANGULAR OR CIRCULAR? appears. Indicate circular (for the stained glass window) by pressing **(C)**.

You are then asked if the area is to be added or subtracted. Press **(S)**. Since you have indicated the area is circular, you are asked for the DIAMETER?. Type **(4)** and press **(ENTER)**.

The question, ANOTHER AREA?, is asked again. Because you need to deduct the area of the fireplace, press **(Y)**. Press **(R)** for the rectangular area. The area is to be subtracted, so press **(S)**. For the LENGTH? (for a fireplace, you measure the height), type **(8)**. For WIDTH? type **(6)** and press **(ENTER)**. For ANOTHER AREA?, press **(N)**, since all of the areas to be added or subtracted have been entered.

## The screen will show:

### 1 WALLS & ROOMS

TOTAL AREA	0.00
CURRENT AREA	489.44
TOTAL AREA	489.44
ANOTHER ROOM?	

If you press **(Y)**, the room size calculation procedure will start again. Each time you add a room, the totals are accumulated. Press **(N)** for ANOTHER ROOM?.

You should now have some familiarity with Handyman. Before going on to the Materials Menu, let's discuss how to correct errors and use the **(BREAK)** key.

## Correcting Errors

If you made a mistake entering information so far, you heard a "BEEP" noise and saw that the screen had announced an error message. Handyman has two error messages. The first signals that an error has been made while entering a number. All numbers must contain only the digits 0-9, and an optional decimal point. The ! in the cursor block indicates which question was being answered when the error occurred. To continue, press any key.

The other error message is TOO BIG OR TOO SMALL. This can happen if a calculation results in a number less than zero or greater than about 42,000,000.

Press any key to clear an error message and continue. If the error occurred when entering a number, the number will be requested again.

The  and  keys can be used to move the cursor (the light block) to the left and right for correcting errors. To change a character, move the cursor block over the incorrect character and type the new character. When **ENTER** is pressed, only the characters to the left of the cursor are taken as the entry. It is not necessary to erase extra characters to the right of, or under the cursor.

## The Break Key

At any time, you can press the **BREAK** key and return to the Main Menu screen. The totals for the various functions are not altered by pressing **BREAK**.

## Materials Menu

You now have the opportunity to choose or compare materials and prices. Continue with the example, since the area of your room has already been calculated.

The Materials Menu for Walls and Rooms offers:

1. PAINT
2. PANELS
3. WALL PAPER
4. TILE
5. WALL BOARD
6. INSULATION
7. OTHER

## Paint

The room area total is 489.44 feet. Press **1** for PAINT. The screen will show: SQUARE FEET COVERED BY ONE GALLON?. The labels on cans of paint will show how many square feet should be covered by one gallon. The transition from darker to lighter colors needs to be considered here.

One coat of creme-colored paint might not cover a previous darker hue. When two coats are needed, the surface area should be doubled.

The room will require one coat (white to off-white). One gallon of Brand X latex wall paint covers approximately 450 square feet. Type **450** and press **ENTER**. You are then asked for PRICE?. The paint costs \$10.41 a gallon (not including sales tax). Type **10.41** and press **ENTER**. Handyman now calculates the number of gallons needed to cover the area and the cost. Material units (gallons in this case) are always rounded up to the next whole unit.

**The screen will show:**

1 WALLS & ROOMS

TOTAL AREA	489.44
MATERIAL SIZE	450.00
PRICE? 10.41	
GALLONS	2.00
COST	20.82
10% GALLONS	2.00
10% COST	20.82
20% GALLONS	2.00
20% COST	20.82
ANOTHER PRICE?	

The second and third sets of figures that are labeled with 10% and 20% are safety margins to allow for inaccurate measurements and partial material use. These percentage figures provide you with the option of buying extra material for your project. The 10% and 20% figures are the results of multiplying the total area by .10 and .20. If you have a great deal of experience doing your own home improvements, you should purchase the amount suggested in the first set of figures.

If you have a moderate amount of experience but tend to make measurement errors occasionally, you should purchase the amount of materials given in the 10% figures. Newcomers to home improvement projects should purchase the 20% amount of materials. The more accurate you become, the less materials you need to buy.

The Paint example shows that there is no need to purchase more than two gallons of paint. Two gallons of paint should be more than enough to cover the area for the expert, intermediate or beginner handyman.

To compare prices for the same amount of material, press **(Y)**. You are asked for the new price. The material, at the new price, is calculated again. If you do not want to compare prices, press **(N)** for ANOTHER PRICE?. Press **(Y)** for ANOTHER MATERIAL? and the Materials Menu will be displayed again.

## Panels

The next selection in the Materials Menu is PANELS. Press **(2)**. The screen shows that the previous area figure has been retained under TOTAL AREA. You are reminded that your dimensions should be measured in feet (SIZE IN FEET?). You are then asked for LENGTH? of the panel.

Type **(8)** for LENGTH? and press **(ENTER)**. Type **(4)** for the WIDTH? and press **(ENTER)**. The screen changes to show that the MATERIAL SIZE is 32 square feet. (Some common panel sizes are 8 by 4, 9 by 5 and 10 by 4.) The price per panel is then requested. In our example, the walnut paneling used is \$20.95 per sheet. Type **(2)(0).(9)(5)** and press **(ENTER)**.

### The screen will show:

#### 1 WALLS & ROOMS

TOTAL AREA	489.44
MATERIAL SIZE	32.00
PRICE? 20.95	
PANELS	16.00
COST	335.20
10% PANELS	17.00
10% COSTS	356.15
20% PANELS	19.00
20% COST	398.05
ANOTHER PRICE?	

After the calculations are displayed, price comparisons can be repeated if desired.

Press **(N)** for ANOTHER PRICE?. For ANOTHER MATERIAL?, press **(Y)** to return to the Materials Menu.

## Wallpaper

Press **(3)** for WALLPAPER. You are asked for SQUARE FEET COVERED BY ONE ROLL?. For this example, the wallpaper selected is in single-sized rolls, covers 30 square feet and is \$15.17 per roll. Type **(3)(0)** and press **(ENTER)**. For the PRICE? question, type **(1)(5).(1)(7)** and press **(ENTER)**.

**The screen will show:**

### 1 WALLS & ROOMS

TOTAL AREA	489.44
MATERIAL SIZE	30.00
PRICE? 15.17	
ROLLS	17.00
COST	257.89
10% ROLLS	18.00
10% COST	273.06
20% ROLLS	20.00
20% COST	303.40
ANOTHER PRICE?	

Patterned wallpaper has to be matched, which can create a waste factor of several square feet. Solid or striped paper will have little waste. The safety margins furnished here are especially helpful.

If you are using a solid or vertically striped wallpaper you only need 17 rolls. If you are using wallpaper that requires careful matching, buy 20 rolls. Hardware store clerks should be helpful in determining how much paper is usually wasted when matching a particular pattern.

Press **(Y)** if you want to compare ANOTHER PRICE?. For our example, press **(N)**.

For ANOTHER MATERIAL?, press **(Y)** and the screen returns to the material choices.

## Tile

To familiarize you with another material choice under Walls and Rooms, press **(4)** for TILE. The screen reminds you that all Tile dimensions should be entered in inches. When you are asked for the LENGTH?, type **(4)(.)(2)(5)** (four and one-quarter inches) and press **(ENTER)**. Type **(4)(.)(2)(5)** for the WIDTH? and press **(ENTER)**. You are asked for PRICE?. Type **(3)(2)** for the price per tile and press **(ENTER)**.

## The screen will show:

### 1 WALLS & ROOMS

TOTAL AREA	489.44
MATERIAL SIZE	0.12
PRICE? .32	
TILES	4079.00
COST	1305.28
10% TILES	4487.00
10% COST	1435.84
20% TILES	4895.00
20% COST	1566.40
ANOTHER PRICE?	

For ANOTHER PRICE?, press **(N)**. For ANOTHER MATERIAL?, press **(Y)**, and the Materials Menu appears.

## Wallboard

WALLBOARD (pegboard, for example) is calculated the same way as Panels.

## Insulation

The amount of insulation rolls needed can be calculated by Handyman. Press **(6)** for INSULATION. The question, SQUARE FEET COVERED BY ONE ROLL?, appears. The roll of insulation chosen is 15 inches wide and covers 80 square feet. Type **(8)(0)** and press **(ENTER)**. For PRICE?, type **(1)(1).(7)(5)** and press **(ENTER)**.

**The screen will show:**

1 WALLS & ROOMS

TOTAL AREA	489.44
MATERIAL SIZE	80.00
PRICE? 11.75	
ROLLS	7.00
COST	82.25
10% ROLLS	7.00
10% COST	82.25
20% ROLLS	8.00
20% COST	94.00
ANOTHER PRICE?	

Press **(N)** for ANOTHER PRICE? and **(Y)** for ANOTHER MATERIAL?.

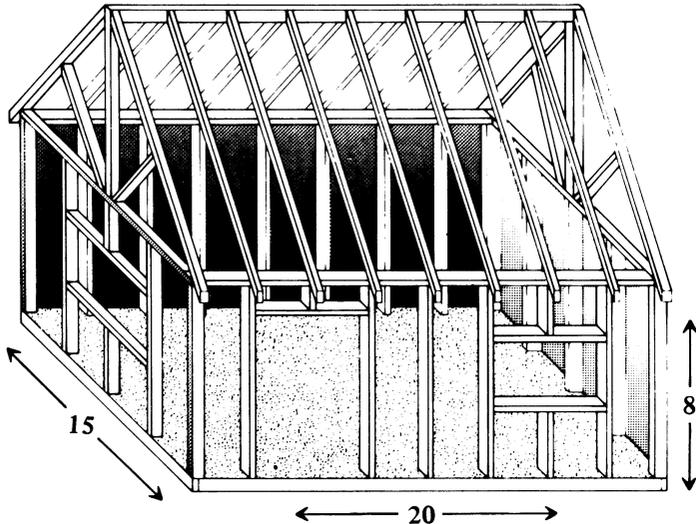
## Other

OTHER performs calculations the same way as the other choices in the Materials Menu. You are asked for SQUARE FEET COVERED BY ONE UNIT?. You are asked for PRICE?, and the price for a room is calculated. This choice would be helpful in calculating a fabric wallcovering.

After you are finished calculating the Walls and Rooms figures, press **BREAK** and the Main Menu appears.

## 2. Floors and Ceilings

At the Main menu, press **(2)** to enter FLOORS AND CEILINGS. Floors and Ceilings works in the same way as Walls and Rooms. The simple diagram shown below should help you practice the Material Menu choices available in Floors and Ceilings.



Dimensions of the floor or ceiling need to be entered before using the **Materials Menu**. You are asked if the area is **RECTANGULAR OR CIRCULAR?** Press **(R)**, and you are then asked if you want to **ADD OR SUBTRACT?** the area. Press **(A)** and you are asked for the **LENGTH?** Type **(2)(0)** and press **(ENTER)**.

For the **WIDTH?**, type **(1)(5)** and press **(ENTER)**. The screen will show the **CURRENT AREA** and **TOTAL AREA (300.00 feet)**. **ANOTHER AREA?** lets you add or subtract another floor or ceiling space.

Press **(N)** for **ANOTHER AREA?**, and the **Materials Menu** appears.

## Materials Menu

The screen will show:

2 FLOORS & CEILINGS

1 CARPETING

2 FLOORING

3 FLOOR TILE

4 CEILING TILE

5 PAINT

6 WALL BOARD

7 INSULATION

8 OTHER

Most of the choices in this menu are operated in the same way as the ones in Walls and Rooms. An example is given for CARPETING and INSULATION. Press **1** for CARPETING.

Handyman measures carpeting material size in square yards. Handyman will tell you how many square yards of carpet will cover a desired area.

Handyman asks for the price. You have decided on a type of carpet at \$12.95 per square yard. Now all you do is type **12.95** for PRICE? and press **ENTER**.

**The screen will show:**

2 FLOORS & CEILINGS

TOTAL AREA	300.00
MATERIAL SIZE	9.00
PRICE? 12.95	
YARDS	34.00
COST	440.30
10% YARDS	37.00
10% COST	479.15
20% YARDS	40.00
20% COST	518.00
ANOTHER PRICE?	

Press **(N)** for ANOTHER PRICE?. Press **(Y)** for ANOTHER MATERIAL?

The next five choices in the Materials Menu are exactly like the selections covered in the Walls and Rooms category.

FLOORING **(2)** is measured according to how many square feet are covered by one piece.

FLOOR TILE **(3)** and CEILING TILE **(4)** are measured by inches.

PAINT **(5)** is calculated by how many square feet one gallon covers.

WALL BOARD **(6)** is measured in feet.

## Insulation

In Walls and Rooms, the insulation category was dealing with the type of insulation that comes in rolls. The insulation category in Floors and Ceilings is for the type of loose insulation that comes in bags and is blown or spread.

Press **(7)** for INSULATION. For the INSULATION DEPTH IN INCHES?, type **(3)** and press **(ENTER)**. The TOTAL AREA figure is then converted to TOTAL VOLUME. In the example, total area of 300 (square feet) becomes 75 cubic feet. You are then asked for the CUBIC FEET FILLED BY ONE BAG?. Type **(8)** and press **(ENTER)**. For PRICE?, type **(4)(.)(9)(9)** (per bag) and press **(ENTER)**.

**The screen will show:**

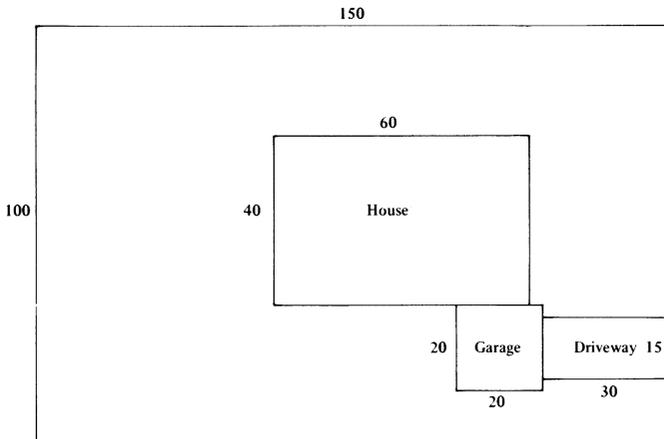
### 3 FLOORS & CEILINGS

TOTAL VOLUME	75.00
MATERIAL SIZE	8.00
PRICE? 4.99	
BAGS	10.00
COST	49.90
10% BAGS	11.00
10% COST	54.89
20% BAGS	12.00
20% COST	59.88
ANOTHER PRICE?	

**Press (N)** for ANOTHER PRICE? and ANOTHER MATERIAL?, and you will return to the Main Menu.

### 3. Lawn Care

Press **(3)** to enter the LAWN CARE category of the Main Menu. Calculate the total lawn area of the lot shown below.



Make sure the total is clear and begin by adding the area defined by the lot size. Subtract each area separately that is not considered lawn care (house, garage and driveway).

You are asked if the area is RECTANGULAR OR CIRCULAR?. Press **(R)**, and you are asked if the area is to ADD OR SUBTRACT?. Press **(A)** and you are asked for LENGTH?. Type **(1)(5)(0)** and press **(ENTER)**. For WIDTH?, type **(1)(0)(0)** and press **(ENTER)**.

The screen will show: CURRENT AREA and TOTAL AREA as 15,000 square feet and ask for ANOTHER AREA?.

Now you need to subtract all areas (house, garage and driveway) other than the lawn. Press **(Y)** for ANOTHER AREA?. For USE CURRENT TOTAL?, press **(N)**. If you press **(Y)**, the Materials Menu appears. For KEEP CURRENT TOTAL?, press **(Y)**.

If you press **(N)**, the TOTAL AREA will go back to zero. Press **(R)**, for RECTANGULAR OR CIRCULAR?. Press **(S)** for ADD OR SUBTRACT?. Type **(6)(0)** for LENGTH? and press **(ENTER)**. Type **(4)(0)** for WIDTH? and press **(ENTER)**. The screen will show the CURRENT AREA as 2400.00 (the house) and the TOTAL AREA as 12600.00 (the lot minus the house area).

You still must subtract the areas of the garage and driveway following this procedure.

Subtract	20	by	20	for	Garage
<u>Subtract</u>	<u>15</u>	<u>by</u>	<u>30</u>	<u>for</u>	<u>Driveway</u>
Total	11750.00 square feet = Lawn				

When asked for ANOTHER AREA?, press **(N)** and the Materials Menu appears.

## Materials Menu

The screen will show:

- 3 LAWN CARE
- 1 SEED
- 2 FERTILIZER
- 3 LAWN COVERING
- 4 OTHER

### Seed

You can determine how much seed to buy. Press **1** for SEED. You are then asked the question, SQUARE FEET COVERED BY ONE BAG?. A one pound bag of Bermuda grass seed, for example, will cover 200 square feet. Type **200** and press **ENTER**. Type **2.66** for price and press **ENTER**.

## The screen will show:

### 3 LAWN CARE

TOTAL AREA	11750.00
MATERIAL SIZE	200.00
PRICE? 2.66	
BAGS	59.00
COST	156.94
10% BAGS	65.00
10% COST	172.90
20% BAGS	71.00
20% COST	188.86
ANOTHER PRICE?	

Press **(N)** for ANOTHER PRICE?. Press **(Y)** for ANOTHER MATERIAL? and to display the Materials Menu.

## Fertilizer

You can determine how much fertilizer to buy for your lawn or garden. Press **(2)** for FERTILIZER.

The screen changes and you are asked for the SQUARE FEET COVERED BY ONE BAG?. Type **(3)(0)(0)(0)** and press **(ENTER)**. You are asked for the PRICE?. Type **(9)(.)(9)(5)** (per bag) and press **(ENTER)**.

## The screen will show:

### 3 LAWN CARE

TOTAL AREA	11750.00
MATERIAL SIZE	3000.00
PRICE? 9.95	
BAGS	4.00
COST	39.80
10% BAGS	5.00
10% COST	49.75
20% BAGS	5.00
20% COST	49.75
ANOTHER PRICE?	

Press **(N)** for ANOTHER PRICE? and **(Y)** for ANOTHER MATERIAL? and you return to the Materials Menu.

## Lawn Covering

Inserting grass squares is an alternative to planting seed. You can compare the costs of these methods.

Press **(3)** for LAWN COVERING. You are then asked how many SQUARE FEET COVERED BY ONE PIECE?. Grass squares are often sold by the square yard (nine square feet). Type **(9)** and press **(ENTER)**. Type **(1)(.)(7)(5)** for the PRICE? and press **(ENTER)**.

**The screen will show:**

3 LAWN CARE

TOTAL AREA	11750.00
MATERIAL SIZE	9.00
PRICE? 1.75	
PIECES	1306.00
COST	2285.50
10% PIECES	1437.00
10% COST	2514.75
20% PIECES	1567.00
20% COST	2742.25
OTHER PRICE?	

Press **(N)** for OTHER PRICE? and **(Y)** for ANOTHER MATERIAL?.

The last category for this section is ANOTHER **(4)**. This category is divided into square feet and is used the way same as Lawn Covering.

Press **(BREAK)** to return to the Main Menu.

## 4. Fillers and Additives

The next choice in the Main Menu is FILLERS AND ADDITIVES. Press **(4)** to use this function. This is a volume calculator with a Materials Menu. This category is useful in building a new driveway, a foundation, a patio or even your own swimming pool. As in the previously discussed categories, once a total has been calculated or selected, the material calculations can be made.

As a project example, building a backyard patio has been selected.

The patio is to be 10 feet in diameter, and six inches thick (.5 feet). The patio will be round, so type **(C)** for RECTANGULAR OR CYLINDRICAL?. You want to add the area, so type **(A)** for ADD OR SUBTRACT?. For DIAMETER? type **(1)(0)** and press **(ENTER)**. For height, type the height of the patio which is **(.)(5)** and press **(ENTER)**. The CURRENT VOLUME and the TOTAL VOLUME are **(3)(9)(.)(2)(6)** cubic feet.

For ANOTHER VOLUME?, press **(N)** and the Materials Menu appears.

## Materials Menu

**The screen will show:**

- 4 FILLERS & ADDITIVES
  - 1 SAND
  - 2 GRAVEL
  - 3 CONCRETE
  - 4 SOIL
  - 5 POOL ADDITIVES
  - 6 OTHER

SAND, GRAVEL, CONCRETE and SOIL are measured in bags or yards. When entering information for these materials, you are asked if the material is in BAGS OR YARDS?. If you press **(B)** (BAGS), you are asked for the number of cubic feet in one bag of material. If you press **(Y)** (YARDS), the volume of the material is automatically entered as **(2)(7)** cubic feet (three feet cubed).

Continuing with the example problem:

Press **(3)** (CONCRETE) and the BAG OR YARDS? question appears. Press **(Y)** for Yards. A cubic yard of concrete is \$50.00. Type **(5)(0)** for PRICE? and press **(ENTER)**. The screen will show that you would have to buy 2 cubic yards of concrete. For ANOTHER PRICE?, press **(N)**. For ANOTHER MATERIAL?, press **(Y)**.

The POOL ADDITIVES section works differently. When **5** is pressed, the total volume is converted to gallons and then displayed. The number of gallons treated by one container (for example, chlorine) is then requested. This is the material size. The price is requested and the total units and costs are shown. If another material is selected, the total volume returns to the number of cubic feet before continuing. If you know the number of gallons your pool holds and want to use the materials portion of the routine with that figure, use the following sequence of entries to convert gallons back to cubic feet.

Clear the total. Select Rectangular and Add. For LENGTH?, type the number of gallons and press **ENTER**. For WIDTH? enter **1.003** and press **ENTER**. For HEIGHT? type **0.13** and press **ENTER**.

The displayed volume is the number of cubic feet. (See Appendix B, page 40 for converting gallons to cubic feet).

Press the **BREAK** key to return to the Main Menu.

## 5. Area Calculator

Press **(5)** in the Main Menu and the AREA CALCULATOR screen will appear. The Area Calculator is for calculating flat surfaces. This is the same type of calculator you used in the early part of Walls and Rooms, Floors and Ceilings and Lawn Care.

Totals calculated in the Area Calculator are immediately transferred to CURRENT TOTAL for Walls and Rooms, Floors and Ceilings and Lawn Care. Previous totals will be erased and replaced by the Area Calculator total.

You have no Materials Menu for the Area Calculator. Areas can be combined by either subtraction or addition of other areas. Examples of this type of calculation are given in Appendix A (examples 1-3) on pages 36 & 37.

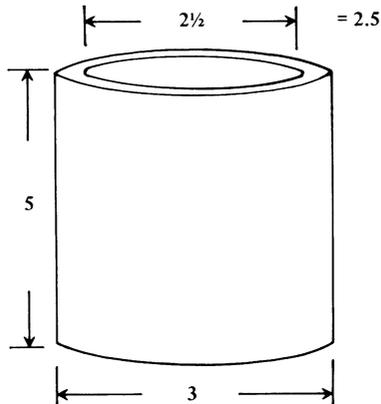
Press the **(BREAK)** key to enter the Main Menu.

## 6. Volume Calculator

Press **6** for the VOLUME CALCULATOR. The operation of this calculator is similar to the volume calculations done in Fillers and Additives. You do not have a Materials Menu in the Volume Calculator.

When you use the Volume Calculator, the total will be transferred to Fillers and Additives. Any previous calculation made in Fillers and Additives will be erased. Calculations done in Fillers and Additives do not affect the Volume Calculator.

As with areas, volumes can be combined by either addition or subtraction for complex shapes. The volume of a ring can be calculated with the following procedure.



Calculate the outside measurement first. Make sure the total volume is set at zero and press **(0)** for RECTANGULAR OR CYLINDRICAL?. Press **(A)** for ADD OR SUBTRACT?. For DIAMETER?, type **(3)** and press **(ENTER)**. For HEIGHT?, type **(3)** and press **(ENTER)**. You then have the volume of the outside measurements of the ring, 21.18. However, you need to subtract the volume of the inside space to have the volume of the example object.

Press **(Y)** for ANOTHER VOLUME?. For KEEP CURRENT TOTAL?, press **(Y)**. The object is cylindrical so press **(C)**. For ADD OR SUBTRACT?, press **(S)**. For DIAMETER?, type **(2)(.)(5)** (the inside diameter) and press **(ENTER)**. For HEIGHT?, type **(3)** and press **(ENTER)**. The screen will show the CURRENT VOLUME (21.18 minus 6.48) and the TOTAL VOLUME (6.48). For ANOTHER VOLUME? press **(N)**.

Formulas for converting cubic feet to gallons and vice-versa are in Appendix B.

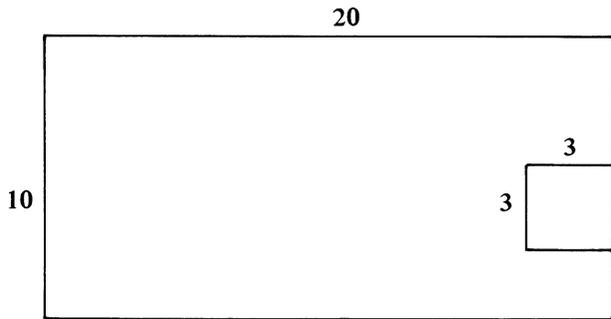
## Appendix A — Area and Volume Examples

This section includes several examples of area and volume calculations. These examples show how the information to enter into Handyman is determined.

### Complex Shapes

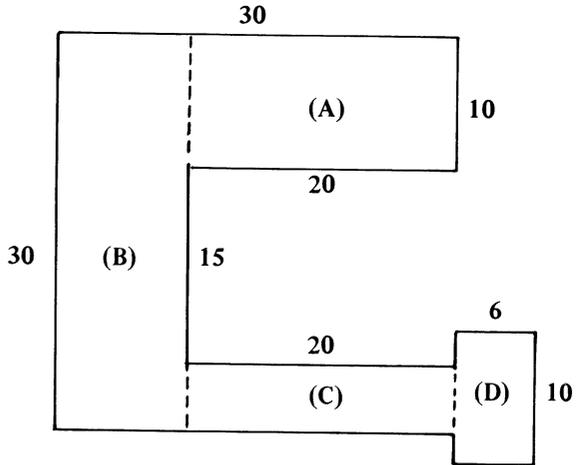
Any shape with square corners can be broken into rectangles. The dashed lines divide the plane into smaller units for easier calculation.

#### Example 1



Add 20 by 10  
Subtract 3 by 3  
Total area = 191.00

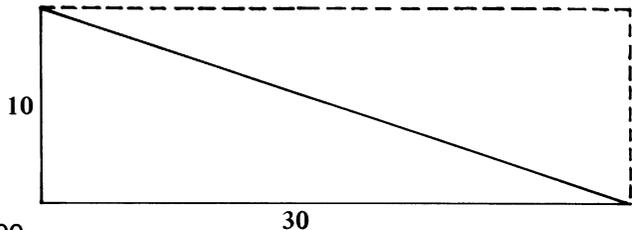
### Example 2



Add 20 by 10 (A)  
Add 10 by 30 (B)  
Add 20 by 5 (C)  
Add 10 by 6 (D)  
Total area = 660.00

### Example 3

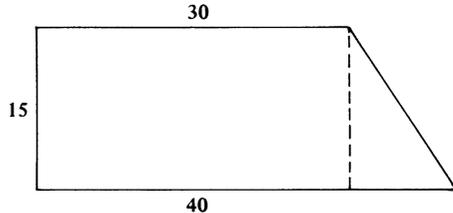
A right triangle is one that has a square at one of its points. The area of such a triangle is one-half of the corresponding rectangular area. By dividing either the length or height in half before giving it to Handyman, the triangular area can be figured.



Add 30 by 5  
Total area = 150.00

### Example 4

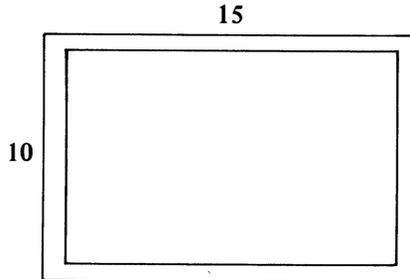
Triangles can also be combined with other rectangles.



Add 30 by 15      Rectangle  
Add 15 by 5      Triangle  
Total area = 525.00

### Example 5

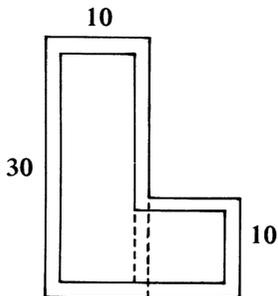
Foundations are a common use of concrete. In the following examples a six inch thickness is assumed, as is a one foot height. A simple foundation for a garden shed would be calculated as follows.



Add 10 by 15 by 1  
Subtract 9 by 14 by 1  
Total volume = 24

### Example 6

A more complex building could be done this way. Notice that the last entry accounts for the small piece in the center of the figure that needs to be subtracted.



Add 30 by 10 by 1	Large
Add 10 by 10 by 1	Small
Subtract 29 by 9 by 1	Large inner
Subtract 9 by 9.5 by 1	Small inner
Subtract 9 by 0.5 by 1	The small dotted piece
Total volume = 49	

## Appendix B — Conversion Formulas

The following shows how the Area or Volume Calculators can be used for other kinds of calculations.

### Converting Gallons to Cubic Feet

LENGTH? number of gallons

WIDTH?

HEIGHT?

### Converting Cubic Feet to Gallons

LENGTH? number of cubic feet

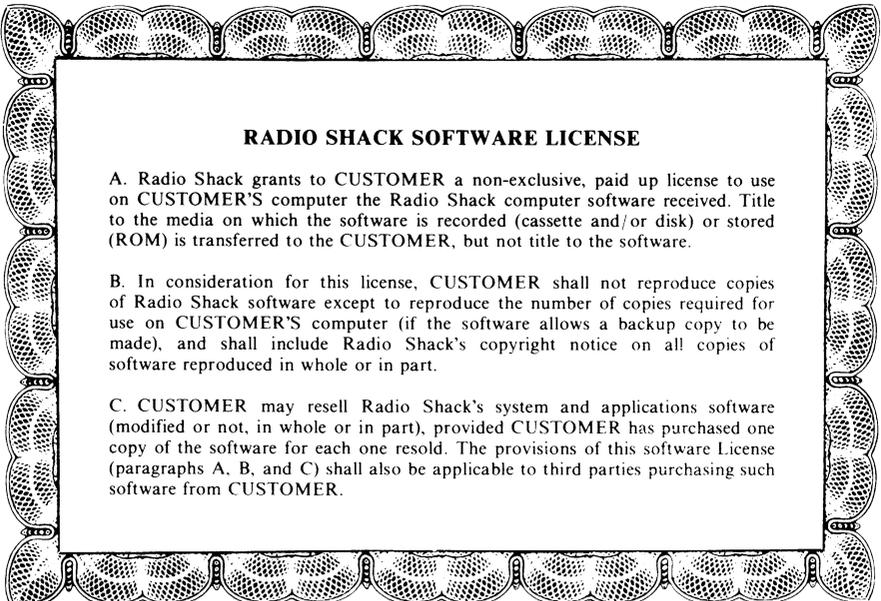
WIDTH?

### Area of a Right Triangle

LENGTH? length

WIDTH? width

HEIGHT?

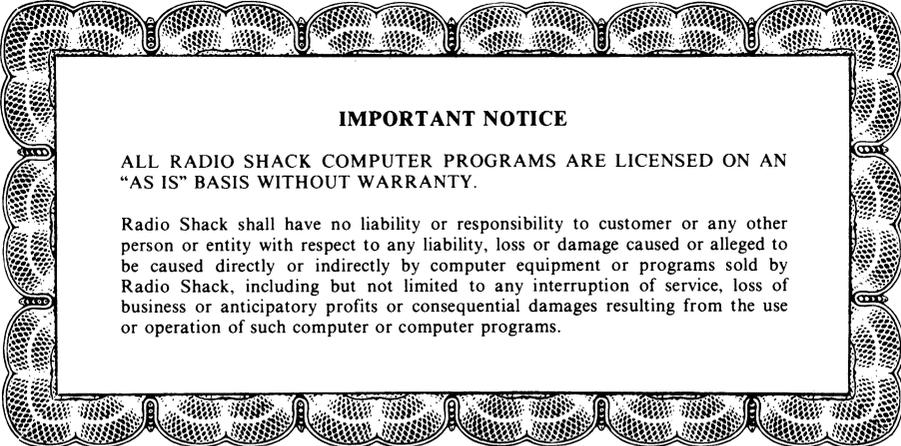


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