



Ingredient Substitutions

Overview: Youth will explore how to substitute ingredients in recipes. They will learn how to replace unhealthy ingredients with healthier options and how to adjust a recipe when they are missing an ingredient.

Subject area: Proper Culinary Preparation

Grade level: 6-8

Oregon Benchmarks/Common Core Standards:

Grades 6-8

Strand - PROMOTION OF HEALTHY EATING

- HE.08.PH03.CC - Identify the impact nutrition has on chronic disease.
- HE.08.PH03.INF - Differentiate between eating habits that are health promoting and eating habits linked to disease.

Objectives:

- Youth will be able to identify healthy ingredient substitutions
- Youth will be able to demonstrate a healthy substitution in at least one recipe
- Youth will be able to adjust a recipe when they are missing an ingredient

Prep time: 30 minutes

Lesson time: 25 minutes

Materials needed:

- White or chalk board
- Nutrition Facts Labels (see pages 4-6)
- Common Ingredient Substitutions & Healthy Substitutions packet (see pages 7-14)
- Recipes (see **Notes**)

Space needed: Functional kitchen space

Staff needed:

- 1 instructor
- 1 volunteer per group of 2-4 youth (optional)

Preparation steps:

- Print nutrition facts labels (pages 4-6)
- Print Common Ingredient Substitutions & Healthy Substitutions packet (pages 7-14)
- Print recipes for the day (see **Notes** for recipe ideas)

Pre-test of knowledge:

- Ask youth what they know about making substitutions in cooking and or baking.
- Ask if youth can name a healthy substitution.
- Ask youth what they know about ingredient versatility.

Presentation Steps:

1. As youth arrive have them wash their hands, then demonstrate proper knife sharpening as a review from the first class. Youth need to wash their knives and put a wet washcloth underneath their cutting board (see lesson one on kitchen safety).
2. Discussing Substitutions
 - a. Divide the class into 3 groups. Hand out nutrition facts labels accordingly:
 - i. Group 1: applesauce, oil, avocado, butter (page 4)
Group 2: white rice, brown rice, black rice (page 5)
Group 3: whole wheat flour, whole wheat pastry flour, all-purpose flour (page 6)
 - ii. Give youth a few minutes to review and compare the nutrition facts of each food item.
 - iii. Have each group discuss and present a reason why healthy substitutions are important. Each group should have more than one idea, as ideas presented by each group should be different. You may want to walk around and give ideas. These might include:
 1. Healthy diets are linked to lower risk of chronic diseases (lower sugar intake might reduce risk of heart disease, obesity, diabetes)
 2. General health promotion (healthy eating makes you feel good and perform well)
 3. Cutting down on unhealthy things (saturated fats, sugars, refined grains)
 4. Adding healthy things (fiber, vitamins, minerals, variety)
 - b. Hand out today's recipes
 - i. Have groups work together to look at the recipes and make at least one substitution given what ingredients are available for the day. (Ex: If you have a baked good recipe, have healthy fat replacement choices available like oil, applesauce, avocado, beans, etc.)
 - ii. Tell groups to keep their substitution(s) a secret until the end of class.
 - iii. At the end of the class, youth will taste each other's recipes. Ask youth if they can tell what ingredient has been substituted.
3. Assessment:
 - a. Give out praise, scores or awards for ingredient substitutions
 - i. Healthiest substitution(s)
 - ii. Most undetectable substitution
 - iii. Substitution that made the dish taste better
 - iv. Most substitutions in a single recipe

Notes:

This is a great lesson to follow up with recipes that have lots of options for substitutions.

Recipe Ideas:

- Hand-made pasta can be made with all-purpose flour, semolina flour or whole wheat flour or any combination of these.
<http://www.cookingchanneltv.com/recipes/kelsey-nixon/fresh-pasta-dough.html>
- Give students a recipe that uses butter, but do not provide any butter (they can use oil, avocado, applesauce, or any myriad of other things from the attached Common & Healthy Ingredient Substitutions packet). Banana bread offers the opportunity for students to make substitutions for both butter and all-purpose flour:
<http://www.foodnetwork.com/recipes/banana-bread-recipe.html>

Group 1

½ Cup Applesauce

Nutrition Facts	
Serving Size (122g) Servings Per Container	
Amount Per Serving	
Calories 50	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 14g	5%
Dietary Fiber 1g	4%
Sugars 11g	
Protein 0g	
Vitamin A 0%	Vitamin C 2%
Calcium 0%	Iron 2%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

½ Cup Canola Oil

Nutrition Facts	
Serving Size (112g) Servings Per Container	
Amount Per Serving	
Calories 990	Calories from Fat 990
% Daily Value*	
Total Fat 112g	172%
Saturated Fat 8g	40%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars 0g	
Protein 0g	
Vitamin A 0%	Vitamin C 0%
Calcium 0%	Iron 0%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

½ Cup Avocado

Nutrition Facts	
Serving Size (115g) Servings Per Container	
Amount Per Serving	
Calories 180	Calories from Fat 150
% Daily Value*	
Total Fat 17g	26%
Saturated Fat 2.5g	13%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 10mg	0%
Total Carbohydrate 10g	3%
Dietary Fiber 8g	32%
Sugars 1g	
Protein 2g	
Vitamin A 4%	Vitamin C 20%
Calcium 2%	Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

½ Cup Butter

Nutrition Facts	
Serving Size (114g) Servings Per Container	
Amount Per Serving	
Calories 810	Calories from Fat 810
% Daily Value*	
Total Fat 92g	142%
Saturated Fat 58g	290%
Trans Fat 3.5g	
Cholesterol 245mg	82%
Sodium 810mg	34%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars 0g	
Protein 1g	
Vitamin A 60%	Vitamin C 0%
Calcium 2%	Iron 0%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

Group 2

½ Cup Dry Brown Rice

Nutrition Facts		
Serving Size (95g) Servings Per Container		
Amount Per Serving		
Calories 340	Calories from Fat 25	
% Daily Value*		
Total Fat 2.5g	4%	
Saturated Fat 0.5g	3%	
Trans Fat 0g		
Cholesterol 0mg	0%	
Sodium 0mg	0%	
Total Carbohydrate 72g	24%	
Dietary Fiber 3g	12%	
Sugars --g		
Protein 7g		
Vitamin A 0%	Vitamin C 0%	
Calcium 4%	Iron 10%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		
Calories: 2,000 2,500		
Total Fat	Less than 65g	80g
Saturated Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4		

½ Cup Dry Black Rice

Nutrition Facts		
Serving Size (101g) Servings Per Container		
Amount Per Serving		
Calories 350	Calories from Fat 35	
% Daily Value*		
Total Fat 3.5g	5%	
Saturated Fat 1g	5%	
Trans Fat 0g		
Cholesterol 0mg	0%	
Sodium 5mg	0%	
Total Carbohydrate 75g	25%	
Dietary Fiber 7g	28%	
Sugars 1g		
Protein 10g		
Vitamin A 0%	Vitamin C 2%	
Calcium 2%	Iron 10%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		
Calories: 2,000 2,500		
Total Fat	Less than 65g	80g
Saturated Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4		

½ Cup Dry White Rice

Nutrition Facts		
Serving Size (93g) Servings Per Container		
Amount Per Serving		
Calories 340	Calories from Fat 5	
% Daily Value*		
Total Fat 0.5g	1%	
Saturated Fat 0g	0%	
Trans Fat 0g		
Cholesterol 0mg	0%	
Sodium 0mg	0%	
Total Carbohydrate 74g	25%	
Dietary Fiber 1g	4%	
Sugars 0g		
Protein 7g		
Vitamin A 0%	Vitamin C 0%	
Calcium 2%	Iron 4%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		
Calories: 2,000 2,500		
Total Fat	Less than 65g	80g
Saturated Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4		

Group 3

1 Cup Whole Wheat Flour

Nutrition Facts	
Serving Size (120g)	
Servings Per Container	
Amount Per Serving	
Calories 410	Calories from Fat 25
% Daily Value*	
Total Fat 3g	5%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 86g	29%
Dietary Fiber 13g	52%
Sugars 0g	
Protein 16g	
Vitamin A 0% • Vitamin C 0%	
Calcium 4% • Iron 25%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

1 Cup Whole Wheat Pastry Flour

Nutrition Facts	
Serving Size (120g)	
Servings Per Container	
Amount Per Serving	
Calories 440	Calories from Fat 20
% Daily Value*	
Total Fat 2g	3%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 92g	31%
Dietary Fiber 16g	64%
Sugars 0g	
Protein 12g	
Vitamin A 0% • Vitamin C 0%	
Calcium 8% • Iron 30%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

1 Cup Unbleached All-Purpose Flour

Nutrition Facts	
Serving Size (125g)	
Servings Per Container	
Amount Per Serving	
Calories 460	Calories from Fat 10
% Daily Value*	
Total Fat 1g	2%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 95g	32%
Dietary Fiber 3g	12%
Sugars 0g	
Protein 13g	
Vitamin A 0% • Vitamin C 0%	
Calcium 2% • Iron 30%	
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4	

Common Ingredient Substitutions & Healthy Substitutions

The following abbreviations are used:

tsp = teaspoon

Tbsp = tablespoon

oz = ounce

lb = pound

Healthy Ingredient Substitutions are italicized

Table 1: Ingredient equivalents.		
Ingredient	Amount	Substitutions
Allspice	1 tsp	1/2 tsp cinnamon + 1/2 tsp ground cloves.
Apple pie spice	1 tsp	1/2 tsp cinnamon + 1/4 tsp nutmeg + 1/8 tsp cardamom.
Arrowroot, as thickener	1 Tbsp	2 Tbsp all-purpose flour; 1 Tbsp cornstarch
Baking powder, double acting	1 tsp	1/4 tsp baking soda, 1/2 tsp cream of tartar and 1/4 tsp cornstarch; 1/4 tsp baking soda plus 5/8 tsp cream of tartar; 1/4 tsp baking soda plus 1/2 cup buttermilk, sour milk or yogurt; (decrease liquid in recipe by 1/2 cup); 1/4 tsp baking soda, 1/2 Tbsp vinegar or lemon juice plus sweet milk to make 1/2 cup (decrease liquid in recipe by 1/2 cup); 1/4 tsp baking soda plus 1/4 cup molasses (decrease liquid in recipe by 1-2 Tbsp); 1 1/2 tsp phosphate or tartrate baking powder.
Bay leaf, crushed	1 tsp	1 whole bay leaf.
Brandy	1/4 cup	1 tsp brandy extract plus enough water or liquid called for in recipe to make 1/4 cup.
Bread crumbs, dry	1/4-1/3 cup	1 slice bread (<i>whole wheat</i>), toasted and crumbled; 1/4 cup cracker crumbs; 2/3 cup rolled oats;
Bread crumbs, soft	1/2-3/4 cup	1 slice bread, diced.
Broth, beef , chicken or vegetable	1 cup	1 bouillon cube, 1 tsp (1 envelope) powdered broth base or 1 tsp instant granules or paste dissolved in 1 cup water.
Butter (salted) for baking	1 cup	<i>1 cup pureed avocado;</i> <i>1 cup applesauce; or 1/2 cup oil + 1/2 cup applesauce</i> <i>1 cup mashed banana; or 1/2 cup oil + 1/2 cup banana</i> <i>1 cup sweet potato puree; or 1/2 cup oil + 1/2 cup sweet</i>

		<p><i>potato puree;</i> <i>3/4 cup prunes with 1/4 cup boiling water pureed (for use in dark baked goods);</i> <i>½ cup oil + 1 Tbsp chia seeds mixed with 9 Tbsp water (let stand until gel-like – 15 minutes);</i> 1 cup margarine (with no <i>trans-fats</i>); 7/8 cup oil plus 1/2 tsp salt.</p>
Butter for sautéing	1Tbsp	1 Tbsp olive oil or canola oil
Catsup (Ketchup)	1 cup	1 cup tomato sauce plus 1/2 cup sugar and 2 Tbsp vinegar; ½ cup tomato paste plus 1/3 cup sugar and 2 Tbsp vinegar (for use in cooking).
Chili Sauce	1 cup	1 cup tomato sauce, 1/4 cup brown sugar, 2 Tbsp vinegar, 1/4 tsp cinnamon, and dash of ground cloves and allspice.
Chives, finely chopped	1 Tbsp	1 Tbsp green onion tops, finely chopped.
Chocolate, unsweetened	1 oz	3 Tbsp cocoa plus 1 Tbsp butter or fat; 3 Tbsp carob powder plus 2 Tbsp water.
Chocolate, semisweet	1-2/3 oz	1 oz unsweetened chocolate plus 4 tsp sugar.
Chocolate chips, semisweet, melted	6 oz pkg (2/3 cup)	2 squares (2 oz) unsweetened chocolate, 2 Tbsp shortening and 1/2 cup sugar melted (2/3 cup).
Coconut, grated, dry	1 Tbsp	1 1/2 tbsp fresh coconut, grated.
Coconut milk	1 cup	1 cup milk.
Coconut cream	1 cup	1 cup cream.
Cornstarch	1 Tbsp	2 Tbsp all-purpose flour; 2 Tbsp granular tapioca; 1 Tbsp arrowroot.
Corn syrup	1 cup	1 cup granulated sugar plus 1/4 cup water or other liquid called for in recipe; 1 cup honey.
Cracker crumbs	3/4 cup	1 cup dry (<i>whole wheat</i>) bread crumbs.
Cream, half & half (10-12% fat)	1 cup	1 1/2 Tbsp butter plus 7/8 cup milk; 1/2 cup coffee cream plus 1/2 cup milk; 1 cup evaporated milk, undiluted.
Cream, coffee (20% fat)	1 cup	3 Tbsp butter plus 7/8 cup milk.
Cream, heavy (36-40% fat)	1 cup	1/3 cup butter plus 3/4 cup milk (for baking only, will not whip).
Cream, whipped cream	2 cups	1 cup chilled evaporated milk plus 1/2 tsp lemon juice, whipped until stiff.

Cream of tartar	1/2 tsp	1 1/2 tsp lemon juice or vinegar.
Dill, fresh	1 head	1 tsp dill seed.
Eggs whole, large	1 egg (3 1/3 Tbsp)	2 1/2 Tbsp dried, sifted eggs plus 2 1/2 Tbsp water; 3 1/3 Tbsp frozen egg yolks, thawed; 1/2 tsp baking powder, 1 Tbsp vinegar and 1 Tbsp liquid (in baking); 1 egg in every 3 can be replaced with 1 Tbsp cornstarch in baking; Soften 1 Tbsp unflavored gelatin in 3 Tbsp cold water, add 3 tsp boiling water, cool and beat until frothy, add to recipe (reduce other liquid by 2 Tbsp); 1/4 cup commercial egg substitute.
Egg whites	1 egg white (2 Tbsp)	2 tsp dried egg white plus 2 Tbsp water; 2 Tbsp frozen egg whites, thawed.
Egg yolks	1 egg yolk (1 1/3 Tbsp)	2 Tbsp dried egg yolks plus 2 tsp water; 4 tsp frozen egg yolks, thawed.
Flour, pastry	1 cup	7/8 cup all-purpose or bread flour.
Flour, cake	1 cup	7/8 cup all-purpose flour (1 cup less 2 Tbsp).
Flour, white, all- purpose for thickening	1 Tbsp	1/2 Tbsp cornstarch, potato starch, rice starch or arrowroot; 1 Tbsp quick-cooking tapioca; 1 Tbsp waxy rice or corn flour; 2 Tbsp granular cereal; 2 Tbsp browned flour; <i>1 1/2 Tbsp whole wheat flour.</i>
Flour, white, all- purpose for baking *Note: Specialty flours added to yeast bread recipes will result in a reduced volume and heavier product.	1 cup	<i>1 cup minus 1 Tbsp whole wheat flour;</i> <i>1 cup whole wheat pastry flour,</i> <i>1 1/2 cups (whole wheat) bread crumbs;</i> <i>1 1/8 cups cake flour (1 cup plus 2 Tbsp);</i> <i>7/8 to 1 cup corn meal;</i> <i>1/2 cup cornstarch plus 1/2 cup rye, potato or rice flour</i> <i>(sift together 6 times, use with 2 tsp baking powder per cup</i> <i>in quick breads as wheat flour allergy substitute);</i> <i>13/16 cup gluten flour (1 cup less 3 Tbsp);</i> <i>5/8 cup potato flour;</i> <i>7/8 cup rice flour;</i> <i>1 1/3 cups rolled oats;</i> <i>1 1/4 cups rye flour;</i> <i>1 cup teff flour (product will be darker)</i>

		<i>1/3 cup wheat germ plus 2/3 cup all-purpose flour.</i>
Flour, white, all-purpose, self-rising	1 cup	1 cup all-purpose flour plus 1 1/4 tsp baking powder and 1/4 tsp salt.
Garlic	1 clove, small	1/8 tsp garlic powder or instant minced garlic; 1/2-1 tsp garlic salt (reduce amount salt called for in recipe).
Gelatin, flavored	3-oz package	1 Tbsp plain gelatin plus 2 cups fruit juice.
Ginger, candied or raw	1 Tbsp	1/8 tsp powdered ginger.
Herbs, fresh	1 Tbsp	1 tsp dried herbs.
Honey	1 cup	1 1/4 cup sugar plus 1/4 cup liquid (use liquid called for in recipe).
Horseradish, grated fresh	1 Tbsp	2 Tbsp bottled horseradish.
Italian seasoning	1 tsp	1/4 tsp basil, 2/3 tsp dried parsley, and pinch oregano.
Lemon, whole	1 lemon	1 to 3 Tbsp juice, plus 2 to 2 1/2 tsp grated rind.
Lemon, juice	1 tsp	1/2 tsp vinegar.
Lemon, grated rind (zest) or peel	1 tsp	1/2 tsp lemon extract.
Lemon grass	1 Tbsp	1 Tbsp lemon peel/zest
Maple sugar, grated	1 Tbsp 1/2 cup	1 Tbsp white sugar; 1 cup maple syrup (decrease liquid by 1/2 cup).
Maple syrup	about 2 cups	Combine 2 cups sugar and 1 cup water, bring to clear boil; take off heat; add 1/2 tsp maple flavoring.
Marshmallows, miniature	1 cup	10 large marshmallows.
Mayonnaise (for use in salads and salad dressings)	1 cup	<i>1 cup plain yogurt, or plain Greek yogurt, sour cream or cottage cheese pureed in blender (use for all or part of mayonnaise called for in recipe).</i>
Milk, buttermilk or sour	1 cup	1 cup minus 1 Tbsp sweet milk, plus 1 Tbsp vinegar or lemon juice; let stand 5 minutes; 1 cup sweet milk plus 1 1/4-1 3/4 tsp cream of tartar; <i>1 cup plain yogurt, or plain Greek yogurt</i>
Milk, skim	1 cup	1/3 cup instant nonfat dry milk plus 7/8 cup water.
Milk, whole	1 cup	1/2 cup evaporated milk plus 1/2 cup water; <i>1 cup skim, 2% or reconstituted dry milk;</i>

		<p>1 cup soy or almond milk; 1 cup fruit juice or potato water in baking; 1 cup water plus 1 1/2 tsp butter in baking; 1 cup buttermilk plus 1/2 tsp baking soda (decrease baking powder by 2 tsp).</p>
Milk, sweetened condensed	1 cup	Combine 1 cup plus 2 Tbsp dry milk with 1/2 cup warm water and 3/4 cup sugar, mix well, may set pan in bowl of hot water to dissolve sugar.
Mint leaves, fresh chopped	1/4 cup	1 Tbsp dried mint leaves.
Molasses	1 cup	<p>3/4 cup sugar, increase liquid by 5 Tbsp, decrease baking soda by 1/2 tsp, add 2 tsp baking powder; 3/4 cup sugar plus 1 1/4 tsp cream of tartar, increase liquid in recipe by 5 Tbsp.</p>
Mushrooms, fresh	1 lb	<p>3 oz dried plus 1 1/2 cups water; 1 8-oz can, drained weight.</p>
Mustard, dry	1 tsp	<p>1 Tbsp prepared mustard; 1/2 tsp mustard seeds.</p>
Nuts	1 cup	1 cup rolled oats, browned (in baked products).
Oil (for sautéing)	1/4 cup	1/4 cup melted margarine, butter, bacon drippings, shortening or lard.
Onion	1 small	<p>1/4 cup chopped, fresh onion; 1 1/3 tsp onion salt; 1 to 2 Tbsp instant minced onion; 1 tsp onion powder.</p>
Onion powder	1 tsp	1/4 cup fresh onion, chopped.
Orange	1 medium	6 to 8 Tbsp juice; 3/4 cup diced; 2 to 3 Tbsp grated rind.
Orange peel, dried	1 Tbsp	2 or 3 Tbsp grated fresh orange peel (peel of medium orange).
Parsley, fresh	1 Tbsp	1 tsp parsley flakes.
Pepper, white	1 tsp	1 tsp black pepper.
Peppers, green or red bell, dried	1 Tbsp	3 Tbsp fresh bell pepper, chopped.
Pimento	2 Tbsp, chopped	<p>3 Tbsp fresh red bell pepper; 1 Tbsp dried red pepper, rehydrated.</p>
Pumpkin pie spice	1 tsp	1/2 tsp cinnamon, 1/4 tsp ginger, 1/8 tsp allspice and 1/8 tsp nutmeg.
Rennet	1 tablet	1 Tbsp liquid rennet.

Rice	1 cup cooked	1 cup converted, regular <i>brown or wild rice, cooked.</i> 1 cup bulgur or pearl barley, cooked.
Rum	1/4 cup	1 Tbsp rum extract plus enough liquid to make 1/4 cup.
Shortening, melted	1 cup	1 cup cooking oil.
Shortening, solid	1 cup	1 cup minus 2 Tbsp lard; 1 cup butter or margarine (decrease salt in recipe by 1/2 tsp); <i>1 cup puréed avocado</i>
Sour Cream	1 cup	<i>1 cup plain Greek yogurt (nonfat, or with fat);</i> <i>1 cup plain yogurt (nonfat, or with fat);</i> 7/8 cup buttermilk or sour milk; 1 1/8 cup powdered nonfat dry milk, 1/2 cup warm water and 1 Tbsp vinegar (mixture will thicken in refrigerator in a few hours); 1 cup evaporated milk plus 1 Tbsp vinegar (allow to stand 5 minutes before using); 1/3 cup buttermilk, 1 Tbsp lemon juice, and 1 cup smooth cottage cheese blended together; 7/8 cup milk, 1 Tbsp lemon juice, and 2 Tbsp butter or margarine
Sugar, brown	1 cup	1 cup granulated sugar; 3/4 cup maple syrup; <i>3/4 cup honey;</i> 1 cup granulated sugar plus 1/4 cup unsulphured molasses; 1/2 cup liquid brown sugar.
Sugar, confectioners or powdered	1 cup	3/4 cup granulated sugar (for uses other than baking).
Sugar, granulated	1 cup	1 cup firmly packed brown sugar; 1 1/3 cup confectioners' sugar (for uses other than baking); 1 cup corn syrup, reduce other liquid by 1/4 cup (never replace more than 1/2 of sugar called for in recipe with corn syrup); 13/16 cup honey (1 cup less 3 Tbsp); reduce liquid in recipe by 3 Tbsp for every cup of honey added; add a pinch of baking soda to neutralize acidity; 3/4 cup maple syrup; <i>3/4 cup honey;</i> 1 cup molasses or sorghum plus 1/2 tsp baking soda; omit or decrease baking powder by 1 tsp; reduce other liquid by 6 Tbsp; 1 cup raw sugar.
Tapioca, quick-cooking	1 1/2-2 Tbsp	4 Tbsp pearl tapioca, soaked.

Tapioca, quick-cooking for thickening	1 Tbsp	1 Tbsp flour.
Tomatoes, fresh	2 cups, chopped	1 16-oz can, drained.
Tomatoes, packed	1 cup	1/2 cup tomato sauce plus 1/2 cup water.
Tomatoes, canned	1 cup	1 1/3 cups diced tomatoes simmered 10 minutes.
Tomato juice	1 cup	1/2 cup tomato sauce plus 1/2 cup water.
Tomato sauce	2 cups	3/4 cup tomato paste plus 1 cup water.
Tomato soup	1 10 3/4 oz. can	1 cup tomato sauce plus 1/4 cup water.
Vanilla bean	1/2 bean	1 Tbsp vanilla extract.
Worcestershire sauce	1 tsp	1 tsp bottled steak sauce.
Yeast, active dry (1/4 oz)	1 package	2 1/2 tsp dry yeast or 1 compressed yeast cake.
Yogurt	1 cup	1 cup buttermilk; 1 cup cottage cheese, blended until smooth; 1 cup sour cream.
Extra Rows for future substitutions you discover!		
<p>* For conversion to metrics, use the following equivalents:</p> <p>1 tsp = 5 milliliters 1 lb = .45 kilograms 1 Tbsp = 15 milliliters 1 cup = .24 liters 1 oz = 28 grams</p>		
<p>Common Conversions:</p> <p>1tbsp = 3 tsp 1 cup = 8 oz = 16 tbsp 2 cups = 1 pint 2 pints = 1 quart 4 quarts = 1 gallon</p>		

Sources:

- <http://www.ext.colostate.edu/pubs/foodnut/09329.html>
- <http://greatist.com/health/83-healthy-recipe-substitutions>
- <http://www.fannetasticfood.com/wp-content/uploads/2011/05/fANNEtastic-Healthy-Cooking-Substitutions.pdf>

This list has been compiled from the above sources and edited by Julie Jacobs, Nutrition Educator, LPI Healthy Youth Program.