

Introduction

It is a big – and very important – job to plan, purchase, prepare, and serve nourishing meals for the U.S. Department of Agriculture’s Child Nutrition Programs. Every day, your work helps fight hunger and improve the nutritional health of children in America.

Whether you are serving food to a small number of children or adults or thousands of students, you need to think carefully about each meal.

- *Will the meal meet the appropriate requirements of the various Child Nutrition Programs?*
- *How many servings will you get from a specific quantity of food?*
- *What quantity of the raw product will provide the amount of ready-to-cook food called for in a recipe?*
- *How much food will you need to buy?*

The *Food Buying Guide for Child Nutrition Programs* is designed to help you in two important ways:

1. It will help you or your purchasing agent buy the right amount of food and buy it most economically whether you use one of the food-based or the nutrient standard menu planning approaches.
2. For the food-based menu planning options, it will help you determine the specific contribution each food makes toward the meal pattern requirements. This is necessary to ensure that meals provide needed nourishment and meet program requirements for reimbursement.



In addition, with yield data for more than 1,200 food items, this guide can provide ideas for adding new foods or new forms of familiar foods to your menus. The *Dietary Guidelines for Americans* emphasize that a variety of fruits, vegetables, and grains, especially whole grains, are key elements of a healthful diet. By offering a wide variety of nourishing foods, you are giving children greater opportunity to develop eating habits that will promote life-long good health.

What is New in This Updated Guide?

As with the previous *Food Buying Guide* last revised in 1984, this new edition will be widely used by school food service professionals. It is also appropriate for use in the Child and Adult Care Food Program as well as the Summer Food Service Program. Meal patterns for each of these Child Nutrition Programs are shown on pages I-7 through I-27.

The *Food Buying Guide for Child Nutrition Programs* was first published in 1947. Since then it has been updated several times to add new foods and to reflect changes in processing technology or packaging that may affect yield.

For example, many schools now purchase ready-to-serve salads and pre-cut vegetables. These were not widely available the last time the guide was revised in 1984.

This new guide *replaces* the 1984 edition. The new guide:

- *is the most comprehensive to date.* It includes over five hundred new food items or new pack sizes, each carefully tested in a food service setting using the equipment and methods that would be used in a typical food service setting.
- *has a new look, with an updated design.* The yield data tables, however, appear in a familiar format so you can continue to use them easily.
- *is packed with helpful information.* For example, a series of variations of practical examples serves as a how-to guide for working with the yield data tables.
- *contains updated meal pattern charts and adds a chart summarizing required menu item for the nutrient standard menu planning approach.*
- *has the following appendices:*

Appendix A: Recipe Analysis. This section has been added as a quick method to see if your USDA modified or locally produced recipes will provide the servings that you need for your planned meal.

Appendix B: Determining the Number of Servings, for Crediting Purposes, from a Particular Food. This section shows how to calculate the credit of one portion of a recipe using Column 6 (Additional Information).

Appendix C: The USDA Child Nutrition (CN) Labeling Program. This section provides a brief description of the CN label program, what types of foods can be CN labeled, and what a CN label looks like. It also contains yield data for food items used primarily by industry.

Appendix D: Food Purchasing. Summaries of *First Choice* and *Choice Plus* are included as a resource for purchasing foods.

Appendix E: Resources. Other resources related to food service, food preparation, food safety, meal planning, and more. There is also a quick reference guide for various Internet addresses and phone numbers.

Yields

Yield information is a valuable planning tool. Use it as a guideline to purchase sufficient food for the meals you will prepare.

Examples of yield information:

- If you plan to include fresh, chopped tomatoes in a green salad, you will need to know how many pounds of whole tomatoes, minus the waste, will yield the desired amount for the recipe.
- If you have received commodity ground beef and you plan to serve 275 portions of meatloaf which will provide 2 ounces of cooked lean meat per portion, you will need to know how many ounces of *raw* ground beef to include in the recipe to yield 275 2-ounce servings of *cooked* lean meat.
- If you plan to serve a marinated black bean salad, and the recipe calls for 5 pounds of drained, canned, black beans, you need to know how many cans of undrained beans will yield 5 pounds of drained beans, or, the number of pounds of dry, uncooked black beans that could be used instead.

The yield information provided in this guide represents *average yields* based on research conducted by USDA. The yield information given for a specific food is meant to be a planning and production tool.

The yield information in this guide is based on careful portioning and weighing. Measuring tools, such as a volume measure filled level to the top and an accurate scale, were used in the research conducted by USDA.

Using these same tools you must measure or weigh portions carefully and ensure that each serving size is appropriate for the age/grade group you are serving.

If your food service operation is consistently getting a higher or lower yield from a product than the yield specified by the *Food Buying Guide*, you may want to research and document the yield or number of portions of a specified size that the product provides. Prior to obtaining any in-house yield data you must find out if your State agency will allow the use of in-house yield data. If your State agency allows the use of in-house yield data: 1) determine what your State agency procedures are to determine the in-house yields; and 2) maintain documentation required by the State agency.

Specific and verifiable procedures must be followed to document yield.

For example, suppose the yield listed in the *Food Buying Guide* for a #10 can of diced pears is consistently lower than the yield you are getting with the brand of diced pears you are currently purchasing. After checking with your State agency, you find out that you can collect in-house yield data, that the agency requires determining yields from at least six samples, and that the State Agency will need to review and approve the data before it can be used.

Based on procedures set by the State Agency, your program will need to carefully portion (using the appropriate scoop/disher or measuring spoon which is filled level to the top of the measure) at least six (6) #10 cans, carefully counting and documenting the number of specified portions. When the portioning and counting are completed, you will total the number of servings from each of the 6 cans and then divide the total by 6 to get the average number of portions per can. To get a better estimate of yield, at least two people should do the portioning and counting of 6 samples independently. In this example, the State agency reviewed and accepted the in-house yield data and required documentation to be maintained of how the yields for the diced pears were established.

Many factors affect yield, including:

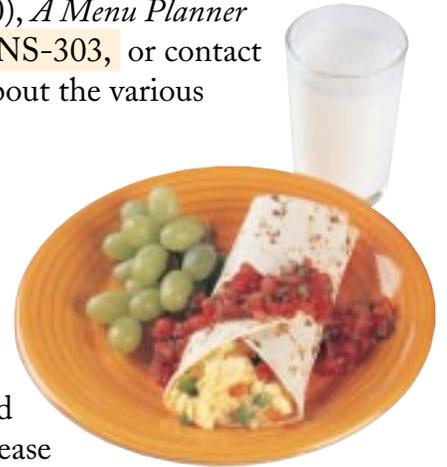
- the quality and condition of the food you buy;
- storage conditions and handling;
- the equipment used in preparation;
- cooking method and time;
- the form in which you serve the food — for example, whether the potatoes you are serving are mashed, fried, or baked; and
- the serving utensils and portion control methods used.

Meal Patterns

For the National School Lunch Program (NSLP) and the School Breakfast Program (SBP), schools may plan meals by:

1. using one of the food-based menu planning approaches,
2. using Nutrient Standard or Assisted Nutrient Standard Menu Planning, or
3. adopting an alternate menu planning approach developed by a State agency or by the school food authority with State agency approval. Please see program regulations (7 CFR Parts 210 and 220), *A Menu Planner for Healthy School Meals* Publication number FNS-303, or contact your State agency for additional information about the various menu planning approaches.

The Child and Adult Care Food Program (CACFP) and the Summer Food Service Program (SFSP) follow meal patterns for planning menus. However, if the CACFP or SFSP is operated by a school using one of the nutrient standard menu planning approaches, that method may also be used for these programs with State Agency approval. Please see program regulations (7 CFR Parts 225 and 226), *The Building Blocks for Fun and Healthy Meals – A Menu Planner for CACFP* Publication number FNS-305 and *Sponsor Meal Preparation Handbook for the Summer Food Service Program for Children* Publication Number FNS-207 or contact your State agency for additional information about menu planning for the CACFP and the SFSP.



Charts 1A & 1B: National School Lunch Program (NSLP)

Chart 1A shows the traditional food-based meal pattern for NSLP. Chart 1B shows the enhanced food-based meal pattern for the NSLP.

USDA recommends, but does not require, that portions be adjusted by age/grade group to better meet the food and nutritional needs of children according to their ages. If portions are not adjusted, the oldest age group served must receive at least the minimum amount for that age group, even though more food will be served than recommended for the lower age groups.

For example, the amounts of food listed under Groups I-IV on the traditional meal pattern for NSLP indicate minimum requirements for the age and grade groups specified. If you do not adjust portions, you must offer the Group IV portions to all students. Group V lists recommended amounts for older students who may need the larger portions.

Also when using the traditional food-based menu planning approach, it is important to ensure that meals provide sufficient calories. The traditional meal pattern was designed to serve as the framework for the meal. Schools are expected to add other foods and condiments to provide taste, enhance appeal, and increase calories and the nutritional value of the meal.

Charts 2A & 2B: School Breakfast Program (SBP)

Chart 2A shows the traditional food-based meal pattern for the SBP. Chart 2B shows the enhanced food-based meal for the SBP.

Chart 3: Afterschool Snacks Served Under the National School Lunch Program (NSLP)

Schools may serve reimbursable supplemental snacks to children in an eligible afterschool snack program. Chart 3 provides the minimum requirements for afterschool snacks.

Chart 4: Child and Adult Care Food Program (CACFP)

For children and adults participating in the CACFP:

Chart 4A shows the meal pattern minimum requirements for breakfast;

Chart 4B shows the meal pattern minimum requirements for lunch;

Chart 4C shows the meal pattern minimum requirements for supper; and

Chart 4D shows the meal pattern minimum requirements for snacks.

Chart 5: Summer Food Service Program (SFSP)

Chart 5 shows the breakfast, lunch or supper, and snack patterns for the SFSP.

Chart 6: Minimum Required Menu Items for Nutrient Standard Menu Planning

Chart 6 is a summary of the menu items required when using the nutrient standard or assisted nutrient standard menu planning approaches.



Chart 1A

SCHOOL LUNCH PATTERNS

TRADITIONAL FOOD-BASED MENU PLANNING – Meal pattern

FOOD COMPONENTS AND FOOD ITEMS	MINIMUM QUANTITIES				RECOMMENDED QUANTITIES
	GROUP I AGES 1 and 2 PRESCHOOL	GROUP II AGES 3 and 4 PRESCHOOL	GROUP III AGES 5-8 GRADES K-3	GROUP IV AGE 9 AND OLDER GRADES 4-12	
Milk , fluid (as a beverage)	6 fl oz (3/4 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Meat or Meat Alternate ^{1, 2, 3, 4, 5} (quantity of the edible portion as served):					
Lean meat, poultry, or fish	1 oz	1-1/2 oz	1-1/2 oz	2 oz	3 oz
Alternate protein products ³	1 oz	1-1/2 oz	1-1/2 oz	2 oz	3 oz
Cheese	1 oz	1-1/2 oz	1-1/2 oz	2 oz	3 oz
Egg (large)	1/2 large egg	3/4 large egg	3/4 large egg	1 large egg	1-1/2 large eggs
Cooked dry beans or peas ⁴	1/4 cup	3/8 cup	3/8 cup	1/2 cup	3/4 cup
Peanut butter or other nut or seed butters	2 Tbsp	3 Tbsp	3 Tbsp	4 Tbsp	6 Tbsp
Yogurt, plain or flavored, unsweetened or sweetened - commercially prepared	4 oz or 1/2 cup	6 oz or 3/4 cup	6 oz or 3/4 cup	8 oz or 1 cup	12 oz or 1-1/2 cup
The following may be used to meet no more than 50% of the requirement and must be used in combination with any of the above: Peanuts, soynuts, tree nuts, or seeds, as listed in program guidance, or an equivalent quantity of any combination of the above meat/meat alternate (1 oz of nuts/seeds=1 oz of cooked lean meat, poultry, or fish) ⁵	1/2 oz = 50% ⁵	3/4 oz = 50% ⁵	3/4 oz = 50%	1 oz = 50%	1-1/2 oz = 50%
Vegetable or Fruit ^{4, 6} Two or more servings of different vegetables, fruits, or both	1/2 cup	1/2 cup	1/2 cup	3/4 cup	3/4 cup
Grains/Breads ⁷ (Servings per week): Must be enriched or whole-grain or made from enriched or whole-grain flour or meal that may include bran and/or germ. A serving is a slice of bread or an equivalent serving of biscuits, rolls, etc., or 1/2 cup of cooked rice, macaroni, noodles, other pasta products, or cereal grains.	5 per week ⁸ -minimum of 1/2 per day	8 per week ⁸ -minimum of 1 per day	8 per week ⁸ -minimum of 1 per day	8 per week ⁸ -minimum of 1 per day	10 per week ⁸ -minimum of 1 per day

¹ Must be served in the main dish or the main dish plus only one other menu item.

² Enriched macaroni with fortified protein may be used to meet part of the meat or meat alternate requirement.

³ Alternate protein products must meet the requirements in Appendix A of 7 CFR Part 210.

⁴ Cooked dry beans or peas may be used as a meat alternate or as a vegetable, but not as both components in the same meal.

⁵ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁶ No more than one-half of the total requirement may be met with full-strength fruit or vegetable juice.

⁷ Enriched macaroni with fortified protein may be used as a meat alternate or as a grains/breads item, but not as both components in the same meal.

⁸ For the purposes of this chart, a week equals 5 school days.

Chart 1B

SCHOOL LUNCH PATTERNS

ENHANCED FOOD-BASED MENU PLANNING — Meal Pattern

FOOD COMPONENTS AND FOOD ITEMS	MINIMUM REQUIREMENTS					OPTION FOR
	AGES 1 and 2	PRESCHOOL	GRADES K-6	GRADES 7-12	GRADES K-3	
Milk , fluid (as a beverage)	6 fl oz (3/4 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Meat or Meat Alternate ^{1, 2, 3, 4, 5} (quantity of the edible portion as served): Lean meat, poultry, or fish	1 oz	1-1/2 oz	2 oz	2 oz	2 oz	1-1/2 oz
Alternate protein products ³	1 oz	1-1/2 oz	2 oz	2 oz	2 oz	1-1/2 oz
Cheese	1 oz	1-1/2 oz	2 oz	2 oz	2 oz	1-1/2 oz
Egg (large)	1/2 large egg	3/4 large egg	1 large egg	1 large egg	1 large egg	3/4 large egg
Cooked dry beans or peas ⁴	1/4 cup	3/8 cup	1/2 cup	1/2 cup	1/2 cup	3/8 cup
Peanut butter or other nut or seed butters	2 Tbsp	3 Tbsp	4 Tbsp	4 Tbsp	4 Tbsp	3 Tbsp
Yogurt, plain or flavored, unsweetened, or sweetened – commercially prepared	4 oz or 1/2 cup	6 oz or 3/4 cup	8 oz or 1 cup	8 oz or 1 cup	8 oz or 1 cup	6 oz or 3/4 cup
The following may be used to meet no more than 50% of the requirement and must be used in combination with any of the above: Peanuts, soynuts, tree nuts, or seeds, as listed in program guidance, or an equivalent quantity of any combination of the above meat/meat alternate (1 oz of nuts/seeds = 1 oz of cooked lean meat, poultry, or fish). ⁵	1/2 oz = 50% ⁵	3/4 oz = 50% ⁵	1 oz = 50%	1 oz = 50%	1 oz = 50%	3/4 oz = 50%
Vegetable or Fruit ^{4, 6} Two or more servings of different vegetables, fruits, or both	1/2 cup	1/2 cup	3/4 cup plus an extra 1/2 cup over a week	1 cup	1 cup	3/4 cup
Grains/Breads ⁷ (Servings per week): Must be enriched or whole-grain or made from enriched or whole-grain flour or meal that may include bran and/or germ. A serving is a slice of bread or an equivalent serving of biscuits, rolls, etc., or 1/2 cup of cooked rice, macaroni, noodles, other pasta products, or cereal grains.	5 per week ⁸ —minimum of 1/2 per day	8 per week ⁸ —minimum of 1 per day	12 per week ⁸ —minimum of 1 per day ⁹	15 per week ⁸ —minimum of 1 per day ⁹	10 per week ⁸ —minimum of 1 per day ⁹	

¹ Must be served in the main dish or the main dish plus only one other menu item.

² Enriched macaroni with fortified protein may be used to meet part of the meat or meat alternate requirement.

³ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 210.

⁴ Cooked dry beans or peas may be used as a meat alternate or as a vegetable, but not as both components in the same meal.

⁵ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁶ No more than one-half of the total requirement may be met with full-strength fruit or vegetable juice.

⁷ Enriched macaroni with fortified protein may be used as a meat alternate or as a grains/breads item, but not as both components in the same meal.

⁸ For the purposes of this chart, a week equals 5 school days.

⁹ Up to one grains/breads serving per day may be a grain-based dessert.

Chart 2A

SCHOOL BREAKFAST PATTERNS

TRADITIONAL FOOD-BASED MENU PLANNING ALTERNATIVE — Meal Pattern

FOOD COMPONENTS AND FOOD ITEMS	MINIMUM REQUIREMENTS		
	AGES 1 and 2	PRESCHOOL	GRADES K-12
Milk (Fluid) (As a beverage, on cereal, or both)	4 fl oz (1/2 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)
Juice/Fruit/Vegetable Fruit and/or vegetable; or full-strength fruit juice or vegetable juice	1/4 cup	1/2 cup	1/2 cup
SELECT ONE SERVING FROM EACH OF THE FOLLOWING COMPONENTS; TWO FROM ONE COMPONENT; OR AN EQUIVALENT COMBINATION¹:			
Grains/Breads²			
Whole-grain or enriched bread	1/2 slice	1/2 slice	1 slice
Whole-grain or enriched biscuit, roll, muffin, etc.	1/2 serving	1/2 serving	1 serving
Whole-grain, enriched, or fortified cereal	1/4 cup or 1/3 oz	1/3 cup or 1/2 oz	3/4 cup or 1 oz
Meat or Meat Alternate^{3, 4, 5}			
Lean meat/poultry or fish	1/2 oz	1/2 oz	1 oz
Alternate protein products ³	1/2 oz	1/2 oz	1 oz
Cheese	1/2 oz	1/2 oz	1 oz
Egg (large)	1/2 large egg	1/2 large egg	1/2 large egg
Peanut butter or other nut or seed butters	1 Tbsp	1 Tbsp	2 Tbsp
Cooked dry beans and peas	2 Tbsp	2 Tbsp	4 Tbsp
Nuts and/or seeds (as listed in program guidance) ^{4, 5}	1/2 oz ⁵	1/2 oz ⁵	1 oz
Yogurt, plain or flavored, unsweetened, or sweetened – commercially prepared	2 oz or 1/4 cup	2 oz or 1/4 cup	4 oz or 1/2 cup

¹ Minimum servings for meat/meat alternate = 0.25 ounce and for grains/breads = 1/4 serving.

² Grains/Breads must be enriched or whole-grain or made from enriched or whole-grain flour or meal that may include bran and/or germ.

³ Alternate protein products must meet requirements in Appendix A 7 CFR Part 220.

⁴ No more than 1 ounce of nuts and/or seeds may be served in any one breakfast.

⁵ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

Chart 2B

SCHOOL BREAKFAST PATTERNS

ENHANCED FOOD-BASED MENU PLANNING ALTERNATIVE — Meal Pattern

FOOD COMPONENTS AND FOOD ITEMS	MINIMUM REQUIREMENTS				OPTION FOR GRADES 7-12
	AGES 1 and 2	PRESCHOOL	GRADES K-12	GRADES 7-12	
Milk (Fluid) (As a beverage, on cereal, or both)	4 fl oz (1/2 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Juice/Fruit/Vegetable Fruit and/or vegetable; or full-strength fruit juice or vegetable juice	1/4 cup	1/2 cup	1/2 cup	1/2 cup	1/2 cup
SELECT ONE SERVING FROM EACH OF THE FOLLOWING COMPONENTS; OR TWO FROM ONE COMPONENT; OR AN EQUIVALENT COMBINATION¹					
Grains/Breads²					
Whole-grain or enriched bread	1/2 slice	1/2 slice	1 slice	1 slice	1 slice
Whole-grain or enriched biscuit, roll, muffin, etc.	1/2 serving	1/2 serving	1 serving	1 serving	1 serving
Whole-grain, enriched, or fortified cereal	1/4 cup or 1/3 oz	1/3 cup or 1/2 oz	3/4 cup or 1 oz	3/4 cup or 1 oz	3/4 cup or 1 oz - Plus an additional serving of one of the Grains/Breads above.
Meat or Meat Alternate^{3, 4, 5}					
Lean meat/poultry or fish	1/2 oz	1/2 oz	1 oz	1 oz	1 oz
Alternate protein products ³	1/2 oz	1/2 oz	1 oz	1 oz	1 oz
Cheese	1/2 oz	1/2 oz	1 oz	1 oz	1 oz
Egg (large)	1/2 large egg	1/2 large egg	1/2 large egg	1/2 large egg	1/2 large egg
Peanut butter or other nut or seed butters	1 Tbsp	1 Tbsp	2 Tbsp	2 Tbsp	2 Tbsp
Cooked dry beans and peas	2 Tbsp	2 Tbsp	4 Tbsp	4 Tbsp	4 Tbsp
Nuts and/or seeds (as listed in program guidance) ^{4, 5}	1/2 oz ⁵	1/2 oz ⁵	1 oz	1 oz	1 oz
Yogurt, plain or flavored, unsweetened, or sweetened – commercially prepared	2 oz or 1/4 cup	2 oz or 1/4 cup	4 oz or 1/2 cup	4 oz or 1/2 cup	4 oz or 1/2 cup

¹ Minimum servings for meat/meat alternate = 0.25 ounce and for grains/breads = 1/4 serving.

² Grains/Breads must be enriched or whole-grain or made from enriched or whole-grain flour or meal that may include bran and/or germ.

³ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 220.

⁴ No more than 1 ounce of nuts and/or seeds may be served in any one breakfast.

⁵ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

Chart 3 NATIONAL SCHOOL LUNCH PROGRAM MEAL PATTERN AFTERSCHOOL SNACKS

SELECT TWO OF THE FOUR COMPONENTS FOR A REIMBURSABLE SNACK

FOOD COMPONENTS AND FOOD ITEMS ¹	CHILDREN AGES 1 and 2	CHILDREN AGES 3-5	CHILDREN AGES 6-12 ¹
Milk			
Fluid milk	4 fl oz (1/2 cup)	4 fl oz (1/2 cup)	8 fl oz (1 cup)
Vegetable or Fruit²			
Juice ² , fruit, and/or vegetable	1/2 cup	1/2 cup	3/4 cup
Grains/Breads^{3, 4}			
Bread <i>or</i>	1/2 slice	1/2 slice	1 slice
Cornbread or biscuit or roll or muffin <i>or</i>	1/2 serving	1/2 serving	1 serving
Cold dry cereal ⁴ <i>or</i>	1/4 cup or 1/3 oz ⁴	1/3 cup or 1/2 oz ⁴	3/4 cup or 1 oz ⁴
Cooked cereal grains <i>or</i>	1/4 cup	1/4 cup	1/2 cup
Cooked pasta or noodles	1/4 cup	1/4 cup	1/2 cup
Meat/Meat Alternate^{5, 6, 7}			
Lean meat or poultry or fish ⁵ <i>or</i>	1/2 oz	1/2 oz	1 oz
Alternate protein products ⁶ <i>or</i>	1/2 oz	1/2 oz	1 oz
Cheese <i>or</i>	1/2 oz	1/2 oz	1 oz
Egg (large) <i>or</i>	1/2 large egg	1/2 large egg	1/2 large egg
Cooked dry beans or peas <i>or</i>	1/8 cup	1/8 cup	1/4 cup
Peanut or other nut or seed butters <i>or</i>	1 Tbsp	1 Tbsp	2 Tbsp
Nuts and/or seeds ⁷ <i>or</i>	1/2 oz ⁷	1/2 oz ⁷	1 oz
Yogurt ⁸	2 oz or 1/4 cup	2 oz or 1/4 cup	4 oz or 1/2 cup

¹ Children age 12 and older may be served larger portions based on their greater food needs. They may not be served less than the minimum quantities listed in this column.

² Serve two or more kinds of vegetable(s) and/or fruit(s). Full-strength vegetable or fruit juice may be counted to meet not more than one-half of this requirement.

³ Grains/Breads must be whole-grain or enriched, or made from whole-grain or enriched flour or meal that may include bran and/or germ. Cereal must be whole-grain, enriched, or fortified.

⁴ Either volume (cup) or weight (oz), whichever is less.

⁵ A serving consists of the edible portion of cooked lean meat or poultry or fish.

⁶ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 210.

⁷ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁸ Yogurt may be plain or flavored, unsweetened, or sweetened – commercially prepared.

Chart 4A

CHILD AND ADULT CARE FOOD PROGRAM MEAL PATTERNS

BREAKFAST

SERVE ALL THREE COMPONENTS FOR A REIMBURSABLE BREAKFAST

FOOD COMPONENTS AND FOOD ITEMS	CHILDREN AGES 1 and 2	CHILDREN AGES 3-5	CHILDREN AGES 6-12 ¹	ADULTS
Milk				
Fluid milk	4 fl oz (1/2 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Vegetable or Fruit				
Full strength juice ² , fruit, and/or vegetable	1/4 cup	1/2 cup	1/2 cup	1/2 cup
Grains/Breads³				
Bread <i>or</i>	1/2 slice	1/2 slice	1 slice	2 slices (servings)
Cornbread or biscuit or roll or muffin <i>or</i>	1/2 serving	1/2 serving	1 serving	2 servings
Cold dry cereal ⁴ <i>or</i>	1/4 cup or 1/3 oz ⁴	1/3 cup or 1/2 oz ⁴	3/4 cup or 1 oz ⁴	1-1/2 cup or 2 oz ⁴
Cooked cereal grains <i>or</i>	1/4 cup	1/4 cup	1/2 cup	1 cup
Cooked pasta or noodles	1/4 cup	1/4 cup	1/2 cup	1 cup

¹ Children age 12 and older may be served larger portions based on their greater food needs. They may not be served less than the minimum quantities listed in this column.

² Full strength vegetable and/or fruit juice or an equivalent quantity of any combination of vegetable(s) or fruit(s), and juice.

³ Breads and grains must be enriched or whole-grain or made from enriched or whole-grain flour or meal that may include bran and/or germ. Cereal must be whole-grain or enriched or fortified.

⁴ Either volume (cup) or weight (oz), whichever is less.

Chart 4B

CHILD AND ADULT CARE FOOD PROGRAM MEAL PATTERNS

LUNCH

SERVE ALL FOUR COMPONENTS FOR A REIMBURSABLE LUNCH

FOOD COMPONENTS AND FOOD ITEMS ¹	CHILDREN AGES 1 and 2	CHILDREN AGES 3-5	CHILDREN AGES 6-12 ¹	ADULTS
Milk				
Fluid milk	4 fl oz (1/2 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Vegetable or Fruit² Two or more servings of vegetables and/or fruits				
Juice ² , fruit and/or vegetable	1/4 cup total	1/2 cup total	3/4 cup total	1 cup total
Grains/Breads³				
Bread <i>or</i>	1/2 slice	1/2 slice	1 slice	2 slices (servings)
Cornbread or biscuit or roll or muffin <i>or</i>	1/2 serving	1/2 serving	1 serving	2 servings
Cooked cereal grains <i>or</i>	1/4 cup	1/4 cup	1/2 cup	1 cup
Cooked pasta or noodles	1/4 cup	1/4 cup	1/2 cup	1 cup
Meat/Meat Alternate^{4, 5, 6, 7, 8}				
Lean meat or poultry or fish ⁴ <i>or</i>	1 oz	1-1/2 oz	2 oz	2 oz
Alternate protein products ⁵	1 oz	1-1/2 oz	2 oz	2 oz
Cheese <i>or</i>	1 oz	1-1/2 oz	2 oz	2 oz
Egg (large) <i>or</i>	1/2 large egg	3/4 large egg	1 large egg	1 large egg
Cooked dry beans or peas <i>or</i>	1/4 cup	3/8 cup	1/2 cup	1/2 cup
Peanut or other nut or seed butters <i>or</i>	2 Tbsp	3 Tbsp	4 Tbsp	4 Tbsp
Nuts and/or seeds ^{6, 7} <i>or</i>	1/2 oz = 50% ⁷	3/4 oz = 50% ⁷	1 oz = 50%	1 oz = 50%
Yogurt ⁸	4 oz or 1/2 cup	6 oz or 3/4 cup	8 oz or 1 cup	8 oz or 1 cup

¹ Children age 12 and older may be served larger portions based on their greater food needs. They may not be served less than the minimum quantities listed in this column.

² Serve two or more kinds of vegetable(s) and/or fruit(s). Full-strength vegetable or fruit juice may be counted to meet not more than one-half of this requirement.

³ Grains/breads must be whole grain or enriched, made from whole-grain or enriched flour or meal which may include bran and/or germ. Cereal must be whole-grain or enriched or fortified.

⁴ A serving consists of the edible portion of cooked lean meat or poultry or fish.

⁵ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 226.

⁶ Nuts and seeds may meet only one-half of the total meat/meat alternate serving and must be combined with another meat/meat alternate to fulfill the lunch requirement.

⁷ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁸ Yogurt may be plain or flavored, unsweetened, or sweetened – commercially prepared.

Chart 4C

CHILD AND ADULT CARE FOOD PROGRAM MEAL PATTERNS

SUPPER

SERVE ALL FOUR COMPONENTS FOR A REIMBURSABLE SUPPER

FOOD COMPONENTS AND FOOD ITEMS ¹	CHILDREN AGES 1 and 2	CHILDREN AGES 3-5	CHILDREN AGES 6-12 ¹	ADULTS
Milk				
Fluid milk	4 fl oz (1/2 cup)	6 fl oz (3/4 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Vegetable or Fruit² Two or more servings of different vegetables and or fruits				
Juice ² , fruit and/or vegetable	1/4 cup total	1/2 cup total	3/4 cup total	1 cup total
Grains/Breads³				
Bread <i>or</i>	1/2 slice	1/2 slice	1 slice	2 slices (servings)
Cornbread or biscuit or roll or muffin <i>or</i>	1/2 serving	1/2 serving	1 serving	2 servings
Cooked cereal grains <i>or</i>	1/4 cup	1/4 cup	1/2 cup	1 cup
Cooked pasta or noodles	1/4 cup	1/4 cup	1/2 cup	1 cup
Meat/Meat Alternate^{4, 5, 6, 7, 8}				
Lean meat or poultry or fish ⁴ <i>or</i>	1 oz	1-1/2 oz	2 oz	2 oz
Alternate protein products ⁵ <i>or</i>	1 oz	1-1/2 oz	2 oz	2 oz
Cheese <i>or</i>	1 oz	1-1/2 oz	2 oz	2 oz
Egg (large) <i>or</i>	1/2 large egg	3/4 large egg	1 large egg	1 large egg
Cooked dry beans or peas <i>or</i>	1/4 cup	3/8 cup	1/2 cup	1/2 cup
Peanut or other nut or seed butters <i>or</i>	2 Tbsp	3 Tbsp	4 Tbsp	4 Tbsp
Nuts and/or seeds ^{6, 7} <i>or</i>	1/2 oz = 50% ⁷	3/4 oz = 50% ⁷	1 oz = 50%	1 oz = 50%
Yogurt ⁸	4 oz or 1/2 cup	6 oz or 3/4 cup	8 oz or 1 cup	8 oz or 1 cup

¹ Children age 12 and older may be served larger portions based on their greater food needs. They may not be served less than the minimum quantities listed in this column.

² Serve two or more kinds of vegetable(s) and/or fruit(s). Full-strength vegetable or fruit juice may be counted to meet not more than one-half of this requirement.

³ Grains/Breads must be whole-grain or enriched, or made from whole-grain or enriched flour or meal that may include bran and/or germ. Cereal must be whole-grain or enriched or fortified.

⁴ A serving consists of the edible portion of cooked lean meat or poultry or fish.

⁵ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 226.

⁶ Nuts and seeds may meet only one-half of the total meat/meat alternate serving and must be combined with another meat/meat alternate to fulfill the supper requirement.

⁷ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁸ Yogurt may be plain or flavored, unsweetened, or sweetened – commercially prepared.

Chart 4D

CHILD AND ADULT CARE FOOD PROGRAM MEAL PATTERNS

SNACKS

SELECT TWO OF THE FOUR COMPONENTS FOR A REIMBURSABLE SNACK

FOOD COMPONENTS AND FOOD ITEMS ¹	CHILDREN AGES 1 and 2	CHILDREN AGES 3-5	CHILDREN AGES 6-12 ¹	ADULTS
Milk				
Fluid milk	4 fl oz (1/2 cup)	4 fl oz (1/2 cup)	8 fl oz (1 cup)	8 fl oz (1 cup)
Vegetable or Fruit²				
Full strength juice ² , fruit and/or vegetable	1/2 cup	1/2 cup	3/4 cup	1/2 cup
Grains/Breads^{3, 4}				
Bread <i>or</i>	1/2 slice	1/2 slice	1 slice	1 slice
Cornbread or biscuit or roll or muffin <i>or</i>	1/2 serving	1/2 serving	1 serving	1 serving
Cold dry cereal ⁴ <i>or</i>	1/4 cup or 1/3 oz ⁴	1/3 cup or 1/2 oz ⁴	3/4 cup or 1 oz ⁴	3/4 cup or 1 oz ⁴
Cooked cereal grains <i>or</i>	1/4 cup	1/4 cup	1/2 cup	1/2 cup
Cooked pasta or noodles	1/4 cup	1/4 cup	1/2 cup	1/2 cup
Meat/Meat Alternate^{5, 6, 7, 8}				
Lean meat or poultry or fish ⁵ <i>or</i>	1/2 oz	1/2 oz	1 oz	1 oz
Alternate protein products ⁶ <i>or</i>	1/2 oz	1/2 oz	1 oz	1 oz
Cheese <i>or</i>	1/2 oz	1/2 oz	1 oz	1 oz
Egg (large) <i>or</i>	1/2 large egg	1/2 large egg	1/2 large egg	1/2 large egg
Cooked dry beans or peas <i>or</i>	1/8 cup	1/8 cup	1/4 cup	1/4 cup
Peanut or other nut or seed butters <i>or</i>	1 Tbsp	1 Tbsp	2 Tbsp	2 Tbsp
Nuts and/or seeds ⁷ <i>or</i>	1/2 oz ⁷	1/2 oz ⁷	1 oz	1 oz
Yogurt ⁸	2 oz or 1/4 cup	2 oz or 1/4 cup	4 oz or 1/2 cup	4 oz or 1/2 cup

¹ Children age 12 and older may be served larger portions based on their greater food needs. They may not be served less than the minimum quantities listed in this column.

² Full strength vegetable and/or fruit juice or an equivalent quantity of any combination of vegetable(s), fruit(s), and juice.

³ Grains/Breads must be enriched or whole-grain or made from whole-grain or enriched flour or meal that may include bran and/or germ. Cereal must be whole-grain or enriched or fortified.

⁴ Either volume (cup) or weight (oz), whichever is less.

⁵ A serving consists of the edible portion of cooked lean meat or poultry or fish.

⁶ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 226.

⁷ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

⁸ Yogurt may be plain or flavored, unsweetened, or sweetened – commercially prepared.

Chart 5 SUMMER FOOD SERVICE PROGRAM MEAL PATTERN FOR CHILDREN

SELECT THE APPROPRIATE COMPONENTS FOR A REIMBURSABLE MEAL

FOOD COMPONENTS AND FOOD ITEMS	BREAKFAST SERVE ALL THREE	LUNCH OR SUPPER SERVE ALL FOUR	SNACKS SERVE TWO OF THE FOUR
Milk ^{1,2}			
Fluid milk	8 fl oz (1 cup) ¹	8 fl oz (1 cup) ²	8 fl oz (1 cup) ¹
Vegetable or Fruit ^{3, 4, 5}			
Juice, fruit and/or vegetable	1/2 cup ³ (juice must be full-strength)	3/4 cup ⁴ total	3/4 cup ^{3,5} (juice must be full-strength)
Grains/Breads ^{6, 7}			
Bread or	1 slice	1 slice	1 slice
Combread or biscuit or roll or Muffin or	1 serving	1 serving	1 serving
Cold dry cereal ⁷ or	3/4 cup or 1 oz ⁷	N/A	3/4 cup or 1 oz ⁷
Hot cooked cereal or	1/2 cup	1/2 cup	1/2 cup
Cooked pasta or noodles or grains	1/2 cup	1/2 cup	1/2 cup
Meat/Meat Alternate ^{8, 9, 10, 11, 12}	optional		
Lean meat or poultry or fish ⁸ or	1 oz	2 oz	1 oz
Alternate protein products ⁹ or	1 oz	2 oz	1 oz
Cheese or	1 oz	2 oz	1 oz
Egg (large) or	1/2 large egg	1 large egg	1/2 large egg
Cooked dry beans or peas or	1/4 cup	1/2 cup	1/4 cup
Peanut or other nut butters or	2 Tbsp	4 Tbsp	2 Tbsp
Nuts and/or seeds ¹¹ or	---	1 oz = 50% ^{10,11}	1 oz ¹¹
Yogurt ¹²	4 oz (1/2 cup)	8 oz (1 cup)	4 oz (1/2 cup)

¹ For Breakfast or Snack, fluid milk shall be served as a beverage, or on cereal, or use part of it for each purpose.

² For Lunch or Supper, fluid milk shall be used as a beverage.

³ Fruit or vegetable juice must be full-strength for Breakfast and Snacks.

⁴ For Lunch or Supper, serve two or more kinds of vegetable(s) and/or fruit(s). Full-strength vegetable or fruit juice may be counted to meet not more than one-half of this requirement.

⁵ Juice may not be served to fulfill the supplement requirement, when milk is served as the only other component.

⁶ Grains/Breads must be enriched or whole-grain, or made from whole-grain or enriched flour or meal that may include bran and/or germ. Cereal must be whole-grain or enriched or fortified.

⁷ Either volume (cup) or weight (oz), whichever is less.

⁸ A serving consists of the edible portion of cooked lean meat or poultry or fish.

⁹ Alternate protein products must meet requirements in Appendix A of 7 CFR Part 225.

¹⁰ Nuts and seeds may meet no more than one-half of the total meat/meat alternate to fulfill the lunch or supper requirement.

¹¹ Nuts and seeds are generally not recommended to be served to children ages 1-3 since they present a choking hazard. If served, nuts and seeds should be finely minced.

¹² Yogurt may be plain or flavored, unsweetened, or sweetened - commercially prepared.

Nutrient Standard Menu Planning (NSMP) Requirements

Menus planned under the NSMP approach must meet two requirements:

- 1) When averaged over the school week, school lunches and school breakfasts must meet the specific age- or grade-based nutrient standards as defined in 7 CFR Parts 210.10 and 220.8; and
- 2) At a minimum, planned menus must contain the menu items as summarized in Chart 6 below. Additional menu items may need to be added in order to meet nutrient standards and/or to increase variety.

Chart 6 **MINIMUM REQUIRED MENU ITEMS FOR NUTRIENT STANDARD MENU PLANNING**

Menu Items	MINIMUM AMOUNTS	
	Lunch	Breakfast
Entree	1 serving	none
Other menu item(s) (side dishes)	1 serving	2 servings
Fluid milk	1 serving	1 serving

**To Help You
Use This Guide**

This section contains a variety of information and reference tools, starting with a list of common abbreviations and symbols used.

Also included are tips on portion control and tables showing:

- common can and jar sizes;
- how to substitute one can size for another;
- how to convert customary units (such as pounds and ounces) to their metric equivalents; and
- how to convert parts of a unit (such as 1/2 gallon or 1/4 pound) to the correct decimal equivalent.

Table 1
List of Abbreviations and Symbols Used

AP as purchased	vol volume
EP edible portion	tsp teaspoon
incl including	Tbsp tablespoon
excl excluding	fl oz fluid ounce
cyl cylinder	c cup
pkg package	pt pint
No. number	qt quart
approx. approximately	gal gallon
wt weight	mL milliliter
oz ounce	L liter
lb pound	# number
g gram	vac vacuum
kg kilogram	

Common Can and Jar Sizes

The following tables provide helpful information on 10 common can and jar sizes. *Table 2* lists the average total net weight or fluid measure per can and the average volume per can. *Table 3* gives information on number of cans per case and principal products.

It is important to know:

- Can sizes are industry terms and do not necessarily appear on the label.
- The net weight on can or jar labels differs according to the density of the contents. For example, a No. 10 can of sauerkraut weighs 6 lb 3 oz (2.81 kg), while a No. 10 can of cranberry sauce weighs 7 lb 5 oz (3.32 kg).
- No. 10 cans of the same food item may have different net weights depending on the manufacturer.
- Canned meats, fish, and shellfish are known and sold by the weight (not volume) of the contents in the can.
- The number 303 can for vegetables is no longer used by American canners. The conversion information for the 303 can remains in the following tables since some of these canned products may still be in storage. Be aware that the yield data tables have been revised; the 303 can yield data have been removed and replaced with the 300 can yield data.



Table 2
Common Can and Jar Sizes
Average Net Weight or Fluid Measure and Average Volume Per Can

Can Size	Average Net Weight or Fluid Measure per Can		Average Volume per Can	
	<i>Customary</i>	<i>Metric</i>	<i>Cups</i>	<i>Liters</i>
No. 10	6 lb (96 oz) to 7 lb 5 oz (117 oz)	2.72 kg to 3.31 kg	12 cups to 13-2/3 cups	2.84 L to 3.24 L
No. 3 Cyl	51 oz (3 lb 3 oz) or 46 fl oz (1 qt 14 fl oz)	1.44 kg or 1.36 L	5-3/4 cups	1.36 L
No. 2-1/2	26 oz (1 lb 10 oz) to 30 oz (1 lb 14 oz)	737 g to 850 g	3-1/2 cups	0.83 L
No. 2 Cyl	24 fl oz	709 mL	3 cups	0.71 L
No. 2	20 oz (1 lb 4 oz) or 18 fl oz (1 pt 2 fl oz)	567 g or 532 mL	2-1/2 cups	0.59 L
No. 303 (old)	16 oz (1 lb) to 17 oz (1 lb 1 oz)	453 g to 481 g	2 cups	0.47 L
No. 300 (new)	14 oz to 16 oz (1 lb)	396 g to 453 g	1-3/4 cups	0.41 L
No. 2 (Vacuum)	12 oz	340 g	1-1/2 cups	0.36 L
No. 1 (Picnic)	10-1/2 oz to 12 oz	297 g to 340 g	1-1/4 cups	0.30 L
8 oz	8 oz	226 g	1 cup	0.24 L

Table 3
Common Can and Jar Sizes
Cans Per Case and Principal Products

Can Size	Cans per Case	Principal Products
No. 10	6 cans per case	Institutional size: Fruits, vegetables, some other foods
No. 3 Cyl	12 cans per case	Institutional size: Condensed soups, some vegetables, meat and poultry products, fruit and vegetable juices
No. 2-1/2	24 cans per case	Family size: Fruits, some vegetables
No. 2 Cyl	24 cans per case	Family size: Juices, soups
No. 2	24 cans per case	Family size: Juices, ready-to-serve soups, some fruits
No. 303 (old)	24 or 36 cans per case	Small cans: Fruits and vegetables, some meat and poultry products, ready-to-serve soups
No. 300 (new)	24 cans per case	Small cans: Some fruits and meat products
No. 2 (Vacuum)	24 cans per case	Small cans: Principally vacuum-packed corn
No. 1 (Picnic)	48 cans per case	Small cans: Condensed soups, some fruits, vegetables, meat, fish
8 oz per case	48 or 72 cans	Small cans: Ready-to-serve soups, fruits, vegetables

Figure 1
Can Size Template

Lie a can on its side directly on this actual size template to help you determine what size can it is.

Dimensional Food Can Standards

Height

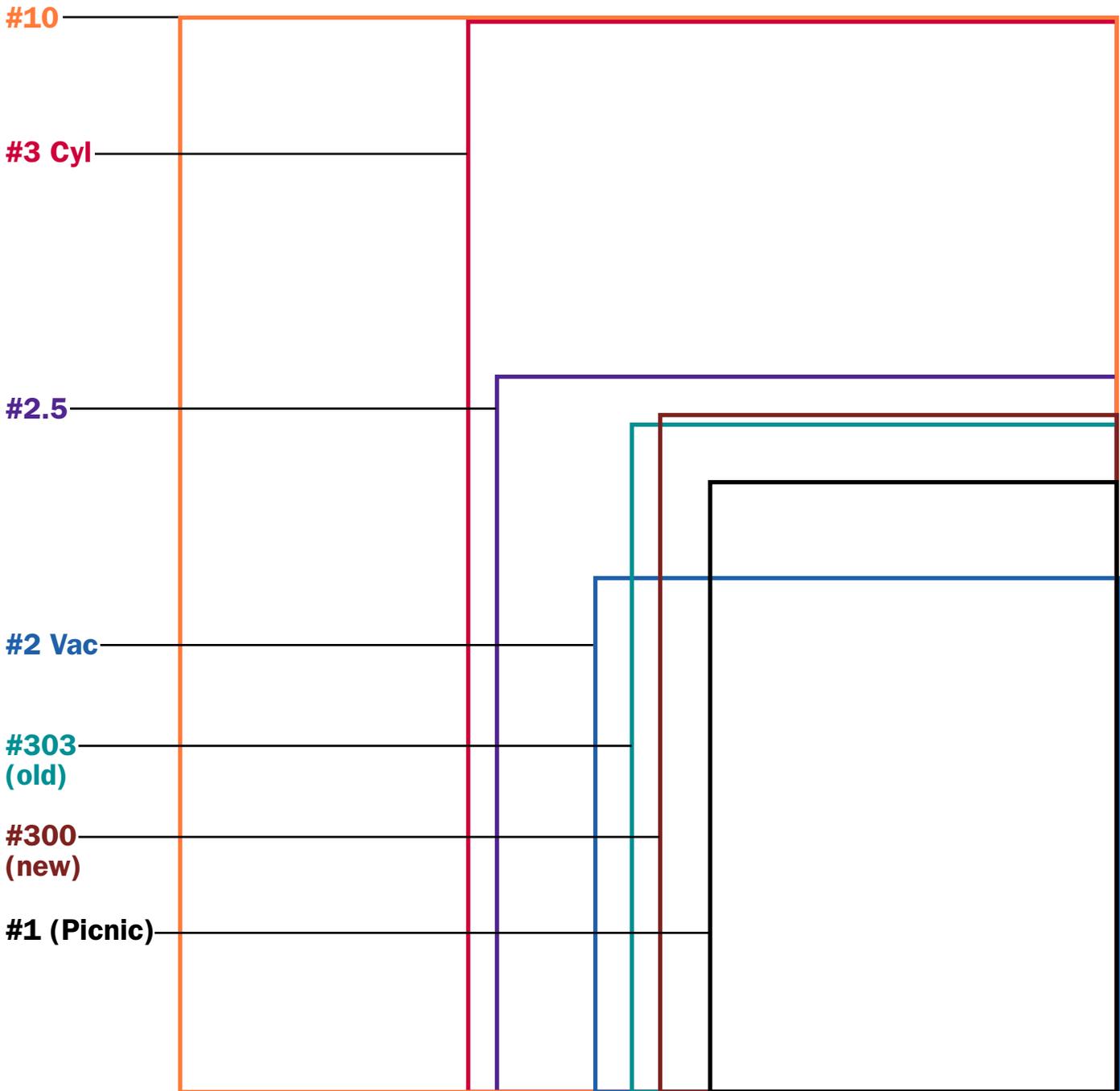
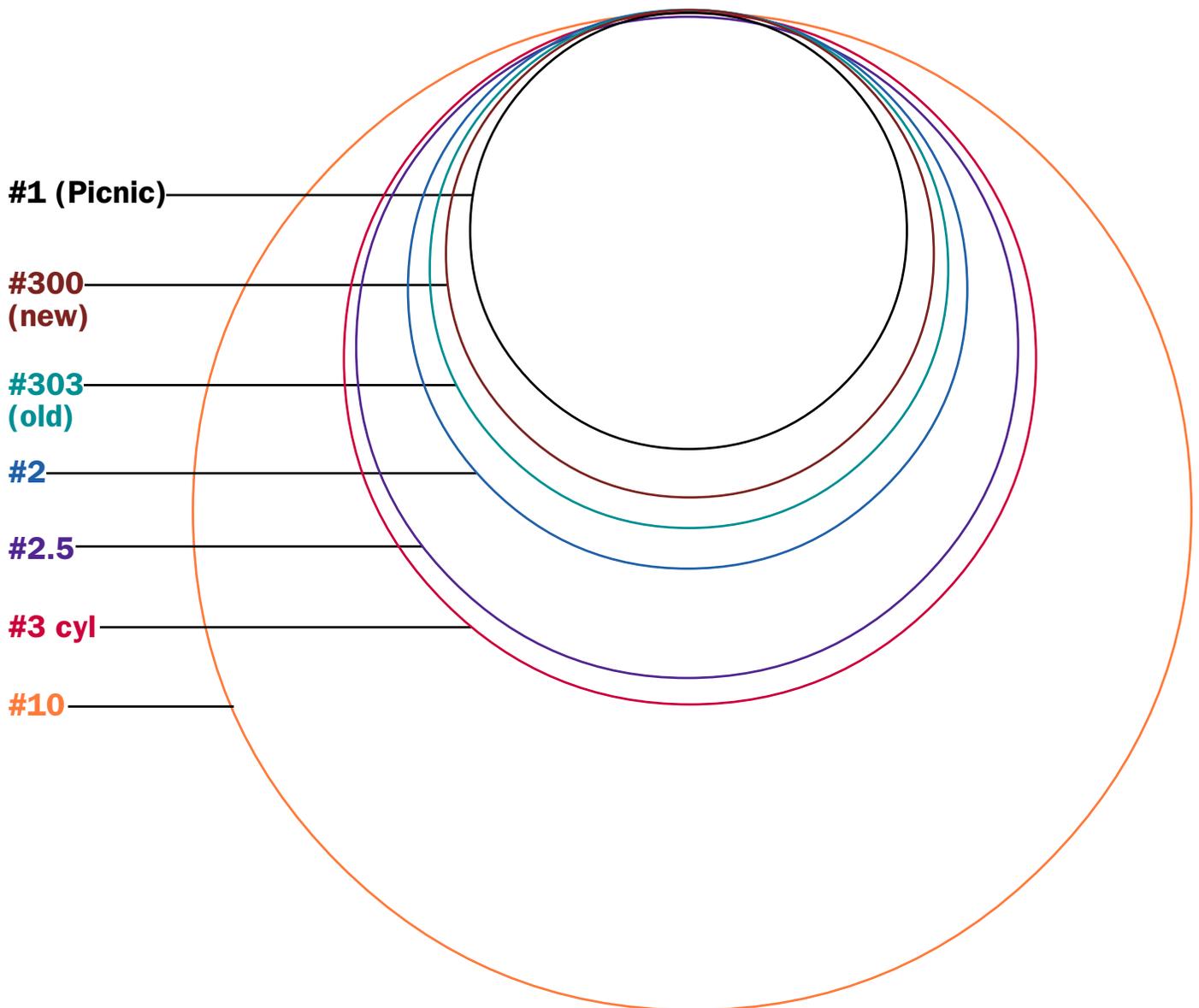


Figure 2
Can Size Template

Position the top side of a can directly on this actual size template to help you determine what size can it is.

Dimensional Food Can Standards

Diameter



Substituting Can Sizes

As you plan menus and make purchasing decisions, you may sometimes want to use a different size can than the ones listed in this guide.

For example, you might have several No. 2 cans of wax beans in inventory you would like to use. *The Food Buying Guide* lists yield information for this product in No. 2-1/2 cans. On page 2-2, you will see that for 100 servings of heated, drained vegetable, you would need 7.8 No. 2-1/2 cans. How will you know how many No. 2 cans to use for 100 servings?

Table 4 makes substitutions easy. To use this table:

- **Read across the top to find the column that begins with the can size you have.** In the example above, you would see that No. 2 is listed in the fourth column.
- **Read down the rows listed under “Can Size In Yield Table.” Find the can size for which you want to make the substitution.** In the example above, you would read down the third row to find No. 2-1/2.
- **Find where the column and the row intersect and note the figure listed. This tells you how many cans you will need to make the substitution.** In the example above, you would note that “1.5” is shown where the fourth column and third row intersect.

For the example above, this tells you:

In place of each No. 2-1/2 can, you would need to use 1.5 No. 2 cans.

To answer how many No. 2 cans you would need for 100 servings of wax beans:
1) Multiply the number of 2-1/2 cans needed for 100 servings (7.8) times the number of size 2 cans needed to substitute for one 2-1/2 can (1.5).

Calculation: 7.8 multiplied by 1.5 equals 11.7

Therefore, if you need 7.8 No. 2-1/2 cans for 100 servings, you would need 11.7 No. 2 cans for the same 100 servings. Keep in mind that you will have to open 12 cans.

Table 4
A Guide for Substituting Cans

CAN SIZE IN YIELD TABLE	CAN SIZE YOU HAVE					
	No. 10	No. 3Cyl	No. 2-1/2	No. 2	No. 303	No. 300
No. 10	1.0	2.1	3.7	5.3	6.5	7.4
No. 3 Cyl	0.5	1.0	1.8	2.6	3.1	3.3
No. 2-1/2	0.3	0.6	1.0	1.5	1.8	2.0
No. 2	0.2	0.4	0.7	1.0	1.3	1.5
No. 303 (old)	0.2	0.3	0.6	0.8	1.0	1.2
No. 300 (new)	0.1	0.3	0.5	0.7	0.9	1.0

Decimal Equivalents

The following four tables will help you convert units of weight and measurement to their decimal equivalents or convert decimal equivalent to measurable or weighable units.

Table 5 lists ounces and their decimal equivalents in pounds.

Table 6 lists common fractions and their number equivalent in decimal form. Use this table as a quick reference when you need to convert a commonly used fraction into numbers.

Table 7 lists numbers in decimal form and converts and rounds them down to the correct fraction of a cup for crediting vegetables/fruits servings.

Table 8 shows decimal equivalents for fractions of pounds, cups, and gallons. These can be listed in the same table because each breaks down into 16 parts. For example, just as there are 16 ounces in a pound, there are also 16 tablespoons in a cup, and 16 cups in a gallon.

Table 5
Decimal Weight Equivalents

Ounces	Pounds	Ounces	Pounds
1 oz =	0.06 lb	16 oz =	1.00 lb
2 oz =	0.12 lb	32 oz =	2.00 lb
3 oz =	0.19 lb	35 oz =	2.19 lb
4 oz =	0.25 lb	48 oz =	3.00 lb
5 oz =	0.31 lb	64 oz =	4.00 lb
6 oz =	0.38 lb	71 oz =	4.44 lb
7 oz =	0.44 lb	80 oz =	5.00 lb
8 oz =	0.50 lb	96 oz =	6.00 lb
9 oz =	0.56 lb	106 oz =	6.63 lb
10 oz =	0.62 lb	112 oz =	7.00 lb
11 oz =	0.69 lb	128 oz =	8.00 lb
12 oz =	0.75 lb	141 oz =	8.82 lb
13 oz =	0.81 lb	144 oz =	9.00 lb
14 oz =	0.88 lb	160 oz =	10.00 lb
15 oz =	0.94 lb		

Table 6
Decimal Equivalents of Commonly Used Fractions

$1/8 = 0.125$	$1/3 = 0.333$	$2/3 = 0.666$
$1/4 = 0.250$	$1/2 = 0.500$	$3/4 = 0.750$
$3/8 = 0.375$	$5/8 = 0.625$	$7/8 = 0.875$

Use *Table 7* to assist in rounding the decimal equivalent of a vegetables/fruits serving to the correct creditable volume towards the vegetables/fruits meal pattern component. The decimal equivalent is not fluid ounces but the fraction of a cup as determined by crediting calculations.

For example, a recipe analysis calculation determined that one portion of a recipe provides 0.68 cups of vegetables/fruits. Based on *Table 7*, you can count $5/8$ cup vegetable towards the vegetables/fruits meal pattern component since 0.68 is between 0.625 and 0.749. Keep in mind that two or more servings of *different* vegetables and/or fruits must be served to meet the vegetable/fruit requirement at lunch and/or supper.

Table 7
Converting Decimal Equivalents to the Nearest Portion of a Cup for Fruits and Vegetables

If decimal equivalent is:	the recipe contributes:
0.125 - .249	$1/8$ cup
.250 - .374	$1/4$ cup
.375 - .499	$3/8$ cup
.500 - .624	$1/2$ cup
.625 - .749	$5/8$ cup
.750 - .874	$3/4$ cup
.875 - .999	$7/8$ cup
1.000 - 1.124	1 cup

**Using Table 8
to Calculate
Fractions of a
Unit**

EXAMPLES:

Cups to Gallons: You want to convert 10-1/2 cups to the equal volume amount of gallons in decimal form.

1. Find the whole number unit in the left-hand column.

For this example, the whole number is “10”. Find “10” in the Number of Units column on the left of the table.

2. Follow this line across the table towards the right to the column headed “+1/2 unit.” Read the decimal number.

Going right from the number “10” and stopping under the heading “+1/2 unit,” the decimal number reads 0.66.

ANSWER: 10-1/2 cups is equal to 0.66 gallons.

Gallons to Cups: Your recipe calls for 0.53 gallons of an ingredient. You want to know the equal volume amount in cups.

1. Find .53 in the body of the table under the “fraction or part of the unit” columns.

For this example, .53 can be found under the “+1/2 unit” 9 rows down.

2. Follow this line across the table towards the left. Read the number in the “Number of Units” column.

The Number of Units corresponding to .53 (which is under the “+1/2 unit” column) reads “8.”

3. Combine the whole unit number from the “Number of Units” column with the fraction listed in the “Fraction or part of the unit” column corresponding to the .53 number.

The whole number = 8
The fraction of a number = +1/2
Combining these numbers = 8-1/2

ANSWER: 0.53 gallons is equal to 8-1/2 cups.

Table 8
Decimal Equivalents for Fractions of a Unit

Whole units are on the left. The fraction or part of the unit is to the right.

If the whole units are: **the decimal equivalents are part of:**
 ounces 1 pound
 tablespoons 1 cup
 cups 1 gallon

FRACTION OR PART OF THE UNIT						
NUMBER OF UNITS		+ 1/4 of unit	+ 1/3 of unit	+ 1/2 of unit	+ 2/3 of unit	+ 3/4 of unit
0	-----	0.02	0.02	0.03	0.04	0.05
1	0.06	.08	.08	.09	.10	.11
2	.12	.14	.15	.16	.17	.17
3	.19	.20	.21	.22	.23	.23
4	.25	.27	.27	.28	.29	.30
5	.31	.33	.33	.34	.35	.36
6	.38	.39	.40	.41	.42	.42
7	.44	.45	.46	.47	.48	.48
8	.50	.52	.52	.53	.54	.55
9	.56	.58	.58	.59	.60	.61
10	.62	.64	.65	.66	.67	.67
11	.69	.70	.71	.72	.73	.73
12	.75	.77	.77	.78	.79	.80
13	.81	.83	.83	.84	.85	.86
14	.88	.89	.90	.91	.92	.92
15	.94	.95	.96	.97	.98	.98
16	1.00	1.02	1.02	1.03	1.04	1.05

Metric Equivalents

Metric quantities are increasingly used for food processing, packaging, and specification writing. The following four tables will help you become familiar with the relationship between metric units (Tables 9, 10 and 11) and customary units (Table 12).

Table 9 is a guide to metric conversions showing, for example, how to change ounces to grams by multiplying by 28.35. *Table 10* shows metric equivalents by weight. *Table 11* shows metric equivalents by volume. *Table 12* shows customary units for volume.

Note: For Tables 11 and 12, keep in mind that volume is measured in fluid ounces and liters.

Table 9
A Guide to Metric Conversions

<i>To change</i>	<i>To</i>	<i>Multiply by</i>
ounces (oz)	grams (g)	28.35
pounds (lb)	grams (g)	453.6
pounds (lb)	kilograms (kg)	0.4536
teaspoons (tsp)	milliliters (mL)	4.93
tablespoons (Tbsp)	milliliters (mL)	14.79
fluid ounces (fl oz)	milliliters (mL)	29.57
cups (c)	liters (L)	0.236
pints (pt)	liters (L)	0.473
quarts (qt)	liters (L)	0.946
gallons (gal)	liters (L)	3.785

Table 10
Metric Equivalents by Weight

<i>Customary Unit (fluid ounces)</i> <i>(avoirdupois)</i>	<i>Metric Unit</i>
<i>Ounces (oz.)</i>	<i>Grams (g)</i>
1 oz	28.35 g
4 oz	113.4 g
8 oz	226.8 g
16 oz	453.6g
<i>Pounds (lb)</i>	<i>Grams (g)</i>
1 lb	453.6 g
2 lb	907.2 g
<i>Pounds (lb)</i>	<i>Kilograms (kg)</i>
2.2 lb	1 kg (1000 g)



Table 11
Metric Equivalents by Volume

<i>Customary Unit</i> <i>(fluid ounces)</i>	<i>Metric Unit</i>
1 cup (8 fl oz)	236.59 milliliters (mL)
1 quart (32 fl oz)	946.36 milliliters (mL)
1.5 quarts (48 fl oz)	1.42 liter (L)
33.818 fl oz	1.0 liter (L)

Table 12
A Guide to Volume Equivalents for Liquids

1 tablespoon	= 3 teaspoons	= 0.5 fluid ounces
1/8 cup	= 2 tablespoons	= 1 fluid ounce
1/4 cup	= 4 tablespoons	= 2 fluid ounces
1/3 cup	= 5-1/3 tablespoons	= 2.65 fluid ounces
3/8 cup	= 6 tablespoons	= 3 fluid ounces
1/2 cup	= 8 tablespoons	= 4 fluid ounces
5/8 cup	= 10 tablespoons	= 5 fluid ounces
2/3 cup	= 10-2/3 tablespoons	= 5.3 fluid ounces
3/4 cup	= 12 tablespoons	= 6 fluid ounces
7/8 cup	= 14 tablespoons	= 7 fluid ounces
1 cup	= 16 tablespoons	= 8 fluid ounces
1/2 pint	= 1 cup	= 8 fluid ounces
1 pint	= 2 cups	= 16 fluid ounces
1 quart	= 2 pints	= 32 fluid ounces
1 gallon	= 4 quarts	= 128 fluid ounces
1 peck	= 8 quarts (dry)	
1 bushel	= 4 pecks	

Measures for Portion Control

Careful portioning is an important part of any food service operation. It helps to ensure that each serving will be the appropriate size and that a recipe will produce the expected yield (see page I-3 for definitions of yield).

Scoops or dishers, ladles, and measuring-serving spoons of standard sizes are fairly dependable measures for portioning by volume and serving food quickly. Below is portion information on each. Remember, whichever measuring utensil you choose, it must be filled level with the top to maintain equal portioning for each measure.

■ Scoops, Dishers, or Dippers

Scoops (sometimes called dishers or dippers) are useful for portioning specific volumes of foods such as drop cookies, muffins, meat patties, and some vegetables and salads.

The number on the scoop tells you how many scoopfuls make 1 quart (946 milliliters). The higher the number the smaller the scoop. For example, a Number 24 scoop is smaller than a Number 6 scoop, because it takes more scoopfuls to make 1 quart.



Table 13 (below) shows the approximate measure of each scoop or disher in cups, tablespoons, and teaspoons. (Remember, the same volume of different foods will not all weigh the same. If you want to measure by weight, use a scale.)

Table 13
Sizes and Capacities of Scoops (Dishers)

Number On Scoop (Disher)	Level Measure
6	2/3 cup
8	1/2 cup
10	3/8 cup
12	1/3 cup
16	1/4 cup
20	3-1/3 tablespoons
24	2-2/3 tablespoons
30	2 tablespoons
40	1-2/3 tablespoons
50	3-3/4 teaspoons
60	3-1/4 teaspoons
70	2-3/4 teaspoons
100	2 teaspoons

■ Ladles

Table 14 shows the approximate measure for the six ladle sizes most frequently used in serving school lunches.

Ladles are useful for serving soups, stews, creamed dishes, sauces, gravies, and other similar liquid products.

The higher the number on a ladle, the larger its size. For example, a ladle marked “2 ounce” is twice as large as a ladle marked “1 ounce.”

Ladles are not labeled “fluid ounce,” although this would be more accurate since they measure volume, not weight.

Table 14
Sizes and Capacities of Ladles

Number On Ladle	Approximate Measure
1 ounce	1/8 cup
2 ounce	1/4 cup
4 ounce	1/2 cup
6 ounce	3/4 cup
8 ounce	1 cup
12 ounce	1-1/2 cups

■ Measuring-Serving Spoons

Measuring-serving spoons are volume-standardized serving spoons identified for a specific volume measure. They are similar to a ladle, scoop, disher, or dipper in that they can be used to measure specific volumes of food but they are shaped like a serving spoon (solid or perforated.)

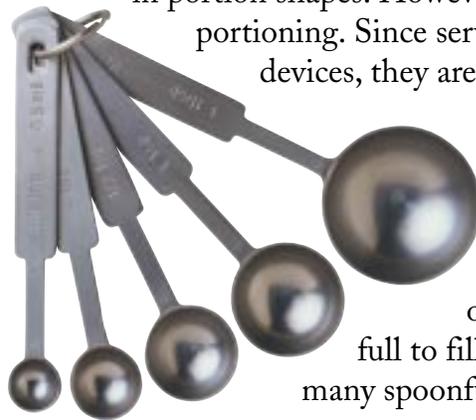
As with ladles, they are labeled in ounces but not in fluid ounces which would be more accurate since they measure volume, not weight.

Table 15
Sizes and Capacities of Measuring-Serving Spoons

Size of Measuring/ Serving Spoon	Approximate Measure
2 oz	1/4 cup
3 oz	3/8 cup
4 oz	1/2 cup
6 oz	3/4 cup
8 oz	1 cup

■ Serving spoons

Serving spoons (solid or perforated) may be used instead of scoops for variation in portion shapes. However, it is more difficult to ensure correct portioning. Since serving spoons are not standardized measuring devices, they are not identified and labeled by number.



When using serving spoons, some extra steps are needed to ensure accurate portioning. Before using a particular serving spoon for portioning, 1) measure or weigh the quantity of food the spoon holds, and 2) determine how full to fill the serving spoon. Then determine how many spoonfuls will be needed for the required serving size.

Explanation of Food Buying Guide

On the following pages, you will find answers to the following questions, along with some helpful examples.

- *How are the foods in this guide listed and grouped?*
- *What information do the yield data tables provide?*
- *How can you use the yield data?*

How are the foods in this guide listed and grouped?

The foods in this guide are listed as individual food items. The foods are arranged alphabetically *within* the appropriate food component from the Child Nutrition Meal Patterns. (These patterns are shown in Charts 1 through 6, pages I-7 through I-27.)

For example, if you were looking for information:

- on beef, you would look in *Section 1: Meats and Meat Alternates*;
- on sweet potatoes, in *Section 2: Vegetables and Fruits*;
- on cereals, in *Section 3: Grains/Breads*;
- on milk, in *Section 4: Milk*;
- on hominy, in *Section 5: Other Foods*.

The foods in *Section 5: Other Foods* do not meet the requirement for any component in the meal patterns. They are foods frequently used as additional foods, condiments or seasonings to increase menu appeal, improve acceptability, and provide additional calories and nutrients to help meet children's nutritional needs. The Other Foods section is provided to assist you in purchasing these types of foods.

If you are not sure under which component a food is listed, the complete index at the end of the guide will direct you to the correct page.

What information do the yield tables provide?

Using a six-column format, the yield data tables provide the following information:

1. Food As Purchased, AP
2. Purchase Unit
3. Servings per Purchase Unit, EP (Edible Portion)
4. Serving Size per Meal Contribution
5. Purchase Units for 100 Servings
6. Additional Information

FOOD BUYING GUIDE

1 Food As Purchased, AP	2 Purchase Unit	3 Servings per Purchase Unit, EP	4 Serving Size per Meal Contribution	5 Purchase Units for 100 Servings	6 Additional Information
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Additional details on each of these columns include:

Column 1 - Food As Purchased, AP: tells you the name of the food item and the form(s) in which it is purchased. Individual foods are arranged in alphabetical order by type of food. For instance, ham is listed under *Pork, mild cured*. Within each type, foods are listed according to the forms in which they appear in the market – fresh, canned, frozen, or dehydrated.

Where appropriate, Column 1 also includes a detailed description of the form in which items are purchased. For example, one listing for canned, boned chicken, reads: *Chicken, canned: Boned poultry with broth*. The listing for fresh beets reads: *Beets, fresh: Without tops*.

Column 2 - Purchase Unit: tells you the basic unit of purchase for the food. For most foods, the guide lists “Pound” as the purchase unit.

For some processed foods, the guide lists an institutional pack and, in many cases, a smaller pack, along with the net weight of the pack’s contents. For example, the listing for canned asparagus cuts and tips, includes information on two can sizes: No. 10 can (103 oz) and No. 300 can (14-1/2 oz).

You can use data on the 1-pound unit of purchase, together with Table 2 Common Can and Jar Sizes, to determine the number of servings for any size purchase unit available in the market. (Table 2 is on page I-30.)

Column 3 - Servings per Purchase Unit, EP (Edible Portion): shows the number of servings of a given size (found in Column 4) from each purchase unit (found in Column 2). It is based on average yields from good quality foods prepared in ways that result in a minimum of waste.

For example, the purchase unit for fresh cranberries is listed as 1 pound. Column 3 indicates 15.6 servings per purchase unit if 1/4 cup raw, chopped fruit (Column 4) is served. This tells us we can expect to obtain 15.6 1/4-cup servings from 1 pound of good quality fresh cranberries.

Where applicable, numbers have been carried to one decimal, such as 15.6 in this example, because fractions become significant when figuring large numbers of servings. (It is for this reason, and not because the figures represent this degree of accuracy, that they have been reported to the nearest 0.01 of a serving for less than 10 servings per purchase unit.)

Numbers reported in this column have sometimes been rounded *down* in order to help ensure enough food for the desired number of servings. In other words, 15.65 became 15.6 instead of 15.7 so that more, rather than less, food will be purchased.

Column 4 - Serving Size per Meal Contribution: describes a serving by weight, measure, or number of pieces or slices. Sometimes both measure and weight are given, or the measure and number of pieces or slices.

Items such as a piece of cooked chicken are given an approximate serving size in measure, with weight in parentheses. For example, for 3.7 oz raw chicken drumsticks, Column 4 reads: 1 drumstick (about 1.8 oz cooked chicken with skin).

For foods specified in the meal patterns, the serving size given in this column can be credited toward meeting the meal pattern requirements. For many fruits and vegetables, both pieces and 1/4-cup servings are included.

Column 5 - Purchase Units for 100 Servings: shows the number of purchase units you need for 100 servings. This number was calculated using the purchase unit listed in Column 2 and the serving size (by weight) listed in Column 4. Numbers in Column 5 have been rounded up to help ensure enough food is available for one hundred servings.

Column 6 - Additional Information: provides other information to help you calculate the amount of food you need to purchase and/or prepare.

For many food items, this column shows the quantity of ready-to-cook or cooked food you will get from a pound of food as purchased. For instance, it tells you 1 pound of fresh, whole, 125-138 count apples will yield 0.78 pounds of raw, cored, peeled, ready-to-cook or -serve apples.

For many processed foods, this column also gives the weight or number of cups of drained vegetable or fruit from various can sizes. For example, for carrots, canned, sliced, No. 10 can, Column 6 tells you that one No. 10 size can provides about 9-1/4 cups of heated, drained sliced carrots.

How can you use the Yield Data?

The data in the yield tables can help you in a variety of ways as you plan menus, make purchasing decisions, and check to make sure meals will meet Child Nutrition Program requirements.

On the following pages is an easy-to-follow guide. Through a variety of practical examples, it shows you how to:

- Determine number of purchase units needed to obtain the desired number of servings of a particular food.

Working with the Food Buying Guide

- Adjust portion sizes and calculate servings to meet the basic minimum requirements.
- Calculate the quantity of food to buy to obtain the correct amount of ready-to-cook food for a recipe.
- Determine correct yields for foods purchased prepared and ready-to-cook or -use. This is especially useful for fresh fruits and vegetables.
- Make cost comparisons.

Calculating how much food you need for a given number of servings

The methods and examples on the following pages illustrate how you might use the yield data tables for a particular purpose.

- Foods are most often purchased in case lots. Keep in mind that the purchase amount may differ from the calculated amount to prepare a menu item.
- Always *round up* when calculating *how much food to buy*.
- Always *round down* when calculating the *creditable component* towards meeting a meal pattern requirement.

To calculate how much of any food to purchase you should begin by asking yourself the following questions:

- How many servings will I need?
- Will different serving sizes be used for various age/grade groupings?
- What is my planned serving size for this food?
- In what form will I purchase this food?
- What serving size is listed in Column 4?
- Is the listed serving size the same as my planned serving size?
- How many purchase units of the food will I need to buy?



Page	Examples Description
	Method 1 – Using Column 3
	<i>Variation 1 – No conversion of serving size needed</i>
I-51	A. Carrot slices, cooked
I-52	B. Ground beef, commodity
	<i>Variation 2 – Conversion of serving size required</i>
I-53	C. Roast beef – round, without bone
I-54	D. Baked beans, vegetarian, canned
I-56	E. Crinkle cut fries, ovenable
I-57	F. Nut butters (including peanut butter)
I-58	G. Eggs, large, shell, fresh
I-59	H. Cereals and cereal grains
	Method 2 – Using Column 5
I-60	A. Meatloaf
I-61	B. Green beans, frozen, cut
I-62	C. Converting Column 5 yield data
	Method 3 – Using Column 6
I-63	A. Broccoli, fresh, ready-to-cook
I-64	B. Iceberg lettuce, fresh shredded
	How to make cost comparisons
I-65	A. Comparing cost of cut green beans

Method 1— Using Column 3

General Procedure: Divide the number of servings you need by the number of servings you will get from one purchase unit (pound, can, etc.) **(Column 3).**

Examples A and B show you how to calculate the number of purchase units needed to obtain the desired number of servings of a particular food. The serving size you are planning to serve is the same as the serving size listed in Column 4 of this *Food Buying Guide*. **No conversion of the serving size is needed.**

Examples C through H show you how to calculate the number of purchase units needed to obtain the desired number of servings of a particular food. The serving size(s) you are planning are not the same as the serving size(s) listed in the *Food Buying Guide*. **Conversion of the serving size is required.**

Method 1 Example A: Carrot Slices, Cooked

You are planning to serve 1/4-cup servings of steamed carrot slices. You will be purchasing frozen, sliced carrots. How many pounds of frozen, sliced carrots will you need to buy?

1: Estimate the number of servings of the prepared food you will need.

You estimate that you will need 195 1/4-cup servings of cooked carrot slices.

2: Locate the food in the *Food Buying Guide* in the form you intend to serve.

For the listing *Carrots, frozen, sliced* (found in Column 1, page 2-31) you look for:

Cooked vegetable (found in Column 4)

3: Check the serving size listed in Column 4. Compare this to your planned serving size.

Column 4 reads: 1/4 cup cooked, drained vegetable

This is the same as your planned serving size to all students, so no conversion is needed. (Examples C through H show what to do when conversion is needed.)

**4: Refer to Column 2 to find the purchase unit.
Refer to Column 3 for the number of servings you will get per purchase unit.**

Column 2 reads: Pound

Column 3 reads: 9.87

5: Divide the number of servings needed by the number of servings you will get per =purchase unit (Column 3.)

Number of servings needed = 195

Servings per purchase unit = 9.87

195 divided by 9.87 = 19.75

6: Round up to 20.0 lb to ensure enough food is available.

ANSWER: You will need 20.0 pounds of frozen, sliced carrots for 195 1/4-cup servings of cooked, sliced carrots.



Method 1 Example B: Ground Beef, USDA Commodity (not more than 16 % fat)

You are planning to serve 1-1/2 ounce portions of cooked ground beef. How many purchase units of frozen ground beef, USDA Commodity, not more than 16% fat, do you need to buy?

1: Estimate the number of servings of the prepared food you will need.

You estimate that you will need 60 1-1/2 ounce servings

2: Locate the food in the *Food Buying Guide* in the form you intend to purchase (Column 1), then locate the form of the food you intend to serve (Column 4).

For the listing *Ground Beef, USDA Commodity, not more than 16% fat*, you will need to use the yield data for ground beef, not more than 20% fat (found in Column 1, page 1-16) you look for:

Cooked lean meat (*found in Column 4*)

3: Check the serving size listed in Column 4. Compare this to your planned serving size.

Column 4 reads:

1-1/2 ounces cooked lean meat

This is the same as your planned serving size, so no conversion is needed. (Examples C through H show what to do when conversion is needed.)



4: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of servings you will get per purchase unit.

Column 2 reads: Pound

Column 3 reads: 7.89

5: Divide the number of servings needed by the number of servings you will get per purchase unit.

Number of servings needed = 60

Servings per purchase unit = 7.89

60 divided by 7.89 = 7.60

6: Round up to 7.75 lb to ensure enough food is available.

ANSWER: You will need 7-3/4 pounds of USDA Commodity ground beef, not more than 16% fat, for 60 1-1/2 oz servings of cooked ground beef.

- For multiple serving sizes of *meat, poultry, fish*, or cheese multiply the number of people to be served times each serving size in ounces to get the ounces needed. Add the results to get the total ounces needed.

Method 1 Example C: Beef Round Roast, without bone

You are planning to serve boneless, cooked roast beef to 75 students of different grade levels. How many pounds of raw beef round roast, without bone, will you need?



1: Estimate the number of servings and the serving size of the prepared food for each age/grade.

You estimate that of the 75 planned servings, 45 will be served 1-1/2 ounces each and 30 will be served 2 ounces each.

2: Locate the food in the *Food Buying Guide* in the form you intend to purchase (Column 1), then locate the food in the form you intend to serve (Column 4).

For the listing “Beef, round roast, without bone” (found in Column 1 on page 1-18) you look for:

Cooked lean meat (found in Column 4)

3: Check the serving sizes listed in Column 4. Compare this to your planned serving sizes.

Column 4 reads: 1 ounce cooked lean meat *and* 1-1/2 ounce cooked lean meat

Since there is no serving size for 2 ounces of cooked lean meat, **a conversion is needed.**

4: Calculate the total ounces of cooked lean meat needed.

45 servings X 1.5 oz = 67.5 ounces

30 servings X 2.0 oz = 60.0 ounces

127.5 ounces total cooked lean meat

You need a total of 127.5 ounces of cooked lean meat. Since this total is in units of 1 ounce, you can now use the serving size of 1 ounce cooked lean meat as found in Column 4.

5: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of servings you will get per purchase unit.

Column 2 reads: Pound

Column 3 reads: 9.76

6: Divide the total number of ounces needed by the number of servings you will get per purchase unit. (Column 3)

Number of total ounces needed = 127.5

Servings per purchase unit = 9.76

127.5 divided by 9.76 = 13.06

7: Round up to 13.25 lb to ensure enough food is available.

ANSWER: You will need 13-1/4 pounds of raw beef round roast without bone, for the required serving sizes for 75 people.

For multiple serving sizes of *cooked dry beans or peas* convert each serving size to the number of 1/4-cup servings needed. This is done by dividing each serving size by 1/4 and multiplying the result by the number of people to be served.

- If you prefer working with decimals instead of fractions, see Table 6 on page I-37.
- For multiple serving sizes, convert each one to 1/4-cup servings and add the results to obtain the total 1/4-cup servings.
- If you are crediting beans as the meat alternate component:
 - 1/2 cup beans = 2 oz equivalent meat alternate
 - 3/8 cup beans = 1-1/2 oz equivalent meat alternate
 - 1/4 cup beans = 1 oz equivalent meat alternate
 - 1/8 cup beans = 0.5 oz equivalent meat alternate

Method 1 Example D: Baked Beans, Vegetarian, canned

You are planning to serve 1/8-cup servings of canned, vegetarian baked beans for part your vegetables/fruits component. You purchase USDA Commodity baked beans in sauce, vegetarian, in No. 10 cans (108 oz). How many No. 10 (108 oz) cans will you need?

1: Estimate the number of servings of prepared food you will need.

You estimate that you will need 120 1/8-cup servings.



2: Locate the food in the *Food Buying Guide* in the form you intend to serve.

For the listing *bean products, canned: beans baked or in sauce, vegetarian, includes USDA Commodity* (found in Column 1, on page 2-19)

you look for: heated vegetable (found in Column 4)

3: Check the serving size listed in Column 4. Compare this to your planned serving size.

Column 4 reads: 1/4-cup heated vegetable with sauce

Since there is no serving size for 1/8-cup of heated baked beans with sauce, **a conversion is needed.**

4: Calculate the number of 1/4-cup servings of baked beans with sauce needed.

Divide 1/8 by 1/4 (convert fractions to decimals; see Table 6: $1/8 = 0.125$, and $1/4 = 0.25$)

0.125 divided by $0.25 = 0.5$

Multiply the factor (0.5) by the number of servings needed (120)

0.5 multiplied by $120 = 60$ 1/4-cup servings

You need a total of 60 1/4-cup servings of baked beans with sauce. Since this number is in units of 1/4-cup servings, you can now use the serving size of 1/4-cup baked beans with sauce as found in Column 4.

5: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of servings you will get per purchase unit.

Column 2 reads: No. 10 can (108 oz)

Column 3 reads: 47.1

6: Divide the total number of 1/4-cup servings needed by the number of servings you will get per purchase unit. (Column 3)

Number of 1/4-cup servings needed = 60

Servings per purchase unit = 47.1

60 divided by $47.1 = 1.27$

7: Round up to 1-1/3 cans to ensure enough food is available.

ANSWER: Since you can only buy whole cans of product, you will need to open 2 No. 10 (108 oz) cans of USDA commodity baked beans in sauce, vegetarian, but only need to prepare 1-1/3 cans, to serve 120 portions of 1/8-cup vegetarian baked beans.

Note: For products having data for can sizes other than the No. 10 can used in example D, substitute the servings per purchase unit for the size of can of your choice in step 5.

For multiple serving sizes of vegetables and fruit, convert each serving size to the number of 1/4-cup servings. To do this, divide each serving size by 1/4 and multiply the result by the number of people to be served that size portion.

Method 1 Example E: Crinkle Cut French Fries, Ovenable



You are planning to serve 1/2-cup servings of baked french fries.

1: Estimate the number of servings of baked french fries you will need.

You estimate that you will need 45 1/2-cup servings of baked french fries.

2: Locate the food in the *Food Buying Guide* in the form you intend to serve.

For the listing *Potatoes, French fries, frozen, Crinkle Cut, Low moisture, Ovenable* (found in Column 1 on page 2-68) you look for:

Cooked vegetable (found in Column 4)

3: Check the serving size listed in Column 4. Compare this to your planned serving size.

Column 4 reads: 1/4-cup cooked vegetable

Since there is no serving size for 1/2 cup of cooked french fries, **a conversion is needed.**

4: Calculate the number of 1/4-cup servings of french fries needed.

Divide 1/2 by 1/4 (convert fractions to decimal; see table 6:

$1/2 = 0.50$ and $1/4 = 0.25$)

0.50 divided by $0.25 = 2.0$

Multiply the factor (2.0) by the number of servings needed (45)

2.0 multiplied by $45 = 90$ 1/4-cup servings

You need a total of 90 1/4-cup servings of french fries. Since this number is in units of 1/4-cup servings, you can now use the serving size of 1/4-cup baked vegetable as found in Column 4.

5: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of servings you will get per purchase unit.

Column 2 reads: pound

Column 3 reads: 16.2

6: Divide the total number of 1/4-cup servings needed by the number of servings you will get per purchase unit. (Column 3)

Number of 1/4-cup servings needed = 90

Servings per purchase unit = 16.2

90 divided by 16.2 = 5.55

7: Round up to 5.75 lb to ensure enough food is available.

ANSWER: You will need 5-3/4 pounds of frozen French fries, crinkle cut, low moisture, ovenable, to serve 45 1/2-cup portions of baked french fries.

Method 1 Example F: Nut Butters (including peanut butter)

You want to serve 1-tablespoon servings of peanut butter as part of the meat/meat alternate component of the meal. How many 32 oz jars of peanut butter do you need to purchase?



1: Estimate the number of servings of peanut butter you will need.

You estimate that you will need 65 servings.

2: Multiply the number of people to be served times the number of tablespoons for each serving (for this example 1 serving is 1 Tbsp). This gives you the total number of tablespoons needed.

65 multiplied by 1 = 65 Tbsp needed

3: Since the *Food Buying Guide* does not have data for 1-Tbsp servings, you need to convert the total tablespoons into a serving size that is given in the *Food Buying Guide*. Divide the total number of single tablespoons needed by 2. This gives you the total number of 2-Tbsp servings needed.

65 divided by 2 = 32.5 2-Tbsp servings

4: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of 2-Tbsp servings you will get per purchase unit. (peanut butter is found on page 1-40.)

Column 2 reads: 32 oz jar

Column 3 reads: 28.8

- 5: Divide the number of 2-Tbsp servings by the number of servings per purchase unit (Column 3). This gives you the number of purchase units needed.**

32.5 divided by 28.8 = 1.12 units

- 6: Round up to 1.25 jars to ensure enough food is available.**

ANSWER: You will need 1-1/4 32-ounce jars of peanut butter to serve 65 1-Tbsp servings of peanut butter. Keep in mind that since only whole jars of any product can be purchased, you will need to purchase 2 32-oz jars of peanut butter to provide 65 1-Tbsp servings.

Method 1 Example G: Eggs, large, shell, fresh

You want to serve cooked egg in portions that will provide 1-1/2 ounces of equivalent meat alternate. How many whole large shell eggs do you need?

- 1: Estimate the number of servings of prepared egg you will need.**

You estimate that you will need 43 servings of cooked egg.

- 2: Multiply the number of people to be served times the serving size(s) (in ounces of equivalent meat alternate).**

This gives you the total ounces of equivalent meat alternate needed.

43 multiplied by 1.5 = 64.5 total ounces of equivalent meat alternate

- 3: Divide the total ounces of equivalent meat alternate needed by two (2) since one large egg in this FBG provides 2 oz equivalent meat alternate. (Column 3)**

This gives you the total number of whole large shell eggs needed.

64.5 divided by 2 = 32.25

- 4: Round up to 33 whole large shell eggs.**

ANSWER: You will need 33 whole large shell eggs to provide 43 portions, each of which will provide 1-1/2 ounces of equivalent meat alternate.



Method 1 Example H: Cereals and Cereal Grains

You want to serve regular cooked oatmeal as part of an adult care menu. How much dry, regular, rolled oats is needed?



1: Estimate the number of servings of prepared food you will need.

You estimate that you will need 70 1-cup servings.

2: Convert the serving size of cooked cereal or cereal grains to the number of 1/2-cup servings since Column 4 does not provide data for a 1 cup serving.

Divide 1.0 by 1/2 (convert fractions to decimals; see Table 6: 1/2 = .5)

1.0 divided by .5 = 2

Multiply the factor by the number of servings needed.

2 multiplied by 70 = 140 1/2-cup servings of cooked oatmeal needed

3: Locate the item as purchased in Column 1

Cereal Grains, Oats (Group H) Rolled, Regular, dry includes USDA Commodity (see page 3-23)

4: Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of 1/2-cup servings you will get per purchase unit.

Column 2 reads: 1 Pound

Column 3 reads: 22.7

5: Divide the total number of 1/2-cup servings of cooked oats needed by the number of servings you will get per purchase unit.

140 divided by 22.7 = 6.16 pounds dry oats

6: Round up to 6.25 pounds to ensure enough food is available.

ANSWER: You will need 6-1/4 pounds of dry rolled oats, regular to provide 70 1-cup servings of cooked oatmeal.

Method 2— Using Column 5

You may use the purchase unit for 100 servings in Column 5 to determine how much of each food you need to prepare a specified number of servings of a given size. This method is useful when planning large numbers of meals.

General Procedure: Multiply the numbers of serving sizes (Column 4) times the number of purchase units (Column 5) and divide by 100.

Examples A and B show you how to calculate the total number of pounds needed to obtain the desired number of servings of a particular food using Column 5.

Examples C shows you how to convert the Column 5 data – purchase units for 100 servings – to the purchase unit for a different number of servings

Method 2 Example A: Meat Loaf

Assume that you need enough USDA Commodity ground beef (not more than 16% fat) to prepare meatloaf for 325 people.



1. Estimate the total number of people in each age group expected to eat that food item.
2. Multiply the total number of servings expected to be taken by each group by the serving size to determine the amount you need for that age group.
3. Add those amounts together to determine the total quantity. (Meat/meat alternate is in ounces, vegetables and fruits are in 1/4-cup servings, and bread is listed in servings or equivalents.)

Group	Number		Serving Size	Total
Group III (K-3)	153	(X)	1-1/2 oz	= 229.5 oz
Group IV (grades 4-12)	157	(X)	2 oz	= 314.0 oz
Group V (grades 7-12)	15	(X)	3 oz	= 45.0 oz
				Total quantity 588.5 oz

4. Determine the purchase unit for 100 servings for your food item according to how it will be served.

According to the yield table, you need 8.5 pounds of *ground beef (USDA Commodity, not more than 16% fat)* for 100 1-ounce servings of cooked lean meat. (See page 1-16)

5. Multiply the total quantity by the purchase unit for 100 servings indicated in Column 5 and then divide the answer by 100.

$$588.5 \times 8.5 \div 100 = 50.02 \text{ pounds}$$

6. Round up to 50.1 lb to ensure enough food is purchased.

ANSWER: You will need 50.1 pounds of raw ground beef (USDA Commodity, not more than 16% fat) for the meatloaf.

Method 2 Example B: Green Beans, frozen cut

Assume you have an offer-verses-serve school and need enough frozen cut green beans to serve the same 325 people in Method 2 Example A with the servings planned below.



1. Estimate the total number of people in each age group expected to eat that food item.
2. Multiply the total number of servings expected to be taken by each group by the serving size to determine the amount you need for that age group. See Table 6 for cup to decimal conversions.
3. Add those amounts together to determine the total quantity. Then multiply the total cups by 4 to get the total 1/4-cup servings needed. (Meat/meat alternate is listed in ounces, vegetables and fruits are in 1/4-cup servings, and bread is in servings or equivalents.)

Group	Number	Serving Size	Total
Group III (K-3)	130	1/8 cup (.125)	16.25 cups
Group IV (grades 4-12)	125	1/4 cup (.25)	31.25 cups
Group V (grades 7-12)	10	1/4 cup (.25)	<u>2.50 cups</u>
Total			50.00 cups or 200.00 1/4-cups

4. Determine the purchase unit for 100 servings for your food item according to how it will be served.

According to the yield table (see page 2-16), you need 8.7 pounds of frozen cut green beans for 100 1/4-cup servings of cooked beans.

5. Multiply the total quantity of 1/4-cup servings by the purchase unit for 100 servings indicated in Column 5 and then divide the answer by 100.

$$200.0 \times 8.7 \div 100 = 17.4 \text{ pounds}$$

6. Round up to 17.5 lb to ensure enough food is purchased.

ANSWER: You will need 17-1/2 pounds of frozen cut green beans.

Method 2 Example C: Converting Column 5 Yield Data

Column 5 of the yield data tables gives the numbers of purchase units needed for 100 servings. Some programs, such as the Child and Adult Care Food Program, Summer Food Service Program, Afterschool Snack Program, or home day care site providers, may not plan meals for a 100 or more; they may plan for 50 or 25 meals. The Column 5 yield data can easily be converted to provide the number of purchase units needed for a smaller number of meals.

Example: You plan to serve 50 meals and want to know how many pounds of frozen whole kernel corn to buy.

1. **Divide 100 by the number of meals you are planning.**

$$100 \text{ divided by } 50 = 2$$

2. **Find, in Column 5, the number of purchase units for pounds of frozen whole kernel corn needed for 100 servings of cooked, drained vegetable.**

$$\text{Purchase units for 100 servings} = 9.1 \text{ lb}$$

3. **Divide the answer from Step 2 by the answer in Step 1**

$$9.1 \text{ divided by } 2 = 4.55$$

4. **Round up to the nearest practical measure.**

$$4.55 \text{ rounds up to } 4.66$$

Answer: You will need 4-2/3 pounds of frozen whole kernel corn for 50 servings.

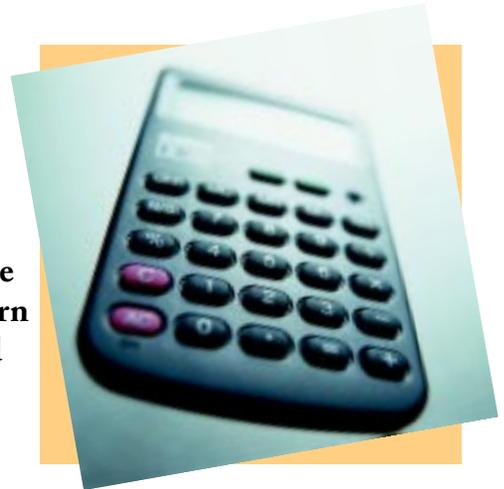
If you want to know the purchase units for 25 servings go through the same process above using 25 in step 1.

$$100 \text{ divided by } 25 = 4$$

$$9.1 \text{ divided by } 4 = 2.27$$

$$2.27 \text{ rounds up to } 2.33 \text{ lb (2-1/3 lb)}$$

The same method can be followed for any number of servings you would like to serve.



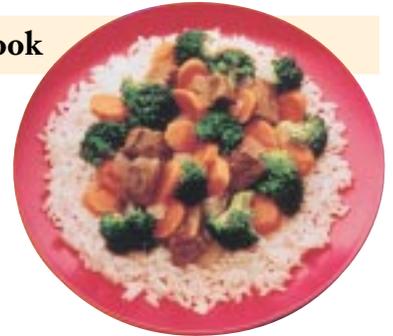
Method 3— Using Column 6

When would you use Column 6? Use the additional information in Column 6 to calculate yields for foods purchased in a different form from that listed in Column 1. For example, the *Food Buying Guide* lists iceberg lettuce, whole, as-purchased, and served as shredded lettuce. Column 6 gives the yield information needed to calculate how many servings you would get if you bought the lettuce already shredded.

How to calculate the quantity of food to buy in order to obtain the correct amount of ready-to-cook food for a recipe.

Method 3 Example A: Broccoli, fresh, ready-to-cook

You are planning to serve a Stir Fry. After adjusting the recipe for the number of servings, you determine that 5 lb 10 oz of chopped, fresh broccoli, ready-to-cook is needed.



The ready-to-cook quantity is the amount you need of trimmed, chopped vegetable. But how much whole, fresh broccoli will you need to buy to be sure to have the correct amount after trimming?

1: Refer to the yield information in Column 6 for the yield determined from the food you will be purchasing to the form you need for your recipe.

For Broccoli, Fresh, untrimmed, Column 6 (page 2-25) reads:

1 lb AP = 0.81 lb ready-to-cook

In other words, 1 pound whole, fresh, untrimmed broccoli as purchased (AP), yields 0.81 pound trimmed, ready-to-cook broccoli.

2: Divide the ready-to-cook (RTC) quantity called for in the recipe by yield data in Column 6.

If the recipe lists the desired RTC quantity in pounds and ounces, begin by determining the decimal equivalent (see Table 8, page I-39).

The stir-fry recipe calls for 5 lb 10 oz (5.62 lb) of ready-to-cook chopped broccoli.

5.62 lb divided by 0.81 = 6.93 lb

Round up to the next smallest practical measure

6.93 lb = 7 lb

ANSWER: You will need to purchase 7 lb of good quality, whole, raw, fresh broccoli to obtain 5 lb 10 oz of chopped ready-to-cook broccoli.

How to determine:

- the number of servings obtained from a bulk pack of food purchased prepared and ready-to-cook or use; and
- the number of servings from one pound of the same product.

Method 3 Example B: Iceberg lettuce, fresh

You purchase shredded fresh iceberg lettuce, ready-to-use, in 10 pound bags.

- How many 1/4-cup servings of shredded lettuce will each 10-pound bag provide?
- How many 1/4-cup servings will you get from just 1-pound of this product?

1: Refer to the yield information in Column 6 for the form of the food you will be purchasing as described in Column 1.

For lettuce, fresh, iceberg, head, untrimmed (see page 2-45), Column 6 reads:

1 lb AP = 0.76 lb ready-to-serve shredded lettuce

2: Determine the number of pounds of fresh head lettuce it would take to get 10 pounds of ready-to-serve shredded lettuce.

Divide the number of pounds of ready-to-use lettuce (10 lb) by the quantity of ready-to-use lettuce obtained from 1 pound, untrimmed head lettuce.

10 pounds divided by 0.76 pounds = 13.15 pounds of head lettuce

3: Refer to Column 3 to find the number of 1/4-cup servings per pound

Column 2 reads: pound

Column 3 reads: 22.2

4: Multiply the number of pounds of head lettuce by the number of 1/4-cup servings shredded lettuce provided per pound.

Pounds of head lettuce = 13.15

1/4-cup servings per pound = 22.2

13.15 X 22.2 = 291.9 1/4-cup servings of shredded lettuce

ANSWER 1: You will get 291.9 1/4-cup servings of shredded lettuce from a 10 lb bag of ready-to-use shredded lettuce.



How To Make Cost Comparisons

- 5: To calculate the servings per pound: Divide the total unrounded number of servings per bag by the total pounds of product in the unopened bag to get the number of 1/4-cup servings from 1 pound.**

Servings per bag = 291.9

Pound weight of product in unopened bag = 10

291.9 divided by 10 = 29.1 1/4-cup servings

ANSWER 2: You will get 29.1 1/4-cup servings per pound of ready-to-use shredded lettuce.

How to compare the cost per serving for food purchased in different forms by using Column 5.

Comparing cost of cut green beans

You want to compare the raw food cost per serving of cut green beans to be served cooked to help you decide if you should buy fresh green beans, canned cut green beans, or frozen cut green beans. The cost per pound of each form of green bean (for this example) is as follows: fresh, \$0.30/lb; canned, cut, \$0.24/lb *; frozen, cut, \$0.36/lb.

- 1: Using Column 5, obtain the purchase units for 100 servings for cut green beans served cooked with the purchase unit of “Pound.” (See pages 2-14 through 2-16).**

Fresh green beans = 9.0

Canned cut green beans = 14.0

Frozen cut green beans = 8.7

- 2: Divide the purchase units for 100 servings by 100 by moving the decimal two places to the left. This gives you the purchase units for 1 serving.**

Fresh green beans = 0.090

Canned cut green beans = 0.140

Frozen cut green beans = 0.087

- 3: Multiply the purchase units for one serving by the cost of one pound of the item. This gives you the cost of one serving size.**

Fresh green beans: $0.090 \times .30 = \$0.027$

* Canned cut green beans $0.140 \times .24 = \$0.034$

Frozen cut green beans $0.087 \times .36 = \$0.031$

*To calculate the cost per pound if you only have the cost per can:

- 1) Determine the number of pounds of food in one can, then
- 2) Divide the cost per can by the number of pounds of food in one can.



4: Compare the raw food cost per servings.

ANSWER: Based on raw food costs only, fresh green beans are the most economical. However, the raw food cost does not take into account labor expenses which will vary according to the form of the food purchased. For example, someone will have to wash, prep, and cook fresh beans. There are also different costs for the various storage conditions. These are only a few of the factors that may add significant cost per pound to the raw food.