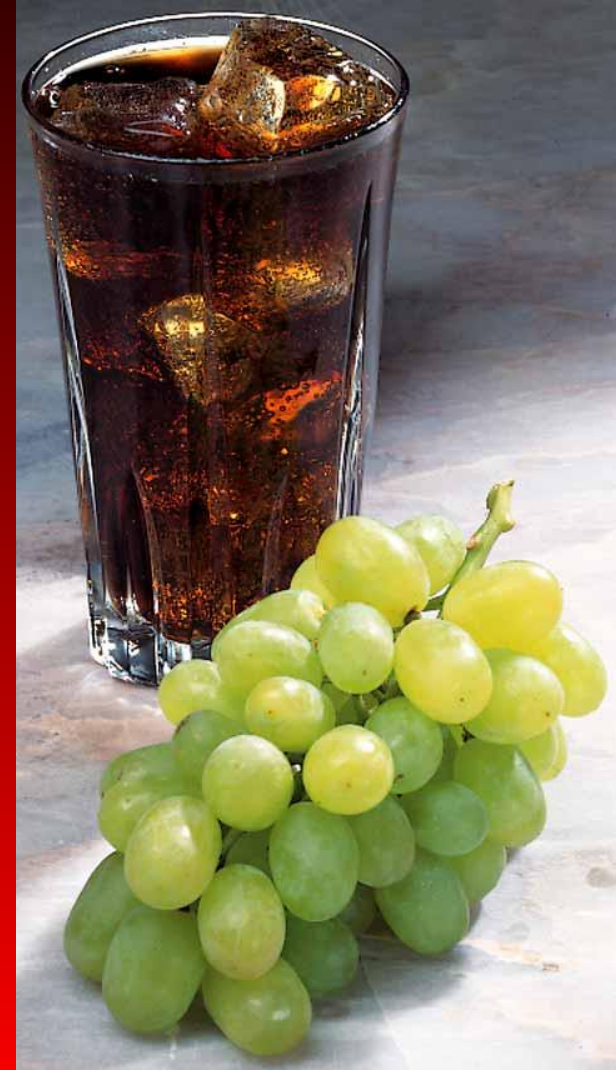


# Diet Planning Principles

- Adequacy
- Balance
- Kcalorie (energy) control

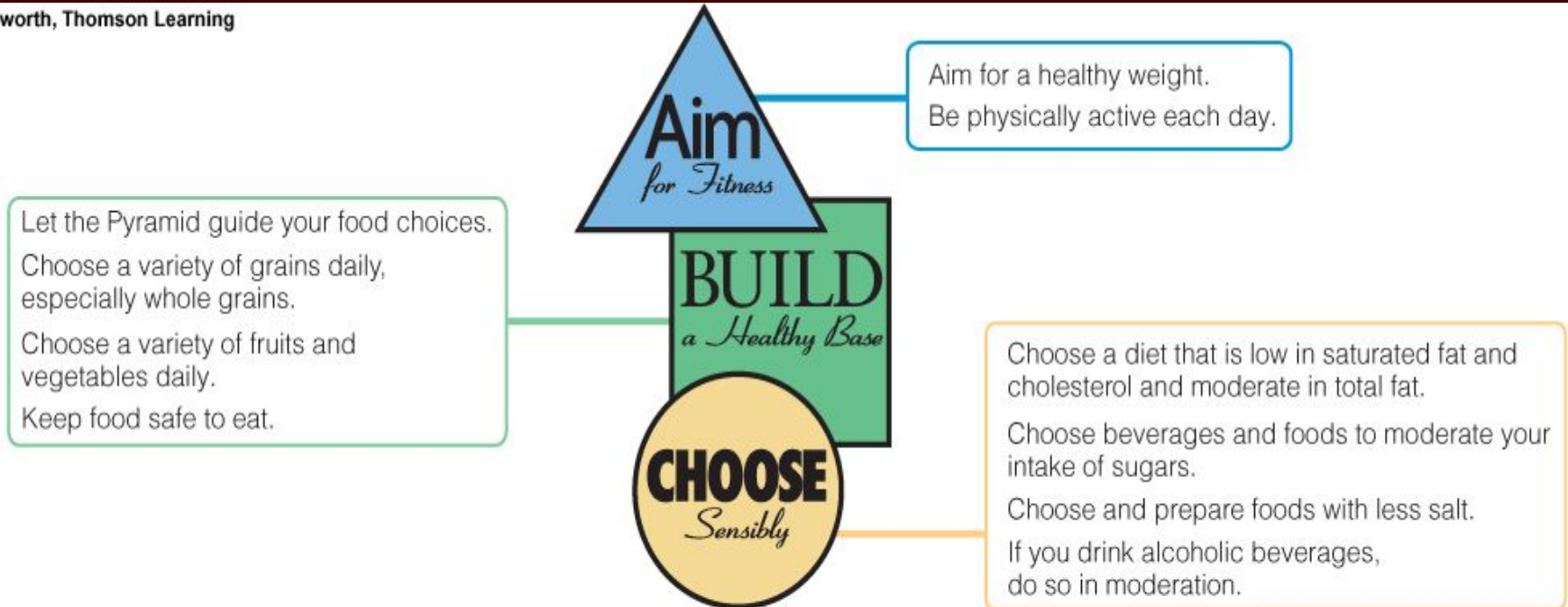
# Diet Planning Principles

- Nutrient density
  - Empty-kilocalorie foods
- Moderation
- Variety



# Dietary Guidelines

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NOTE: These guidelines are intended for adults and healthy children ages 2 and older.

SOURCE: U.S. Department of Agriculture and U.S. Department of Health and Human Services, *Nutrition and Your Health: Dietary Guidelines for Americans*, Home and Garden Bulletin no. 232 (Washington, D.C.: 2000).

# Food Group Plans

- Daily food guide
  - Notable nutrients
  - Miscellaneous foods
  - Mixtures of foods

# Food Group Plans

- Daily food guide
  - Nutrient density
  - Recommended servings
  - Serving sizes



# Daily Food Guide

## Key:

- Foods generally highest in nutrient density (good first choice).
- Foods moderate in nutrient density (reasonable second choice).
- Foods lowest in nutrient density (limit selections).



## BREADS, CEREALS, AND OTHER GRAIN PRODUCTS: 6 TO 11 SERVINGS PER DAY

These foods contribute complex carbohydrates, riboflavin, thiamin, niacin, folate, iron, protein, magnesium, and fiber.

Serving = 1 slice bread;  $\frac{1}{2}$  c cooked cereal, rice, or pasta; 1 oz ready-to-eat cereal;  $\frac{1}{2}$  bun, bagel, or English muffin; 1 small roll, biscuit, or muffin; 3 to 4 small or 2 large crackers.

- Whole grains (wheat, oats, barley, millet, rye, bulgur, couscous, polenta), enriched breads, rolls, tortillas, cereals, bagels, rice, pastas (macaroni, spaghetti), air-popped corn.
- Pancakes, muffins, cornbread, crackers, cookies, biscuits, presweetened cereals, granola, taco shells, waffles, french toast.
- Croissants, fried rice, doughnuts, pastries, cakes, pies.

## VEGETABLES: 3 TO 5 SERVINGS PER DAY

(Use dark green, leafy vegetables and legumes several times a week.)

These foods contribute vitamin A, vitamin C, folate, potassium, magnesium, and fiber, and lack fat and cholesterol.

Serving =  $\frac{1}{2}$  c cooked or raw vegetables; 1 c leafy raw vegetables;  
 $\frac{1}{2}$  c cooked legumes;  $\frac{3}{4}$  c vegetable juice.

- Bamboo shoots, bok choy, bean sprouts, broccoli, brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, eggplant, green beans, green peas, leafy greens (spinach, mustard, and collard greens), legumes, lettuce, mushrooms, okra, onions, peppers, potatoes, pumpkin, scallions, seaweed, snow peas, soybeans, sweet potatoes, tomatoes, water chestnuts, winter squash.
- Candied sweet potatoes.
- French fries, tempura vegetables, scalloped potatoes, potato salad.

# Daily Food Guide



# Daily Food Guide



## FRUITS: 2 TO 4 SERVINGS PER DAY

These foods contribute vitamin A, vitamin C, potassium, and fiber, and lack sodium, fat, and cholesterol.

Serving = typical portion (such as 1 medium apple, banana, or orange,  $\frac{1}{2}$  grapefruit, 1 melon wedge);  $\frac{3}{4}$  c juice;  $\frac{1}{2}$  c berries;  $\frac{1}{2}$  c diced, cooked, or canned fruit;  $\frac{1}{4}$  c dried fruit.

- Apples, apricots, bananas, blueberries, cantaloupe, grapefruit, guava, kiwi, oranges, papaya, peaches, pears, pineapples, plums, strawberries, watermelon; unsweetened juices.
- Canned or frozen fruit (in syrup); sweetened juices; dried fruit, coconut, avocados, olives.
- Punches, ades, and fruit drinks that contain little juice and lots of added sugars.



# Daily Food Guide

## MEAT, POULTRY, FISH, AND ALTERNATES: 2 TO 3 SERVINGS PER DAY

Meat, poultry, and fish contribute protein, phosphorus, vitamin B<sub>6</sub>, vitamin B<sub>12</sub>, zinc, iron, niacin, and thiamin; legumes are notable for their protein, fiber, thiamin, folate, vitamin E, potassium, magnesium, iron, and zinc, and for their lack of fat and cholesterol.

Serving = 2 to 3 oz lean, cooked meat, poultry, or fish (total 5 to 7 oz per day); count 1 egg,  $\frac{1}{2}$  c cooked legumes, 4 oz tofu,  $\frac{1}{3}$  c nuts or seeds, or 2 tbs peanut butter as 1 oz meat (or about  $\frac{1}{3}$  serving).

- Poultry (light meat, no skin), fish, shellfish, legumes, egg whites.
- Lean meat (fat-trimmed beef, lamb, pork); poultry (dark meat, no skin); ham; refried beans; whole eggs, tofu, tempeh, peanut butter, nuts.
- Hot dogs, luncheon meats, ground beef, sausage, bacon, fried fish or poultry, duck.

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# Daily Food Guide



## MILK, CHEESE, AND YOGURT: 2 SERVINGS PER DAY

(3 servings per day for older children, teenagers, young adults, pregnant/lactating women, and older adults.)

These foods contribute calcium, riboflavin, protein, vitamin B<sub>12</sub>, and, when fortified, vitamin D and vitamin A.

Serving = 1 c milk or yogurt; 2 oz process cheese food; 1½ oz cheese.

- Fat-free and 1% low-fat milk (and fat-free products such as buttermilk, cottage cheese, cheese, yogurt); fortified soy milk.
- 2% reduced-fat milk (and low-fat products such as yogurt, cheese, cottage cheese); chocolate milk; sherbet; ice milk.
- Whole milk (and whole-milk products such as cheese, yogurt); custard; milk shakes; pudding; ice cream.

# Daily Food Guide

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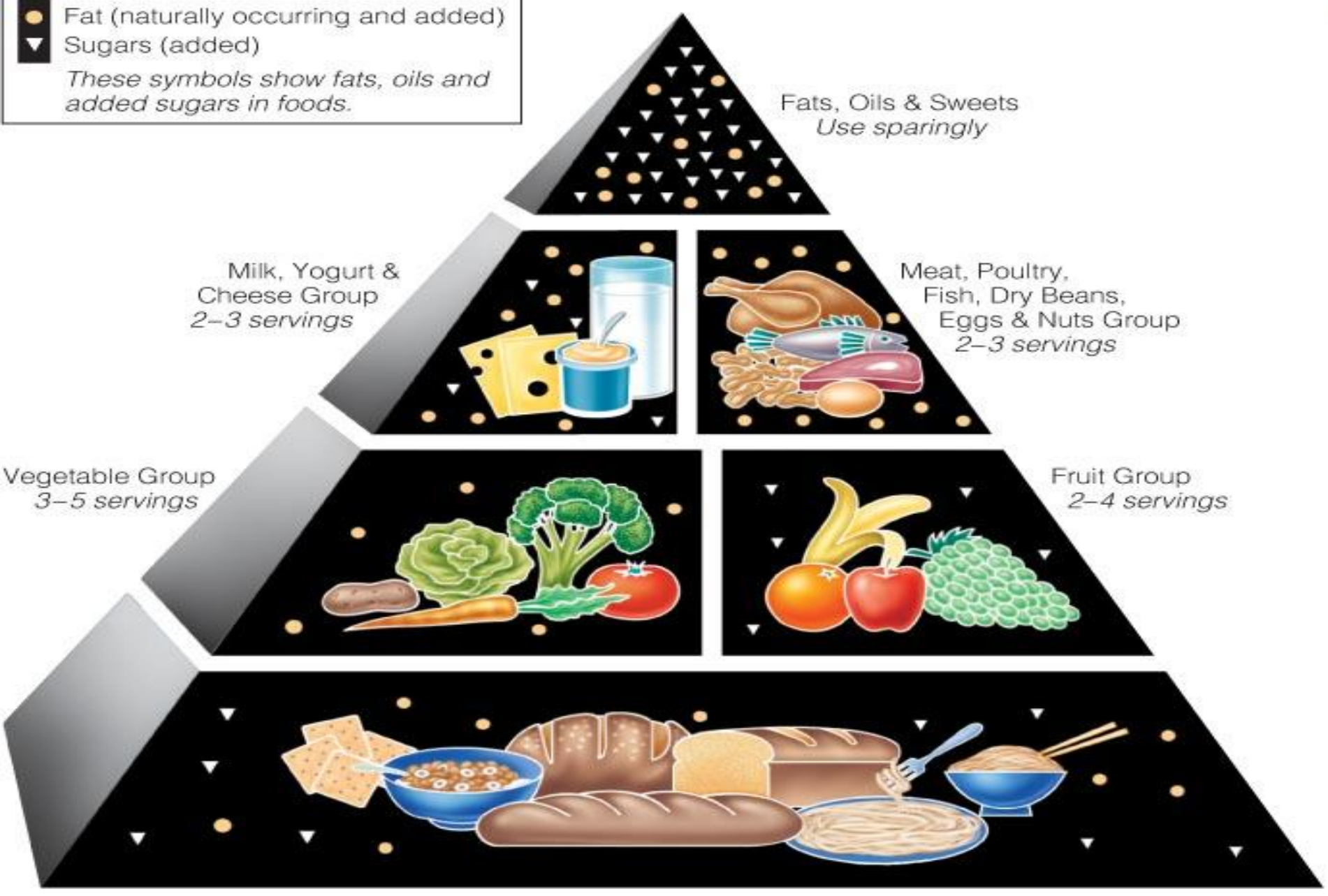


## FATS, SWEETS, AND ALCOHOLIC BEVERAGES: USE SPARINGLY

These foods contribute sugar, fat, alcohol, and food energy (kcalories). They should be used sparingly because they provide food energy while contributing few nutrients. Miscellaneous foods not high in kcalories, such as spices, herbs, coffee, tea, and diet soft drinks, can be used freely.

- Foods high in fat include margarine, salad dressing, oils, lard, mayonnaise, sour cream, cream cheese, butter, gravy, sauces, potato chips, chocolate bars.
- Foods high in sugar include cakes, pies, cookies, doughnuts, sweet rolls, candy, soft drinks, fruit drinks, jelly, syrup, gelatin, desserts, sugar, and honey.
- Alcoholic beverages include wine, beer, and liquor.

**Key:**  
● Fat (naturally occurring and added)  
▼ Sugars (added)  
*These symbols show fats, oils and added sugars in foods.*



Fats, Oils & Sweets  
*Use sparingly*

Milk, Yogurt & Cheese Group  
*2-3 servings*

Meat, Poultry, Fish, Dry Beans, Eggs & Nuts Group  
*2-3 servings*

Vegetable Group  
*3-5 servings*

Fruit Group  
*2-4 servings*

Bread, Cereal, Rice & Pasta Group  
*6-11 servings*

# Daily Food Guide

**TABLE 2-2**

Recommended Servings for Different Energy Intakes

Food Group	Energy <sup>a</sup> (kcal)		
	1600	2200	2800
Bread, especially whole grain	6	9	11
Vegetable	3	4	5
Fruit	2	3	4
Milk, preferably fat-free or low fat <sup>b</sup>	2-3	2-3	2-3
Meat, preferably lean or low fat	2 (5 oz)	2 (6 oz)	3 (7 oz)

<sup>a</sup>Choose low-fat and lean foods from the five major food groups and use foods from the fats, oils, and sweets group sparingly.

<sup>b</sup>Older children, teenagers, young adults, women who are pregnant or breastfeeding, and older adults need 3 servings. In fact, given the 1997 DRI, which raised calcium recommendations, all individuals may need an additional serving from the milk group.

SOURCE: Adapted from U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, *The Food Guide Pyramid*, Home and Garden Bulletin no. 252, 1996.

**Asian**



© Becky Luigart-Stayner/Corbis

**Mediterranean**



© PhotoDisc Inc.

**Mexican**



© PhotoDisc Inc.

**Grains**

**Vegetables**

**Fruits**

**Meats and Alternates**

**Milk**

Rice, noodles, millet

Amaranth, baby corn, bamboo shoots, chayote, bok choy, mung bean sprouts, sugar peas, straw mushrooms, water chestnuts, kelp

Carambola, guava, kumquat, lychee, persimmon, melons, mandarin orange

Soybeans, squid, tofu, duck eggs, pork, poultry, fish and other seafood, peanuts, cashews

Soy milk

Pita pocket bread, pastas, rice, couscous, polenta, bulgur, focaccia, Italian bread

Eggplant, tomatoes, peppers, cucumbers, grape leaves

Olives, grapes, figs

Fish and other seafood, gyros, lamb, chicken, beef, pork, sausage, lentils, fava beans

Ricotta, provolone, parmesan, feta, mozzarella, and goat cheeses; yogurt

Tortillas (corn or flour), taco shells, rice

Chayote, corn, jicama, tomato salsa, cactus, cassava, tomatoes, yams, chilies

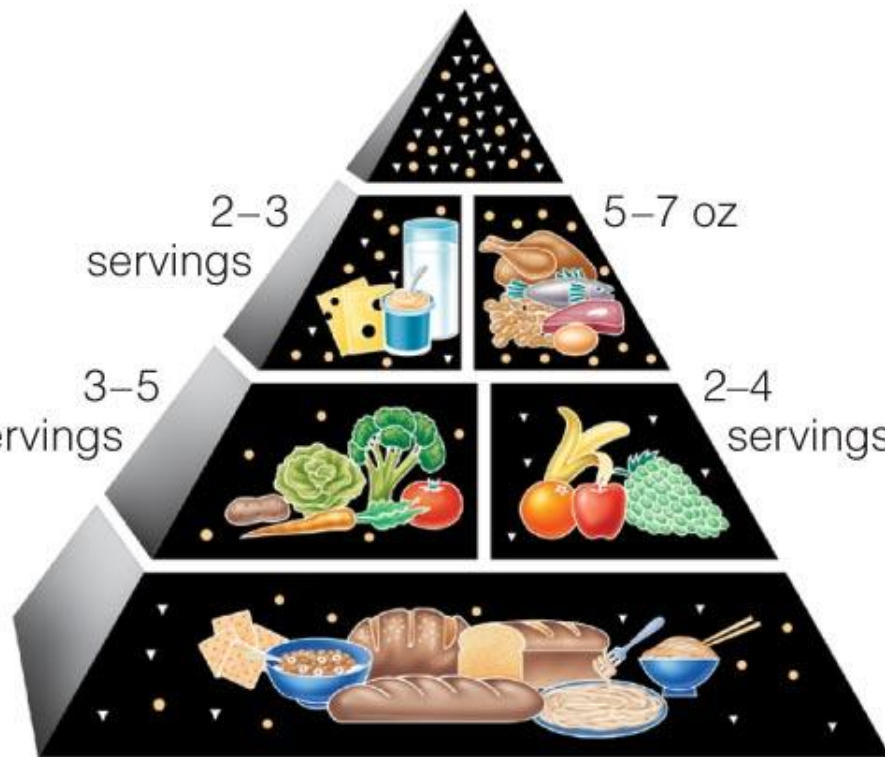
Guava, mango, papaya, avocado, plantain, bananas, oranges

Refried beans, fish, chicken, chorizo, beef, eggs

Cheese, custard

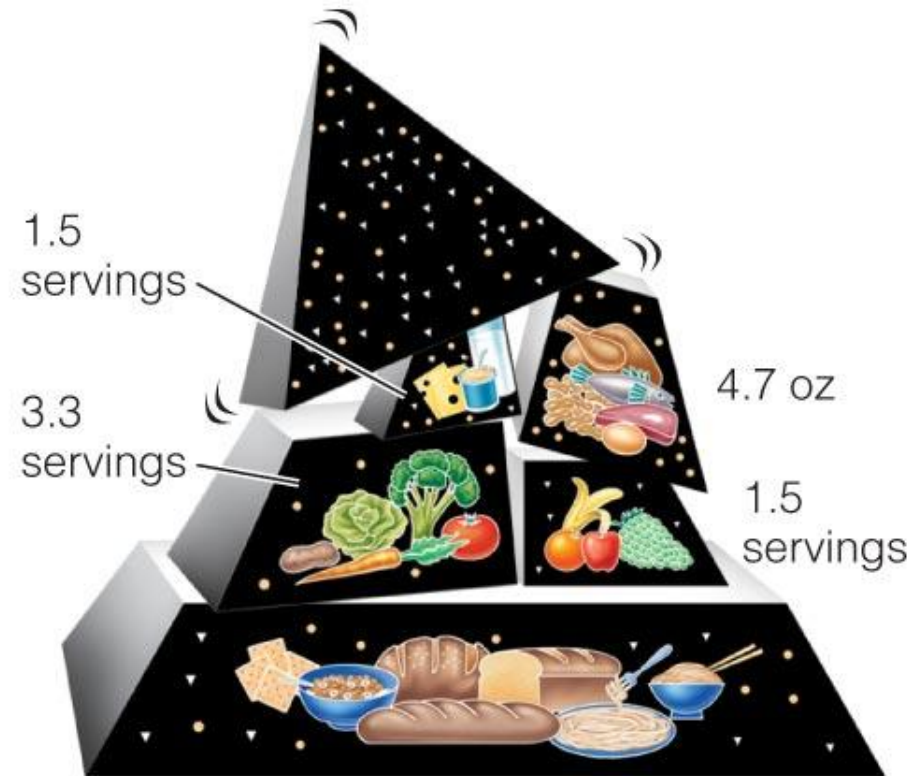
# Daily Food Guide

- Perceptions and actual intakes



6-11 servings

**Recommended Consumption Pyramid**

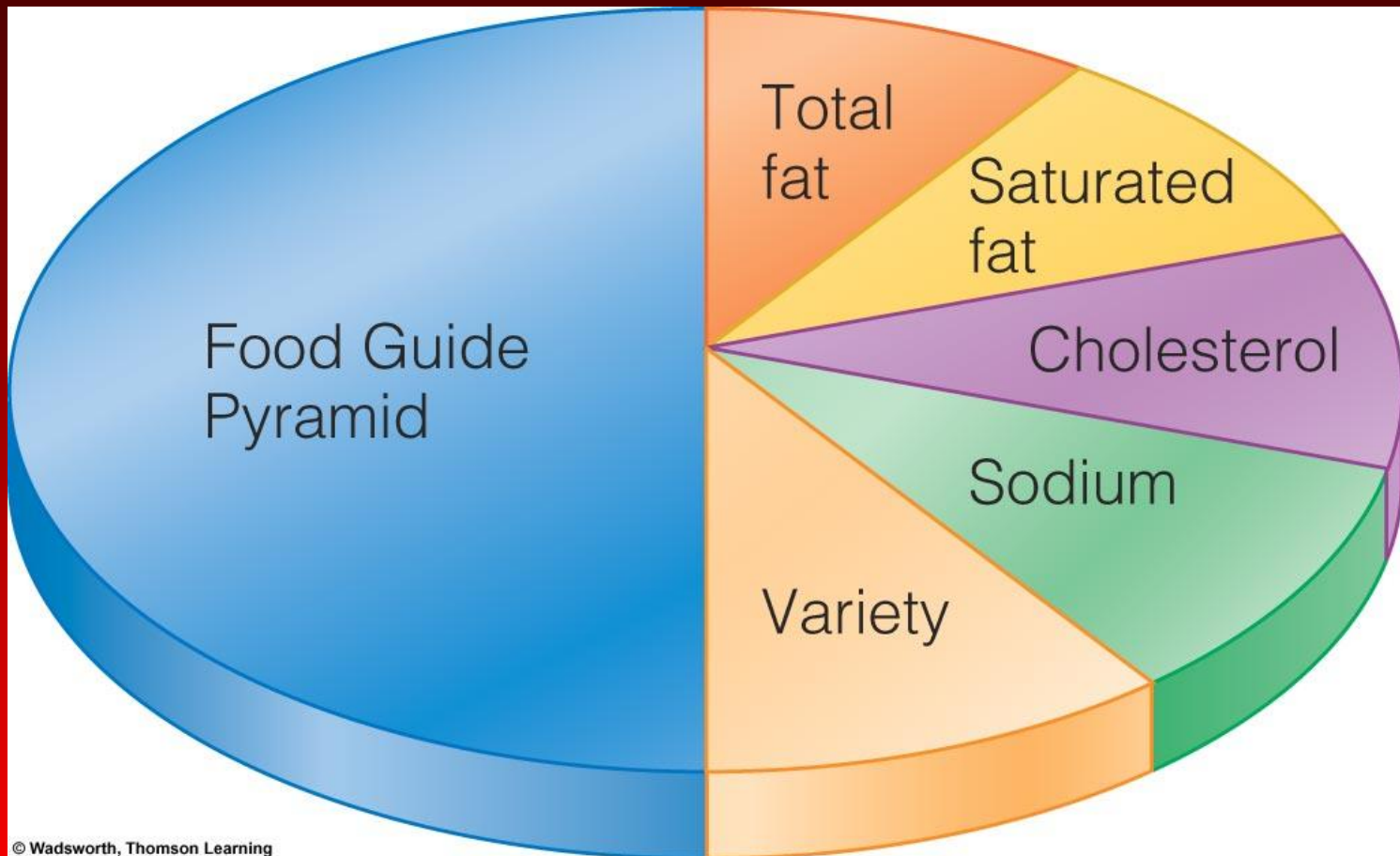


6-7 servings

**Actual Consumption Pyramid**

# Daily Food Guide

- **Healthy Eating Index (100 pts.)**





# Daily Food Guide

## Scoring Guide

Portion of Healthy Eating Index for *Dietary Guidelines*

Points	Total Fat (% of kcal)	Saturated Fat (% of kcal)	Cholesterol (mg)	Sodium (mg)	Variety <sup>a</sup>
10	≤30.0	≤10.0	≤300	≤2400	≥8.0
9	31.5	10.5	315	2640	7.5
8	33.0	11.0	330	2880	7.0
7	34.5	11.5	345	3120	6.5
6	36.0	12.0	360	3360	6.0
5	37.5	12.5	375	3600	5.5
4	39.0	13.0	390	3840	5.0
3	40.5	13.5	405	4080	4.5
2	42.0	14.0	420	4320	4.0
1	43.5	14.5	435	4560	3.5
0	≥45.0	≥15.0	≥450	≥4800	≤3.0

<sup>a</sup>Values for variety are based on a one-day period; for a three-day period, the values range from 16 to 6.

# Daily Food Guide

**TABLE 2-4**

Diet Planning Using the Daily Food Guide

This diet plan is one of many possibilities. It follows the minimum number of servings suggested by the Daily Food Guide.

<b>Food Group</b>	<b>Breakfast</b>	<b>Lunch</b>	<b>Dinner</b>
Grains (breads and cereals)— choose 6 to 11 servings	1	2	3
Vegetables—choose 3 to 5 servings			3
Fruit—choose 2 to 4 servings	1	1	
Meat—choose 2 to 3 servings (5 to 7 oz)		1	1
Milk—choose 2 servings	1	1	

# Daily Food Guide

- Pyramid shortcomings
  - No distinction between foods *within* the groups.
  - Are all foods equal? Fats? Carbs?
- USDA is currently refining this guide.
- Food Guide Limitations: Only measures energy intake.

You could still overeat...

# Exchange Lists

- Originally developed for diabetics.
- Foods sorted based on energy-nutrient content

# Putting the Plan into Action



Matthew Farruggio (all)

## SAMPLE MENU

**Breakfast** 1 oz cereal  
1 banana  
1 c fat-free milk

**Lunch** 1 turkey sandwich  
1 bunch grapes  
1 c fat-free milk

**Dinner** 1½ c spaghetti with meat sauce  
1 c tossed salad  
½ c green beans  
1 slice Italian bread  
2 graham crackers

Servings	Energy (kcal)
1 grain	110
1 fruit	109
1 milk	86
2 grains, 1 meat	360
1 fruit	53
1 milk	86
1½ grains, 1 meat, 1 vegetable	554
1 vegetable	88
1 vegetable	22
1 grain	54
½ grain	59



Chicken, noodle, and broccoli dinner

- Reduced-fat sauce
- 2 oz Chicken
- 1/2 c Broccoli
- 1 c Noodles

# From Guidelines to Groceries

- Processed foods
- Fortified foods

# From Guidelines to Groceries

- Breads, cereals, and other grain products
  - Enriched
  - Refined foods
  - Whole-grain products

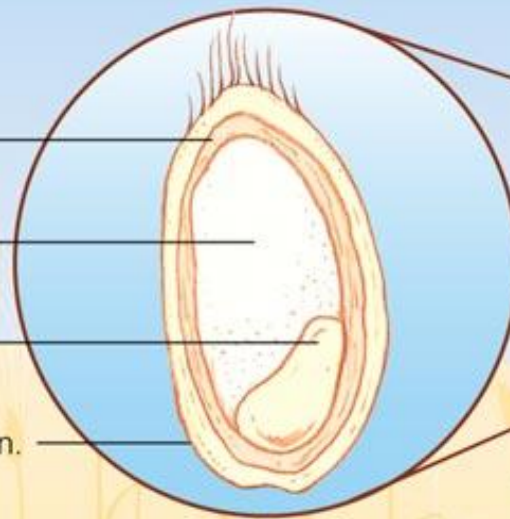


The protective coating of **bran** around the kernel of grain is rich in nutrients and fiber.

The **endosperm** contains starch and proteins.

The **germ** is the seed that grows into a wheat plant, so it is especially rich in vitamins and minerals to support new life.

The outer **husk** (or **chaff**) is the inedible part of a grain.



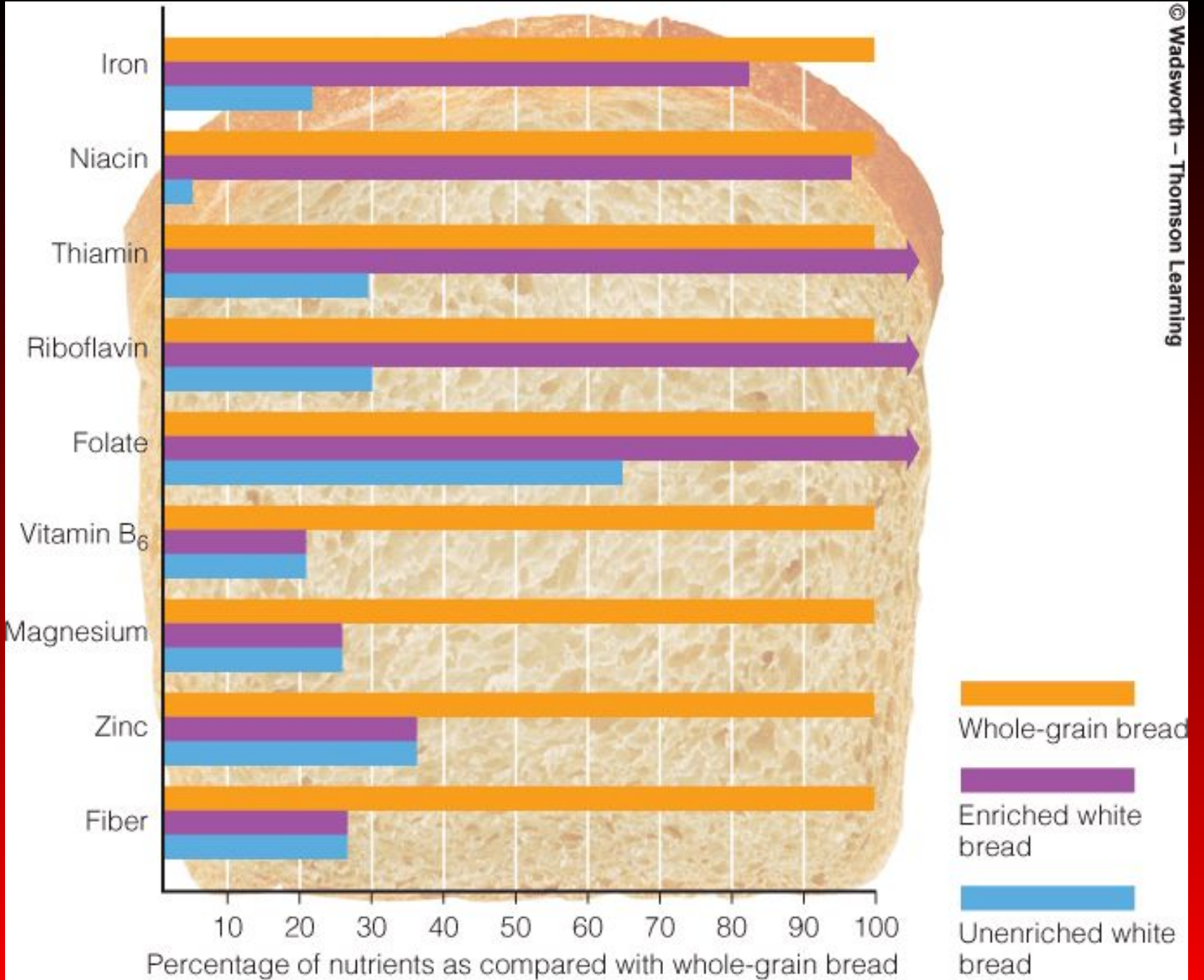
Whole-grain products contain much of the germ and bran, as well as the endosperm; that is why they are so nutritious.

Common types of flour:

- *White flour*—an endosperm flour that has been refined and bleached for maximum softness and whiteness.
- *Unbleached flour*—a tan-colored endosperm flour with texture and nutritive qualities that approximate those of regular white flour.
- *Wheat flour*—any flour made from wheat, including white flour; wheat flour has been refined whereas *whole-wheat flour* has not.
- *Whole-wheat flour*—flour made from whole-wheat kernels; a whole-grain flour.

Refined white grain products contain only the endosperm. Even with nutrients added back, they are not as nutritious as whole-grain products, as the next figure shows.





# From Guidelines to Groceries

- Vegetables
- Legumes
- Fruit



# From Guidelines to Groceries

- Meat, fish, and poultry
  - Textured vegetable protein
- Milk
  - Imitation foods
  - Food substitutes

# Food Labels

- Ingredient list
- Serving sizes  
(FDA mandated for certain foods, why?)
- Nutrition facts
  - Daily Values

The name and address of the manufacturer, packer, or distributor

The common or usual product name

Approved nutrient claims if the product meets specified criteria

The net contents in weight, measure, or count

Approved health claims stated in terms of the total diet



## Nutrition Facts

Serving size  $\frac{3}{4}$  cup (28 g)  
Servings per container 14

### Amount per serving

Calories 110      Calories from fat 9

	% Daily Value*
<b>Total Fat</b> 1 g	2%
Saturated fat 0 g	0%
Trans fat 0 g	
<b>Cholesterol</b> 0 mg	0%
<b>Sodium</b> 250 mg	10%
<b>Total Carbohydrate</b> 23 g	8%
Dietary fiber 1.5 g	6%
Sugars 10 g	

**Protein** 3 g

Vitamin A 25% • Vitamin C 25% • Calcium 2% • Iron 25%

\*Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	2000	2500
Total fat	Less than	65 g	80 g
Sat fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2400 mg	2400 mg
Total Carbohydrate		300 g	375 g
Fiber		25 g	30 g

Calories per gram  
Fat 9 • Carbohydrate 4 • Protein 4

**INGREDIENTS**, listed in descending order of predominance: Corn, Sugar, Salt, Malt flavoring, freshness preserved by BHT.  
**VITAMINS and MINERALS:** Vitamin C (Sodium ascorbate), Nicotinamide, Iron, Vitamin B<sub>6</sub> (Pyridoxine hydrochloride), Vitamin B<sub>2</sub> (Riboflavin), Vitamin A (Palmitate), Vitamin B<sub>1</sub> (Thiamin hydrochloride), Folic acid, and Vitamin D.

The serving size and number of servings per container

kCalorie information and quantities of nutrients per serving, in actual amounts

Quantities of nutrients as "% Daily Values" based on a 2000-kcalorie energy intake

Daily Values reminder for selected nutrients for a 2000- and a 2500-kcalorie diet

kCalorie per gram reminder

The ingredients in descending order of predominance by weight

# Food Labels

**TABLE 2-6**

Daily Values

for Food Labels

Food labels must present the “% Daily Value” for these nutrients.

<b>Food Component</b>	<b>Daily Value</b>	<b>Calculation Factors</b>
Fat	65 g	30% of kcalories
Saturated fat	20 g	10% of kcalories
Cholesterol	300 mg	—
Carbohydrate (total)	300 g	60% of kcalories
Fiber	25 g	11.5 g per 1000 kcalories
Protein	50 g	10% of kcalories
Sodium	2400 mg	—
Potassium	3500 mg	—
Vitamin C	60 mg	—
Vitamin A	1500 µg	—
Calcium	1000 mg	—
Iron	18 mg	—

NOTE: Daily Values were established for adults and children over 4 years old. The values for energy-yielding nutrients are based on 2000 kcalories a day.

# Food Labels

- Nutrient claims
- Health claims
- Structure-function claims



# Food Labels: Future lab

Some terms:

free

more

good source of...

organic?

healthy

low cal.

high

fat-free

less

*trans* fat

light (lite)

lean

low

low sodium

**TABLE 2-7****Food Label Health Claims—The “A” List**

- Calcium and reduced risk of osteoporosis
- Sodium and reduced risk of hypertension
- Dietary saturated fat and cholesterol and reduced risk of coronary heart disease
- Dietary fat and reduced risk of cancer
- Fiber-containing grain products, fruits, and vegetables and reduced risk of cancer
- Fruits, vegetables, and grain products that contain fiber, particularly soluble fiber, and reduced risk of coronary heart disease
- Fruits and vegetables and reduced risk of cancer
- Folate and reduced risk of neural tube defects
- Sugar alcohols and reduced risk of tooth decay
- Soluble fiber from whole oats and from psyllium seed husk and reduced risk of heart disease
- Soy protein and reduced risk of heart disease
- Whole grains and reduced risk of heart disease and certain cancers
- Plant sterol and plant stanol esters and heart disease
- Potassium and reduced risk of hypertension and stroke

**TABLE 2-8****The FDA's Health Claims Report Card**

<b>Grade</b>	<b>Level of Confidence in Health Claim</b>
A	High: Significant scientific agreement
B	Moderate: Evidence is supportive, but not conclusive
C	Low: Evidence is limited and not conclusive
D	Very low: Little scientific evidence supporting this claim

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## Required Label Disclaimers

These health claims do not require disclaimers; see Table 2-7 for examples.

"[Health claim.] Although there is scientific evidence supporting this claim, the evidence is not conclusive."

"Some scientific evidence suggests [health claim]. However, FDA has determined that this evidence is limited and not conclusive."

"Very limited and preliminary scientific research suggests [health claim]. FDA concludes that there is little scientific evidence supporting this claim."

## TABLE 2-9

## Examples of Structure-Function Claims

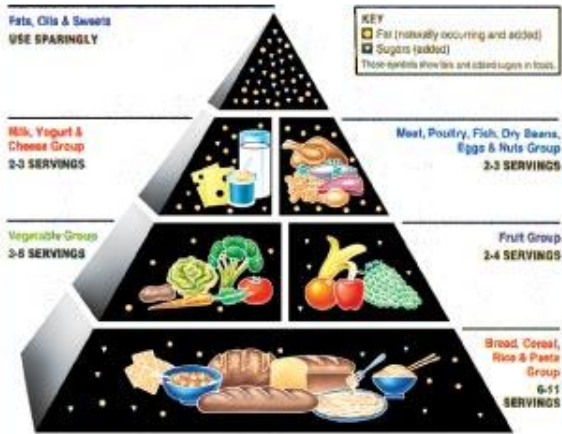
- Builds strong bones
- Defends your health
- Promotes relaxation
- Slows aging
- Improves memory
- Guards against colds
- Boosts the immune system
- Lifts your spirits
- Supports heart health

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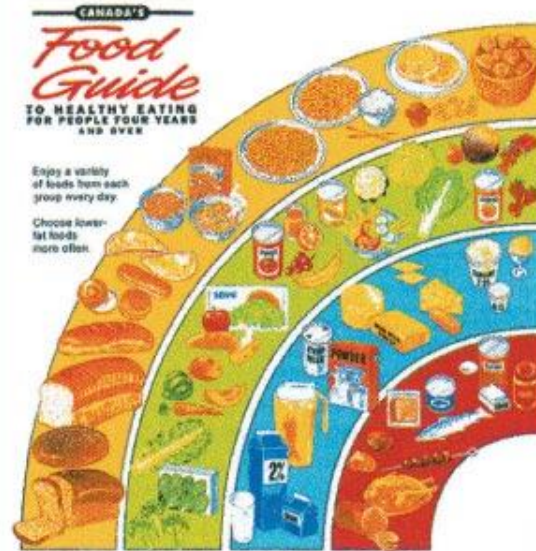
NOTE: Structure-function claims cannot make statements about diseases. See Table 2-7 on p. 60 for examples of health claims.

# A World Tour

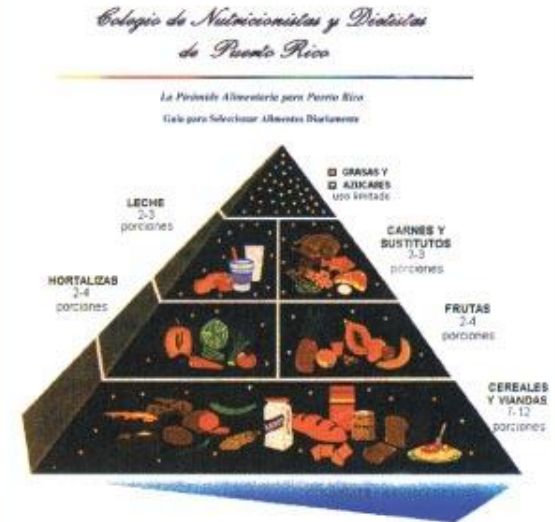
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United States



Canada



Puerto Rico

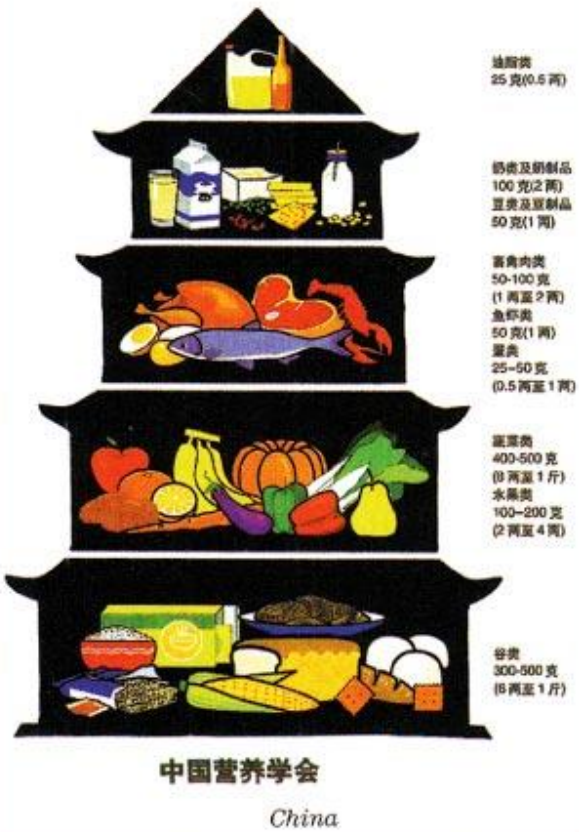
The United States uses a pyramid to convey the message of proportionality. (Interestingly, Thailand inverts the pyramid to convey the same message of proportionality, putting the largest amounts at the top and the smaller amounts at the bottom.)

Canada's unique rainbow design also illustrates proportionality.

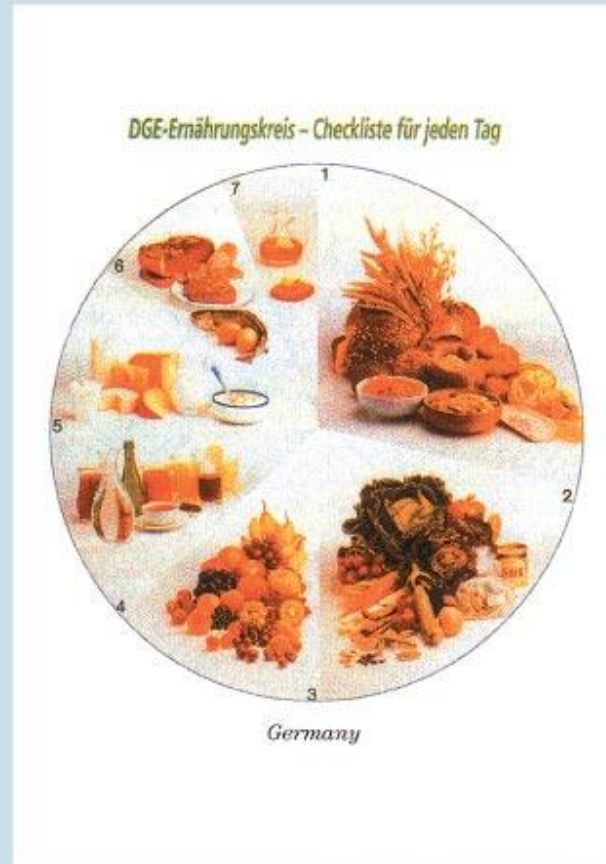
Puerto Rico (and the Philippines) adopted the pyramid design and then made modifications. Notably, Puerto Rico adds a blue shadow to illustrate water, and the Philippines combines the milk and meat groups into one group of animal foods.

# A World Tour

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In China (and Korea), a pagoda is used to depict the food guide.



In Germany (and most other European countries, as well as Australia), the food guide is illustrated with a circle.



In Mexico (and Great Britain), a circular food guide is transformed into a sectioned plate of foods.

# Dietary Guidelines

- Aim for a healthy weight
- Be physically active each day
- Let the pyramid guide be your guide

# Dietary Guidelines

- Choose a variety of grains daily
- Choose a variety of fruits and vegetables daily
- Keep foods safe to eat



# Dietary Guidelines

- Choose a diet low in:
  - Saturated fat
  - Cholesterol
- Be moderate in total fat intake

# Dietary Guidelines

- Choose beverages and foods to moderate sugar intake
- Choose and prepare foods with less salt

# Dietary Guidelines

- Drink alcoholic beverages in moderation (if at all)
- Eating pleasure