

Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the National School Lunch Program and School Breakfast Program

This guidance applies to the meal patterns for grades K-12 in the U.S. Department of Agriculture’s (USDA) National School Lunch Program (NSLP), School Breakfast Program (SBP), and Seamless Summer Option (SSO) of the NSLP. For additional guidance on the grains component for grades K-12, see the Connecticut State Department of Education’s (CSDE) guide, [Menu Planning Guide for School Meals for Grades K-12](#).

For guidance on grain calculations for grades K-12 in the Afterschool Snack Program (ASP) of the NSLP, see the CSDE’s handout, [Calculation Methods for Grains/Breads Servings for Grades K-12 in the ASP](#). For guidance on grain calculations for preschoolers (ages 1-4), see the CSDE’s handout, [Calculation Methods for Grain Servings for Preschoolers in the NSLP, SBP, and ASP](#). For a comparison of the USDA’s requirements for the grains component in the meal patterns for grades K-12 and preschoolers in the NSLP, SBP, SSO, and ASP, see the Connecticut State Department of Education’s (CSDE) handout, [Comparison of Meal Pattern Requirements for the Grains Component in the School Nutrition Programs](#).



To credit as the grains component in the NSLP and SBP meal patterns for grades K-12, grain products must be whole grain-rich (WGR) or enriched. Cooked and ready-to-eat (RTE) breakfast cereals must be WGR, enriched, or fortified. At least half of the weekly grains offered at lunch and breakfast must be WGR. For guidance on identifying WGR, whole, and enriched grains, see the CSDE’s handout, [Crediting Whole Grains in the NSLP and SBP](#), [Crediting Enriched Grains in the NSLP and SBP](#), and [Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP](#).



The NSLP and SBP meal patterns for grades K-12 determine the quantities for the grains component using ounce equivalents. School food authorities (SFAs) have two options for calculating the ounce equivalents for creditable commercial products and foods made on site. Method 1 uses the weight (groups A-G) or volume (groups H-I) for the appropriate grain group in the USDA’s ounce equivalents chart. Method 2 calculates the total weight (grams) of creditable grains (whole and enriched) per serving.

SFAs are not required to use either method if a product has a Child Nutrition (CN) label. CN-labeled products credit based on the stated crediting information for grain ounce equivalents. Grain products (such as muffins, bagels, and rolls) are ineligible for CN labels, which are available only for main dish entrees that contribute to the meat/meat alternates component. However, CN-labeled products usually include the crediting information for grains, vegetables, and fruits that are part of the product. The USDA’s [Authorized Labels and Manufacturers](#) webpage lists approved CN-labeled

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products and manufacturers. For more information, see the CSDE's handout, *Child Nutrition (CN) Labeling Program*.

SFAs may use either method, but must document how the crediting information was obtained. For more information, see "Choosing a Calculation Method" on page 11. In some situations, method 2 is required. For more information, see "When Method 2 is Required for Commercial Products" on page 4.

Method 1: Ounce Equivalents Chart (Weights or Volumes)

Method 1 determines the ounce equivalents for creditable grain products using the weight (groups A-G) or volume (groups H-I) for the appropriate grain group in the USDA's ounce equivalents chart. This chart is summarized in the CSDE's handout, *Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP*, and groups foods based on the average grain content of similar products. For example, to provide 1 ounce equivalent, a whole-wheat roll (group B) must weigh 28 grams (1 ounce) and a blueberry muffin (group D) must weigh 55 grams (2 ounces). The minimum creditable amount for all groups is $\frac{1}{4}$ ounce equivalent.

- **Groups A-G (baked goods):** Baked goods (such as crackers, breads, rolls, taco shells, muffins, waffles, pancakes, and grain-based desserts, e.g., cookies, cake, granola bars, and pastries) require 16 grams of creditable grains (whole and enriched) to credit as 1 ounce equivalent. The amount that provides 1 ounce equivalent varies from 22 grams (0.8 ounces) for foods in group A to 115 grams (4.4 ounces) for foods in group G. To be WGR, a food must contain at least 8 grams of whole grains per ounce equivalent. **Note:** At lunch, the weekly total of all grain-based desserts in groups B-G (such as cookies, graham crackers, brownies, and cake) cannot exceed 2 ounce equivalents.
- **Group H (cereal grains):** Cereal grains (such as amaranth, barley, buckwheat, cornmeal, corn grits, farina, kasha, millet, oats, quinoa, wheat berries, and rolled wheat) require $\frac{1}{2}$ cup cooked or 1 ounce (28 grams) dry to credit as 1 ounce equivalent. Cereal grains typically credit based on the cooked serving, but SFAs may choose to use the dry uncooked weight. To be WGR, a food must contain at least $\frac{1}{4}$ cup cooked or 14 grams dry of whole grains per ounce equivalent ($\frac{1}{2}$ cup). **Note:** Dry cereal grains used as an ingredient in a recipe (such as rolled oats in bread) credit the same as groups A-G; they require 16 grams of creditable grains to credit as 1 ounce equivalent. For guidance on the crediting and serving size requirements for cooked breakfast cereals, see the CSDE's handout, *Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP*.
- **Group I (RTE breakfast cereals):** RTE breakfast cereals require 1 ounce (28 grams) to credit as 1 ounce equivalent. A 1-ounce equivalent serving equals 1 cup of flaked or round cereals, $1\frac{1}{4}$ cups of puffed cereals, and $\frac{1}{4}$ cup of granola. If the appropriate volume of cereal

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weighs less than 28 grams, it still credits as 1 ounce equivalent. For example, 1 cup of flaked cereal that weighs 26 grams credits as 1 ounce equivalent. RTE breakfast cereals are WGR if a whole grain is the first ingredient and the cereal is fortified. The limit for noncreditable grains does not apply to fortified WGR RTE breakfast cereals. Fortification is not required for 100 whole grain cereals. For guidance on the crediting and serving size requirements for RTE breakfast cereals, see the CSDE's handout, *Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP*.

The USDA's ounce equivalents chart applies to all creditable commercial grain products. SFAs may also use this chart for creditable grain foods made on site, if the standardized recipe indicates the weight of the prepared (cooked) serving. If the standardized recipe does not provide this information, the SFA must calculate the average weight per serving by weighing at least four samples of the cooked product. For more information, see the CSDE's handout, *Yield Study Data Form*. For guidance on identifying WGR and enriched grains, see the CSDE's handouts, *Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP*, *Crediting Whole Grains in the NSLP and SBP*, and *Crediting Enriched Grains in the NSLP and SBP*.

Method 2: Creditable Grains

Method 2 determines the ounce equivalents for creditable grain products and recipes by calculating the total weight (grams) of creditable grains (whole and enriched) per manufacturer's serving or recipe serving. A food in groups A-G of the USDA's ounce equivalents chart must contain 16 grams of creditable grains to credit as 1 ounce equivalent, and at least 8 grams of whole grains per ounce equivalent to be WGR. A food in groups H of the USDA's ounce equivalents chart must contain 28 grams of creditable grains to credit as 1 ounce equivalent, and at least 14 grams of whole grains per ounce equivalent to be WGR.

- **Commercial products:** SFAs must obtain a manufacturer's product formulation statement (PFS) that indicates the weight of all creditable grains, and if applicable, noncreditable grains. This information cannot be determined from the product's Nutrition Facts label or packaging. For more information, see the CSDE's handouts, *Product Formulation Statements* and *Accepting Processed Product Documentation*, and the USDA's handouts, *Product Formulation Statement for Grains: Ounce Equivalents*, *Sample Completed Product Formulation Statement for Grains: Ounce Equivalents*, and *Tips for Evaluating a Manufacturer's Product Formulation Statement*. For examples of noncreditable grains, see the CSDE's handout, *Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP*.
- **Foods made on site:** SFAs must determine the amount of creditable grains per serving from the weights listed for each grain ingredient in the standardized recipe. If the recipe lists grain ingredients by volume (e.g., cups and quarts), the SFA must calculate the equivalent

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weight (grams) for each grain ingredient. For more information, see “Method 2 calculation for recipes listing the volume of grain ingredients” on page 14.

When Method 2 is Required for Commercial Products

There are six situations when SFAs must use method 2 (instead of the USDA’s ounce equivalents chart) to determine the ounce equivalents contribution of commercial grain products.

1. **Multiple creditable grains:** A creditable grain is not the first ingredient (excluding water), but the product contains more than one creditable grain. SFAs must obtain a PFS from the manufacturer to document that the **combined weight** of all creditable grains is more than the weight of the first ingredient, excluding water. For example, the yellow corn flour in the product below is not a creditable grain because it is not whole grain, enriched, or nixtamalized. To credit in the NSLP and SBP meal patterns, the product’s PFS must document that the combined weight of the two whole grains (whole-wheat flour and rolled oats) is more than the weight of the yellow corn flour (noncreditable grain), and that the weight of the yellow corn flour does not exceed the limit for noncreditable grains.

Ingredients: *Yellow corn flour, whole-wheat flour, sugar, rolled oats, wheat gluten.* Contains 2% or less of each of the following: honey, salt, oat bran, yeast, molasses.

Note: Nixtamalization is a process in which dried corn is soaked and cooked in an alkaline solution. If the product’s PFS indicates that cornmeal or corn flour are nixtamalized, these ingredients are whole grain. For more information, see the CSDE’s handout, [Crediting Whole Grains in the NSLP and SBP](#).

2. **Flour blends:** A commercial product contains a blend of whole and enriched flour (such as “flour blend (whole-wheat flour, enriched flour)”) and the SFA wants to determine if the product is WGR. Flour blends do not indicate if the whole grain is the greatest grain ingredient by weight. For example, if the flour blend is 40 percent of the product’s weight (25 percent whole-wheat flour and 15 percent enriched flour) and the first ingredient after the flour blend is sugar (30 percent of the product’s weight), the sugar weighs more than the whole-wheat flour. SFAs must obtain a PFS from the manufacturer to document that either the whole grain content is at least 8 grams per ounce equivalent (groups A-G), or the weight of the whole grain in the flour blend is more than the first ingredient listed after the flour blend. For example, the PFS for the product below must document that the whole-wheat flour in the flour blend weighs more than the brown sugar.

Ingredients: Water, **flour blend** [*whole-wheat flour, enriched flour (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, enzyme, folic acid)*], water, **brown sugar**, corn oil, dough conditioner (soybean oil, vegetable glycerides, soy flakes), yeast, salt, wheat gluten, enzyme.

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Method 2 is not required for flour blends that contain only whole grains, such as “flour blend (whole-wheat flour, whole-grain oats).” Products that contain 100 percent whole grains are WGR.

3. **Combination foods:** A commercial combination food contains a grain portion from groups A-I of the USDA’s ounce equivalents chart. Examples include pizza crust in pizza, noodles in lasagna, and baked chicken coated with bread crumbs or crushed cereal flakes. SFAs must obtain a PFS from the manufacturer that documents the amount of creditable grains (and noncreditable grains, if applicable) in the **grain portion** of the product.
4. **Manufacturer’s crediting claim:** The manufacturer claims that a commercial product can provide the minimum creditable grains using a serving that is **less** than the minimum weight or volume specified for that product’s group in the USDA’s ounce equivalents chart.
5. **Product not listed:** A commercial product does not belong to one of the nine groups listed in the USDA’s ounce equivalents chart.
6. **SFA credits a product differently:** The SFA wants to credit a commercial product differently from the ounce equivalents listed in the USDA’s ounce equivalents chart.

For each situation described above, SFAs must obtain a manufacturer’s PFS that states the amount per serving of creditable grains (whole and enriched) and noncreditable grains, if applicable. The PFS must also demonstrate how the product provides those amounts according to the USDA’s regulations, guidance, or policy.

SFAs must verify the accuracy of the product’s PFS prior to including the product in reimbursable meals, and must maintain all crediting documentation on file. The CSDE will review this information during the Administrative Review of school nutrition programs. **Note:** If the manufacturer will not supply a PFS, or the PFS does not provide the appropriate documentation, SFAs cannot use the product to credit as the grains component in school meals.

Sample Calculations for Commercial Products in Groups A-G

Table 1 shows a sample calculation using method 1 to determine the ounce equivalents contribution for a commercial whole-wheat pancake product in group C. Table 2 shows a sample calculation for this same product using method 2.

Each method results in a different crediting contribution for this product. For some products, each method results in the same crediting contribution. SFAs may use **either** method, but must document how the crediting information was



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obtained. For more information, see “Choosing a Calculation Method” on page 11.

With method 1, SFAs must use the weight (ounces or grams) of one serving from the commercial product’s Nutrition Facts label or the manufacturer’s PFS. If the product lists ounces and grams, SFAs may choose to use either one. To convert ounces to grams, multiply ounces by 28.35.

Table 1. Using method 1 (ounce equivalents chart) to calculate the ounce equivalents for commercial products in groups A-G

Mini Whole-Wheat Pancakes ¹	
Manufacturer’s serving size: 5 pancakes (1.75 ounces)	Group C (USDA’s ounce equivalents chart): 1 ounce equivalent = 34 grams or 1.2 ounces
Ingredients: Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.	
1. List the weight of the manufacturer’s serving size from the product’s Nutrition Facts label or PFS (1 ounce = 28.35 grams).	A 1.75 ounces
2. List the required weight for 1 ounce equivalent for the product’s group (A-G) in the USDA’s ounce equivalents chart. ²	B 1.2 ounces
3. Determine the ounce equivalents in one serving of the product: Divide A by B.	C 1.46 ounce equivalents per manufacturer’s serving
4. Round down the number in C to the nearest ¼ ounce equivalent. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.	D 1.25 ounce equivalents per manufacturer’s serving (rounded)
<p>¹ This product is WGR because whole-wheat flour is the first ingredient (excluding water), enriched flour is the only other grain ingredient, and the product does not contain any noncreditable grains. For guidance on identifying WGR foods, see the CSDE’s handout, Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP.</p> <p>² Calculations use the weight for the appropriate group in the USDA’s ounce equivalents chart, Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP. Pancakes are in group C.</p>	

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**Table 2. Using method 2 (creditable grains) to calculate
the ounce equivalents for commercial products in groups A-G**

Mini Whole-Wheat Pancakes ¹

Manufacturer’s serving size:

5 pancakes (1.75 ounces)

Group C (USDA’s ounce equivalents chart):

1 ounce equivalent = 34 grams or 1.2 ounces

**Creditable grains per serving
(from product’s PFS):**

Whole-wheat flour: 16 grams

Enriched flour: 14 grams

Noncreditable grains: 0 grams

Ingredients: Water, whole-wheat flour, enriched flour (wheat flour, niacin, ferrous sulfate, thiamin mononitrate, riboflavin, folic acid), sugar, canola oil. Contains 2% or less of: leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), eggs, salt, buttermilk.

1. List the combined weight (grams) of whole and enriched grains in one serving from the product’s PFS (1 ounce = 28.35 grams). ²

16 grams of whole-wheat flour +
14 grams of enriched flour =
30 grams of creditable grains

A	30 grams
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2. Determine the ounce equivalents in one serving of the product: Divide A by 16 (16 grams of creditable grains = 1 ounce equivalent for groups A-G).

B	1.88 ounce equivalents per manufacturer’s serving
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3. Round down the number in B to the nearest ¼ ounce equivalent. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.

C	1.75 ounce equivalents per manufacturer’s serving (rounded)
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¹ This product is WGR because the whole-wheat flour (16 grams) weighs more than the enriched flour (14 grams) and the product does not contain any noncreditable grains. For guidance on identifying WGR foods, see the CSDE’s handout, *Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP*.

² To credit a product using method 2, SFAs must obtain a manufacturer’s PFS that states the weight of all creditable grains (and noncreditable grains, if applicable). For information on PFS forms, see the CSDE’s handouts, *Product Formulation Statements* and *Accepting Processed Product Documentation*; the “Crediting Commercial Processed Products” section of the CSDE’s *Crediting Foods in School Nutrition Programs* webpage; and the USDA’s handouts, *Product Formulation Statement for Grains: Ounce Equivalents*, *Sample Completed Product Formulation Statement for Grains: Ounce Equivalents*, and *Tips for Evaluating a Manufacturer’s Product Formulation Statement*.

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Sample Calculations for Commercial Products in Group H

Table 3 shows a sample calculation using method 1 to determine the ounce equivalents contribution for a commercial whole-grain pasta product in group H. Table 4 shows a sample calculation for this same product using method 2.

Each method results in the same crediting contribution for this product. For some products, each method results in a different crediting contribution. SFAs may use either method 1 or 2, but must document how the crediting information was obtained. For more information, see “Choosing a Calculation Method” on page 11.

Note: Cereal grains in group H typically credit based on the **cooked** serving (i.e., $\frac{1}{2}$ cup credits as 1 ounce equivalent), but SFAs may choose to calculate the product’s ounce equivalents based on the dry uncooked weight (1 ounce credits as 1 ounce equivalent). With method 1, SFAs must use the weight (ounces or grams) of one serving from the commercial product’s Nutrition Facts label or the manufacturer’s PFS. If the product lists ounces and grams, SFAs may choose to use either one.



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Table 3. Using method 1 (ounce equivalents chart) to calculate the ounce equivalents for commercial products in group H

Whole-grain Pasta ¹	
Manufacturer's serving size: 32 grams (½ cup cooked)	Group H (USDA's ounce equivalents chart): 1 ounce equivalent = ½ cup cooked or 28 grams dry
Ingredients: Whole-grain durum wheat flour, enriched wheat flour.	
1. List the weight of the manufacturer's serving size from the product's Nutrition Facts label or PFS (1 ounce = 28.35 grams).	A 32 grams
2. List the required uncooked (dry) weight for 1 ounce equivalent for group H in the USDA's ounce equivalents chart. ²	B 28 grams
3. Determine the ounce equivalents in one serving of the product: Divide A by B.	C 1.14 ounce equivalents per manufacturer's serving
4. Round down the number in C to the nearest ¼ ounce equivalent. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.	D 1.0 ounce equivalents per manufacturer's serving (rounded)
<p>¹ This product is WGR because whole-grain flour is the first and only ingredient. For guidance on identifying WGR foods, see the CSDE's handout, Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP.</p> <p>² Calculations use the weights for group H in the USDA's ounce equivalents chart, Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP. Group H requires ½ cup cooked or 28 grams dry to provide 1 ounce equivalent.</p>	



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**Table 4. Using method 2 (creditable grains) to calculate
the ounce equivalents for commercial products in group H**

Whole-grain Pasta ¹

Manufacturer's serving size:
32 grams (½ cup cooked)

Group H (USDA's ounce equivalents chart):
1 ounce equivalent = ½ cup cooked or 28 grams dry

**Creditable grains per serving
(from product's PFS):**

Whole-wheat flour: 15 grams

Enriched flour: 14 grams

Noncreditable grains: 0 grams

Ingredients: Whole-grain durum wheat flour, enriched wheat flour.

1. List the combined weight (grams) of whole and enriched grains in one serving from the product's PFS (1 ounce = 28.35 grams). ²

15 grams of whole-wheat flour +
14 grams of enriched flour =
29 grams of creditable grains

A **29** grams

2. Determine the ounce equivalents in one serving of the product: Divide A by 28 (28 grams of creditable grains = 1 ounce equivalent for group H).

B **1.04** ounce equivalents per
manufacturer's serving

3. Round down the number in B to the nearest ¼ ounce equivalent. For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.

C **1.0** ounce equivalents
per manufacturer's
serving (rounded)

¹ This product is WGR because the whole-wheat flour (15 grams) weighs more than the enriched flour (14 grams) and the product does not contain any noncreditable grains. For guidance on identifying WGR foods, see the CSDE's handout, [Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP](#).

² To credit a product using method 2, SFAs must obtain a manufacturer's PFS that states the weight of all creditable grains (and noncreditable grains, if applicable). For information on PFS forms, see the CSDE's handouts, [Product Formulation Statements](#) and [Accepting Processed Product Documentation](#); the "Crediting Commercial Processed Products" section of the CSDE's [Crediting Foods in School Nutrition Programs](#) webpage; and the USDA's handouts, [Product Formulation Statement for Grains: Ounce Equivalents](#), [Sample Completed Product Formulation Statement for Grains: Ounce Equivalents](#), and [Tips for Evaluating a Manufacturer's Product Formulation Statement](#).

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Choosing a Calculation Method

Calculation methods 1 and 2 may result in a different crediting contribution for the same product, or may result in the same crediting contribution for the product. For example, a 2-ounce bagel might credit as 2 ounce equivalents using method 1 (USDA's ounce equivalents chart), but might credit as 2½ ounce equivalents using method 2 (creditable grains indicated in the manufacturer's PFS). SFAs may choose to use **either** method for all foods in the USDA's ounce equivalents chart, but must document which method is used for each product.

When using method 2 for commercial products, SFAs must obtain a PFS from the manufacturer that documents the weight of all creditable grains per serving (and the weight of all noncreditable grains, if applicable). When using method 2 for foods made on site (groups A-G), SFAs must have a standardized recipe on file that lists the weight of all creditable grains. If the recipe is not standardized and lists only the volume of grain ingredients, the SFA must calculate the weight equivalent (grams) of each grain ingredient. For more information, see "Method 2 calculation for recipes listing the volume of grain ingredients" on page 14.

When SFAs choose a calculation method for a specific product, the USDA requires that same calculation method must be used each time that same product is on the menu for that same age group. For example, if the SFA uses method 2 to determine the crediting of a whole-grain bagel at the high school, that same bagel on any high school menu must always be credited using method 2. However, the SFA may choose to use a different calculation method for that same bagel at the middle and elementary schools.

The CSDE strongly recommends choosing one calculation method for consistent crediting. This simplifies menu planning and assists SFAs with documenting compliance with the meal pattern requirements for the grains component.

Sample Calculations for Foods Made on Site

SFAs must have standardized recipes on file to document the meal pattern contribution of foods prepared on site, such as breads, rolls, muffins, pizza dough, and pancakes. SFAs must determine the ounce equivalents in one serving of the standardized recipe by using either:

- the appropriate weight (groups A-G) or volume (groups H-I) in the USDA's ounce equivalents chart (method 1); or
- the weight of creditable grains per serving (method 2).

The CSDE encourages SFAs to use method 2 (creditable grains) for recipes in groups A-G because it provides more accurate crediting information. Group H (cereal grains) typically credit based on the cooked serving, i.e., ½ cup credits as 1 ounce equivalent.

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For information on standardized recipes, see section 2 of the CSDE's [Menu Planning Guide for School Meals for Grades K-12](#), chapter 4 of the USDA's [Menu Planner for School Meals](#), the CSDE's [Standardized Recipe Form](#), and the "Crediting Foods Prepared On Site" section of the CSDE's [Crediting Foods in School Nutrition Programs](#) webpage.

Note: SFAs do not need to calculate grain ounce equivalents for foods prepared from the USDA's recipes for Child Nutrition Programs. These standardized recipes specify the meal pattern crediting information per serving, including grain ounce equivalents. For links to the USDA's recipes, visit the ICN's [Child Nutrition Recipe Box](#) and the CSDE's [Menu Planning for Child Nutrition Programs](#) webpage.

Using method 1 (ounce equivalents chart) for foods made on site

To use the USDA's ounce equivalents chart for school-made foods in groups A-G, SFAs must know the **weight** of the prepared serving of the standardized recipe after cooking or baking. If the standardized recipe does not provide this information, the SFA must calculate the average weight per serving by weighing at least four samples of the cooked product. For more information, see the CSDE's [handout, Yield Study Data Form](#).

Using method 2 (creditable grains) for foods made on site

Standardized recipes list measurements for grain ingredients in weight (pounds and ounces) and volume (e.g., cups and quarts). SFAs must use the recipe's **weight** measurements to determine the creditable grains per serving. For assistance with recipe calculations, such as converting fractions to decimals, review the ICN's [Basics at a Glance Portion Control Poster](#) and the decimal equivalents of fractions in the "[Introduction](#)" section of the USDA's [Food Buying Guide for Child Nutrition Programs](#).


Method 2 calculation for recipes listing the weight of grain ingredients

Table 5 shows how to use method 2 to calculate the ounce equivalents for a standardized recipe that lists the weight (pounds and ounces) of grain ingredients. A standardized recipe for a food in groups A-G must contain 16 grams of creditable grains to credit as 1 ounce equivalent, and at least 8 grams of whole grains per ounce equivalent to be WGR.



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Table 5. Using method 2 (creditable grains) to calculate the ounce equivalents for recipes listing the weight of grain ingredients

WGR standardized recipe for multi-grain bread ¹		
Yield: 100 servings	Grain ingredients:	
Serving size: 1 piece	Whole-wheat flour: 8 ounces (0.5 pound)	
	Rolled oats: 1 pound 2 ounces (1.125 pounds) ²	
	Enriched flour: 1 pound	
	Enriched cornmeal: 8 ounces (0.5 pound) ²	

<p>1. Determine the total weight (pounds) of all creditable grains in the recipe (16 ounces = 1 pound). Convert fractions to decimals, e.g., 1¾ pounds equals 1.75 pounds.</p> <p style="padding-left: 40px;">1.625 pounds of whole grains (whole-wheat flour and rolled oats) + 1.5 pounds of enriched grains (enriched flour and enriched cornmeal) = 3.125 pounds of creditable grains</p>	A	3.125	pounds of creditable grains
<p>2. Determine the total grams of creditable grains in the recipe: Multiply A by 453.6 (1 pound = 453.6 grams).</p>	B	1417.5	grams of creditable grains
<p>3. List the number of servings in the recipe.</p>	C	100	servings per recipe
<p>4. Determine the grams of creditable grains per recipe serving: Divide B by C.</p>	D	14.175	grams of creditable grains per recipe serving
<p>5. Determine the ounce equivalents per recipe serving: Divide D by 16 (1 ounce equivalent = 16 grams of creditable grains). ²</p>	E	0.89	ounce equivalents
<p>6. Round down the number in E to the nearest ¼ ounce equivalent For example, 1.49 and 1.27 round down to 1.25; and 1.24 rounds down to 1.</p>	F	0.75	ounce equivalents (rounded)

¹ This recipe is WGR because the combined weight of all whole grains (1.625 pounds of whole-wheat flour and rolled oats) is more than the combined weight of all enriched grains (1.5 pounds of enriched flour and enriched cornmeal), and the recipe does not contain any noncreditable grains. For guidance on identifying WGR foods, see the CSDE’s handout, *Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP*.

² Dry cereal grains used as an ingredient in a recipe (such as rolled oats and cornmeal) credit the same as groups A-E; they require 16 grams of creditable grains to credit as 1 ounce equivalent and at least 8 grams of whole grains per ounce equivalent to be WGR.

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Method 2 calculation for recipes listing the volume of grain ingredients

To determine the ounce equivalents of the recipe, SFAs must first convert the volume (e.g., cups and quarts) of all grain ingredients to weight (grams). SFAs may use any of the methods below for this calculation.

- Use the manufacturer's serving size information on the Nutrition Facts label for the grain ingredient. For example, a recipe contains 2 cups of enriched flour. The product's Nutrition Facts label states that $\frac{1}{4}$ cup of enriched flour weighs 30 grams. Multiply the weight of the manufacturer's serving (30 grams) by the amount of the ingredient used in the recipe (2 cups) to determine the weight of the ingredient used in the recipe (240 grams).
- Search the USDA's [FoodData Central](#) nutrient database for grain ingredients, such as whole-wheat flour or yellow corn meal. Enter "1" in the data field for the cup measurement, and the database will provide the weight of 1 cup of that ingredient.
- Use volume equivalent charts that list the weight of 1 cup of grain ingredients. Table 6 shows the weight per cup of some commonly used grain ingredients.
- Determine the average weight of 1 cup of the grain ingredient by measuring and weighing several samples. For more information, see the CSDE's [Yield Study Form](#).

Table 7 shows how to use method 2 to calculate the ounce equivalents per serving for a non-standardized recipe that lists the grain ingredients in volume (cups).



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Table 6. Weights of 1 cup of commonly used grain ingredients ¹

Food item	Weight (grams) per cup
Barley, flour or meal ²	148
Barley, hulled ²	184
Barley, pearled, uncooked ²	200
Barley, pearled, cooked ²	157
Bread crumbs, dry, grated, plain ²	108
Bread crumbs, plain, dry, grated, seasoned ²	120
Bread crumbs, plain soft, white ²	45
Bulgur, uncooked ²	140
Bulgur, cooked ²	182
Cereal, General Mills Cheerios ³	28
Cereal, General Mills Corn Chex ³	31
Cereal, General Mills Rice Chex ³	27
Cereal, General Mills Wheat Chex ³	47
Cereal, General Mills Wheaties ³	36
Cereal, Kellogg's All-Bran Bran Buds ⁴	90
Cereal, Kellogg's All-Bran Original ⁴	62
Cereal, Kellogg's Corn Flakes crumbs ⁴	88
Cereal, Kellogg's Corn Flakes, whole ⁴	28
Cereal, Kellogg's Rice Krispies ⁵	26
Cereal, Quaker Puffed Rice ⁵	14
Cereal, Quaker Puffed Wheat ⁵	28
Cornmeal, enriched, uncooked, yellow, degerminated ²	157
Cornmeal, enriched, uncooked, yellow, whole grain ²	122
Cracker crumbs, graham, crushed ²	84
Cracker crumbs, snack, standard snack-type, regular, crushed ²	52

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Table 6. Weights of 1 cup of commonly used grain ingredients ¹, *continued*

Food item	Weight (grams) per cup
Flour, buckwheat, whole groat ²	120
Flour, corn, whole grain, yellow ²	117
Flour, rice, brown ²	158
Flour, rice, white ²	158
Flour, rye, dark ²	128
Flour, rye, light ²	102
Flour, wheat, white, all-purpose enriched, bleached ²	125
Flour, wheat, white, all-purpose enriched, unbleached ²	125
Flour, wheat, white, bread, enriched ²	137
Flour, wheat, white, cake, enriched, unsifted, dipped ²	137
Flour, wheat, white, self-rising, enriched ²	125
Flour, wheat, whole grain ²	120
Wheat germ, uncooked, plain ²	88
Wheat germ, toasted, plain ²	115
Oat bran, raw ²	94
Oat bran, cooked ²	219
Oats, rolled, quick, uncooked ²	81
Oats, rolled, regular, uncooked ²	81

¹ The use of brand-name products is solely for clarification regarding serving sizes and does not constitute approval or endorsement by the USDA or CSDE. The actual weight of 1 cup may be more or less than the weights in this chart, depending on the measuring method used, e.g., stirred or unstirred, sifted or unsifted, spooned or dipped, and coarsely or finely crushed. For the most accurate conversion of volume to weight, calculate the average weight of 1 cup of the ingredient by measuring and weighing several samples. For more information, see the CSDE's *Yield Study Form*.

² USDA's FoodData Central database (Standard Reference (SR) Legacy Data):
<https://fdc.nal.usda.gov/>

³ General Mills Cereals: <https://www.generalmills.com/en/Brands/Cereals>

⁴ Kellogg's Cereals: https://www.kelloggs.com/en_US/home.html

⁵ Quaker Cereals: <https://www.quakeroats.com/products>

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Table 7. Using method 2 (creditable grains) to calculate the ounce equivalents for recipes listing the volume of grain ingredients

Multi-grain bread ¹			
25 servings		Convert cups to grams	
Grain ingredient	Measure	Grams per cup ²	Weight (grams)
Whole-wheat flour	2 cups	X 120 =	240.00 grams
Rolled oats ³	$\frac{3}{4}$ cup	X 181 =	60.75 grams
All-purpose enriched flour	2 cups	X 125 =	250.00 grams
Enriched cornmeal	$\frac{1}{4}$ cup	X 138 =	34.50 grams
Total weight of creditable grains:			585.25 grams

1. Determine the combined weight (grams) of all creditable grains in the recipe.

A	585.25 grams
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300.75 grams of whole grains (whole-wheat flour and rolled oats) + 284.5 grams of enriched grains (all-purpose enriched flour and enriched cornmeal) = 585.25 grams of creditable grains
2. List the number of servings in the recipe.

B	25 servings
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3. Determine the grams of creditable grains per serving; Divide A by B.

C	23.41 grams
----------	--------------------
4. Determine the ounce equivalents per serving; Divide C by 16 (1 ounce equivalent = 16 grams of creditable grains). ³

D	1.46 ounce equivalents
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5. Round down the number in D to the nearest $\frac{1}{4}$ ounce equivalent. For example, 1.49 and 1.27 round down to 1.25, and 1.24 rounds down to 1.

E	1.25 ounce equivalents
----------	-------------------------------

¹ This recipe is WGR because the combined weight (300.75 grams) of all whole grains (whole-wheat flour and rolled oats) is more than the combined weight (284.5 grams) of all enriched grains (all-purpose enriched flour and enriched cornmeal), and the recipe does not contain any noncreditable grains.

² The grams per cup are from the USDA's [FoodData Central](#) database (Standard Reference (SR) Legacy Data).

³ Dry cereal grains used as an ingredient in a recipe (such as rolled oats and cornmeal) credit the same as groups A-E; they require 16 grams of creditable grains to credit as 1 ounce equivalent and at least 8 grams of whole grains per ounce equivalent to be WGR.

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Resources

Basics at a Glance Portion Control Poster (Institute of Child Nutrition):

<https://theicn.org/icn-resources-a-z/basics-at-a-glance/>

Calculating Weekly Percentage of Whole Grain-rich Menu Items in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/PercentageWGRCalculation.xlsx>

Child Nutrition (CN) Labeling Program (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/CNlabel.pdf>

Comparison of Meal Pattern Requirements for the Grains Component in the School Nutrition Programs (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/ComparisonGrainCrediting.pdf>

Crediting Breakfast Cereals for Grades K-12 in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/CreditCereals.pdf>

Crediting Enriched Grains in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/CreditEnrichedGrains.pdf>

Crediting Foods in School Nutrition Programs (CSDE webpage):

<https://portal.ct.gov/SDE/Nutrition/Meal-Patterns-School-Nutrition-Programs>

Crediting Whole Grains in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/CreditWholeGrains.pdf>

CSDE Operational Memorandum No. 11-19: Weekly Whole Grain-rich (WGR) Requirement for the NSLP and SBP Meal Patterns for Grades K-12

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Memos/OM2019/OM11-19.pdf>

Food Buying Guide for Child Nutrition Programs (USDA):

<https://www.fns.usda.gov/tn/food-buying-guide-for-child-nutrition-programs>

FoodData Central (USDA):

<https://fdc.nal.usda.gov/>

Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/Grainsozeq.pdf>

Meal Patterns for Grades K-12 in School Nutrition Programs (CSDE webpage):

<https://portal.ct.gov/SDE/Nutrition/Meal-Patterns-School-Nutrition-Programs>

Menu Planner for School Meals (USDA):

<https://www.fns.usda.gov/tn/menu-planner>

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Menu Planning Guide for School Meals for Grades K-12 (CSDE):

<https://portal.ct.gov/SDE/Nutrition/Menu-Planning-Guide-for-School-Meals>

Product Formulation Statement for Grains: Ounce Equivalents (USDA):

https://fns-prod.azureedge.net/sites/default/files/resource-files/PFS_Documenting_Grains_oz_eq.pdf

Product Formulation Statements (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/PFS.pdf>

Sample Completed Product Formulation Statement for Grains: Ounce Equivalents (USDA):

https://fns-prod.azureedge.net/sites/default/files/resource-files/PFS_Sample_oz_eq.pdf

Standardized Recipe Form (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/StdRecipeSchools.doc>

USDA Final Rule (83 FR 63775): Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements:

<https://www.govinfo.gov/content/pkg/FR-2018-12-12/pdf/2018-26762.pdf>

USDA Memo SP 30-2012: Grain Requirements for the National School Lunch Program and School Breakfast Program:

<https://www.fns.usda.gov/school-meals/grain-requirements-national-school-lunch-program-and-school-breakfast-program>

USDA Memo SP 34-2019, CACFP 15-2019 and SFSP 15-2019: Crediting Coconut, Hominy, Corn Masa, and Masa Harina in the Child Nutrition Programs:

<https://www.fns.usda.gov/cn/crediting-coconut-hominy-corn-masa-and-masa-harina-child-nutrition-programs>

Whole Grain Resource for the National School Lunch and School Breakfast Programs:

<https://www.fns.usda.gov/tn/whole-grain-resource-national-school-lunch-and-school-breakfast-programs-0>

Whole Grain-rich Criteria for Grades K-12 in the NSLP and SBP (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/WGRCriteria.pdf>

Yield Study Form (CSDE):

<https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/YieldStudy.pdf>

Calculation Methods for Grain Ounce Equivalents for Grades K-12 in the NSLP and SBP



For more information, review the CSDE's *Menu Planning Guide for School Meals for Grades K-12* and visit the CSDE's [Meal Patterns for Grades K-12 in School Nutrition Programs](#) and [Crediting Foods in School Nutrition Programs](#) webpages, or contact the [school nutrition programs staff](#) in the CSDE's Bureau of Health/Nutrition, Family Services and Adult Education, 450 Columbus Boulevard, Suite 504, Hartford, CT 06103-1841.

This document is available at <https://portal.ct.gov/-/media/SDE/Nutrition/NSLP/Crediting/GrainCalc.pdf>.

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- (1) mail: U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
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Washington, D.C. 20250-9410;
- (2) fax: (202) 690-7442; or
- (3) email: program.intake@usda.gov.

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