

User's Manual for  
RECOST -- Computer-Assisted Recipe Costing

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Miscellaneous Publication 22-1983  
Agricultural Experiment Station  
University of Minnesota

## Acknowledgements

Funded by an Educational Development grant, this work was initiated and developed in 1977-78. Original programming was done by Wayne Asp, and Lynn Schmidt assisted with completion of the data base. The present work was funded through Project #18-35, Agricultural Experiment Station, University of Minnesota, St. Paul, Minnesota.

Appreciation for review of both the programs and this manual is expressed to Louise M. Mullan, R.D., and Robert P. Olson.

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The inclusion of some ingredients by brand name in the food dictionary (FDLST) is not an act of endorsement by the University of Minnesota, the Agricultural Experiment Station, or the authors.

	PAGE
Introduction . . . . .	1
I. Identification . . . . .	4
II. General Description . . . . .	4
III. Data Base (FDLST). . . . .	5
a. Ingredient Code	
b. Unit Code	
c. Ingredient Name	
d. Prices	
e. Yield Information	
IV. Using the RECAST Program . . . . .	7
V. Making Changes in FDLST . . . . .	10
VI. Computer Notes . . . . .	12
a. Programs	
b. Note on Security	
c. Updating this User's Manual	
References . . . . .	14
Appendix: Student Supplement	
A. How to Run RECAST. . . . .	16
B. General Procedure to Log on to the Computer. . . . .	16
C. Sample Run of RECAST . . . . .	18
D. Three Concepts of Recipe Costing . . . . .	22
1. Food Form	
2. Weight/Volume Conversion	
3. Yield	
E. Costing Worksheet. . . . .	24
F. Abbreviations and Meanings . . . . .	25
G. Key to Ingredient List . . . . .	26
1. Table of Contents	
2. Ingredient List (Updated March, 1983)	

## INTRODUCTION

Computer-assisted instruction (CAI) has its roots in the learning theories generally referred to as behaviorism. Although not the first psychologists to describe and study this kind of learning, certainly B.F. Skinner and his colleagues made major research contributions to the field. Programmed instructional approaches were an initial attempt to utilize reinforcement theories in educational settings. In-print or computer-assisted programmed instruction remains the method of choice for learning some kinds of technical, facts-oriented material (Meierhenry, 1982). One author (Reynolds, 1982) views CAI as an effective way to increase the transfer of technological training from the classroom to the job.

During the decade of the 60's and increasingly in the 70's, the use of computers in classroom settings grew as prices of both hardware and software decreased. Especially popular were computer-assisted simulations, which presented the learner only requested information as s/he attempted to solve a complicated problem such as diagnosing a patient's illness or managing the financial activity of a business concern. Such simulations continue to be a major use of CAI. Even more widespread is the use of computers to perform routine calculations underpinning classroom learning, such as analysis of nutrients in a client's

food intake (Youngwirth, 1983). Such analyses call forth a computer's particular capability to store, retrieve, and manipulate vast amounts of alpha-numeric information.

This later usage is a variant of learning theory application, for the student inputs certain information and receives immediate feedback, which is a basic tenet of reinforcement. Educators believe that unless feedback is immediate, learning is slowed. Further, immediate feedback that input was incorrect may cause greater learning than does immediate feedback that it was correct (Kulhavy, 1977). Obviously, CAI is an ideal way of immediate feedback for the reinforcement component of learning theory.

The RECOST program described in this User's Manual is another example of CAI, which performs routine calculations to facilitate classroom learning. The program operates on a relatively large data base of food items. The prices come from the large quantity purchasing and production mode. The computer assists the student in recipe costing procedures taught in a quantity foods laboratory class. The student is thus freed to concentrate on the why of costing a recipe rather than on the mechanical calculations. Learning is further facilitated because CAI allows the student to work independently, for whatever amount of time each individual needs.

RECOST has been used extensively since 1978. Student and instructor suggestions for modifications and additions were collected. Prior use of RECOST can be viewed as a pilot test. The purpose of the present project was to incorporate these

suggestions into RECOST. Some of the suggestions required relatively major refinements but would result in major improvements. Errors in the Edit program were corrected, the FDLST was sorted, RECOST was reprogrammed to accept multiple recipes on the same run and to allow deletion and addition of ingredients to the recipe, and the time needed to run the program was reduced. Increased efficiency and effectiveness of RECOST would increase not only student learning but also the problem-solving capability of the program and the realism /usefulness of the outputs.

These modifications and additions have now been accomplished, and the revised program is operational. In addition, complete documentation and instructions, as well as descriptive materials, have been collected into this User's Manual. The revised RECOST has been reviewed in depth by two faculty members of the Department of Food Science and Nutrition, University of Minnesota (see Acknowledgements). Their comments and suggestions have been incorporated.

The way is now clear for further research using RECOST. In addition to its very considerable importance in the learning of recipe costing procedures and applications, RECOST could also be used in the study of methods of teaching costing. For example, it would be possible to vary the sequences of teaching recipe costing, or perhaps more basic, to vary the complexity of cost concepts being taught. Also, algorithms to incorporate labor costs and overhead costs might be added. The possibilities of using RECOST in independent study modules should be investigated. It is hoped that future researchers will avail themselves of the opportunities presented by RECOST.

## I. Identification

Title: RE COST -- Computerized Recipe Costing

Program Calling Name: RE COST

Additional Programs Used: FDLST, EDIT, PRINT

Language: FORTRAN

Computer: CDC CYBER

System: MERITSS/MECC

Library Program Required: MINNLIB

Programmer: Wayne Asp; modifications and revisions by Dr.  
Nancy Thieret

## II. General Description

The RE COST program is designed for use by undergraduate students for costing large quantity recipes. By removing a large portion of the time-consuming and often error-prone mathematical calculations, the program makes it easier for students to concentrate on the actual concepts of the costing.

The program takes as input Ingredient Codes, Unit Codes, and number of servings for the recipe. After entering ingredients, the user is presented with the entire recipe including a code, a description, a cost, and the units (cups, cans, etc.) for each ingredient. An analysis of the recipe is printed which lists name, total weight in pounds, total cost, weight per serving, cost per serving, and number of servings. The program will permit addition or deletion of ingredients within a recipe, thereby allowing students to study effects of ingredient substitution on portion cost. The program will accept

multiple recipes during the same run.

### III. Data Base (FDLST)

The RECAST program, as of March 1983, accesses approximately 670 ingredients through a data base called FDLST. This data base is accessed through an Ingredient Code and a Unit Code.

#### a. Ingredient Code

Each ingredient code contains four digits. The first digit signifies one of the ten main food groups.

- 0 = water
- 1 = beverages
- 2 = dairy and egg
- 3 = desserts
- 4 = fats, oils, and nuts
- 5 = flour, cereal, and bread
- 6 = fruits
- 7 = fish, poultry, and entrees
- 8 = staples, sweets, and seasonings
- 9 = vegetables

Each main food group can have up to ten subgroups, which are identified by the second digit. For example: beverages have subgroups of liquors (1); chocolates (2); and coffees/teas, and carbonated beverages (3).

The final two digits of the code are the specific item. For example: tea bags has a code of 1320 where 1 is beverages, 3 is teas and 20 is tea bags. Instant tea (1330) differs from tea bags in the last two digits. A complete listing of Ingredient Codes appears in the Key to Ingredient List in the Student Supplement, p.26 .

#### b. Unit Code

Following the four-digit Ingredient Code, an alphabetic character must be used to indicate the Unit Code (purchase



form), as shown in this Table of Standard Measures:

Code	Unit
A.	Lbs./oz.
B.	Gallons
C.	Quarts
D.	Cups and decimal parts of a cup
E.	Tablespoons
F.	Teaspoons
G.	Count
H.	Can regardless of size
I.	Fluid ounces

The RECOST program allows many ingredients to be accessed in several purchased forms. For example, jumbo whole ripe undrained #10 olives has all four purchased forms--weight, volume, can, and count. The majority of ingredients can be accessed in two forms. Generally, for the purchase form, dry ingredients use weight, liquids use volume, canned goods use can, and single items use count. Count usually represents an average.

Each ingredient's purchased form could appear as can, count, weight, and/or volume. Most ingredients include a weight so that recipe total weight can be calculated. Weight is not included for foods customarily used singly, such as ice cream cones or individual packages of salt or catsup. If a user enters a Unit Code that is not available for that ingredient, an error message is printed.

Note: Where ingredient purchase form information was not available, studies in quantity foods classes obtained it. Liquids were set at eight pounds per gallon. The weight of #10 cans was set at 6.9 pounds.

#### c. Ingredient Name

FDLST contains names for all its ingredients. These names

are printed out each time an Ingredient Code and Unit Code have been properly entered into the computer. In addition, certain frequently used descriptive words were abbreviated and included in FDLST, such as drained (DR) or dehydrated (DEHY). The program allows 20 spaces for the complete name. A list of the abbreviations used is found on p. 25 in the Student Supplement.

#### d. Prices

FDLST contains a price for each ingredient. Updating of prices has customarily been done once a year. RE COST has a special companion computer program (EDIT) which must be used in updating the FDLST. The most recent updating of costs was in June of 1981.

#### e. Yield Information

Percent yields contained in the data base were obtained from Fowler, West, and Shugart 1971; Moyer, 1974; Peterkin and Evans, 1965; USDA, 1970a; and USDA 1970b. Where the data for percent yield for food were not available, studies in quantity foods classes were used to obtain it.

The content of FDLST is arranged:

Ingredient Number	Item Name	Weight (lbs)	Volume (gal)	Can	Count	Price	Yield
0001	WATER	8.000	1.000	0	0	0	100
1100	BOURBON	8.000	1.000	0	0	40.500	100

#### IV. Using the RE COST program

In order to perform recipe costing, the user must be familiar with three concepts: food form, weight/volume conversion, and yield. Briefly, food form describes the way the food is used in the recipe, such as frozen or canned,

Weight/volume conversion describes density of a food. Some heavy foods have a small volume per pound, such as one pound of butter equals two cups. Lighter foods have a greater volume per pound, such as one pound of quick cooking oats equals five cups. If a product is sold by weight, this conversion must be known. Yield can be more or less than purchased quantity. For example, 60 pounds (a crate) of celery yields 45 pounds of raw chopped celery; one pound of nonfat powdered milk, when reconstituted, yields eight pounds. Yield is expressed in percent.

Definitions and examples of these concepts can be requested when entering RE COST. However, the user should be already familiar with them before attempting to use the RE COST program. A more detailed explanation of these concepts is given in the Student Supplement, p. 22.

Prior to entering the program, the user should complete the computer-assisted recipe costing form (Student Supplement, p. 24) for each recipe to be used. The form requires the use of Ingredient Codes (from the Key to Ingredient List) and Unit Codes (from the Table of Standard Measures).

RE COST accepts an ingredient by its Ingredient Code and Unit Code. For example, to enter one fourth of a pound of butter using an Ingredient Code and Unit Code:

```

      INPUT INGREDIENT CODE, UNIT CODE.
? 2100,A <-----user's input indicated by arrow

```

If the user enters a wrong ingredient or unit code, error messages are displayed and the process is started over. After

the codes are correctly entered, the program requests the number of cups, pounds, count, etc., which is specified by the Unit Code. In the above example the Unit Code was A (lbs/ozs) so the program asks:

```

HOW MANY POUNDS? (WITH DECIMAL POINT).
? 0.0    <-----
HOW MANY OUNCES? (WITH DECIMAL POINT).
? 4.0    <-----

```

The program then prints a verification:

```

2100 BUTTER .250 LBS

```

```

LISTING CORRECT?

```

After all ingredients are entered, the program prints the Recipe Ingredient List, as shown below:

```

          RECIPE INGREDIENT LIST
          BAKLAVA
-----
CODE      DESCRIPTION          COST-$  AMOUNT  UNIT
-----
2100 BUTTER                      .405    .250  LBS
4100 CORN OIL                    .093    .126  LBS
4225 WALNUTS EP                  .928    .420  LBS
8212 SUGAR WHITE                 .246    .420  LBS
8245 HONEY                       .337    .378  LBS
6416 LEMON JUICE REAL           .034    .095  LBS

```

Finally the program requests the user to enter the number of servings, or the weight per serving, and the Analysis of the Recipe then is printed:

#### ANALYSIS OF THE RECIPE

```

DESCRIPTION  TOTAL  TOTAL  WEIGHT/  COST/  NO. OF
              WEIGHT  COST   SERVING  SERVING  SERVINGS
              (LBS)  ($)   (LBS)   ($)
-----
BAKLAVA      1.69   2.043  .141    .170    12.0

```

At this point, the user may elect to add or delete ingredients in the recipe, or to cost another recipe. Addition or deletion of recipe ingredients permit the user to substitute less expensive ingredients or add a special topping if cost constraints can be met. When adding or deleting, the program asks for the Ingredient Code and the Unit Code for each ingredient. The recipe is corrected and reprinted. A sample run of RECAST that shows the addition and deletion of ingredients in a recipe can be found in the Student Supplement p. 18.

#### V. Making Changes in FDLST

The program EDIT is used to change food costs or to add or modify the ingredients in the data base. To run the program, the following inputs should be used:

```

RECOVER/SYSTEM: mnfts          <--- user's input
OLD, NEW, LIB, OR GAME FILE: old,edit <---
READY.
change(fdlst,fdlst/pw=protect,fp=off) <---
READY.
x,fetch,minnlib/v=mnf         <---
READY.
settl,100                     <---
READY.
run                            <--

```

Changes that can be made are:

1. ADD--To add an ingredient to the database a new Ingredient Code must be created for the food. The code must be consistent with the other Ingredients Codes in its category. Other information that must be input is the ingredient name (20 letters or less), weight, volume, can, count, price, and percent yield. Zeros must be input where there is no information. All information is asked for in easy to understand prompts.

2. DELETE--The program will delete any food.

3. CHANGE PRICE--Any item's price can be modified to reflect market fluctuations.

4. EXIT(ABORT) WITH NO CHANGES--This command is a protective mechanism which will prevent any changes from occurring if there has been a mistake during the modifications.

5. EXIT AND MAKE CHANGES-- This command must be entered for any modifications to be made permanent.

Below is an example of an EDIT run using the ADD option:

83/03/12. 09.50.53.  
MNFTS PROGRAM EDIT

672 ITEMS IN DATA BASE.

SELECT OPTION:

1. ADD
2. DELETE
3. CHANGE PRICE
4. EXIT (ABORT) WITH NO CHANGES
5. EXIT AND MAKE CHANGES

? 1 ←-- user's input

ENTER NEW FOOD CODE (4 DIGITS):

? 2344 ←----

ENTER FOOD DESCRIPTION: (20 CHARACTERS)

? trialfood ←----

ENTER WEIGHT: (IN POUNDS WITH DECIMAL POINT)

? 1.0 ←----

ENTER VOLUME: (IN GALLONS WITH DECIMAL POINT)

? 3.0 ←----

ENTER CANS: (1 DIGIT)

? 0 ←----

ENTER COUNT: (3 DIGITS)

? 0 ←----

ENTER PRICE: (WITH DECIMAL POINT)

? .23 ←----

ENTER PERCENT YIELD: (3 DIGITS)

? 009 ←----

2344 TRIALFOOD 1.000 3.000 0 0 .230 9

OK? (Y OR N)

? y ←----

ITEM ADDED

To change the volume, weight, can, count or yield of an item which already is on the food list, the ingredient needs to be DELETED (option 2) from FDLST and then the corrected information entered using the ADD command (option 1).

It is suggested that only 30 changes be made at one time to minimize errors resulting from operator mistakes and computer failures. After changes are made, ingredients should be sorted by their codes. To do this, first exit EDIT (option 4 or option 5):

```

RUN COMPLETE
old,fdlist <-----
READY.
sort <-----
READY.
list <---- (this command is mandatory to complete the
           sorting procedure. Stop this listing by
           typing "s" during the printing of FDLST)
s <-----

*TERMINATED*
retain,fdlst <---- this will save the sorted listing
READY.
change(fdlst,fdlst,pw=protect,fp=on) <-----

```

Note: once the FDLST is sorted and retained there will be no record of the changes that have been made. Therefore it is imperative that this Manual be changed to reflect the addition of new foods or the revision of existing foods (see Updating this User's Manual p.13 ).

## VI. Computer Notes

### a. Programs

RE COST is the main program (comment statements are throughout this program)  
 BRE COST is RE COST's security backup

FDLST is the listing of the foods  
 BFDLST is FDLST's security backup

PRINT is the file with the majority of the printed output  
used in RECOST

BPRINT is 'PRINT's security backup

EDIT is the program to do modifications of the foodlist

BEDIT is EDIT's security backup

To get a listing of any of the programs:

RECOVER/SYSTEM: old,filename <----user's input

READY

/list <--

To end the listing at any time type "S". The printing of the  
FDLST could take up to 30 minutes.

#### b. Note on Security

Passwords should be changed after every course completing to  
avoid the unauthorized use of computer time. All of RECOST's  
files have been protected so that they cannot be accessed from  
other numbers. To change the accessibility, use the command:  
CHANGE(newfilename,oldfilename/ct=pu) which will make the file  
accessible to other users. At present no user can write on  
RECOST, any of the backups or associated files, or the food list  
unless they follow the directions given in this manual (i.e., all  
files are write protected). This write protection was done by  
this CHANGE command:

CHANGE,newfilename,oldfilename/pw=protect,fp=on

#### c. Updating this User's Manual

By using a microcomputer this Manual can be easily updated.  
This Manual is available on an IBM PC computer diskette. It can  
be altered and printed again as a document file using the program  
Wordstar. The Manual is file FINAL4 and the raw data file is  
FDLST. The Manual is the only program for RECOST available on  
microcomputer disk.



## REFERENCES

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## APPENDIX

## STUDENT SUPPLEMENT

A. How to Run RECAST . . . . .	16
B. General Procedure to Log on to the Computer . . . . .	16
C. Sample Run of RECAST . . . . .	18
D. Three Concepts of Recipe Costing . . . . .	22
1. Food Form	
2. Weight/Volume Conversion	
3. Yield	
E. Costing Worksheet . . . . .	24
F. Abbreviations and Meanings. . . . .	25
G. Key to Ingredient List. . . . .	26
1. Table of Contents	
2. Ingredient List (Updated March, 1983)	

## A. How to Run RECOST

To use this computerized recipe costing system you must understand the meaning of three food concepts: food form, weight/volume conversion, and yield. You must also know how to code your recipe's ingredients for input into the program; and how to begin and end the RECOST program.

### Steps:

Review the concepts of food form, weight/volume conversion, and yield (p. 22).

Fill out a computer costing sheet (p. 24) for each recipe to be costed using the Key to Ingredient List. The List tells you in what form an ingredient will be accepted by RECOST and gives you the Ingredient Code number. The Table of Standard Measures below will give you the Unit Code for each ingredient:

Table of Standard Measures

Code	Unit
A.	Lbs./oz.
B.	Gallons
C.	Quarts
D.	Cups and decimal parts of a cup 1/4 = 0.25, 1/3 = 0.33, 1/2 = 0.5
E.	Tablespoons
F.	Teaspoons
G.	Count
H.	Can regardless of size
I.	Fluid ounces

Example: On page 27 of the List, Bourbon has code number 1100. This alcoholic beverage can be accepted using weight or volume. The Table of Standard Measures shows that lbs./oz. are Unit Code A, and fluid ounces are Unit Code I. Either of these Unit Codes could be used depending upon the form of Bourbon you wanted to use. RECOST's forms are weight, volume, count, and can, but not all ingredients have all these forms.

Every recipe ingredient must have both an Ingredient Code and a Unit Code. Every recipe must have a specified number of servings or the weight for one serving.

## B. General Procedure to Log on to the Computer

### Teletype

Start the teletype (TTY) by turning the knob located on the front lower right hand corner of the terminal to LINE (a quarter turn to the left). The teletype will connect to MERITSS instantly.

## DECwriter

For the DECwriter terminal depress the rocker switch to ON. Be sure the telephone modem is also on with the switch in the back. The DECwriter requires you to phone 67730. Then you must hear a high pitched sound when you are connected and place the phone face down into the modem.

When the machine is successfully connected you should see:

```
80/10/28. 08.0.8.11. TERMINAL ; 10G P106
MERITSS/MECC (09/25-BN)
USER NUMBER:          <<---write the class number and
PASSWORD:
XXXXXXXXX             <<---password down to use later
RECOVER/SYSTEM:mnfts <<---user's input
OLD,NEW,LIB OR GAME FILE: old,recost/un= <<---
READY.
x,fetch,minnlib/v=mnf <<---
READY.
settl,100 <<---
READY.
run
```

```
80/1028. 14.09.23
MNFTS PROGRAM RECOST °
```

If you reach this point you will be in the program. You will be asked to enter your recipe's Ingredient Codes and Unit Codes.

To get out of the program:

If you see a ? then type STOP and you will exit.

If the computer is printing, type S and the machine will stop and you will exit.

If you want to rerun RECOST at this point, type RUN. IF you want to leave the program, type BYE.

After you have entered all your recipes and ingredients you should see:

```
RUN COMPLETE
bye <<----- you type
```

```
2218907 LOG OFF 14.10.39
```

Your machine is now successfully disconnected.

## C. Sample Run of RECAST

```
RECOVER/SYSTEM: mnfts
OLD,NEW,LIB, OR GAME FILE: old,recost/un=
READY.
x,fetch,minnlib/v=mnf
READY.
settl(100)
READY.
run
```

```
83/02/15. 09.02.31.
MNFTS      PROGRAM      RECAST
```

WELCOME TO RECAST -- COMPUTERIZED RECIPE COSTING.

DO YOU WANT INSTRUCTIONS FOR INPUTTING? (YES OR NO)  
? no

INPUT INGREDIENT CODE, UNIT CODE.  
(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)  
? 9309,d  
HOW MANY CUPS ? (WITH DECIMAL POINT).  
? 1.0  
9309 CARROTSTRIPORDICERAW 1.000 CUPS

LISTING CORRECT ?  
? yes

PLEASE ENTER NEXT ITEM.  
INPUT INGREDIENT CODE, UNIT CODE.  
(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)  
? 9484,a  
HOW MANY POUNDS ? (WITH DECIMAL POINT).  
? 0.0  
HOW MANY OUNCES ? (WITH DECIMAL POINT).  
? 4.0  
9484 PEAS UNCOOKED FZ .252 LBS

LISTING CORRECT ?  
? yes

PLEASE ENTER NEXT ITEM.  
INPUT INGREDIENT CODE, UNIT CODE.  
(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)  
? 0000,a

WHAT IS THE NAME OF YOUR RECIPE ?  
?peezencart

RECIPE INGREDIENT LIST  
PEEZENCART

CODE	DESCRIPTION	COST-\$	AMOUNT	UNIT
9309	CARROTSTRIPORDICERAW	.258	1.000	CUPS
9484	PEAS UNCOOKED FZ	.108	.252	LBS

DO YOU KNOW HOW MANY SERVINGS THIS MAKES? (YES OR NO)

? yes

INPUT THE NUMBER OF SERVINGS. (WITH DECIMAL POINT)

? 2.0

2.000 SERVINGS. CORRECT? (YES OR NO)

? yes

ANALYSIS OF THE RECIPE

DESCRIPTION	TOTAL WEIGHT (LBS)	TOTAL COST (\$)	WEIGHT/ SERVING (LBS)	COST/ SERVING (\$)	NO. OF SERVINGS
PEEZENCART	.58	.366	.288	.183	2.0

DO YOU WISH TO ADD OR DELETE ANY INGREDIENT?

ENTER "ADD", "DELETE", OR "NO"

? delete

INPUT INGREDIENT CODE, UNIT CODE.

(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)

? 9309,d

DO YOU KNOW HOW MANY SERVINGS THIS MAKES? YES OR NO.

? yes

INPUT THE NUMBER OF SERVINGS. (WITH DECIMAL POINT)

? 2.0

2.000 SERVINGS CORRECT? (YES OR NO)

? yes

ANALYSIS OF THE RECIPE

DESCRIPTION	TOTAL WEIGHT (LBS)	TOTAL COST (\$)	WEIGHT/ SERVING (LBS)	COST/ SERVING (\$)	NO. OF SERVINGS
PEEZENCART	.25	.108	.126	.054	2.0

DO YOU WISH TO ADD OR DELETE ANY INGREDIENT  
ENTER "ADD", "DELETE", OR "NO"

? add

INPUT INGREDIENT CODE, UNIT CODE.

(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)

? 9315,a

HOW MANY POUNDS ? (WITH DECIMAL POINT).

? 0.0

HOW MANY OUNCES ? (WITH DECIMAL POINT).

? 4.0

9315 CARROT SLICEDICECOOK .252 LBS

LISTING CORRECT ?

? yes

PLEASE ENTER NEXT ITEM.

INPUT INGREDIENT CODE, UNIT CODE.

(OR INPUT "0000,A" FOR NO MORE INGREDIENTS)

? 0000,a

RECIPE INGREDIENT LIST  
PEEZENCART

CODE	DESCRIPTION	COST-\$	AMOUNT	UNIT
9484	PEAS UNCOOKED FZ	.108	.252	LBS
9315	CARROT SLICEDICECOOK	.286	.252	LBS

DO YOU KNOW HOW MANY SERVINGS THIS MAKES? YES OR NO.

? yes

INPUT THE NUMBER OF SERVINGS. (WITH DECIMAL POINT)

? 2.0

2.000 SERVINGS. CORRECT? (YES OR NO)

? yes

ANALYSIS OF THE RECIPE

DESCRIPTION	TOTAL WEIGHT (LBS)	TOTAL COST (\$)	WEIGHT/ SERVING (LBS)	COST/ SERVING (\$)	NO. OF SERVINGS
PEEZENCART	.50	.394	.252	.197	2.0

DO YOU WISH TO ADD OR DELETE ANY INGREDIENT?  
ENTER "ADD", "DELETE", OR "NO"

? no

DO YOU HAVE ANOTHER RECIPE? (YES OR NO)  
? no

RECAST VERSION 1.0 -- RUN COMPLETE  
SAVE THIS PRINTOUT FOR FUTURE REFERENCE.

SRU 4.803 UNTS.

RUN COMPLETE.

bye

2218906	LOG OFF	09.08.29.
QBZ1013	SRU	4.975 UNTS.



#### D. Three Concepts of Recipe Costing

##### a. Food Form

Food form considers both the purchased measurement form (a can of green beans, a pound of butter, etc.), and the descriptive form (drained green beans, dehydrated onions, etc.) of an ingredient utilized in the recipe.

The Key to Ingredient List shows the different forms in which food may be purchased. These represent the form in which the ingredients are purchased and sometimes used in the recipe. Peas, for example, can be obtained fresh, frozen, or canned and are purchased by weight or by can size. A recipe using peas could call for them by the #10 can or by weight. Macaroni is purchased by the pound. A recipe may call for dry macaroni by the pound or for cooked macaroni by the measure.

The student must also be familiar with the descriptive form of each ingredient as it can affect the finished product. In the case of canned green beans, two descriptive forms are available: drained and undrained. Canned green beans, which are drained for use in a three bean salad, will not have the same weight and volume as beans served with the liquid as a plain vegetable. Macaroni also has two descriptive forms: cooked and uncooked. A recipe for soup which calls for the addition of dry macaroni would show a marked difference in the final product if cooked macaroni was added instead. The cooked macaroni would leave more liquid in the soup. Hence, the actual descriptive form used when preparing the recipe is essential in assuring accurate total weight and volume of the completed product.

##### b. Weight/Volume Conversion

Weight/volume conversion refers to the density of ingredients. The volume per pound of light, airy products is greater than the volume per pound of heavy compact products. For example, one pound of butter has a volume of two cups whereas the same weight of grated cheese has a volume of four cups. One pound of salt has a volume of 1 1/2 cups whereas one pound of flour has a volume of four cups. Some products, such as brown sugar, are difficult to compute and can cause confusion. Brown sugar has a volume of anywhere from two to three cups per pound depending upon how it is packed.

##### c. Yield

Yield refers to whether an ingredient in the finished product is greater than, equal to, or less than the quantity purchased. Any product whose weight remains unchanged (e.g. a can of applesauce) will give a yield of 100 percent. Some products must be cleaned and prepared, with the inedible portions being lost to the final product, giving a lower yield. For example, celery has a yield of 75 percent. Any product whose

weight decreases in comparison to the purchased product has a yield of less than 100 percent. Coffee and dry mixes are examples of foods where weight increases in the final form.

Some products vary in their yield depending upon usage. Macaroni, for example, weighed in the dry state will have increased in weight when cooked and drained. In this case, macaroni has a yield of 336 percent. Dry macaroni added to soup will also increase in weight. However, this weight increase results in a weight loss for the soup. Since the total weight of the combined macaroni and soup has remained unchanged, the yield is 100 percent.

A yield of 100 percent is also obtained with "each" items. An "each" item is considered to be any item designed to be one serving for one person, such as hot dog buns, ice cream cones, individual cracker packages, etc.

The RECAST program incorporates a data base of foods chosen from those that could be used in a college dormitory food and catering service. These particular foods were picked to limit the data base of RECAST to a reasonable number of foods and to use items with which the students would have contact with. Each item chosen was linked to its ingredient code, a food name abbreviation, a food form, a price, and a percent yield.

E. COSTING WORKSHEET

NAME \_\_\_\_\_

DATE \_\_\_\_\_

SECTION \_\_\_\_\_

RECIPE NAME \_\_\_\_\_ (10 LETTERS OR LESS)

INGREDIENT NAME	COMPUTER INGREDIENT NUMBER	COMPUTER UNIT LETTER	AMOUNT USED IN RECIPE
1. _____	+	+	+
2. _____	+	+	+
3. _____	+	+	+
4. _____	+	+	+
5. _____	+	+	+
6. _____	+	+	+
7. _____	+	+	+
8. _____	+	+	+
9. _____	+	+	+
10. _____	+	+	+
11. _____	+	+	+
12. _____	+	+	+
13. _____	+	+	+
14. _____	+	+	+
15. _____	+	+	+

YIELD: \_\_\_\_\_

SERVING SIZE: \_\_\_\_\_

Abbreviations and Meanings (where space exists the longer abbreviation is used)

AN	ANNE	MINESTR	MINESTRONE
AP	AS PURCHASED	MSG	MONOSODIUM GLUTAMATE
APPL	APPLE	MUSHRMS	MUSHROOMS
BBQ	BARBEQUE	NFD MILK	NONFAT DRY MILK
BRD	BREADED	NONDAIR	NONDAIRY
BRST	BREAST	NOODL	NOODLE
BRUSEL	BRUSSEL	NU	NEW
BS	BROWN AND SERVE	OLIV	OLIVE
CH	CHOP	ORANG	ORANGE
CHERY	CHERRY	PAK	PACK
CHICK	CHICKEN	PEEL	PEELED
CHOC	CHOCOLATE	PINEAPPL	PINEAPPLE
COLRING	COLORING	PIT	PITTED
CONC	CONCENTRATE (D)	PKG	PACKAGE
COND	CONDENSED	PP	PREPARED
CONSO	CONSOMME	PRES	PRESERVES
CR	CREAM	PROCESS	PROCESSED
CRUSH	CRUSHED	PUDD	PUDDING
CUKE	CUCUMBER	RECON	RECONSTITUTED
DEHY	DEHYDRATE (D)	RECONST	RECONSTITUTED
DEL	DELMARK	REDY	READY
DICE	DICED	REHYD	REHYDRATED
DR	DRAINED	RIP	RIPE
DRAIN	DRAINED	RND	ROUND
DRY	DRIED	RTP	RED TART PITTED
E	EARLY	SECT	SECTION
ENGL	ENGLAND	SERV	SERVING
EP	EDIBLE PORTION	SL	SLICED
EVAP	EVAPORATED	SLICE	SLICED
FILL	FILLING	SM	SMALL
FR	FRENCH	SP	SPICED
FRUT	FRUIT	ST	STUDENT
FZ	FROZEN	STRIP	STRIPS
FZ DRY	FREEZE DRIED	STUFF	STUFFED
GAL	GALLON	TATER	POTATO
GOLDN	GOLDEN	TIDBT	TIDBIT
GR	GREEN	TOP	TOPPING
GRD	GROUND	TOPPNG	TOPPING
GT	GRATE	UNCOOK	UNCOOKED
HALF	HALVES	UNDR	UNDRAINED
HC	HOG CASING	UNDRAIN	UNDRAINED
INDIV	INDIVIDUAL	UNPEEL	UNPEELED
INDIVID	INDIVIDUAL	UNRECONST	UNRECONSTITUTED
INST	INSTANT	UNRE	UNREHYDRATED
ITAL	ITALIAN	UNREH	UNREHYDRATED
JUM	JUMBO	UNWHIP	UNWHIPPED
KERL	KERNEL	WHIP	WHIPPED
LGE	LARGE	WHL	WHOLE
MANDAR	MANDARINE	WISC	WISCONSIN
MANHAT	MANHATTAN	VEG	VEGETABLE
MARASINO	MARASCHINO	VEGET	VEGETARIAN
MASH	MASHED	XCUT	CROSSCUT
MED	MEDIUM		

## G. KEY TO INGREDIENT LIST

## 1. Table of Contents

	PAGE		PAGE
BEVERAGES . . . . .	.28	MEAT, FISH, POULTRY & ENTREES.	.35
1100 Alcoholic		7100 Beef	
1200 Bases		7200 Fish & Shellfish	
1300 Cocoa, Coffee, Tea		7300 Poultry	
DAIRY AND EGG. . . . .	28	7400 Lamb	
2100 Butter & Margarine		7500 Lunch Meats & Sausages	
2200 Cheese		7600 Pork	
2300 Cheese & Milk		7700 Ready Foods & Entrees	
2400 Eggs		7800 TVP	
2500 Ice Cream & Yogurt		7900 Veal	
DESSERTS . . . . .	29	STAPLES, SWEETS, & SEASONINGS.	.37
3100 Mixes		8100 Condiments	
3200 Ready-To-Eat		8200 Confectionary	
FATS, OILS, & NUTS . . . . .	.30	8300 Flavorings & Food Color	
4100 Fats & Oils		8400 Jello	
4200 Nuts		8500 Jelly, Jams & Preserves	
FLOUR, CEREAL & BREADS ..	.31	8600 Sauces	
5100 Breads		8700 Soups	
5200 Bread-type mixes		8800 Spices	
5300 Cereals, ready-to-eat		8900 Staples	
5400 Cereals, uncooked		VEGETABLES.. . . . .	.40
5500 Donuts, Rolls & Pastry		9100 Canned	
5600 Pastas		9200 Dehydrated	
5700 Ready Foods		9300 Fresh	
5800 Grains and Flours		9400 Frozen	
		9500 Juices	
		9600 Pickles, Olives & Relishes	
		WATER	
FRUITS . . . . .	33	0001 Water. . . . .	.42
6100 Canned			
6200 Fresh			
6300 Frozen			
6400 Juices			

## 2. Ingredient List

(Updated March, 1983)

## BEVERAGES: Alcoholic

1100 Bourbon (wt vol)  
 1110 Brandy (wt vol)  
 1120 Creme de Cocoa (wt vol)  
 1130 Creme de Menthe (wt vol)  
 1140 Hamms Beer (wt vol count:1 can)  
 1150 Red Burgundy (wt vol)  
 1160 Rum (wt vol)  
 1170 Sauterne (wt vol)  
 1180 Sherry (wt vol)  
 1190 Sherry Golden (wt vol)

## BEVERAGES: Bases

1220 Chocolate Drink Base ready-to-serve #10 (wt vol can)  
 1200 Nedlog Drink Base ready-to-serve (wt vol)

## BEVERAGES: Cocoa, Coffee, &amp; Teas

0001 Water (wt vol)  
 1340 Carbonated Beverages (wt vol)  
 1305 Coffee, dry (wt vol)  
 1300 Coffee, prepared 8 oz. cup (wt vol)  
 1310 Coffee, Sanka individual (count: 1 packet)  
 1330 Instant Tea (wt)  
 1320 Tea Bags (count: 1 bag)

## DAIRY &amp; EGG: Butter &amp; Margarine

2100 Butter (wt vol)  
 2105 Butterettes (wt count: 90 butterettes)  
 2110 Butter Tray Pack (wt count: 90 per 1b)  
 2115 Liquid Margarine (vol wt)  
 2120 Oleo Patties (wt count: 90 per 1b)

## DAIRY &amp; EGG: Cheese

2200 American Cheese (wt)  
 2204 American Cheese, sliced (wt count: 16 slices)  
 2208 Cheddar Cheese, sliced (wt count: 16 slices)  
 2236 Cheese and Onion Cheese (wt)  
 2224 Cream Cheese (wt vol)  
 2264 Gouda (wt)  
 2272 Monterey Jack (wt)  
 2276 Monterey Jack, grated (wt vol)  
 2228 Mozzarella Cheese (wt)  
 2232 Mozzarella Cheese grated (wt vol)  
 2240 Parmesan Cheese (wt)  
 2244 Parmesan Cheese, grated (wt vol)  
 2248 Roquefort (Blue) Cheese, crumbled (wt)

2252 Salami & Cheese (wt)  
 2268 Sliced Swiss Processed (wt count: 16 slices)  
 2220 Small Curd Cottage Cheese (wt vol)  
 2256 Swiss Cheese Chunk (wt)  
 2260 Swiss Cheese Chunk, grated (wt vol)  
 2212 Wisconsin Cheddar Cheese (wt)  
 2216 Wisconsin Cheddar Cheese, grated (wt vol)

DAIRY & EGG: Cream & Milk

2300 Buttermilk (wt vol)  
 2303 Buttermilk, Half Pint (wt vol count: 1 small carton)  
 2305 Chocolate Milk, Bulk (wt vol)  
 2308 Chocolate Milk, Half Pint (wt vol count: 1 small carton)  
 2310 Coffee Cream (wt vol)  
 2315 Coffee Cream, Individual (count: 1 packet)  
 2380 Coffee Mate (count: 1 container)  
 2365 Dry Skim Milk, reconstituted (wt)  
 2360 Dry Skim Milk, unreconstituted (wt)  
 2325 Evaporated Milk, condensed #10 (wt vol can)  
 2326 Evaporated Milk, reconstituted #10 (wt vol can)  
 2330 Hi Heat Milk Powder (wt)  
 2340 Nonfat Dry Milk, reconstituted (wt vol)  
 2335 Nonfat Dry Milk, unreconstituted (wt vol)  
 2355 Skim Milk, Bulk (wt vol)  
 2358 Skim Milk, Half Pint (wt vol count: 1 small carton)  
 2320 Sour Cream (wt vol)  
 2345 Whipped Topping, Nondairy, unwhipped 1 case (wt vol can)  
 2350 Whipped Topping, Nondairy, whipped 1 case (wt vol can)  
 2370 Whole Milk, Bulk (wt vol)  
 2373 Whole Milk, Half Pint (wt vol count: 1 small carton)

DAIRY & EGG: Eggs

2400 Large Whole Eggs (wt vol count: 1 egg)  
 2410 Scrambled Egg Mix (wt)  
 2420 What-a-Egg (wt)

DAIRY & EGG: Ice Cream & Yogurt

2580 Ice Cream, Flavored (wt vol)  
 2530 Ice Cream, Vanilla (wt vol)  
 2520 Ice Cream, Bar, Heath (wt count: 1 bar)  
 2500 Ice Cream, Sandwich Bar (wt count: 1 bar)  
 2540 Northland Sundae Cups, Bulk (count: 1 bulk)  
 2550 Sherbet (vol wt)  
 2560 Soft Serve Ice Cream, Chocolate (wt vol)  
 2570 Soft Serve Ice Cream, Vanilla (wt vol)  
 2590 Yogurt (wt vol)

DESSERTS: Mixes

3100 Angel Food Cake Mix (wt)  
 3151 Apple Pie Filling #10 (wt can)  
 3139 Basic Cookie Mix (wt)

3154 Blueberry Pie Filling #10 (wt can)  
 3130 Bundt Cake Mix (wt)  
 3166 Butterscotch Pudding (wt vol)  
 3103 Cheese Cake Mix (wt)  
 3157 Cherry Pie Filling #10 (wt can)  
 3136 Chocolate Brownie Mix (wt)  
 3169 Chocolate Pudding (wt vol)  
 3112 Cinnamon Struesel Cake Mix (wt)  
 3172 Coconut Pudding (wt vol)  
 3184 Custard, Delmark 4 oz. serving (wt vol count: 10 servings)  
 3106 Devils Food Cake Mix (wt)  
 3187 Frosting, Chocolate Fudge (wt)  
 3190 Frosting, Fluffy, White (wt)  
 3121 Gingerbread Cake Mix (wt)  
 3133 Honey Spice Cake Mix (wt)  
 3160 Lemon Pie Filling #10 (wt can)  
 3181 Lemon Pudding (wt vol)  
 3124 Milk Chocolate Cake Mix (wt)  
 3163 Peach Pie Filling #10 (wt can)  
 3127 Spice Cake Mix (wt)  
 3109 Sponge Cake Mix (wt)  
 3145 Strawberry Glaze #10 (wt can)  
 3148 Strawberry Pie Filling #10 (wt can)  
 3142 Sweet Roll Mix (wt)  
 3178 Tapioca, Grain (wt vol)  
 3175 Vanilla Pudding (wt vol)  
 3115 White Cake Mix (wt)  
 3118 Yellow Cake Mix (wt)

#### DESSERTS: Ready-to-Eat

3200 Apple Strudel (wt count: 1 strudel)  
 3245 Boston Creme Pie (count: 1 pie)  
 3266 Butterscotch Pudding #10 (wt can)  
 3203 Carrot Cake (wt count: 1 cake)  
 3236 Cheese Cake (wt count: 1 cake)  
 3206 Chocolate Cake (wt count: 1 cake)  
 3269 Chocolate Pudding #10 (wt vol can)  
 3242 Coffee Cake (wt count: 1 cake)  
 3263 Cupcake (count: 1 cupcake)  
 3209 Devils Food Cake (wt count: 1 cake)  
 3212 German Chocolate Cake (wt count: 1 cake)  
 3275 Lemon Pudding #10 (wt can)  
 3233 Pecan Pie (wt count: 1 pie)  
 3215 Pound Cake (wt count: 1 cake)  
 3230 Rich's Cake Roll (wt count: 1 cake roll)  
 3272 Tapioca Pudding #10 (wt vol can)  
 3273 Vanilla Pudding #10 (vol can)  
 3221 Yellow Cake (wt count: 1 cake)

#### FATS, OILS, & NUTS: Fats & Oils

4100 Corn Oil (wt col)  
 4115 Vegeline (vol)  
 4120 Cottonseed Oil (wt vol)



- 4105 Shortening, All Purpose (wt vol)
- 4110 Shortening, Liquid (wt vol)

FATS, OILS & NUTS: Nuts

- 4200 Almonds, Slivered (wt)
- 4205 Almond, Whole (wt vol)
- 4210 Deluxe Mixed Nuts (wt)
- 4230 Mixed Nuts (wt)
- 4231 Sunflower Seed, Shell (vol)
- 4230 Pecans, Edible Portions (wt vol)
- 4215 Virginia Peanuts, Edible Portions (wt vol)
- 4225 Walnuts, Edible Portions (wt vol)

FLOUR, CEREAL, & BREADS: Breads

- 5160 Bagel (wt count: 1 bagel)
- 5135 Coney Buns (wt count: 1 bun)
- 5100 Cracked Wheat Bread (wt count: 16 slices)
- 5170 English Muffin (count: 1 muffin)
- 5105 French Bread (wt)
- 5145 Hamburger Buns (wt count: 1 bun)
- 5150 Hamburger Buns, Sesame (wt count: 1 bun)
- 5155 Hogi Bun (count: 1 bun)
- 5165 Onion Bun (count: 1 bun)
- 5110 Pinwheel Bread (wt)
- 5115 Rye Bread (wt count: 16 slices)
- 5120 Texas Toast (wt count: 15 slices)
- 5125 White Bread (wt count: 16 slices)
- 5130 Whole Wheat Bread (wt count: 16 slices)

FLOUR, CEREAL & BREADS: Bread-type Mixes

- 5200 Basic Muffin Mix (wt)
- 5210 Golden Rich Pancake Mix (wt)
- 5205 Old West Pancake Mix (wt)

FLOUR, CEREAL & BREADS: Cereals: Ready-to-Eat

- 5300 Cheerios, Individual (count: 1 box)
- 5305 Corn Flakes, Individual (wt count: 1 box)
- 5310 Frosted Flakes, Individual (wt count: 1 box)
- 5315 Granola, 2 lb. 8 oz. (wt count: 1 box)
- 5320 Product 19, Individual (wt count: 1 box)
- 5325 Puffed Rice, Individual (count: 1 box)
- 5330 Puffed Wheat, Individual (wt count: 1 box)
- 5335 Raisin Bran, Individual (wt count: 1 box)
- 5340 Rice Krispies, 13 oz. (wt count: 1 box)
- 5345 Rice Krispies, Individual (wt count: 1 box)
- 5350 Shredded Wheat, Individual (wt count: 1 box)
- 5355 Special K, 1 pound (wt)
- 5360 Special K, Individual (wt count: 1 box)
- 5365 Sugar Smacks, Individual (wt count: 1 box)
- 5370 Sugar Pops, Individual (wt count: 1 box)
- 5375 Wheaties, Individual (wt count: 1 box)

## FLOUR, CEREAL &amp; BREADS: Cereals, uncooked

- 5405 Cream of Wheat, cooked (wt vol count: 1 box)
- 5400 Cream of Wheat, uncooked (wt vol count: 1 box)
- 5415 Malt-O-Meal, cooked (wt count: 1 box)
- 5410 Malt-O-Meal, uncooked (wt count: 1 box)
- 5425 Oatmeal, cooked (wt vol)
- 5420 Oatmeal, uncooked (wt vol)

## FLOUR, CEREALS, &amp; BREADS: Donuts, Rolls &amp; Pastry

- 5510 Bismark, large (wt count: 1 bismark)
- 5515 Donut, Cake, large, (wt count: 1 donut)
- 5535 Donut, Powdered (wt count: 1 donut)
- 5540 Donut, Raised (count: 1 donut)
- 5520 Eclairs (count 1 eclair)
- 5500 Rolls, dinner (wt count: 12 per pkg)
- 5525 Roll, French (count: 1 roll)
- 5530 Roll, Hard (wt count: 1 roll)
- 5505 Roll, Parker House (count: 1 roll)
- 5545 Roll, Sweet (wt count: 1 roll)

## FLOUR, CEREALS &amp; BREADS: Pastas

- 5625 Noodles, Lasagna, cooked (wt)
- 5620 Noodles, Lasagna, uncooked (wt)
- 5615 Noodles, Wide Egg, cooked (wt)
- 5610 Noodles, Wide Egg, uncooked (wt)
- 5635 Macaroni, Elbow, cooked (wt)
- 5630 Macaroni, Elbow, uncooked (wt)
- 5675 Macaroni Rings, cooked (wt)
- 5670 Macaroni Rings, uncooked (wt)
- 5645 Macaroni Shell, cooked (wt)
- 5640 Macaroni Shell, uncooked (wt)
- 5605 Mostaccoli, cooked (wt)
- 5600 Mostaccoli, as purchased, uncooked (wt)
- 5655 Spaghetti, cut, cooked (wt)
- 5650 Spaghetti, cut, uncooked (wt)
- 5665 Spaghetti, Italian, cooked (wt)
- 5660 Spaghetti, Italian, uncooked (wt)

## FLOUR, CEREAL AND BREADS: Ready Foods

- 5740 Cones, Ice Cream (wt count: 1 cone)
- 5730 Cones, Ice Cream, sugar (count: 1 cone)
- 5790 Corn Chips, Individual (wt count: 1 pkg)
- 5712 Cracker, Ritz (wt)
- 5785 Crackers, soda, 2-pack (count: 1 pack)
- 5720 Croutettes (wt)
- 5760 Noodles, Chow Mein (wt)
- 5743 Potato Chips, bulk (wt vol)
- 5745 Pretzels (wt)
- 5795 Ry Krisp (count: 1 packet)
- 5765 Sociables, case (wt count: 100 per case)

5780 Sugar Wafers, each (count: 1 packet)  
 5770 Swiss Creams, each (count: 1 packet)  
 5775 Taco Chips, Individual (wt count: 1 package)  
 5710 Taco Shells (count: 1 shell)  
 5750 Tart Shell (count: 1 shell)  
 5700 Waffle (wt count: 1 waffle)

FLOUR, CEREALS, & BREADS: Grain & Flours

5800 Corn Flake, Crumbs (wt count: 1 box)  
 5810 Corn Meal, cooked (wt vol)  
 5805 Corn Meal, as purchased, uncooked (wt vol)  
 5815 Cracker Meal (wt vol)  
 5820 Flour, All Purpose (wt vol)  
 5845 Flour, Cake (wt)  
 5840 Flour, Whole Wheat (wt vol)  
 5850 Flour, Wondra (wt)  
 5825 Graham Crackers Crumbs (wt)  
 5835 Rice, Cooked (wt vol)  
 5830 Rice, uncooked (wt vol)

FRUITS: Canned

6109 Applesauce #10 (wt vol can)  
 6100 Apples, sliced #10 (wt can)  
 6103 Apples, Spiced Ring, undrained #10 (wt can count: 100 rings)  
 6115 Apricot, halves, drained #10 (wt can)  
 6112 Apricot, halves; undrained #10 (wt can)  
 6118 Cherries, Bing pitted, undrained #10 (wt can)  
 6122 Cherries, Maraschino, Halves drained (wt vol count: 858 halves)  
 6121 Cherries, Maraschino, halves, undrained (wt vol count: 858 halves)  
 6185 Cherries, Red Tart Pitted, drained #10 (wt can)  
 6184 Cherries, Red Tart Pitted #10 (wt can)  
 6127 Cherries, Royal Anne, drained #10 (wt can)  
 6124 Cherries, Royal Anne, undrained #10 (wt can)  
 6130 Crabapple, whole spiced, undrained #10 (wt can)  
 6178 Figs #10 (wt can)  
 6133 Fruit cocktail, undrained #10 (wt vol can)  
 6143 Grapefruit Sections drained #10 (wt can)  
 6142 Grapefruit Sections, undrained #10 (wt can)  
 6137 Grapes, Maraschino, drained #10 (wt can)  
 6136 Grapes, Maraschino, undrained #10 (wt can)  
 6140 Grapes, Thompson, drained #10 (wt can)  
 6139 Grapes, Thompson, undrained #10 (wt can)  
 6146 Oranges, Mandarin, drained #10 (wt can)  
 6145 Oranges, Mandarin, undrained #10 (wt can)  
 6149 Peach Halves, drained #10 (wt can)  
 6148 Peach Halves, undrained #10 (wt can)  
 6154 Peach Slices, drained #10 (wt can)  
 6151 Peach Slices, undrained #10 (wt can)  
 6158 Pear Halves drained #10 (wt can)  
 6157 Pear Halves, undrained #10 (wt can)  
 6161 Pineapple, Crushed, drained #10 (wt can)

- 6060 Pineapple, crushed, undrained #10 (wt can)
- 6186 Pineapple, Mini Sliced, undrained #10 (wt can)
- 6164 Pineapple, sliced rings, drained #10 (wt can)
- 6163 Pineapple, sliced rings, undrained #10 (wt can)
- 6167 Pineapple, tidbits, drained #10 (wt can)
- 6166 Pineapple, tidbits, undrained #10 (wt vol can)
- 6170 Plums, drained #10 (wt can)
- 6169 Plums, undrained #10 (wt can)
- 6172 Prunes, undrained #10 (wt can)
- 6175 Raisins (wt vol)

#### FRUITS: Fresh

- 6200 Apples, medium edible portions raw (wt count: 1 apple)
- 6204 Avocado, edible portions, raw (wt count: 1 avocado)
- 6208 Banana, medium edible portions raw (wt count: 3 bananas)
- 6264 Blueberries, edible portions raw (wt)
- 6212 Cantaloupe, No. 36 edible portions raw (wt count: 1 cantaloupe)
- 6224 Grapefruit, No. 64 edible portions raw (wt count: 1 grapefruit)
- 6228 Honeydew, edible portions sliced or diced (wt count: 1 melon)
- 6230 Honeydew, edible portions wedge 1/8 (wt count: 1 melon)
- 6232 Lemon, medium edible portions (wt count: 1 lemon)
- 6256 Oranges, edible portions raw (wt count: 1 orange)
- 6236 Pineapple, edible portions jumbo size 5 (count: 1 pineapple)
- 6240 Preserved Fruit (wt)
- 6260 Raspberries, edible portions raw (wt)
- 6244 Strawberries, edible portions raw (wt)
- 6248 Watermelon, edible portions raw (wt)
- 6252 Yellow Apples, medium edible portions raw (wt count: 1 apple)

#### FRUITS: Frozen

- 6300 Blueberries, frozen (wt)
- 6350 Raspberries, frozen (wt)
- 6375 Strawberries, frozen (wt)

#### FRUITS: Juices

- 6406 Apple Cider (wt vol)
- 6400 Apple Juice #5 (wt vol can)
- 6400 Apple Juice #5 (wt vol can)
- 6408 Apricot Juice #5 (wt vol can)
- 6412 Blended Juice #5 (wt vol can)
- 6424 Grapefruit Tang, dehydrated (wt count: 1 bottle)
- 6428 Grapefruit Tang, rehydrated (wt count: 1 bottle)
- 6436 Grape Juice frozen, concentrate (wt)
- 6440 Grape Juice frozen, reconstituted (wt)
- 6444 Lemonade, frozen, concentrate (wt vol can)
- 6448 Lemonade, frozen, reconstituted (wt vol can)
- 6416 Lemon Juice, Real (wt vol)
- 6452 Orange Juice frozen, concentrate (wt vol can)

6456 Orange Juice frozen, reconstituted (wt vol can)  
 6432 Orange Juice - Ready #5 (wt vol can)  
 6420 Pineapple, Juice #5 (wt vol can)

MEAT, FISH, POULTRY & ENTREES: Beef

7110 Beef, Chow Mein Cut (wt)  
 7115 Beef, Corned (wt)  
 7116 Beef, Diced (wt)  
 7120 Beef, Dried (wt)  
 7130 Beef, Ground Lean, cooked & drained (wt vol)  
 7125 Beef, Ground Lean, uncooked (wt vol)  
 7139 Beef Patties 3 - student dinner (wt count: 3 per pound)  
 7140 Beef Patties 4 (wt count: 4 per pound)  
 7141 Beef Patties 5 - student lunch (wt count: 5 per pound)  
 7142 Beef Patties 6 snack bar (wt count: 6 per pound)  
 7135 Liver Sliced (wt count: 4 per pound)  
 7150 Ribs, Beef Short (wt count: 3 ribs)  
 7145 Roast, Prime Rib (wt)  
 7105 Steak, Breakfast (wt)  
 7155 Steak, Cubed (wt count: 3 per pound)  
 7160 Steak, Sirloin (wt)

MEAT, FISH, POULTRY & ENTREES: Fish & Shellfish

7205 Fish Almondine (wt count: 3 per pound)  
 7225 Mini Shrimp (wt)  
 7215 Square Fish (wt count: 4 per pound)  
 7223 Tuna drained 4 lb. can (wt vol can)  
 7220 Tuna undrained 4 lb. can (wt vol can)

MEAT, FISH, POULTRY & ENTREES: Poultry

7330 Chicken Breast Boneless (wt count: 1 breast)  
 7310 Chicken Raw Quarters (wt count: 2 per pound)  
 7315 Chicken Pulled (wt)  
 7335 Turkey Breast (wt)  
 7340 Turkey Cubed (wt)  
 7350 Turkey Ham (wt)  
 7360 Turkey Pullman Roll (wt)  
 7365 Turkey Thighs (wt)  
 7355 Turkey Wieners (wt)

MEAT, FISH, POULTRY & ENTREES: Lamb

7400 Lamb Shoulder Roast (wt)

MEAT, FISH, POULTRY, & ENTREES: Lunch Meats & Sausages

7500 Bologna (wt)  
 7505 Ham & Cheese Loaf (wt)  
 7510 Ham Loaf (wt)  
 7515 Liver Sausage (wt)  
 7525 Polish Sausage (wt)  
 7530 Salami (wt)

- 7535 Salami and Cheese (wt)
- 7520 Turkey Pastrami (wt)
- 7540 Thuringer (wt)
- 7545 Wieners (wt count: 10 wieners)
- 7550 Wieners hog casing (wt count: 8 wieners)

MEAT, FISH, POULTRY & ENTREES: Pork

- 7605 Bacon, Canadian (wt)
- 7610 Bacon, Layout (wt count: 22 slices per pound)
- 7612 Bacon, precooked (wt)
- 7615 Baconex (count: 500 slices)
- 7620 Ham, Buffet (wt)
- 7630 Ham, Canned Chef (wt)
- 7625 Ham, Canned Pullman (wt)
- 7600 Pork, Back Ribs (wt)
- 7640 Pork Chops (wt count: 3 per pound)
- 7660 Pork Cutlets (wt count: 3 per pound)
- 7645 Pork, Ground (wt)
- 7650 Pork, Roast Boneless (wt)
- 7665 Sausages, Brown & Serve (wt count: 20 links)
- 7655 Sausages, Links (wt count: 12 links)

MEAT, FISH, POULTRY & ENTREES: Ready Foods & Entrees

- 7700 Beef Burgundy, preprepared 12 lb. (wt vol count: 1 pan)
- 7703 Beef Burgundy, preprepared 1 lb. (wt)
- 7706 Beef Pies, preprepared (wt count: 1 pie)
- 7709 Beef Stew, preprepared 12 lb. (wt vol count: 1 pan)
- 7712 Beef Stew, preprepared 1 lb. (wt)
- 7766 Chicken Cordon Bleu, preprepared (wt count: 2 portions)
- 7751 Chicken Fricassee, preprepared (wt)
- 7754 Chicken Kiev, preprepared (wt count: 1 portion)
- 7757 Chicken Pot Pie, case (wt count: 12 pies)
- 7784 Chile with Beans #10 (wt can)
- 7769 Corn Dogs, preprepared (wt count: 1 cord dog)
- 7730 English Cut Whitefish, preprepared (wt)
- 7739 Flounder Stuffed, preprepared (wt count: 1 fish portion)
- 7748 Haddock Stuffed & Breaded, preprepared (wt)
- 7760 Lamb Leg, precooked (wt)
- 7778 Lasagna, preprepared (wt)
- 7715 Meat Balls, preprepared (wt)
- 7718 Meat Loaf, preprepared (wt)
- 7775 Mini Cod Breaded, preprepared (wt count: 8 per pound)
- 7772 Pizza Combinations, preprepared (wt)
- 7790 Pork Loin, precooked (wt)
- 7781 Ravioli #10 preprepared (wt can)
- 7721 Roast Beef Round, precooked preprepared (wt)
- 7724 Salisbury Steak, preprepared (wt)
- 7733 Whiting, preprepared (wt count: 6 per pound)

MEAT, FISH, POULTRY & ENTREES: TVP

- 7800 Bac-0-Chips (wt vol)
- 7825 Bontrae (wt)

7826 TVP (wt)

MEAT, FISH, POULTRY & ENTREES: Veal

7925 Cubed Veal (wt)

7900 Veal Cutlet (wt count: 4 per pound)

STAPLES, SWEETS & SEASONINGS: Condiments

8109 Catsup (wt vol)

8112 Catsup, Individual (count: 1 packet)

8100 Dressing, Blue Cheese (wt vol)

8106 Dressing, Caesar (wt vol)

8115 Dressing, Coleslaw (wt vol)

8118 Dressing, French Individual (count: 1 packet)

8121 Dressing, Green Goddess (wt vol)

8127 Dressing, Hostess (wt vol)

8169 Dressing, Italian (wt vol)

8103 Dressing, 1000 Island (wt vol)

8124 Horseradish (wt vol)

8130 Kitchen Bouquet (wt vol)

8133 Mapleine (wt vol)

8136 Mayonnaise, Individual (count: 1 packet)

8139 Miracle Whip (wt vol)

8142 Mustard, Individual (count: 1 packet)

8145 Mustard, Prepared (wt vol)

8148 Tabasco Sauce (wt vol)

8150 Taco Sauce, individual (count: 1 packet)

8172 Taco Seasonings (wt vol)

8151 Vinegar, Cider (wt vol)

8154 Vinegar, White (wt vol)

8157 Vinegar, Wine (wt vol)

8163 Waffle Syrup (wt vol)

8166 Waffle Syrup, Individual (count: 1 packet)

8160 Worcestershire (wt vol)

STAPLES, SWEETS & SEASONINGS: Confectionary

8248 Butterscotch Sprigs (wt)

8254 Chocolate Bakers to be grated (wt vol count: 6 squares)

8251 Chocolate, Bakers to be melted (wt vol count: 6 squares)

8258 Chocolate Chips (wt)

8257 Chocolate Sprigs (wt)

8260 Cocoa dry (wt vol)

8269 Coconut, Shredded (wt vol)

8245 Honey (wt vol)

8230 Marshmallow, Mini (wt)

8233 Marshmallow, Regular (wt vol)

8272 Molasses, Light (wt vol count: 1 bottle)

8275 Peanut Butter Smooth (wt vol)

8203 Sugar, Brown light pack (wt vol)

8200 Sugar, Brown solid pack (wt vol)

8242 Sugar, Colored (wt vol)

8206 Sugar, Individual (count: 1 packet)

8209 Sugar, Powdered (wt vol)

8212 Sugar, White (wt vol)  
 8215 Syrup, Dark Corn (wt vol count: 1 bottle)  
 8218 Syrup, Light Corn (wt vol count: 1 bottle)  
 8221 Topping, Butterscotch #10 (wt can)  
 8236 Topping, Caramel #10 (wt can)  
 8224 Topping, Chocolate #10 (wt can)  
 8239 Topping, Hot Fudge #10 (wt can)  
 8227 Topping, Marshmallow #10 (wt can)

STAPLES, SWEETS & SEASONINGS: Flavorings & Food Coloring

8310 Extract, Almond (wt vol)  
 8320 Extract, Peppermint (wt vol)  
 8315 Extract, Vanilla (wt vol)  
 8300 Food Coloring, Red (wt vol)  
 8305 Food Coloring, Yellow (wt vol)

STAPLES, SWEETS & SEASONINGS: Jello

8400 Flavored Gelatin (wt)

STAPLES, SWEETS & SEASONINGS: Jelly, Jams & Preserves

8500 Apple Jelly #10 (wt vol can)  
 8505 Current Jelly #10 (wt can)  
 8510 Grape Jelly #10 (wt vol can)  
 8515 Honey, Individual (count: 1 packet)  
 8520 Mint Jelly (wt)  
 8525 Orange Marmalade #10 (wt can)  
 8530 Raspberry Preserves #10 (wt can)  
 8535 Strawberry Preserves #10 (wt vol can)

STAPLES, SWEETS & SEASONINGS: Sauces

8630 BBQ Sauce (wt vol)  
 8600 Cheese Sauce #10 (wt vol can)  
 8640 Chili Sauce #10 (wt can)  
 8605 Cranberry Sauce #10 (wt vol can)  
 8645 Durkees Sauce (wt vol)  
 8615 Soy Sauce (wt vol)  
 8610 Spaghetti Sauce #10 (wt vol can)  
 8635 Tartar Sauce (wt vol)  
 8625 White Sauce Mix, made (wt)  
 8620 White Sauce Mix, unmade dry (wt vol)

STAPLES, SWEETS & SEASONINGS: Soups

8703 Beef Base Concentrate (wt)  
 8706 Beef Noodle Soup, condensed #5 (wt vol can)  
 8760 Beef Vegetable Barley Soup, condensed #5 (wt vol can)  
 8700 Bean with Bacon Soup, condensed #5 (wt vol can)  
 8712 Chicken Base Concentrate (wt)  
 8715 Chicken Beef Consomme #5 (wt vol can)  
 8721 Chicken Gumbo Soup, condensed #5 (wt vol can)  
 8724 Chicken Noodle Soup, condensed #5 (wt vol can)



8727 Chicken Rice Soup, condensed #5 (wt vol can)  
8763 Consomme, condensed #5 (wt vol can)  
8709 Cream of Celery Soup, condensed #5 (wt vol can)  
8710 Cambell Cream of Celery Soup #5 (wt vol can)  
8718 Cream of Chicken Soup, condensed #5 (wt vol can)  
8719 Cambell Cream of Chicken Soup #5 (wt vol can)  
8733 Cream of Mushroom Soup, condensed #5 (wt vol can)  
8734 Cambell Cream of Mushroom Soup #5 (wt vol can)  
8742 Cream of Tomato Soup, condensed #5 (wt vol can)  
8766 Cream of Pea Soup, condensed #5 (wt vol can)  
8772 Cream of Potato Soup, condensed #5 (wt vol can)  
8754 Manhattan Clam Chowder, condensed #5 (wt vol can)  
8730 Minestrone Soup, condensed #5 (wt vol can)  
8757 New England Clam Chowder, condensed #5 (wt vol can)  
8736 Onion Soup, condensed #5 (wt vol can)  
8739 Split Pea Soup, condensed #5 (wt vol can)  
8745 Tomato Rice Soup, condensed #5 (wt vol can)  
8748 Vegetable Beef Soup, condensed #5 (wt vol can)  
8769 Vegetable Soup, condensed #5 (wt vol can)  
8751 Vegetarian Vegetable Soup, condensed #5 (wt vol can)

STAPLES, SWEETS & SEASONINGS: Spices

8800 All Spice (wt vol)  
8887 Basil, Sweet leaf (wt vol)  
8803 Bay Leaves, whole (wt)  
8804 Bay Leaves, crushed (wt)  
8806 Caraway Seed (wt vol)  
8809 Celery Salt (wt vol)  
8812 Celery Seed (wt vol)  
8815 Chili Powder (wt vol)  
8818 Cinnamon, Ground (wt vol)  
8821 Cinnamon, Stick (wt)  
8824 Cloves, Ground (wt vol)  
8827 Cloves, White (wt vol)  
8830 Curry Powder (wt vol)  
8833 Garlic Powder (wt vol)  
8836 Garlic Salt (wt vol)  
8839 Ginger (wt vol)  
8842 MSG (wt vol)  
8845 Mustard, dry (wt vol)  
8848 Nutmeg (wt vol)  
8851 Onion Salt (wt vol)  
8854 Oregano, powdered (wt vol)  
8857 Paprika (wt vol)  
8860 Pepper, Black ground (wt vol)  
8866 Pepper, Black whole (wt)  
8869 Pepper, Individual Package (count: 1 packet)  
8863 Pepper, White ground (wt vol)  
8872 Sage (wt vol)  
8893 Salt, Cooking (wt vol)  
8878 Salt, Individual (count: 1 packet)  
8896 Salt, Lowry (wt vol)  
8881 Salt, Table (wt vol)  
8884 Sesame Seed (wt vol)

8890 Thyme, powdered (wt vol)  
 8875 Tumeric (wt vol)

STAPLES, SWEETS, & SEASONINGS: Staples

8900 Baking Powder (wt vol)  
 8905 Baking Soda (wt vol count: 1 box)  
 8910 Clear Jel (wt)  
 8915 Cornstarch (wt vol count: 1 box)  
 8902 Cream of Tartar (wt vol)  
 8925 Yeast (wt)

VEGETABLES: Canned

9109 Beans, Baked #10 (wt vol can)  
 9110 Beans, Garbanzo, undrained #10 (wt vol count)  
 9111 Beans, Garbanzo drained #10 (wt vol count)  
 9115 Beans, Green cut, drained #10 (wt can)  
 9112 Beans, Green cut, undrained #10 (wt can)  
 9195 Beans, Green Whole, drained #10 (wt can)  
 9194 Beans, Green whole, undrained #10 (wt can)  
 9120 Beans, Kidney, drained #10 (wt can)  
 9118 Beans, Kidney, undrained #10 (wt can)  
 9199 3-Bean Salad (wt vol)  
 9130 Bean Sprouts, drained #10 (wt can)  
 9127 Bean Sprouts, undrained #10 (wt can)  
 9124 Beans, wax drained #10 (wt can)  
 9121 Beans, wax, undrained #10 (wt can)  
 9136 Beets, Sliced, drained #10 (wt can)  
 9133 Beets, Sliced, undrained #10 (wt can)  
 9139 Corn, Cream Style #10 (wt can)  
 9145 Corn, Whole Kernel, drained (wt can)  
 9142 Corn, Whole Kernel, undrained (wt can)  
 9151 Mushrooms, drained #10 (wt can)  
 9148 Mushrooms, undrained #10 (wt can)  
 9157 Onions, Whole, drained #10 (wt can)  
 9154 Onions, Whole, undrained #10 (wt can)  
 9191 Peas, Early June, drained #10 (wt can)  
 9188 Peas, Early June, undrained #10 (wt can)  
 9163 Pimiento, drained #1 (wt can)  
 9160 Pimiento, undrained #1 (wt can)  
 9100 Potato, Irish #10 (wt can)  
 9103 Potato Salad, German #5 (wt can)  
 9106 Potato, Sweet, drained #10 (wt can)  
 9105 Potato, Sweet, undrained #10 (wt can)  
 9166 Pumpkin #10 (wt can)  
 9172 Sauerkraut, drained #10 (wt can)  
 9169 Sauerkraut, undrained #10 (wt can)  
 9175 Tomatoes, Diced #10 (wt can)  
 9178 Tomato Paste #10 (wt can)  
 9181 Tomato Puree #10 (wt can)  
 9145 Waterchestnuts, drained #10 (wt vol can)  
 9184 Waterchestnuts, undrained #10 (wt vol can)

## VEGETABLES: Dehydrated

9230 Onions, Chopped, rehydrated (wt vol)  
 9220 Onions, Chopped unhydrated (wt vol)  
 9280 Parsley Flakes, dried (wt vol)  
 9250 Pepper, Diced Green, rehydrated (wt)  
 9240 Pepper, Diced Green, unhydrated (wt vol)  
 9270 Potatoes, Diced, freeze dried rehydrated (wt vol)  
 9260 Potatoes, Diced, freeze dried unhydrated (wt vol)  
 9210 Potatoes, Instant, #10 cooked and mashed (wt vol)  
 9200 Potatoes, Instant #10 uncooked (wt can)

VEGETABLES: Fresh (Note: only if item says preprepared is it  
 actually bought in given form, otherwise buyer  
 does cooking, slicing, etc.)

9305 Broccoli cuts raw (wt)  
 9306 Cabbage, raw coleslaw (wt)  
 9310 Cabbage raw preprepared (wt)  
 9300 Cabbage, sliced and cooked (wt)  
 9303 Cabbage, wedge cooked (wt)  
 9315 Carrots, cooked sliced or diced (wt)  
 9312 Carrots, raw grated (wt vol count: 5 carrots)  
 9309 Carrots, raw strips or diced (wt vol count: 5 carrots)  
 9321 Cauliflower, cooked (wt)  
 9318 Cauliflower, raw sliced (wt)  
 9396 Celery Cabbage, raw (count: 1 head)  
 9327 Celery, cooked cut or chopped (wt)  
 9324 Celery, raw chopped preprepared (wt vol)  
 9330 Celery, whole case, edible portions (wt)  
 9333 Cucumber, raw peeled and sliced (wt)  
 9339 Cucumber, raw unpeeled and sliced (wt)  
 9342 Endive, raw (count: 1 bunch)  
 9348 Lettuce, Head, raw (wt count: 1 head)  
 9345 Lettuce, Leaf, raw (wt)  
 9351 Onions, Green, raw (count: 1 bunch)  
 9357 Onions, Whole, raw peeled, grated or chopped (wt vol)  
 9354 Onions, Whole, raw peeled preprepared (wt)  
 9360 Parsley, raw edible portions (wt count: 1 bunch)  
 9369 Pepper, Green, cooked strips (wt)  
 9363 Pepper, Green, raw diced or strips (wt)  
 9393 Potato, Baker (wt count)  
 9372 Romaine, raw (wt)  
 9374 Rutabagas, Fresh (wt)  
 9381 Salad, deluxe preprepared (wt)  
 9378 Salad, medium preprepared (wt)  
 9375 Salad, plain preprepared (wt)  
 9390 Slaw processed preprepared (wt vol)  
 9399 Tomatoes, Cherry raw (vol)  
 9384 Tomatoes, raw sliced (wt)  
 9387 Zucchini, raw (wt)

## VEGETABLES: Frozen

9421 Beans, French Cut, frozen cooked (wt)  
 9418 Beans, French Cut, frozen uncooked (wt)  
 9427 Beans, Green, frozen cooked (wt)  
 9424 Beans, Green, frozen uncooked (wt)  
 9433 Beans, Lima, frozen cooked (wt vol)  
 9430 Beans, Lima, frozen uncooked (wt)  
 9446 Broccoli, Cut, frozen cooked (wt)  
 9445 Broccoli, Cut, frozen uncooked (wt)  
 9442 Broccoli Spears, frozen (wt)  
 9451 Brussel Sprouts, frozen cooked (wt)  
 9448 Brussel Sprouts, frozen uncooked (wt)  
 9457 Carrots, Sliced, frozen cooked (wt)  
 9454 Carrots, Sliced, frozen uncooked (wt)  
 9463 Carrots, Whole frozen cooked (wt)  
 9460 Carrots, Whole, unfrozen cooked (wt)  
 9469 Cauliflower, frozen cooked (wt)  
 9466 Cauliflower, frozen uncooked (wt)  
 9439 Corn, Cut, frozen cooked (wt)  
 9436 Corn, Cut, frozen uncooked (wt)  
 9406 French Fries, frozen (wt)  
 9403 Hash Browns, frozen cooked (wt)  
 9400 Hash Browns, frozen uncooked (wt)  
 9478 Onions, Chopped, frozen (wt)  
 9490 Peas and Pearl Onions, frozen (wt)  
 9487 Peas, frozen cooked (wt)  
 9484 Peas, frozen uncooked (wt)  
 9494 Spinach, frozen cooked (wt)  
 9493 Spinach, frozen uncooked (wt)  
 9497 Squash, frozen cooked (wt)  
 9496 Squash, frozen uncooked (wt)  
 9412 Tater Tots, frozen (wt, count: 50)  
 9409 Tritaters, frozen (count: 1 tritater)  
 9475 Vegetables, Mixed, frozen cooked (wt)  
 9472 Vegetables, Mixed, frozen uncooked (wt)  
 9499 Zucchini, frozen (wt)

## VEGETABLES: Juices

9530 Cranberry Cocktail #5 (wt vol can)  
 9500 Cranberry Juice #5 (wt vol can)  
 9510 Tomato Juice #5 (wt vol can)  
 9520 V-8 Cocktail #5 (wt vol can)

## VEGETABLES: Pickles, Olives, Relishes, etc.

9647 Olives, Green broken, drained (wt vol)  
 9645 Olives, Green Broken, undrained (wt vol)  
 9605 Olives, Green Whole, large gallon drained (wt count: 210 olives)  
 9606 Olives, Green Whole, large individual (wt count: 1 olive)  
 9612 Olives, Ripe Jumbo whole drained #10 (wt vol count: 192 olives)  
 9610 Olives, Ripe Jumbo whole undrained #10 (wt vol can count:

192 olives)  
9611 Olives, Ripe Whole Individual (wt count:1 olive)  
9600 Olives, Ripe Sliced #10 (wt can)  
9650 Olives, Stuffed undrained (vol)  
9618 Pickles, Dill Crosscut, drained (wt vol count: 600 slices)  
9615 Pickles, Dill Crosscut, undrained (wt vol count: 600 slices)  
9623 Pickles, Dill Spears, drained (wt count: 83 pickles)  
9620 Pickles, Dill Spears, undrained (wt count: 83 pickles)  
9643 Pickles, Kosher Dill, drained (wt vol count: 100 pickles)  
9640 Pickles, Kosher Dill, undrained (wt vol count: 100 pickles)  
9628 Pickles, Sweet, drained (wt count: 300 pickles)  
9625 Pickles, Sweet, undrained (wt count: 300 pickles)  
9633 Pickles, Watermelon, drained (wt vol count: 200 pickles)  
9630 Pickles, Watermelon, undrained (wt vol count: 200 pickles)  
9636 Relish, Sweet, drained (wt vol)  
9635 Relish, Sweet, undrained (wt vol)  
9655 Relish, Vegetable, undrained (vol)

## WATER

0001 Water (wt vol)

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