



FOOD CHALLENGE

Dr. Tetiana Zubatiuk
Ms. Karina Kapusta

19-20 of July, 2017

FAT AND CALORIES

Figuring out fat and calories

From all you hear, you'd think fat and calories are really bad for you. It's true that many people are eating more fat and calories than they need. But we all require a certain amount of fat and calories in our diets to fuel our growth and activities — everything from solving a math problem to racing up and down the soccer field. So what's the truth on fat and calories?

What Are Fat and Calories?

Food Labels: Calories

Food Labels: Fat

4, 4, and . . . 9?

Not All Fats Are the Same

Fat and Calories in a Healthy Diet

How to read a food label?

How to Calculate Calories per Day?

My Worksheet

What Are Fat and Calories?

FATS, or **lipids**, are nutrients in food that the body uses to build cell membranes, nerve tissue (like the brain), and hormones. The body also uses fat as fuel. If fats that a person has eaten aren't burned as energy or used as building blocks, they are stored by the body in fat cells. This is the body's way of thinking ahead: By saving fat for future use, it plans for times when food might be scarce.

A **CALORIE** is a unit of measurement — but it doesn't measure weight or length. A calorie is a unit of energy. When you hear something contains 100 calories, it's a way of describing how much energy your body could get from eating or drinking it.

Food Labels: Calories

Food labels list calories by the amount in each **SERVING SIZE**. Serving sizes differ from one food to the next, so to figure out how many calories you're eating, you'll need to do three things:

1. Look at the serving size.
2. See how many calories there are in one serving.
3. Multiply the number of calories by the number of servings you're going to eat.

For example, a bag of cookies may list (4) cookies as a serving size. But if you eat 8 cookies, you are really eating two servings, not one. To figure out how many calories those two servings contain, you must double the calories in one serving. A small bag of corn chips may contain two or more servings — although most people would eat the entire bag! That's why it's always important to check the serving size of all foods on the label.

Nutrition Facts	
Serving Size	4 cookies (30g)
Servings Per Container	4

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Food Labels: Fat

When it comes to fat, labels can say many things. Low fat, reduced fat, light (or lite), and fat free are common terms you're sure to see on food packages. The U.S. government has strict rules about the use of these phrases: **By law, fat-free foods can contain no more than 0.5 grams of fat per serving.** Low-fat foods may contain **3 grams** of fat or less per serving. Foods marked reduced fat and light (lite) are a little trickier, and you may need to do some supermarket sleuthing.

Light (lite) and reduced-fat foods may still be high in fat. The requirement for a food to be labeled **LIGHT** (lite) is that it must contain **50% less** fat or one third fewer calories per serving than the regular version of that food. Foods labeled **REDUCED FAT** must contain **25% less** fat per serving than the regular version. But if the regular version of a particular food was high in fat to begin with, a 25% to 50% reduction may not lower the fat content enough to make it a smart snacking choice. For example, the original version of a brand of peanut butter contains 17 grams of fat and the reduced fat version contains 12 grams. That's still a lot of fat!

It's helpful to know how many of the calories you're getting come from fat. The 2010 U.S. dietary guidelines recommend that children and teens ages 4–18 get between **25% to 35%** of their daily calories from fat. But food labels don't always show the percentage of fat in a food. It is easy to calculate. Divide the number of calories from fat by the number of total calories and multiply by 100:

$$\frac{\text{Calories from fat}}{\text{Total calories}} \times 100 = \text{percent of fat}$$

For example, if a 300-calorie food has 60 calories from fat, you divide 60 by 300 and then multiply by 100. The result shows that food gets 20% of its calories from fat:

$$\frac{60}{300} \times 100 = 20\%$$

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The calories in food come from **CARBOHYDRATES, PROTEINS, AND FATS**. A gram of carbohydrate contains 4 calories. A gram of protein also contains 4 calories. A gram of fat, contains 9 calories — more than twice the amount of the other two.

Calories per gram		
Fat 9	•	Carbohydrate 4 • Protein 4

That's why one food with the same serving size as another may have far more calories. A high-fat food has many more calories than a food that's low in fat and higher in protein or carbohydrates.

Example: a 1/2-cup serving of ice cream contains: 178 total calories:

- 2 grams of protein (2 grams times 4 calories = 8 calories from protein)
- 12 grams of fat (12 grams times 9 calories = 108 calories, or 61%, from fat)
- 15.5 grams of carbohydrate (15.5 grams times 4 calories = 62 calories from carbohydrate)

Compare this with the same serving size (1/2 cup) of cooked carrots:

- 36 total calories
- 1 gram of protein (1 gram times 4 calories = 4 calories from protein)
- 0 grams of fat (0 grams times 0 calories = 0 calories from fat)
- 8 grams of carbohydrate (8 grams times 4 calories = 32 calories from carbohydrate)

So, FAT makes quite a difference when it comes to total calories in a food.

But let's face it, who's going to choose a heaping bowl of cooked carrots over ice cream on a hot summer day? It all comes down to making sensible food choices most of the time. The goal is to make tradeoffs that balance a higher-fat food with foods that are lower in fat to keep the fat intake at about 30% for the day. So, if you really want that ice cream, it's OK once in a while — as long as you work in some lower-fat foods, like carrots, that day.

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Not All Fats Are the Same

Although all types of fat have the same amount of calories, some are more harmful to your health than others. Two of the most harmful fats are **SATURATED FAT** and **TRANS FAT**. Both of these fats can increase a person's risk of heart disease. Food labels show the amounts of saturated fats and trans fats in a particular food.

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 6g	30%
Trans Fat 0.5g	
Cholesterol 10mg	2%
Sodium 70mg	4%
Total Carbohydrates 25g	8%
Dietary Fiber 1g	4%
Sugars 20g	
Protein 3g	

Saturated and trans fats are solid at room temperature — like butter, or the fat on meat. **Saturated fat** comes mostly from *animal products*, but some tropical oils, like *palm kernel oil* and *coconut oil*, also contain saturated fat. Small amounts of naturally occurring trans fat are also found in whole dairy and meat products.

Trans fats are often found in packaged *baked goods*, like *cookies* or *crackers*. They also may be found in *fried foods* like *french fries* and *doughnuts*. Because saturated fat and trans fat raise blood cholesterol levels, increasing a person's risk of developing heart disease, *a gram of one of these fats is worse for a person's health than a gram of unsaturated fat!*

One of the most common sources of trans fat in today's foods is *partially hydrogenated vegetable oil*. Hydrogenation is a process that changes liquid oils into a solid form of fat by adding hydrogen. This process allows these fats to keep for a long time without losing their flavor or going bad.

Unsaturated fats are liquid at room temperature. Unsaturated fats can be polyunsaturated or monounsaturated.

Polyunsaturated fat is found in soybean, corn, sesame and sunflower oils, or fish and fish oil.

Monounsaturated fat is found in olives, olive oil or canola oil, most nuts and their oils, and avocados.

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Fat and Calories in a Healthy Diet

Fats should be eaten in moderation. The American Heart Association recommends that people get as much of their daily fat intake as possible from unsaturated fats and that they limit saturated fats and trans fats.

It's a bad idea to try to avoid fat completely, though, especially for teens. A certain amount of fat is necessary for development, especially during puberty when the body grows very quickly.

Fats are also needed to absorb certain vitamins that are essential for proper growth. Vitamins A, D, E, and K are **fat soluble**, meaning they can only be absorbed if there is fat in a person's diet. Also, body fat cells act as insulation to keep the body warm and help protect and cushion internal organs.

Like fat, you need a certain amount of calories in your diet to fuel your body. In fact, nutritionists do not recommend calorie counting (keeping track of the number of calories in everything that you eat) for teens unless a doctor has specifically recommended it. So, if you are concerned about your weight, speak to your doctor.

Maintaining a healthy weight means choosing a variety of foods that are low in fat (especially saturated and trans fats) and added sugars. Think about substitutes for foods that have a lot of sugar, fat, or calories. For example, you may want to drink water or skim milk instead of soft drinks, or choose mustard instead of mayonnaise on your sandwich.

Being aware of the amount of fat and calories you eat makes sense, as long as you eat a balanced diet. Establishing sensible eating habits, choosing foods wisely, and exercising regularly are the keys to long-term good health.

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SERVINGS

A **serving size** is the amount of food in one serving of a product.

1 serving of this product = 4 cookies (30 grams)

The nutrition facts on a label represent the amounts in **ONE** serving (in this example – for 4 cookies or for 30 grams).

Servings per container are the number of servings that can be found in a container (box, bottle, bag, etc.) of food.

Anytime you eat more than one serving of a product, multiply the nutritional facts by the number of servings you eat.

Remember, the nutrition facts on a label represent the amounts in one serving.

CALORIES

Here's what the food label tells us:

There are 12 grams of fat per serving (per 4 cookies) in this product.

There are 110 calories from fat per 4 cookies.

FAT, CARBOHYDRATES, AND PROTEIN are the only nutrients that contribute calories to food. Add up the calories from these three nutrients to get the total calories shown on the label.

Calories from nutrients, always:

1 gram of fat = 9 calories

1 gram of carbohydrates = 4 calories

1 gram of protein = 4 calories

Here's the math (calories from fat, carbohydrates, proteins):

12 grams of **fat** x 9 calories per gram = 108 calories

25 grams of **carbohydrates** x 4 calories per gram = 100 calories

3 grams of **protein** x 4 calories per gram = 12 calories

108 + 100 + 12 = **220 calories**

Why does it say 110 Calories from Fat?

Calories from fat are rounded to the nearest 10 calorie increment (if over 50 calories). Therefore 108 calories is rounded to 110 calories from fat on the label.

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Serving Size	4 cookies (30g)
Servings Per Container	4
Amount Per Serving	
Calories 220	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 6g	30%
Trans Fat 0.5g	
Cholesterol 10mg	2%
Sodium 70mg	4%
Total Carbohydrates 25g	8%
Dietary Fiber 1g	4%
Sugars 20g	
Protein 3g	
Vitamin A 0%	Vitamin C 8%
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
Sat 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

How to read a food label?

FAT

Total Fat on the food label represents the amount of fat in **ONE** serving of the product.

Total Fat comes from four sources:

- Saturated Fat
- Trans Fat
- Polyunsaturated Fat
- Monounsaturated Fat

Note: Manufacturers are *required* to list SATURATED FAT and TRANS FAT as subcategories of total fat and can *voluntarily* list monounsaturated fat and polyunsaturated fat.

There are 12 grams of total fat in one serving of this product

6 grams = SATURATED FAT,
0.5 grams = TRANS FAT.

You can assume the remaining 5.5 grams of fat come from monounsaturated and/or polyunsaturated fat, even though it's not listed on the label.

Here's the math:

(12 grams of total fat) – (6 grams of saturated fat) – (0.5 grams of trans fat) = 5.5 grams of polyunsaturated and monounsaturated fat.

The American Heart Association suggests that healthy adults limit dietary fat to no more than **20% to 35%** of total daily calories.

Here's an example for total fat based on a 2,000-calorie-a-day diet.

Multiply 2,000 by 0.20 (20 percent) to get 400 calories.

Multiply 2,000 by 0.35 (35 percent) to get 700 calories.

How many fat grams is that? There are 9 calories in a gram of fat, so you divide the number of calories by 9: $400/9=44$ and $700/9=78$

So, if you're on a 2,000-calorie-a-day diet, 400 to 700 calories can come from dietary FAT, which translates to between

44 and 78 fat grams a day.

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Total Carbohydrate	300g 375g
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Calories per gram	
Fat 9	Carbohydrate 4 Protein 4

How to read a food label?

DAILY VALUE

The % Daily Value is the percentage of a nutrient that one serving of the product contributes toward the daily recommended amount.

For example:

There is **1 gram of Dietary Fiber** in one serving of this product. One gram of fiber provides 4% of the daily recommended amount of fiber. % Daily Values are based on a 2,000 calorie diet.

If you eat less than 2,000 calories a day, this product will contribute more than 4% of fiber toward the daily recommended amount.

If you eat more than 2,000 calories, this product will contribute less than 4% of fiber toward the daily recommended amount.

Use the % daily value as a guide to determine if there is a low or high amount of a particular nutrient in one serving of the product.

Low = 5% or less

High = 20% or more

For example:

One serving of this product provides **30% of the daily recommended amount of saturated fat**. This is a high amount of saturated fat!

This product is high in saturated fat and borderline high in fat.

This product is low in: cholesterol, sodium, total carbohydrates, fiber, vitamin A, vitamin C, calcium, and iron.

TRANS FAT

Although a % Daily Value has not been established for TRANS FAT, health experts recommend limiting your consumption. The American Heart Association currently recommends no more than 1% of total calories coming from trans fat. (On a 2,000 calorie diet, that is approximately **2 grams of trans fat**).

SUGAR

Experts have not come up with a % Daily Value for sugar.

PROTEIN

Protein is not a current health concern for adults.

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Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram	
Fat 9	Carbohydrate 4 Protein 4

Usually, there is no “% Daily Value” for TRANS FAT, SUGAR, or PROTEIN, because Experts have not established a % Daily Value for these nutrients.

Note: % Daily Values have been established for infants and children under 4 years old, pregnant women, and nursing mothers. Products meant for these populations list a % Daily Value of **PROTEIN**.

How to Calculate Calories per Day?

Everyone's daily caloric needs are different based on *age, height, weight, gender, and activity level*. When you know how to calculate your total daily calorie needs, you can design an eating plan to help meet your health goals.

STEP 1 - Determine your basal metabolic rate or BMR by equations (Your BMR is the amount of calories your body requires just to perform daily, life sustaining functions. It's the rate of your metabolism or the amount of calories your body burns at rest)

Men's BMR =

$$65 + (6.2 \times \text{weight in lbs}) + (12.7 \times \text{height in in.}) - (6.8 \times \text{age in yrs})$$

Women's BMR =

$$655 + (4.3 \times \text{weight in lbs}) + (4.3 \times \text{height in in.}) - (4.7 \times \text{age in yrs})$$

STEP 2 - Calculate your **TOTAL ENERGY (total calories needs)** expenditure using the Harris Benedict Equation: (*Harris Benedict Equation can help you calculate an estimate of how many calories you burn each day by multiplying your BMR by your activity level*)

ACTIVITY TYPE	ACTIVITY LEVEL
Sedentary (little to no exercise)	1.2
Lightly active (exercising about 1-to-3 days each week)	1.375
Moderately active (exercising moderately and/or play sports 3-to-5 days)	1.55
Very active (people who engage in strenuous sports or hard exercise 6-to-7 days a week)	1.725
Extra active (people who engage in very physically challenging jobs or exercise, such as 2-a-day workouts)	1.9

STEP 3 - Use your total calorie needs to lose/gain weight
Many people want to figure out how many calories they burn each day to help them lose weight. Adjust your recommended intake to help support your goal.

- If you want to lose weight, it's typically recommended to cut out about **500 calories daily** to result in safe weight loss (losing 1-2 pounds weekly).
- Cutting out more calories is typically **not recommended**. If you don't eat enough your weight loss may slow and you're at a higher risk for nutrient deficiencies.

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MY WORKSHEET

look for instructions at the right sidebar

1

My basal metabolic rate or BMR:

My weight in lbs: _____

My height in in. : _____

My ages in years: _____

My gender : _____

My activity level: _____

My BMR (use an appropriate formula listed above):

2

My TOTAL ENERGY (total calorie-a-day needs)

(My BMR) x (My activity level)

3

Based on your calorie-a-day needs do the following:

Calculate Your Recommended Fat Grams Intake

Calculate Recommended Protein Grams Intake

Calculate Your Recommended Carb Grams Intake

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INSTRUCTIONS:

1. Find out the parameters needed for evaluation of your BMR;

Use BMR formula according to your gender.

2. For estimation of total calories you burn each day multiply your BMR by your activity level.

3. Follow Recommendation:

Carbohydrates: 45-65%

Fat: 20-35% of calories

Protein: 10-35%

Example calculation of Carb Grams Intake based on a 2,000-calorie-a-day needs:

$$\frac{2000}{100} \times 45\% = 900 \text{ calories}$$

$$\frac{2000}{100} \times 65\% = 1300 \text{ calories}$$

There are **4 calories** in a gram of carb, so you divide the number of calories by **4**

$$\frac{900 \text{ cal}}{4 \text{ cal/g}} = 225 \text{ grams}$$

$$\frac{1300 \text{ cal}}{4 \text{ cal/g}} = 325 \text{ grams}$$

Answer: from 225 to 325 carb grams a day

MY WORKSHEET

Most people estimate calories by serving size but calculating calories by grams is more precise. Learn how to use the official USDA nutrient list to calculate the amount of real calories are in your servings basing on the weight and/or size of the food items:

Get USDA data on the food items here...

<http://ndb.nal.usda.gov/ndb/search/list>

Mediterranean Tuna Wrap



Ingredients:	Size	Grams	Calories
Tuna Creations® Herb & Garlic	1 (2.6 oz.) Pouch	74 g	
Flatbread wrap	1	60 g	
Fresh baby spinach leaves	1/4 cup	21 g	
Feta cheese	2 Tbsp.	10 g	
Thin cucumber slices	4	95 g	
Chopped roasted red peppers	2 Tbsp.	35 g	
Sun- dried tomatoes	2 oil- packed	10 g	
Balsamic vinaigrette	1 Tbsp.	30 g	
TOTAL CALORIES per SERVING			

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INSTRUCTIONS:

Take the gram weight of your food and **divide by 100** and enter that value in the box in the 100gram column and click on the apply changes button and the nutrient content for your weight will be calculated and displayed.

For example, if your food item weights 78 grams, enter 0.78 in the box in the 100-gram column. Click on apply changes and the nutrient content of 78 grams of your food item will be displayed.

Nutrient	Unit	0.78 Value per 78 g
Proximates		
Water	g	68.56
Energy	kcal	48
Protein	g	2.71

Since the meal could consists of different kind of food items – just summarize all calories from the ingredients to get the total amount of calories per serving.