



Food Buying Guide for Child Nutrition Programs



United States Department of Agriculture



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Food Buying Guide for Child Nutrition Programs

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Buy American Requirement

The Buy American Provision is a very important provision in the National School Lunch and Breakfast Programs (NSLP/SBP). This provision does not apply to Child and Adult Care Food Program (CACFP) sponsors who are not school food authorities operating the NSLP/SBP.

This provision requires that a school food authority purchase, to the maximum extent practicable, domestic commodities or products. The term “domestic commodity or product” means an agricultural commodity that is produced in the United States or a food product that is processed in the United States substantially using agricultural commodities that are produced in the United States.

The definition of “substantially” means that over 51% of the final processed product consists of agricultural commodities that were grown domestically; however, exceptions to purchase domestic foods are very limited. These limited exceptions are only permitted after first considering domestic alternatives and when domestic foods are unavailable or prohibitively expensive.



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Introduction

Food Buying Guide for Child Nutrition Programs

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 and adults in America.

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

Questions to ask yourself include:

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

This Food Buying Guide for Child Nutrition Programs (FBG) is designed to help you in two important ways.

- 1.** First, it will help you or your purchasing agent buy the right amount of food and purchase it in the most cost-effective manner.
- 2.** Second, it will help you determine the specific contribution each food makes toward the meal pattern requirements. This is necessary to ensure that meals provide balanced nourishment and meet program requirements for reimbursement.

In addition, with yield data for more than 2,100 food items, this guide provides 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 dark green and red/orange vegetables and whole grains, are key elements of a healthful diet. By offering a wide variety of nourishing foods, you are giving children and adults a greater opportunity to develop eating habits that will promote life-long good health and wellness. The FBG was first published in 1947. It is updated periodically, to reflect updated meal pattern requirements, to add new foods, and to reflect changes in processing technology or packaging that may affect yield.

The FBG is widely used by school food service professionals participating in the National School Lunch Program (NSLP), School Breakfast Program (SBP), the NSLP Afterschool Snack Service, institutions and facilities participating in the Child and Adult Care Food Program (CACFP), and sponsors participating in the Summer Food Service Program (SFSP).

Meal patterns for each of these Child Nutrition Programs are shown on pages I-7 to I-13.

What's included in this guide?

This current version:

- Reflects updated meal pattern requirements for the NSLP, SBP, and CACFP including:
 - new grain items that are whole grain or whole grain-rich,
 - the separation of vegetable and fruit components and
 - the addition of vegetable subgroups (beans and peas, red/orange, dark green, starchy, and other vegetables). Offering specific amounts of vegetables from each vegetable subgroup weekly is only required in the school meal programs. However, other Child Nutrition Programs (CACFP and SFSP) may wish to use these subgroups as a guide for offering a variety of vegetables to program participants.
- Is the most comprehensive to date. It includes over 2,100 food items or pack sizes, each carefully tested using the equipment and methods that would be used in a typical food service setting.
- Is packed with helpful information. For example, practical examples are included to serve as a how-to guide for working with the yield data tables.
- Contains the meal pattern requirement charts for each Child Nutrition Program.
- Appendixes:
 - **Appendix A: Recipe Analysis Workbook**
This appendix was updated to provide a tool to help you determine your recipe's expected meal pattern contributions. This tool contains a series of worksheets (tabs) with formulas for each food group (meal component).
 - **Appendix B: How to Use Column 6**
This appendix shows how to determine the amount of food to purchase for yield and crediting purposes using Column 6 "Additional Information."
 - **Appendix C: The USDA Child Nutrition (CN) Labeling Program**
This appendix provides a brief description of the CN Labeling Program, the types of foods that can be CN labeled, and what a CN label looks like. It also contains yield data for "Food Items for Further Processing" used primarily by industry.
 - **Appendix D: The Purchasing Process**
This appendix provides a summary of resources to guide you through the food purchasing process.
 - **Appendix E: Grains/Breads Component: The Summer Food Service Program (SFSP) and National School Lunch Program (NSLP) Afterschool Snack Service**
This appendix was added to provide information on how food products contribute toward the grains/breads requirement in the Summer Food Service Program and NSLP Afterschool Snack Service.
 - **Appendix F: Resources**
Resources related to program requirements, nutrition guidance, food safety, and more.

Introduction

Yields

Yield information is a valuable planning and production tool used to:

- estimate the amount of food to purchase;
- determine meal pattern contribution for each food component;
- control foods costs;
- prevent food waste; and
- ensure an adequate quantity of food is produced each meal.

Use it as a guideline to purchase the appropriate amount of food for the meals you will prepare.

These examples illustrate what is meant by yield:

- If you plan to include fresh, chopped tomatoes in a green salad, you need to determine how many pounds of whole tomatoes you must purchase to have the amount needed for the recipe.
- If you purchased USDA Foods ground beef and you plan to serve 275 portions of meatloaf, which provide 2 ounces of cooked lean meat per portion, you need to determine 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 determine how many cans to start with – in other words, how many cans of undrained beans will yield 5 pounds of drained beans? Or, how many pounds of dry, uncooked black beans 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. Using tools such as scales, measuring cups, and measuring spoons, you must measure or weigh portions carefully and ensure that each serving size is appropriate for the age/grade group you are serving.

In-House Yield Data

If your food service operation is consistently getting a higher or lower yield from a product than the yield specified in this FBG, you may want to conduct an in-house yield study or 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 you need to document to show your State agency how you determined the in-house yields; and 2) maintain any documentation required by the State agency.

Specific and verifiable procedures must be followed to document yield.

For example, suppose the yield listed in this FBG for a #10 can of diced pears is consistently lower than the yield you are getting with the brand of diced pears you currently purchase. Program operators may request approval from their State agency to conduct in-house yield data.

If approval is granted to conduct in-house yields, a minimum of at least six (6) samples (e.g., six (6) #10 cans of diced pears) are required to determine the yield. The program operator must carefully portion the food, using the appropriate scoop/disher or measuring spoon. The food item should be filled to the top level of the measuring utensil that is being used. Carefully count the number of the specified serving size obtained from each sample and document the number count (see table on in-house yields). To determine the average number of portions per sample, add the number of servings from each sample and then divide the total number of servings by six (sample size).

To get a better yield estimate, it is recommended that at least two people do the portioning and counting of six samples independently. Program operators should maintain how the yields were established and provide the State agency with appropriate documentation (see sample documentation). The State agency may also request other forms of documentation, such as photographs of the actual measurements.

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 cooked;
- the form in which you serve the food – for example, whether the potatoes you are serving are mashed, fried, or baked; and
- serving utensils used and portion control.

In-House Yields – Sample Documentation

Name of School District:	Bolding
City and State:	Paring, TX
Person Conducting In-House Yield:	
Phone Number:	
Type of Product:	Diced Pears - #10 Can
Company's Name:	Farmberry Fruits
Product Net Weight:	106 oz
Specified Serving Size:	1/2 cup

Number of servings	
Number of samples	
(1/2 cup) per sample can	
Can #1	25
Can #2	26
Can #3	25
Can #4	25
Can #5	25
Can #6	26
Total number of servings per sample can	152
Yield	
Total number of servings per sample	= 152
Number of samples	= 6

One #10 can of diced pears provide 25.3 1/2 cup servings of fruit and juice.

Introduction

Meal Patterns

All Child Nutrition Program meal patterns follow a food-based menu planning approach. This approach requires specific amounts of foods be served daily in accordance with the meal pattern. The specific amounts of foods included in the meal pattern requirements ensure that program participants receive access to a variety of foods each day which contribute to a healthy diet. The meal pattern requirements for each Child Nutrition Program are provided in Charts 1-4D. See the Interim Final Rule Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements (82 FR 56703), which provides State agencies discretion to grant whole grain-rich exemptions through school year 2018-2019. For additional guidance, please contact your State agency.

Chart 1: National School Lunch Program (NSLP) and School Breakfast Program (SBP)

Chart 1 presents the food-based meal pattern for the NSLP and SBP. To allow for age-appropriate school meals, USDA requires schools to use grade groups K-5, 6-8, and 9-12 to plan menus in the NSLP and SBP. Schools are provided the flexibility to use one meal pattern for students in grades K through 8 as food quantity requirements for groups K-5 and 6-8 overlap, provided the school meets the calorie, saturated fat, and sodium standards for each of the grade groups receiving the school meals.

Chart 2: NSLP Afterschool Snack Service

Schools may serve reimbursable supplemental snacks to children in an eligible NSLP Afterschool Snack Service. Chart 2 provides the food components and minimum serving size requirements for afterschool snacks.

Chart 3: Summer Food Service Program (SFSP)

Chart 3 presents the breakfast, lunch, and supper meal patterns for the SFSP.

Charts 4A, B, C, and D: Child and Adult Care Food Program (CACFP)

USDA revised the CACFP meal patterns in early 2016. Child care providers in the CACFP centers and day care homes must comply with the updated meal pattern requirements by October 1, 2017. The FBG provides information based on these updated meal pattern requirements.

Charts 4A, B, and C present the CACFP child and adult meal patterns for breakfast, lunch/supper, and snacks.

Chart 4D presents the CACFP infant meal patterns for breakfast, lunch, supper and snacks. Please note that the FBG does not include yields for infant formulas or other commercially prepared infant foods.

Chart 1: National School Lunch Program (NSLP) and School Breakfast Program (SBP)

Meal Pattern	Breakfast			Lunch		
Grades	K - 5 ¹	6 - 8 ¹	9 - 12 ¹	K - 5	6 - 8	9 - 12

Amount of Food² Per Week (Minimum per day)

Fruits (cups) ^{3, 4}	5 (1) ⁵	5 (1) ⁵	5 (1) ⁵	2-1/2 (1/2)	2½ (1/2)	5 (1)
Vegetables (cups) ^{3, 4}	0	0	0	3-3/4 (3/4)	3-3/4 (3/4)	5 (1)
➤ Dark Green ⁶	0	0	0	1/2	1/2	1/2
➤ Red/Orange ⁶	0	0	0	3/4	3/4	1-1/4
➤ Beans and Peas (Legumes) ⁶	0	0	0	1/2	1/2	1/2
➤ Starchy ⁶	0	0	0	1/2	1/2	1/2
➤ Other ^{6, 7}	0	0	0	1/2	1/2	3/4
Additional Vegetable to Reach Total ⁸	0	0	0	1	1	1 1/2
Grains (oz eq) ⁹	7-10 (1) ¹⁰	8-10 (1) ¹⁰	9-10 (1) ¹⁰	8-9 (1)	8-10 (1)	10-12 (2)
Meats/Meat Alternates (oz eq)	0 ¹¹	0 ¹¹	0 ¹¹	8-10 (1)	9-10 (1)	10-12 (2)
Fluid Milk (cups) ¹²	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)

Other Specifications: Daily Amount Based on the Average for a 5-Day Week

Min - Max calories (kcal) ^{13, 14, 15}	350-500	400-550	450-600	550-650	600-700	750-850
Saturated Fat (% of total calories) ^{14, 15}	< 10	< 10	< 10	< 10	< 10	< 10
Sodium (mg) ^{14, 16}	≤ 540	≤ 600	≤ 640	≤ 1,230	≤ 1,360	≤ 1,420
Trans fat ^{14, 15}	Nutrition label or manufacturer specifications must indicate zero grams of trans fat per serving.					

¹ In the SBP, the above age-grade groups are required beginning July 1, 2013 (SY 2013-14).

² Food items included in each food group and subgroup and amount equivalents. Minimum creditable serving is 1/8 cup.

³ One quarter cup of dried fruit counts as 1/2 cup of fruit; 1 cup of leafy greens counts as ½ cup of vegetables. No more than half of the fruit or vegetable offerings may be in the form of juice. All juice must be 100% full-strength.

⁴ For breakfast, vegetables may be substituted for fruits, but the first two cups per week of any such substitution must be from the dark green, red/orange, beans/peas (legumes) or "Other vegetables" subgroups as defined in §210.10(c)(2)(iii).

⁵ The fruit quantity requirement for the SBP (5 cups/week and a minimum of 1 cup/day) is effective July 1, 2014 (SY 2014-2015).

⁶ Larger amounts of these vegetables may be served.

⁷ This category consists of "Other vegetables" as defined in §210.10(c)(2)(iii)(E). For the purposes of the NSLP, "Other vegetables" requirement may be met with any additional amounts from the dark green, red/orange, beans/peas (legumes) vegetable subgroups as defined in §210.10(c)(2)(iii).

⁸ Any vegetable subgroup may be offered to meet the total weekly vegetable requirement.

⁹ All grains must be whole-grain-rich. Exemptions are allowed as specified in 7 CFR 220.8(c)(2)(iv)(B).

¹⁰ In the SBP, the grain ranges must be offered beginning July 1, 2013 (SY 2013-2014).

¹¹ There is no separate meats/meat alternates component in the SBP. Beginning July 1, 2013 (SY 2013-2014), schools may substitute 1 oz. eq. of meat/meat alternate for 1 oz. eq. of grains after the minimum daily grains requirement is met.

¹² All fluid milk must be fat-free (skim) or low-fat (1 percent fat or less). Milk may be unflavored or flavored.

¹³ The average daily amount of calories for a 5-day school week must be within the range (at least the minimum and no more than the maximum values).

¹⁴ Discretionary sources of calories (solid fats and added sugars) may be added to the meal pattern if within the specifications for calories, saturated fat, trans fat, and sodium. Foods of minimal nutritional value and fluid milk with fat content greater than 1 percent milk fat are not allowed.

¹⁵ In the SBP, calories and trans fat specifications take effect beginning July 1, 2013 (SY 2013-2014).

¹⁶ Sodium Target 1 (shown) is effective from July 1, 2014 (SY 2014-2015) through June 30, 2019 (SY 2018-2019). For sodium targets due to take effect beyond SY 2018-2019, see 7 CFR 220.8(f)(3).

Introduction

Chart 2: National School Lunch Program Meal Pattern for Afterschool Snacks Service

Select two of the four components for a reimbursable meal				
Meal Components ¹		Children Ages 1 - 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)
Vegetables or Fruit ^{2, 9}	Juice ^{2, 9} , fruit, and/or vegetable	1/2 cup	1/2 cup	3/4 cup
Grains/Breads ^{3, 4} (Select one)	Bread	1/2 slice	1/2 slice	1 slice
	Cornbread/biscuit/roll/muffin	1/2 serving	1/2 serving	1 serving
	Cold dry cereal ⁴	1/4 cup or 1/3 oz	1/3 cup or 1/2 oz	3/4 cup or 1 oz
	Cooked cereal grains	1/4 cup	1/4 cup	1/2 cup
	Pasta/noodles	1/4 cup	1/4 cup	1/2 cup
Meats/Meat Alternates ^{5, 6, 7} (Select one)	Meat/poultry/fish ⁵	1/2 oz	1/2 oz	1 oz
	Alternate protein products ⁶	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
	Cooked dry beans/peas	1/8 cup	1/8 cup	1/4 cup
	Peanut/other nut/seed butters	1 Tbsp	1 Tbsp	2 Tbsp
	Nuts and/or seeds ⁷	1/2 oz ⁷	1/2 oz ⁷	1 oz
	Yogurt ⁸	2 oz (1/4 cup)	2 oz (1/4 cup)	4 oz (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 or fruit juice may count towards the entire vegetables or fruit component.

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.

⁹ Juice may not be served at snack when milk is served as the only other component.

Chart 3: Summer Food Service Program Meal Pattern for Children

Select the appropriate components for a reimbursable meal

Meal Component		Breakfast, Serve all 3	Lunch/Supper, Serve all 4	Snacks, Serve 2 of 4
Milk ^{1, 2}	Fluid milk	8 fl oz (1 cup) ¹	8 fl oz (1 cup) ²	8 fl oz (1 cup) ¹
Vegetables or Fruit ^{3, 4, 5}	Juice, fruit, and/or vegetable	1/2 cup ³ (juice must be full-strength)	3/4 cup ⁴	3/4 cup ^{3, 5} (juice must be full-strength)
Grains/Breads ^{6, 7} (Select one)	Bread	1 slice	1 slice	1 slice
	Cornbread/biscuit/roll/muffin	1 serving	1 serving	1 serving
	Cold dry cereal ⁷	3/4 cup or 1 oz ⁷	N/A	3/4 cup or 1 oz ⁷
	Hot cooked cereal	1/2 cup	1/2 cup	1/2 cup
	Cooked pasta/noodles/grains	1/2 cup	1/2 cup	1/2 cup
Optional				
Meats/Meat Alternates ^{8, 9, 10, 11, 12} (Select one)	Lean meat/poultry/fish ^{5, 8}	1 oz	2 oz	1 oz
	Alternate protein product ⁹	1 oz	2 oz	1 oz
	Cheese	1 oz	2 oz	1 oz
	Egg (large)	1/2 large egg	1 large egg	1/2 large egg
	Cooked dry beans/peas	1/4 cup	1/2 cup	1/4 cup
	Peanut/other nut butters	2 Tbsp	4 Tbsp	2 Tbsp
	Nuts and/or seeds ¹¹	N/A	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 vegetable or fruit component at snack 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 must be commercially prepared, and may be plain or flavored, unsweetened, or sweetened.

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Chart 4A: Child and Adult Care Food Program Meal Pattern for Children and Adults: Breakfast

Select all three components for a reimbursable meal

Meal Component ²		Minimum Quantities				
		Ages 1 - 2	Ages 3 - 5	Ages 6 - 12	Ages 13 - 18 ¹ (at-risk afterschool programs and emergency shelters)	Adult
Fluid Milk ³		4 fl oz	4 fl oz	8 fl oz	8 fl oz	8 fl oz
Vegetables, fruits, or portions of both ⁴		1/4 cup	1/2 cup	1/2 cup	1/2 cup	1/2 cup
Grains (oz eq) ^{5, 6, 7} (Select one)	Whole grain-rich or enriched bread	1/2 slice	1/2 slice	1 slice	1 slice	2 slices
	Whole grain-rich or enriched bread product, such as biscuit, roll, muffin	1/2 serving	1/2 serving	1 serving	1 serving	2 servings
	Whole grain-rich, enriched or fortified cooked breakfast cereal ⁸ , cereal grain, and/or pasta	1/4 cup	1/2 cup	1/2 cup	1/2 cup	1 cup
	Whole grain-rich, enriched or fortified ready-to-eat breakfast cereal (dry, cold) ^{8, 9}	Flakes or rounds	1/2 cup	1 cup	1 cup	2 cups
		Puffed cereal	3/4 cup	1-1/4 cup	1-1/4 cup	2-1/2 cups
	Granola	1/8 cup	1/8 cup	1/4 cup	1/4 cup	1/2 cup

¹ Larger portion sizes than specified may need to be served to children 13 through 18 years old to meet their nutritional needs.

² Must serve all three components for a reimbursable meal. Offer versus serve is an option for only adult and at-risk afterschool participants.

³ Must be unflavored whole milk for children age one. Must be unflavored low-fat (1 percent) or unflavored fat-free (skim) milk for children two through five years old. Must be unflavored low-fat (1 percent), unflavored fat-free (skim), or flavored fat-free (skim) milk for children six years old and older and adults. For adult participants, 6 ounces (weight) or 3/4 cup (volume) of yogurt may be used to meet the equivalent of 8 ounces of fluid milk once per day when yogurt is not served as a meat alternate in the same meal.

⁴ Pasteurized full-strength juice may only be used to meet the vegetable or fruit requirement at one meal, including snack, per day.

⁵ At least one serving per day, across all eating occasions, must be whole grain-rich. Grain-based desserts do not count towards meeting the grains requirement.

⁶ Meats and meat alternates may be used to meet the entire grains requirement a maximum of three times a week. One ounce of meat and meat alternates is equal to one-ounce equivalent of grains.

⁷ Beginning October 1, 2019, ounce equivalents are used to determine the quantity of creditable grains.

⁸ Breakfast cereals must contain no more than 6 grams of sugar per dry ounce (no more than 21.2 grams of sucrose and other sugars per 100 grams of dry cereal).

⁹ Beginning October 1, 2019, the minimum serving size specified in this section for ready-to-eat breakfast cereals must be served. Until October 1, 2019, the minimum serving size for any type of ready-to-eat breakfast cereals is 1/4 cup for children ages 1-2; 1/3 cup for children ages 3-5; 3/4 cup for children 6-12; and 1-1/2 cups for adults.

Chart 4B: Child and Adult Care Food Program Meal Pattern for Children and Adults: Lunch and Supper

Select all three components for a reimbursable meal

Meal Component ²		Minimum Quantities				
		Ages 1 - 2	Ages 3 - 5	Ages 6 - 12	Ages 13-18 ¹ (at-risk afterschool programs and emergency shelters)	Adult
Fluid Milk ³		4 fl oz	6 fl oz	8 fl oz	8 fl oz	8 fl oz ⁴
Meats/Meat Alternates (<i>Edible portion as served</i>)	Lean meat, poultry, or fish	1 ounce	1-1/2 ounces	2 ounces	2 ounces	2 ounces
	Tofu, soy products, or alternate protein products ⁵	1 ounce	1-1/2 ounces	2 ounces	2 ounces	2 ounces
	Cheese	1 ounce	1-1/2 ounce	2 ounces	2 ounces	2 ounces
	Large egg	1/2	3/4	1	1	1
	Cooked dry beans or peas	1/4 cup	3/8 cup	1/2 cup	1/2 cup	1/2 cup
	Peanut butter or soy nut butter or other nut or seed butters	2 Tbsp	3 Tbsp	4 Tbsp	4 Tbsp	4 Tbsp
	Yogurt, plain or flavored unsweetened or sweetened ⁶	4 ounces or 1/2 cup	6 ounces or 3/4 cup	8 ounces or 1 cup	8 ounces or 1 cup	8 ounces or 1 cup
The following may be used to meet no more than 50 percent of the requirement: Peanuts, soy nuts, tree nuts, or seeds, as listed in program guidance, or an equivalent quantity of any combination of the above meats/meat alternates (1 ounce of nuts/seeds = 1 ounce of cooked lean meat, poultry, or fish)		1/2 ounce = 50%	3/4 ounce = 50%	1 ounce = 50%	1 ounce = 50%	1 ounce = 50%
Vegetable ⁷		1/8 cup	1/4 cup	1/2 cup	1/2 cup	1/2 cup
Fruits ^{7, 8}		1/8 cup	1/4 cup	1/4 cup	1/4 cup	1/2 cup
Grains (oz eq) ^{9, 10}	Whole grain-rich or enriched bread	1/2 slice	1/2 slice	1 slice	1 slice	2 slices
	Whole grain-rich or enriched bread product, such as biscuit, roll, muffin	1/2 serving	1/2 serving	1 serving	1 serving	2 servings
	Whole grain-rich, enriched or fortified cooked breakfast cereal ¹¹ , cereal grain, and/or pasta	1/4 cup	1/4 cup	1/2 cup	1/2 cup	1 cup

¹ Larger portion sizes than specified may need to be served to children 13 through 18 years old to meet their nutritional needs.

² Must serve all five components for a reimbursable meal. Offer versus serve is an option for only adult and at-risk participants.

³ Must be unflavored whole milk for children age one. Must be unflavored low-fat (1 percent) or unflavored fat-free (skim) milk for children two through five years old. Must be unflavored low-fat (1 percent), unflavored fat-free (skim), or flavored fat-free (skim) milk for children six years old and older and adults. For adult participants, 6 ounces (weight) or 3/4 cup (volume) of yogurt may be used to meet the equivalent of 8 ounces of fluid milk once per day when yogurt is not served as a meat alternate in the same meal.

⁴ A serving of fluid milk is optional for suppers served to adult participants.

⁵ Alternate protein products must meet the requirements in Appendix A to Part 226.

⁶ Yogurt must contain no more than 23 grams of total sugars per 6 ounces.

⁷ Pasteurized full-strength juice may only be used to meet the vegetable or fruit requirement at one meal, including snack, per day.

⁸ A vegetable may be used to meet the entire fruit requirement. When two vegetables are served at lunch or supper, two different kinds of vegetables must be served.

⁹ At least one serving per day, across all eating occasions, must be whole grain-rich. Grain-based desserts do not count towards the grains requirement.

¹⁰ Beginning October 1, 2019, ounce equivalents are used to determine the quantity of the creditable grain.

¹¹ Breakfast cereals must contain no more than 6 grams of sugar per dry ounce (no more than 21.2 grams of sucrose and other sugars per 100 grams of dry cereal).

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Chart 4C: Child and Adult Care Food Program Meal Pattern for Children and Adults: Snacks

Snack meal pattern for children and adults						
Meal Component ²		Minimum Quantities				
		Ages 1 - 2	Ages 3 - 5	Ages 6 - 12	Ages 13-18 ¹ (at-risk afterschool programs and emergency shelters)	Adult
Fluid Milk ³		4 fl oz	4 fl oz	8 fl oz	8 fl oz	8 fl oz
Meats/Meat Alternates (Edible portion as served)	Lean meat, poultry, or fish	1/2 ounce	1/2 ounce	1 ounce	1 ounce	1 ounce
	Tofu, soy products, or alternate protein products ⁴	1/2 ounce	1/2 ounce	1 ounce	1 ounce	1 ounce
	Cheese	1/2 ounce	1/2 ounce	1 ounce	1 ounce	1 ounce
	Large egg	1/2	1/2	1/2	1/2	1/2
	Cooked dry beans or peas	1/8 cup	1/8 cup	1/4 cup	1/4 cup	1/4 cup
	Peanut butter or soy nut butter or other nut or seed butters	1 Tbsp	1 Tbsp	2 Tbsp	2 Tbsp	2 Tbsp
	Yogurt, plain or flavored unsweetened or sweetened ⁵	2 ounces or 1/4 cup	2 ounces or 1/4 cup	4 ounces or 1/2 cup	4 ounces or 1/2 cup	4 ounces or 1/2 cup
	Peanuts, soy nuts, tree nuts, or seeds	1/2 ounce	1/2 ounce	1 ounce	1 ounce	1 ounce
Vegetables ⁶		1/2 cup	1/2 cup	3/4 cup	3/4 cup	1/2 cup
Fruits ⁶		1/2 cup	1/2 cup	3/4 cup	3/4 cup	1/2 cup
Grains (oz eq) ^{7,8}	Whole grain-rich or enriched bread	1/2 slice	1/2 slice	1 slice	1 slice	1 slice
	Whole grain-rich or enriched bread product, such as biscuit, roll, muffin	1/2 serving	1/2 serving	1 serving	1 serving	1 serving
	Whole grain-rich, enriched or fortified cooked breakfast cereal, ⁹ cereal grain, and/or pasta	1/4 cup	1/4 cup	1/2 cup	1/2 cup	1/2 cup
	Whole grain-rich, enriched or fortified ready-to-eat breakfast cereal (dry, cold) ^{9,10}	Flakes or rounds	1/2 cup	1 cup	1 cup	1 cup
		Puffed cereal	3/4 cup	1-1/4 cup	1-1/4 cup	1-1/4 cup
		Granola	1/8 cup	1/4 cup	1/4 cup	1/4 cup

- 1 Larger portion sizes than specified may need to be served to children 13 through 18 years old to meet their nutritional needs.
- 2 Select two of the five components for a reimbursable snack. Only one of the two components may be a beverage.
- 3 Must be unflavored whole milk for children age one. Must be unflavored low-fat (1 percent) or unflavored fat-free (skim) milk for children two through five years old. Must be unflavored low-fat (1 percent), unflavored fat-free (skim), or flavored fat-free (skim) milk for children six years old and older and adults. For adult participants, 6 ounces (weight) or 3/4 cup (volume) of yogurt may be used to meet the equivalent of 8 ounces of fluid milk once per day when yogurt is not served as a meat alternate in the same meal.
- 4 Alternate protein products must meet the requirements in Appendix A to Part 226.
- 5 Yogurt must contain no more than 23 grams of total sugars per 6 ounces.
- 6 Pasteurized full-strength juice may only be used to meet the vegetable or fruit requirement at one meal, including snack, per day.
- 7 At least one serving per day, across all eating occasions, must be whole grain-rich. Grain-based desserts do not count towards meeting the grains requirement.
- 8 Beginning October 1, 2019, ounce equivalents are used to determine the quantity of creditable grains.
- 9 Breakfast cereals must contain no more than 6 grams of sugar per dry ounce (no more than 21.2 grams of sucrose and other sugars per 100 grams of dry cereal).
- 10 Beginning October 1, 2019, the minimum serving sizes specified in this section for ready-to-eat breakfast cereals must be served. Until October 1, 2019, the minimum serving size for any type of ready-to-eat breakfast cereals is 1/4 cup for children ages 1-2; 1/3 cup for children ages 3-5; 3/4 cup for children 6-12; and 1-1/2 cups for adults.

**Chart 4D: Child and Adult Care Food Program Infant Meal Patterns:
Infant Meal Pattern**

Meal	Infants: Birth through 5 months	Infants: 6 through 11 months
Breakfast, Lunch, or Supper	4-6 fluid ounces breastmilk ¹ or formula ²	6-8 fluid ounces breastmilk ¹ or formula ² ; and 0-4 tablespoons infant cereal ^{2,3} , meat, fish, poultry, whole egg, cooked dry beans or cooked dry peas; or 0-2 ounces of cheese; or 0-4 ounces (volume) of cottage cheese; or 0-4 ounces or 1/2 cup of yogurt ⁴ or a combination of the above ⁵ ; and 0-2 tablespoons vegetable or fruit or a combination of both ^{5,6}
Snack	4-6 fluid ounces breastmilk ¹ or formula ²	2-4 fluid ounces breastmilk ¹ or formula ² ; and 0-1/2 slice bread ^{3,7} ; or 0-2 crackers ^{3,7} ; or 0-4 tablespoons infant cereal ^{2,3,7} or ready-to-eat breakfast cereal ^{3,5,7,8} ; and 0-2 tablespoons vegetable or fruit, or a combination of both ^{5,6}

¹ Breastmilk or formula, or portions of both, must be served; however, it is recommended that breastmilk be served in place of formula from birth through 11 months. For some breastfed infants who regularly consume less than the minimum amount of breastmilk per feeding, a serving of less than the minimum amount of breastmilk may be offered, with additional breastmilk offered at a later time if the infant will consume more.

² Infant formula and dry infant cereal must be iron-fortified.

³ Beginning October 1, 2019, ounce equivalents are used to determine the quantity of creditable grains.

⁴ Yogurt must contain no more than 23 grams of total sugars per 6 ounces.

⁵ A serving of this component is required when the infant is developmentally ready to accept it.

⁶ Fruit and vegetable juices must not be served.

⁷ A serving of grains must be whole grain-rich, enriched meal, or enriched flour.

⁸ Breakfast cereals must contain no more than 6 grams of sugar per dry ounce (no more than 21.2 grams of sucrose and other sugars per 100 grams of dry cereal).

Introduction

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
- How to convert parts of a unit (such as 1/2 gallon or 1/4 pound) to the correct decimal equivalent

Table 1: Abbreviations and Symbols

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

Common Can and Jar Sizes – per Can

The following tables provide helpful information on 10 common can and jar sizes. Table 2 lists:
1) the average total net weight or fluid measure per can; and 2) 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 differ 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.

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	
	Customary	Metric	Cups	Liters
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. 300	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

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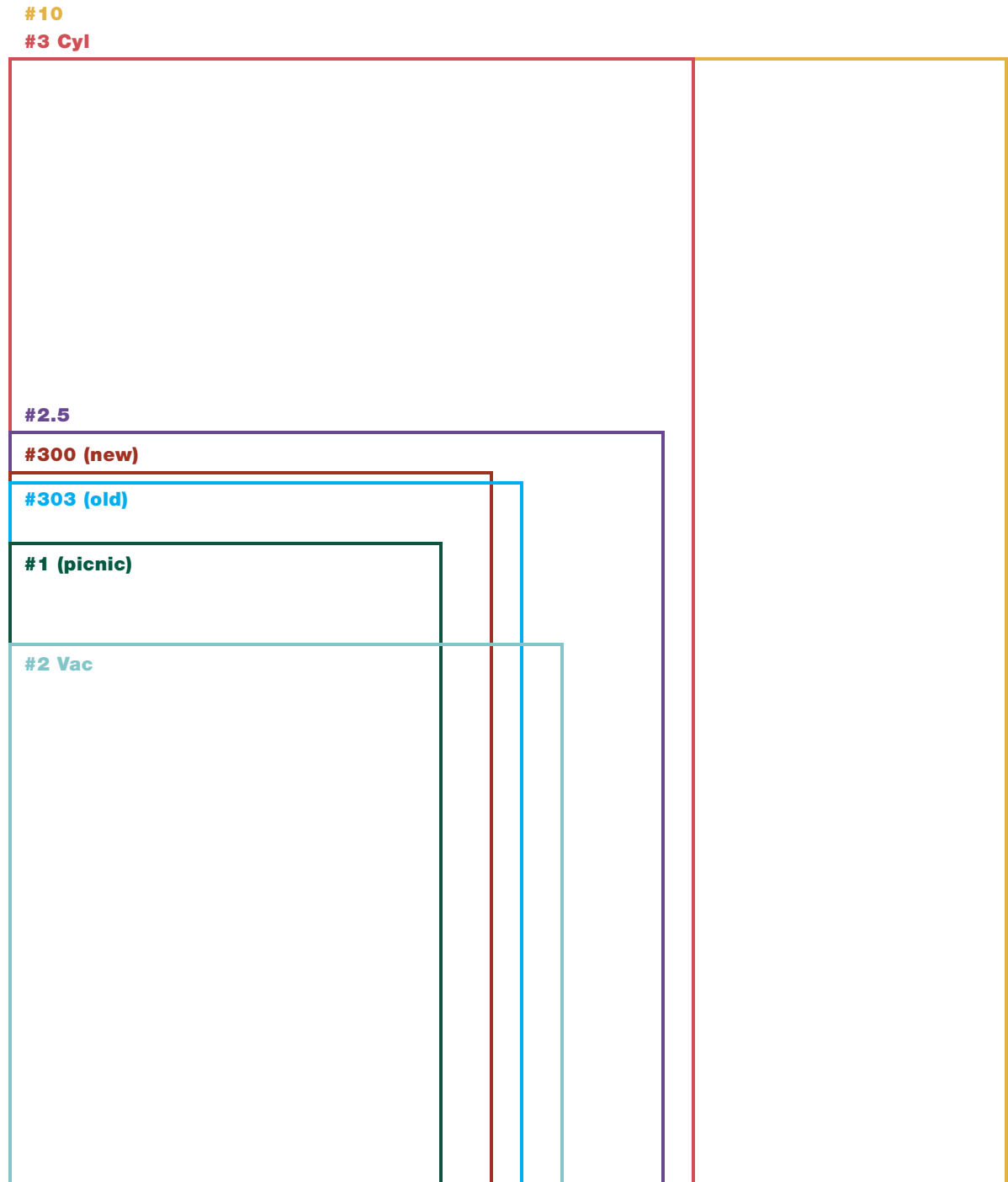
Table 3: Common Can and Jar Sizes - per Case and Principal Products

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. 300	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	48 or 72 cans per case	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

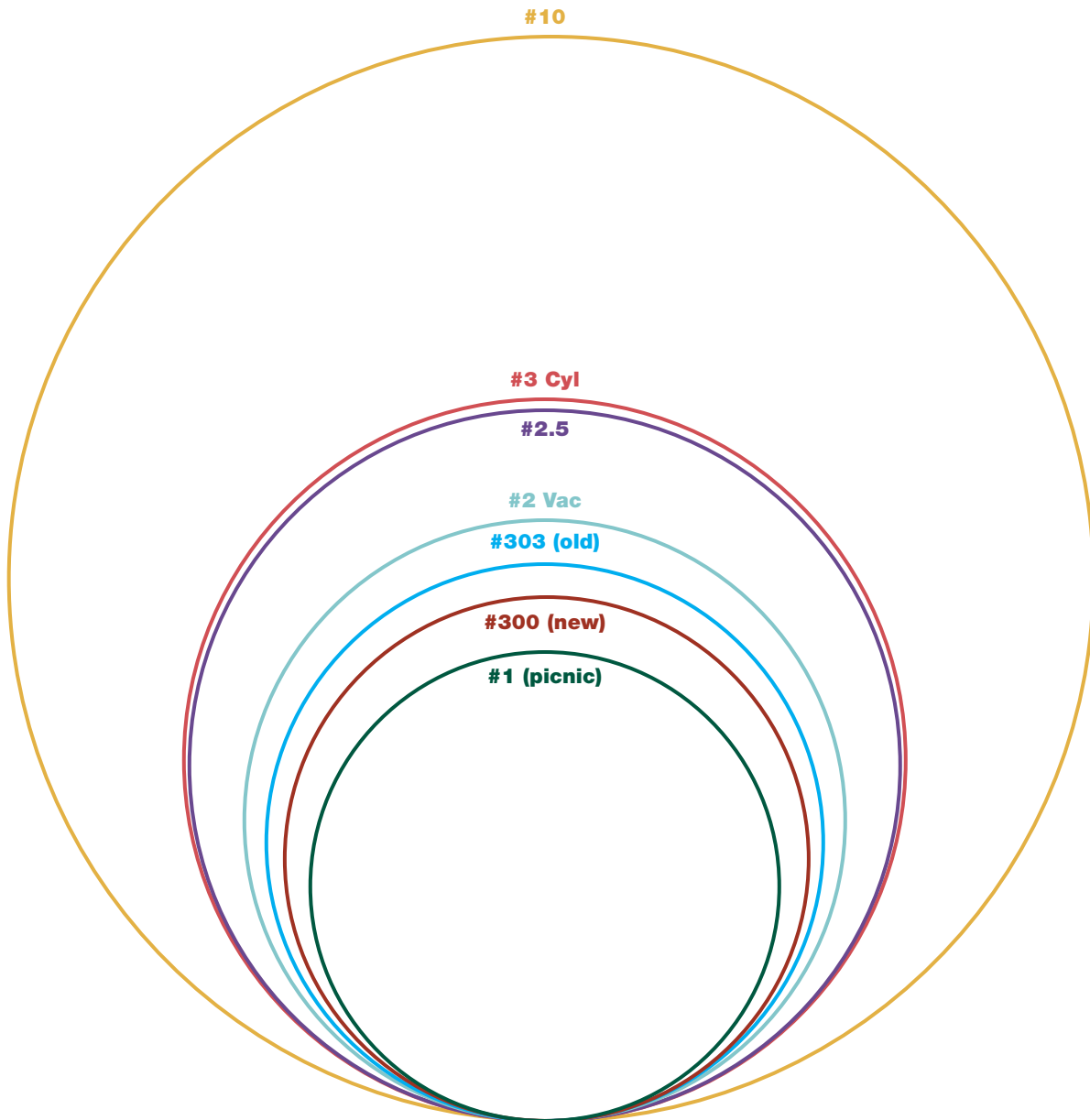


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Figure 2: Can Size Template

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 at times want to use a different can size than the ones listed in this guide.

For example, you might have several No. 2 cans of wax beans in your inventory that you want to use. The FBG lists yield information for this product in No. 2-1/2 cans. In the Vegetable yield tables, you will see that for 100 servings of heated, drained vegetable, you need 7.9 No. 2-1/2 cans. How can you determine how many No. 2 cans are needed for 100 servings?

Table 4 makes substitutions easy. Here is how to use it:

- 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 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 are required for the substitution. In the example above, 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 the question above:

1. Multiply the number of 2-1/2 cans needed for 100 servings (7.9) by the number of size 2 cans needed to substitute for one 2-1/2 can (1.5).

Calculation: 7.9 multiplied by 1.5 equals 11.85

2. Round up to the next whole can.

11.85 rounds up to 12

Therefore, if you need 7.9 No. 2-1/2 cans for 100 servings, you would need 12 No. 2 cans for the same 100 servings.

Table 4: A Guide for Substituting Cans

Can Size in Yield Table	No. 10	No. 3 Cyl	No. 2-1/2	No. 2	No. 300
No. 10	1.0	2.1	3.7	5.3	7.4
No. 3 Cyl	0.5	1.0	1.8	2.6	3.3
No. 2 ½	0.3	0.6	1.0	1.5	2.0
No. 2	0.2	0.4	0.7	1.0	1.5
No. 300	0.1	0.3	0.5	0.7	1.0

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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 vegetable and fruit 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

Fraction	Decimal
1/8	0.125
1/4	0.125
1/3	0.333
3/8	0.375
1/2	0.500
5/8	0.625
2/3	0.667
3/4	0.750
7/8	0.875

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 - 0.249	1/8 cup
0.250 - 0.374	1/4 cup
0.375 - 0.499	3/8 cup
0.500 - 0.624	1/2 cup
0.625 - 0.749	5/8 cup
0.750 - 0.874	3/4 cup
0.875 - 0.999	7/8 cup
1.000 - 1.124	1 cup

Use Table 7 to assist in rounding the decimal equivalent of a vegetable or fruit serving to the correct creditable volume towards the vegetable or fruit meal pattern component. The decimal equivalent is not “fluid ounces” but the fraction of a serving as determined by crediting calculations.

For example, a calculation using the recipe analysis worksheet (see Appendix A) determined that the amount of carrots in one portion of a recipe provides 0.68 cups of vegetable. Based on Table 7, this amount actually credits as 5/8 cup vegetable (red/orange vegetable subgroup in school meals) since 0.68 is between 0.625 and 0.749.

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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	0.08	0.08	0.09	0.10	0.11
2	0.12	0.14	0.15	0.16	0.17	0.17
3	0.19	0.20	0.21	0.22	0.23	0.23
4	0.25	0.27	0.27	0.28	0.29	0.30
5	0.31	0.33	0.33	0.34	0.35	0.36
6	0.38	0.39	0.40	0.41	0.42	0.42
7	0.44	0.45	0.46	0.47	0.48	0.48
8	0.50	0.52	0.52	0.53	0.54	0.55
9	0.56	0.58	0.58	0.59	0.60	0.61
10	0.62	0.64	0.65	0.66	0.67	0.67
11	0.69	0.70	0.71	0.72	0.73	0.73
12	0.75	0.77	0.77	0.78	0.79	0.80
13	0.81	0.83	0.83	0.84	0.85	0.86
14	0.88	0.89	0.90	0.91	0.92	0.92
15	0.94	0.95	0.96	0.97	0.98	0.98
16	1.00	1.02	1.02	1.03	1.04	1.05

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.” So 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 0.53 in the body of the table under the “fraction or part of the unit” columns. For this example, 0.53 can be found under the “+1/2 unit” nine 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 0.53 (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 0.53 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.

Introduction

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

To change	To	Multiply by
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

Customary Unit	Metric Unit
Ounces (oz)	Grams (g)
1 oz	28.35 g
4 oz	113.4 g
8 oz	226.8 g
16 oz	453.6 g
Pounds (lb)	Grams (g)
1 lb	453.6 g
2 lb	907.2 g
Pounds (lb)	Kilograms (kg)
2.2 lb	1kg (1000 g)

Table 11: Metric Equivalents by Volume

Customary Unit (fluid ounces)	Metric Unit
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 liters (L)
33.818 fl oz	1.0 liter (L)

Table 12: Guide to Volume Equivalents for Liquids

1 tablespoon	= 3 teaspoons	= 0.5 fluid ounce
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	

Introduction

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-4 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 utensil you chose to measure with, it must be filled level to 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 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 (or 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 by Child Nutrition Program operators to portion foods.

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

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.)

Table 15 shows the approximate measure of each measuring-serving spoon.

Like 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

Introduction

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 the number of spoonfuls required for the serving size.

Explanation of the Food Buying Guide for Child Nutrition Programs

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 meal component from the Child Nutrition Meal Patterns. (These meal pattern charts are shown on pages I-7 to I-13.)

For example, if you were looking for information...

- ...on chicken, search in Section 1: Meats/Meat Alternates
- ...on sweet potatoes, see Section 2: Vegetables
- ...on blueberries, see Section 3: Fruits
- ...on cereals, see Section 4: Grains
- ...on milk, see Section 5: Milk
- ...on hominy, see Section 6: Other Foods

The foods in Section 6: Other Foods do not meet the requirement for any component in the meal patterns and therefore are not creditable. 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.

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

Food As Purchased, AP	Purchase Unit	Servings per Purchase Unit, EP	Serving Size per Meal Contribution	Purchase Units for 100 Servings	Additional Information
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Introduction

Here are more details on each of these columns:

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, a 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 green beans, French style, includes information on two can sizes: No. 10 can (101 oz) and No. 2-1/2 can (28 oz).

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 to ensure that 1) each serving will provide the amount listed in Column 3, and 2) that enough 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 volume and weight are given or weight 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 Chicken drumsticks, Column 4 reads: 1 drumstick (about 1.5 oz cooked chicken without 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, 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 apples will yield 0.78 pounds of ready-to-cook or -serve raw, cored, peeled 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 can provides about 67.0 oz (10 cups) drained, unheated carrots. See Appendix B for additional examples.

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 your meals meet Child Nutrition Program requirements.

On the following pages are a variety of practical examples, that show you how to:

- Determine number of purchase units needed to obtain the desired number of servings of a particular food.
- Adjust portion sizes and calculate servings.
- 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.

Introduction

Working with the Food Buying Guide for Child Nutrition Programs

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

There are three methods used to determine the quantity of food needed for a given number of servings.

Method 1 – Using Column 3

- Variation 1 – No conversion of serving size needed
- Variation 2 – Conversion of serving size required

Method 2 – Using Column 5

Method 3 – Using Column 6

The methods and examples on the following pages illustrate how you can use the yield data tables to:

- Calculate the quantity of food to purchase.
- Calculate the number of servings in a purchase unit not listed in the FBG.
- Do cost comparisons of food items.

Tips to remember as you calculate the quantity of food for a given number of servings:

- Foods are most often purchased in case lots so 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 amount of food towards meeting a meal pattern requirement.

To calculate the amount 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 groups?
- 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?

There are two additional Food Buying Guide (FBG) resources available to assist you in determining the quantity needed for a given number of servings

The FBG Online Calculator assists users in building shopping lists from the FBG and determining how much of each item to purchase. The FBG Online Calculator is available at: <http://fbg.nfsmi.org/>.

The **Interactive Food Buying Guide (FBG)** provides the ability to:

- Search by food groups and further narrow the search by food categories.
- Perform side-by-side comparisons of foods within a food category (e.g. diced canned carrots vs. diced fresh carrots).
- Create and save a favorite food list (items in the favorite food list can be saved and accessed at a later time).
- Access the FBG yields from the electronic Recipe Analysis Worksheet (RAW) and determine the meal pattern contribution for recipes.

The **Interactive Food Buying Guide (FBG)** is available at <https://foodbuyingguide.fns.usda.gov>.

Methods Used to Determine Quantity

Method 1 – Using Column 3

Variation 1 – No conversion of serving size needed

- A.** Carrot slices, cooked
- B.** Ground beef

Variation 2 – Conversion of serving size required

- C.** Beef round roast, without bone
- D.** Baked beans, vegetarian, canned
- E.** Nut butters (including peanut butter)
- F.** Eggs, large, shell, fresh
- G.** Cereals and cereal grains

Method 2 – Using Column 5

- A.** Turkey Meatloaf
- B.** Green beans, frozen, cut
- C.** Converting Column 5 yield data

Method 3 – Using Column 6

Broccoli, fresh, ready-to-cook
Romaine lettuce, fresh, pieces
Butternut squash, fresh, whole

Introduction

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 plan to serve is the same as the serving size listed in Column 4 of this FBG. *No conversion of the serving size is needed.*

Examples C-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 plan are not the same as the serving size(s) listed in the FBG. *Conversion of the serving size is required. The conversion chart below can assist in determining the creditable amount per portion.*

Table 16: Quarter Cup to Cup Conversions

Quarter Cup	Cup	Ounce
0.5 Quarter Cups	1/8 cup vegetable/fruit	or 0.5 ounces of equivalent meat alternate
1.0 Quarter Cups	1/4 cup vegetable/fruit	or 1.0 ounce of equivalent meat alternate
1.5 Quarter Cups	3/8 cup vegetable/fruit	or 1.5 ounces of equivalent meat alternate
2.0 Quarter Cups	1/2 cup vegetable/fruit	or 2.0 ounces of equivalent meat alternate
2.5 Quarter Cups	5/8 cup vegetable/fruit	or 2.5 ounces of equivalent meat alternate
3.0 Quarter Cups	3/4 cup vegetable/fruit	or 3.0 ounces of equivalent meat alternate
3.5 Quarter Cups	7/8 cup vegetable/fruit	or 3.5 ounces of equivalent meat alternate
4.0 Quarter Cups	1 cup vegetable/fruit	or 4.0 ounces of equivalent meat alternate

The result of 0.9999 equals 1/8 cup but a result of 1.0 equals 1/4 cup

Method 1 Example A: Carrot Slices, Cooked

You plan to serve 1/4 cup servings of steamed carrot slices. You will purchase frozen, sliced carrots. How many pounds of frozen, sliced carrots do you need?

- 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) 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, so no conversion is needed. (Examples C-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

$$195 \div 9.87 = 19.75$$

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

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

Method 1 Example B: Ground Beef, fresh or frozen (no more than 15 % fat)

You plan to serve 1-1/2 ounce portions of cooked ground beef. How many pounds frozen ground beef, no more than 15% fat, do you need?

- 1. Estimate the number of servings of the prepared food you 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, fresh or frozen no more than 15% fat, (found in Column 1) 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 includes the serving size: 1-1/2 ounce cooked lean meat. This is the same as your planned serving size, so no conversion is needed. (Examples C-H show what to do when a conversion is needed.)

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

Column 2 reads: Pound

Column 3 reads: 8.0

- 5. Divide the number of servings needed by the number of servings you get per purchase unit.**

Number of servings needed = 60

Servings per purchase unit = 8.0

$$60 \div 8.0 = 7.5$$

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

Answer: You need 7-3/4 pounds of frozen ground beef, no more than 15% 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 participants to be served by each serving size in ounces to get the ounces needed. Add the results to get the total ounces needed.

Introduction

Method 1 Example C: Beef Round Roast, fresh or frozen, without bone 1/4 inch trim

You plan to serve boneless, cooked roast beef to 75 participants of different grade levels. How many pounds of raw beef round roast, without bone, do 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 at 1-1/2 ounces each and 30 will be served at 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, fresh or frozen, without bone 1/4 inch trim” (found in Column 1) 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 includes the serving sizes: 1 oz cooked lean meat and 1-1/2 oz 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 oz
30 servings x 2.0 oz	+ 60.0 oz
	127.5 ounces total lean cooked meat

You need a total of 127.5 oz of lean cooked meat. Since this total is in units of 1 ounce, you can now use the serving size of 1 oz 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 get per purchase unit (Column 3).

Number of total ounces needed = 127.5

Servings per purchase unit = 9.76

$127.5 \div 9.76 = 13.06$

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

Answer: You need 13-1/4 pounds of raw roast beef without bone, 1/4 inch trim to provide the required serving sizes for 75 participants.

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 participants to be served.

- If you prefer working with decimals instead of fractions, see Table 6 on page I-26.
- 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:

- 1/8 cup beans = 0.5 oz equivalent meat alternate
- 1/4 cup beans = 1 oz equivalent meat alternate
- 3/8 cup beans = 1.5 oz equivalent meat alternate
- 1/2 cup beans = 2 oz equivalent meat alternate

Method 1 Example D: Baked Beans, Vegetarian, Canned

You plan to serve 1/2 cup servings of canned, vegetarian baked beans. You purchase USDA Foods baked beans in sauce, vegetarian, in No. 10 cans (108 oz). How many No. 10 (108 oz) cans do you need?

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

You estimate that you need 120 1/2 cup servings.

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

For the listing Bean Products, dry beans, canned, Beans Baked in Sauce, Vegetarian (found in Column 1). You look for: heated beans (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 beans with sauce

Since there is no serving size for 1/2 cup of heated beans with sauce, a conversion is needed.

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

- 1) Divide 1/2 by 1/4. (convert fractions to decimals; see Table 6: 1/2 = 0.5, and 1/4 = 0.25)
 $0.5 \div 0.25 = 2.0$
- 2) Multiply the factor (2.0) by the number of servings needed (120)
 $2.0 \times 120 = 240 \text{ 1/4 cup servings}$

You need a total of 240 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: 47.10

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

Number of 1/4 cup servings needed = 240

Servings per purchase unit = 47.10

$240 \div 47.10 = 5.09$

7. Round up to 5-1/4 cans to ensure enough food is available.

Answer: Since you can only buy whole cans of product, you need to open 6 No. 10 (108 oz) cans of USDA Foods baked beans in sauce, vegetarian, but only need to prepare slightly above 5-1/4 cans to serve 120 1/2 cup portions of vegetarian baked beans.

Introduction

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

You want to serve 1 Tbsp servings of peanut butter as part of the meats/meat alternates component of the meal. How many 32 oz jars of peanut butter do you need?

- 1. Estimate the number of servings of peanut butter you need.**
You estimate that you need 65 servings.
- 2. Multiply the number of participants to be served by the number of tablespoons for each serving (for this example 1 serving is 1 Tbsp). This gives you the total number of tablespoons needed.**
 $65 \times 1 = 65 \text{ tablespoons needed}$
- 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. Divide the total number of single tablespoons needed by 2. This gives you the total number of 2 Tbsp servings needed.**
 $65 \div 2 = 32.5 \text{ 2 Tbsp servings}$
- 4. Refer to Column 2 to find the purchase unit. Refer to Column 3 for the number of 2 Tbsp servings you get per purchase unit.**
Column 2 reads: 32 oz container
Column 3 reads: 28.80
- 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.**
 $32.5 \div 28.8 = 1.12 \text{ units}$
- 6. Round up to 1.25 jars to ensure enough food is available.**

Answer: You need 1-1/4 32 oz 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 need to purchase 2 32 oz jars of peanut butter to provide 65 1 Tbsp servings.

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

You want to serve cooked egg in portions that provide 1 ounce equivalent meat alternate. How many whole large shell eggs do you need?

- 1. Estimate the number of servings of prepared egg you need.**
You estimate that you need 43 servings of cooked egg. (Each serving needs to provide 1-ounce equivalent meat alternate for this example.)
- 2. Multiply the number of participants to be served by the serving size(s) (in ounce equivalents).**
This gives you the total ounce equivalent meat alternate needed.
 $43 \times 1 = 43 \text{ total ounce equivalents of meat alternate}$
- 3. Divide the total ounce equivalents of meat alternate needed by two (2) since one large egg in this FBG provides 2 oz equivalent meat alternate.**
This gives you the total number of whole large shell eggs needed.
 $43 \div 2 = 21.5$
- 4. Round up to 22 whole large shell eggs.**

Answer: You need 22 whole large shell eggs to provide 43 1 oz equivalent meat alternate portions.

TIP: 1 large egg = 2 oz equivalent meat alternate.

Method 1 Example G: Cereals and Cereal Grains

You want to serve cooked oatmeal on your menu.

What quantity of dry, instant, rolled oats do you need?

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

You estimate that you 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 1 cup servings.

Divide 1.0 by 1/2 (convert fractions to decimals: $1/2 = 0.5$, see Table 6)

$$1.0 \div 0.5 = 2$$

Multiply the factor by the number of servings needed.

$$2 \times 70 = 140 \text{ 1/2 cup servings of cooked oatmeal needed}$$

3. Locate the item as purchased in Column 1.

Cereal Grains, Oats (Group H) Rolled, Instant, Dry

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

Column 2 reads: Pound

Column 3 reads: 23.40

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

$$140 \div 23.40 = 5.98 \text{ pounds dry instant rolled oats}$$

6. Round up.

5.98 rounds up to 6 lb

Answer: You need 6 pounds of dry, instant, rolled oats to provide 70 1 cup servings of cooked oatmeal.

NOTE: Dry cereals vary greatly in number of servings per pound or package. Check the cereal box for the number and/or size of servings.

NOTE: For more examples, refer to Exhibit A in Section 4: Grains (see Grains 4-14).

Introduction

Method 2 - Using Column 5

Use the purchase unit for 100 servings in Column 5 to determine how much food you need to prepare for 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) by 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.

Example 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: Turkey Meatloaf

You are preparing turkey meatloaf for 325 participants. How much ground turkey do you need?

- 1. Estimate the total number of participants in each age/grade group expected to eat that food item.**
- 2. Multiply the total number of participants in 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.**
(Meats/meat alternates and grains are listed in oz equivalents, while vegetables and fruits are in volume servings.)

Grade	Number x Serving Size	Total
Age/Grade group 1	153 x 1 oz	153 oz
Age/Grade group 2	157 x 1 oz	157 oz
Age/Grade group 3	15 x 2 oz	+ 30 oz
Total quantity		340 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 (Column 5), you need 9.0 pounds of ground turkey for 100 1 oz servings of cooked turkey.
- 5. Multiply the total quantity by the purchase unit for 100 servings indicated in Column 5 and divide the answer by 100.**
$$340 \times 9.0 \div 100 = 30.6 \text{ pounds}$$
- 6. Round up to 31 lb to ensure enough food is purchased.**

Answer: You need 31 pounds of USDA Foods ground turkey for the amount of turkey meatloaf you wish to prepare.

Method 2 Example B: Green Beans, frozen, cut

You are serving the green beans to the same 325 people in Method 2 Example A, how much frozen cut green beans do you need?

1. **Estimate the total number of participants in each age/grade group expected to eat that food item.**
2. **Multiply the total number of participants in 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.**
Meats/meat alternates is listed in ounces, vegetables and fruits are in 1/4 cup servings, and bread is in servings or equivalents.

Grade	Number x Serving Size	Total
Age/Grade group 1	130 x 1/4 cup (0.25)	32.5 cups
Age/Grade group 2	125 x 1/4 cup (0.25)	31.25 cups
Age/Grade group 3	10 x 1/4 cup (0.25)	+ 2.50 cups
Total		66.25 cups or 265.00 1/4 cups

4. **Determine the purchase unit for 100 servings for the food item according to how it will be served.**
According to the yield table (Column 5), 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 divide the answer by 100.**
$$265.00 \times 8.7 \div 100 = 23.055 \text{ pounds}$$
6. **Round up to 23.25 lb to ensure enough food is purchased.**

Answer: You need 23-1/4 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. 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, how many pounds of frozen whole kernel corn do you need?

1. **Divide 100 by 50 = 2**
2. **In Column 5 you will find the number of purchase units for pounds of frozen whole kernel corn needed for 100 servings of cooked vegetable.**
$$\text{Purchase units for 100 servings} = 9.1$$
3. **Divide the answer from step 2 by the answer in step 1**
$$9.1 \div 2 = 4.55$$
4. **Round up to 4.75 lb, to ensure enough food is purchased.**

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

Introduction

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

$$100 \div 25 = 4$$

$$9.1 \div 4 = 2.27$$

2.27 rounds up to 2.5 lb

The same method can be followed for any number of servings you want 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 what is listed in Column 1. For example, the Food Buying Guide (FBG) lists Romaine lettuce, untrimmed as: purchased and served as vegetable pieces. Column 6 gives the yield information needed to calculate how many servings you get if you bought the lettuce ready-to-serve.

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 trimmed, fresh broccoli, ready-to-cook is needed.

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

- 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 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 7).

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

$$5.62 \text{ lb} \div 0.81 = 6.93 \text{ lb}$$

- 3. Round up to 7 lb to ensure enough food is purchased.**

Answer: You need to purchase 7 lb of good quality, whole, raw, fresh broccoli to obtain 5 lb 10 oz of trimmed, 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: Lettuce, fresh, Romaine, untrimmed

You plan to serve a salad on your menu and you purchase fresh Romaine lettuce pieces, ready-to-serve in 10 lb bags.

1. How many 1/4 cup servings of romaine lettuce pieces will this 10 lb bag provide?
2. 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 as described in Column 1.**

For Lettuce, fresh, Romaine, untrimmed, Column 6 reads: 1 lb AP = 0.64 lb ready-to-serve raw lettuce

- 2. Determine the number of pounds of fresh Romaine lettuce, untrimmed (As Purchased) it would take to get 10 pounds of fresh Romaine lettuce pieces, ready-to-serve.**

Introduction

Divide the number of pounds of fresh Romaine lettuce pieces, ready-to-serve (10 lb) by the quantity of ready-to-serve lettuce obtained from 1 pound, fresh Romaine lettuce, untrimmed (0.64 lb).

$$10 \text{ pounds} \div 0.64 \text{ pounds} = 15.62 \text{ pounds of Lettuce, fresh, Romaine, untrimmed}$$

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

Column 2 reads: Pound

Column 3 reads: 31.30

4. Multiply the number of pounds of Romaine lettuce by the number of 1/4 cup servings raw vegetable pieces provided per pound.

Pounds of Romaine lettuce = 15.62

1/4 cup servings per pound = 31.30

$$15.62 \times 31.30 = 488.90 \text{ 1/4 cup servings of raw vegetable pieces}$$

Answer 1: You get 488.90 1/4 cup servings of raw vegetable pieces from a 10 lb bag of fresh Romaine lettuce, ready-to-serve.

To calculate the servings per pound: Divide the total 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 = 488.90 divided by pound weight of product in unopened bag = 10

$$488.90 \div 10 = 48.89 \text{ 1/4 cup servings}$$

Answer 2: You get 48.89 1/4 cup servings per pound of fresh, Romaine lettuce pieces, ready-to-serve.

TIP: Note that raw leafy greens credit as half the volume served in the NSLP, SBP, and CACFP. For example, 1/4 cup serving of Romaine lettuce pieces contributes 1/8 cup vegetable (dark green subgroup in school meal programs) to the meal pattern.

Method 3 Example C: Butternut Squash, fresh, cubed, cooked

You have a recipe for cooked, cubed butternut squash. After adjusting the recipe for the number of servings, you determine that 6 lb 5 oz of fresh butternut squash, ready-to-cook, pared is needed.

The ready-to-cook quantity is the amount you need of pared vegetable. But how much whole, fresh butternut squash should you purchase to be sure you have the correct amount after paring?

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 Butternut squash, Fresh, untrimmed, Column 6 reads: 1 lb AP = 0.84 lb ready-to-cook pared squash.

In other words, 1 pound whole, fresh, untrimmed butternut squash as purchased (AP), yields 0.84 pound pared, ready-to-cook vegetable.

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 7).

The recipe calls for 6 lb 5 oz (6.31 lb) of ready-to-cook, pared, butternut squash.

$$6.31 \text{ lb} \div 0.84 = 7.51 \text{ lb}$$

Round up to the next smallest practical measure

$$7.51 \text{ lb} = 7.6 \text{ lb}$$

Answer: You need to purchase 7.6 lb of good quality, whole, raw, fresh butternut squash to obtain 6 lb 5 oz of pared, ready-to-cook butternut squash.

How to Make Cost Comparisons

Comparing Cost of Cut Green Beans

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

EXAMPLE: You want to compare the raw food cost per serving of cut green beans 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, \$0.86/lb.

1. Using Column 5, obtain the purchase units for 100 servings for the item.
Fresh green beans, untrimmed = 9.1
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 = 0.091
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: $0.091 \times 0.30 = \$0.027$
**Canned cut green beans* $0.140 \times 0.24 = \$0.034$
Frozen cut green beans $0.087 \times 0.86 = \$0.074$
4. Compare the raw food cost per servings.



Answer: Based on raw food costs only, fresh green beans are the most economical. Remember that the raw food cost does not take into account labor costs 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.

* 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,
2. divide the cost per can by the number of pounds of food in one can.

