

Your Carbohydrate Counting Guide

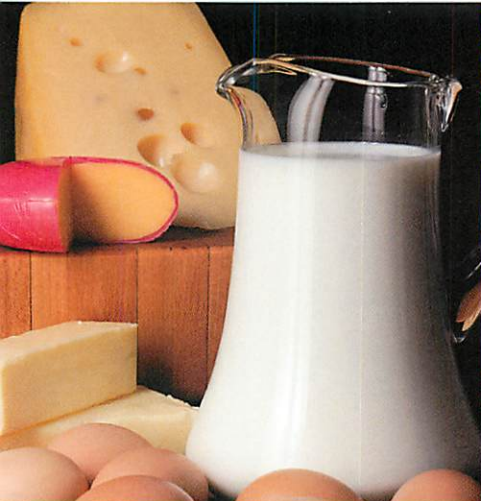


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What Are Carbohydrates (carbs)?

Carbs are found in many of the foods you eat. They are important nutrients and are responsible for giving the glucose which your body and brain need. Glucose is the most important carbohydrate in biology since it is used by the cells as a source of energy.

Your body uses carbs for energy to help you walk, climb stairs, carry groceries and do other physical activities. Also, your brain must have glucose to work right.

Carbs = Energy

What foods have carbs?

Fruits, vegetables, milk, yogurt, rice, cereals, bread and other grains all have carbs and give you important nutrients.

These carb-containing foods also give you energy and work to keep your heart and bones healthy. They may help protect you from diseases such as cancer and heart disease too.

Many snack foods, such as pretzels, chips and popcorn, have carbs. Sweets, including regular soda, cakes, candy and cookies, also contain carbs.



Why Do You Need to Know about Carbs When You Have Diabetes?

- 1st** Your body turns carbs into glucose.
- 2nd** Your body uses insulin to move glucose into your cells. When you have diabetes, either you don't make enough insulin or your body has trouble using the insulin you make.
- 3rd** Eating the right amount of carbs at each meal (combined with the use of diabetes medications, if needed) may help keep your blood glucose closer to target levels.

Managing blood glucose may help you feel better and may help prevent serious problems like heart disease and strokes. High blood glucose may make you feel tired and can lead to serious health problems.

Blood Sugar (Glucose) Targets*		
Test	ADA Goal 1**	ACE Goal 2***
A1C (a test that tells you what your average blood glucose has been for the past 2 to 3 months)	Under 7%	6.5% or less
Glucose (before meals)	90 to 130	Under 110
Glucose (after you eat)	Under 180 (peak)	Under 140 (2 hours)

* Talk with your doctor and health care team to set blood glucose targets which are right for you.
Sources:

** 1. American Diabetes Association, 2006

*** 2. American College of Endocrinology 2002

How Many Foods with Carbs Do You Need to Eat?

Your Registered Dietitian can help decide how many carbs you need. The amount depends on your age, weight, activity and diabetes medications, if used. You can learn how to 'carb count' in order to get the right amount of carbs at each meal (and snacks, if needed) to help keep your blood glucose at your target level.

1 carb choice = 15 grams of carbohydrates

How do you count carbs?

CARB COUNTING*	
Most WOMEN need about 3 to 4 carb choices OR 45 to 60g of carbs at each meal 1 carb choice or 15g of carbs for snacks (if needed)	Most MEN need about 4 to 5 carb choices OR 60 to 75g of carbs at each meal 1 to 2 carb choices or 15 to 30g of carbs for snacks (if needed)

Carbs are an important part of a healthy diet. With diabetes, watching portion sizes and getting most of your carbs from fruits, vegetables, whole grains and low fat milk and yogurt is key.

Sample of a 4-Carb Meal:

- 1 slice of bread
- ½ cup mashed potatoes
- ½ cup canned peaches
- 1 cup skim milk

Add these to complete the meal:

- 3 ounces of chicken
- 1 green salad
- 1 to 2 tablespoons of dressing

Source:

*For a referral to a Registered Dietitian or more information on meal planning, contact the American Dietetic Association at www.eatright.org.

Be a Carb Detective – Read Food Labels

LOW SODIUM (SALT) CRACKERS

Nutrition Facts			
Serving Size 1 cup oyster crackers (45g)			
Amount per serving			
Calories	195	Fat Calories	48
% Daily Value			
Total Fat	5g		8%
Saturated Fat	1g		7%
Trans Fat	0g		
Cholesterol	0mg		0%
Sodium	286mg		12%
Total Carbohydrate	32g		11%
Dietary Fiber	1g		5%
Sugar	1g		
Protein	4g		
Vitamin A	0%	Calcium	5%
Vitamin C	0%	Iron	14%

Check the serving size:
1 cup oyster crackers
Is that how much you plan
to eat?

Count total carbohydrates.

You do not need to count
sugars separately because
it is already counted as
part of the total
carbohydrate.

TO CALCULATE CARB CHOICES:

Divide the number of grams of total carbs by 15
(because 1 carb choice = 15 grams of carb).

Total carb = 32g

32 divided by 15 = 2.1 (round to 2)

FIBER*:

If the item has 5 or more grams of fiber, subtract the amount of fiber from the total carbohydrate.

These crackers have only 1g of fiber, so you do not subtract it.

Grams of Carb	Number of Carb Choices*
0 to 5g	Do not count
6 to 10g	½ carb choice
11 to 20g	1 carb choice
21 to 35g	1½ carb choices
26 to 35g	2 carb choices

Source:

* Daly A, Barry B, Gillespie S, Kulkarni K, Richardson M. Level 2 Carbohydrate Counting: Moving On. 1995. American Diabetes and American Dietetic Associations.

What's a Portion Size?

Portion size is the amount that you actually eat of a specific food. It can be different for each person. It may be one serving, half a serving, or even 2 servings. Your portion size may be larger than the serving size listed on the food package. Therefore, carefully check the nutrition facts label to estimate the amount of carbs you actually eat from a food.

Did you know that portion sizes keep getting bigger and bigger? Therefore, it is easy to lose touch with what a normal serving size is. Also, the larger the portion offered, the more people tend to eat!



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2000



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Portion Sizes – Past and Present

Source:

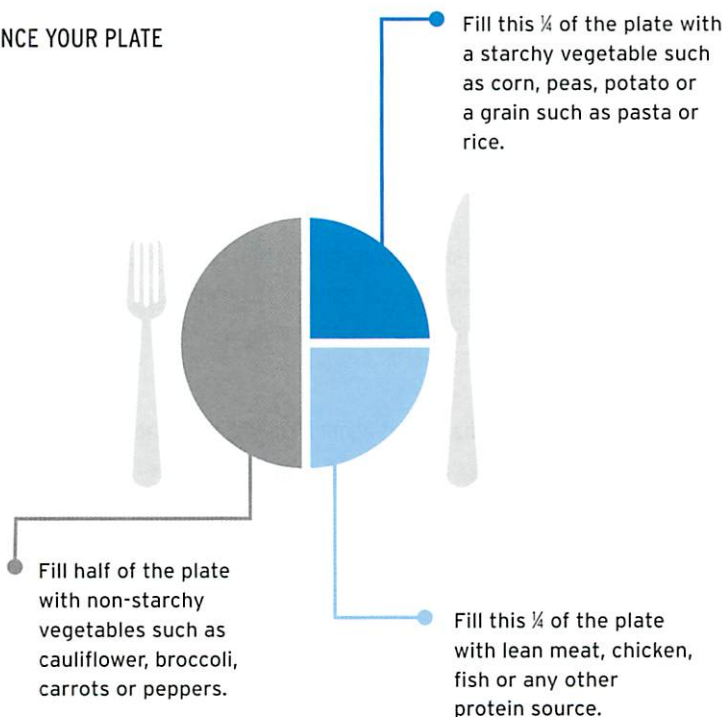
<http://hp2010.nhlbihin.net/portion/>

What's on Your Plate?

Correct answer: Everything!

Try to have a bit of each food group on your plate, using this plate example as a guide. To help control portion sizes, use a nine-inch plate.

BALANCE YOUR PLATE



Source:

Raidl M, Spain K, Lanting R, Lockard M, Johnson S, Spencer M, et al. The healthy diabetes plate. *Prev Chronic Dis* [serial online] 2007 Jan [January 2007].

Available from: http://www.cdc.gov/pcd/issues/2007/jan/06_0050.htm.

A handy guide for portion sizes

Are you eating out? You can stay on track by using this quick guide to estimate portion sizes and carbs. Use the handy guide to estimate portion sizes and carbs. Practice can help you learn portion sizes that provide the amount of carbs you need to help keep your blood glucose at target levels.

USE THE HANDY GUIDE TO ESTIMATE HOW MUCH YOU CONSUME



- **Your fingers** remind you of your number of carbohydrate choices to eat for a meal. Four choices per meal is often a good starting point.



- **Your palm**, not including fingers and thumb, is about 3 to 5 ounces of cooked and boneless meat or 1 medium sized serving of meat. If you are smaller, you may need a smaller serving.



- **Your open handful** is about a cup of food or about 2 carbohydrate choices for foods such as a 6 oz. baked potato or 1 cup corn or peas.



- **A tight fist** is about $\frac{1}{2}$ cup or about 1 carbohydrate choice such as $\frac{1}{2}$ cup ice cream or $\frac{1}{2}$ cup cooked cereal.



- **Your thumb** is about 1 tablespoon or 1 serving of regular salad dressing, reduced-fat mayonnaise, or reduced-fat margarine.



- **Your thumb tip** is about 1 teaspoon or 1 serving of margarine, mayonnaise, or other fats such as oils.



Your fingers
= about 4 carbs per meal



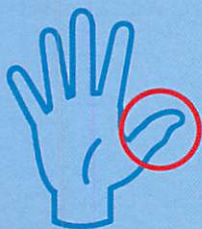
Your palm
= about 3 to 5 oz. of protein



Your open handful
= about 1 cup of food



A tight fist
= about ½ cup or 1 carb choice



Your thumb
= about 1 tablespoon



Your thumb tip
= about 1 teaspoon

What is Healthy Eating?

Healthy Eating is just that, eating what your body needs to be healthy – not too much, and not too little.

When you have diabetes, besides counting carbs, you can also benefit from eating lower fat, high fiber foods, and just enough calories to maintain a healthy weight.

Eating fruits and vegetables of all colors also provides important vitamins and minerals necessary for health.

Most foods can fit in a healthy meal plan, it all depends on:

- How much
- How often
- Other foods in the menu

Too little or too much?

WE OFTEN GET TOO MUCH OF THESE:

Total Fat, Saturated Fat, Trans Fat, Cholesterol, Sodium (salt)

SOME OF US DON'T GET ENOUGH OF THESE:

Dietary fiber, Vitamin A, Vitamin C, Iron, Calcium

For enough vitamins, minerals and fiber, eat **2 to 3** cups of vegetables and **1½ to 2** cups of fruit a day.

For enough Calcium, eat **3** servings of dairy a day.

Since some foods do not come with labels, you can often find nutrition information of foods on websites of the food manufacturer or restaurants.

Make Healthy Eating Really Work For You

When choosing your menu, make sure you get variety from all the food groups.

Besides managing blood glucose, how you eat can also help you stay healthy. The food choices you make may affect the health of your heart, bones and brain. Plus, how you eat may lower your risk of developing some types of cancer.

Current guidelines also suggest at least 30 minutes of physical activity most days of the week. For weight loss and maintenance of weight lost, being even more active is the way to go!

Talk with your doctor about how much and what type of activity is right for you. Also, be sure to ask about safety issues you may need to be aware of.

A Healthy Diet:

- focuses on whole grains, fruits, vegetables, and fat-free or low-fat milk and milk products
- includes lean meats, poultry, fish, beans, eggs, and nuts
- is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars

Examples of Carb Choices

For more information on the following publications by the American Dietetic Association and the American Diabetes Association, see:
 Official Pocket Guide to Diabetic Exchanges or Exchange List For Meal Planning.
 Available at: <http://store.diabetes.org/>

Bread, cereal, grain, pasta and rice	One Carb Choice = 15g Carbs
Bagel (¼ or 1 oz) Biscuit (2½ inches) Bread (1 slice) Bun, hamburger/hot dog (½) Crackers (4 to 6) English muffin (½) French Toast (1 slice) Melba toast (4 slices) Muffin (1 small) Oyster Crackers (24) Pancake or waffle (4 inches) Saltines (6) Stuffing (⅓ cup)	Tortilla (6 inches) Cereals: Bran cereal, flakes (½ cup) Cold cereal, unsweetened (¾ cup) Cold cereal, sugar frosted (½ cup) Granola (¼ cup) Hot cereal, oatmeal, grits (½ cup) Puffed cereal (1 ½ cup) Grains (cooked): Barley (½ cup) Couscous (⅓ cup) Pasta (⅓ cup) Rice (⅓ cup)
Starchy Vegetables	One Carb Choice = 15g Carbs
Corn/peas (½ cup) Corn on the cob, large (½ cob) Lima beans (⅓ cup) Mixed vegetables (1 cup)	Potato, baked (1 small, 3 ounces) Potatoes, mashed (½ cup) Squash, acorn, butternut (1 cup) Sweet potato (½ cup)
Dried Beans	One Carb Choice = 15g Carbs
Baked beans (⅓ cup) Beans, peas lentils, cooked (½ cup) Garbanzo beans (⅓ cup cooked)	Hummus (⅓ cup) Refried beans (⅓ cup)
Non-starchy vegetables	
<p>In general 1 serving = 1 cup raw, ½ cup cooked, ½ cup juice or ¼ cup tomato sauce. Include 2 servings a day as free choices.</p> <p>Beans (wax or green), bean sprouts, beets, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, celery, cucumber, eggplant, greens, lettuce, mushrooms, okra, onions, pea pods, peppers, radishes, rutabaga, spinach, tomatoes, or zucchini.</p>	

Mixed Dishes	
One Carb Choice = 15g Carbs: Casserole (½ cup) or Soup (1 cup)	Two Carb Choices = 30g Carbs Pizza (¼ of 12 inch - 6 oz)
Fruit	One Carb Choice = 15g Carbs
Apple or orange (1 small) Apricots (4 whole or 8 dried halves) Banana, large (½ or 4 oz.) Blueberries (¾ cup) Canned in juice (½ cup) Cantaloupe (1 cup) Cherries (12) Grapes, small (17) Grapefruit (½) Juice, unsweetened (½ cup)	Juice, prune or grape (½ cup) Kiwi (1) Papaya (½) Pear or peach (1 medium) Pineapple (¾ cup) Plum (2 small) Raisins or dried cherries (2 Tbsp) Raspberries (1 cup) Strawberries (1¼ cup) Watermelon (1¼ cup)
Milk	One Carb Choice = 12 - 15g Carbs
Fat free or reduced fat milk (soy or cow's) (1 cup) Fat-free plain yogurt (¾ cup)	Fat-free, artificially sweetened flavored yogurt (¾ cup)
Snack Foods	One Carb Choice = 15g Carbs
Animal crackers (8 crackers) Gingersnaps (3 items) Graham crackers (3 squares) Rice cakes (2 cakes)	Popcorn (3 cups) Pretzels (¾ ounce) Snack chips (15-20 chips) Vanilla wafers (5 wafers)
Sweets	
One Carb Choice = 15g Carbs Brownie, unfrosted (2 in. square - 1oz.) Cake, unfrosted (2 in. square - 1 oz.) Cookie (2 small, sandwich type) Doughnut, plain (1 small - 1 oz.) Fruit juice bars (1 bar - 3 oz.) Ice cream (½ cup) Jam/Jelly (1 Tbsp) Regular jello (½ cup) Regular soda (½ cup) Sports drinks (1 cup) Yogurt, frozen, fat free (½ cup)	Two Carb Choices = 30g Carbs Cupcake, small, frosted (2 oz.) Doughnut, glazed (2 oz.) Milk, chocolate (1 cup) Pie, pumpkin (½ pie) Pudding (½ cup) Sherbet (½ cup) Please note that these foods below have more than 2 Carb choices: Sweet roll, 2½ oz. = 2½ Carb choices Pie, fruit, 2 crusts (½ pie) = 3 Carbs choices

Note: meat/chicken/poultry/fish do not have carbs, but if they are prepared with sauces or breaded, they may certainly contain carb. Check the Nutrition Facts on the package or jar. Plan to eat 4 to 6 ounces of lean meat and meat substitutes per day. Also, fats do not contain carbs, but eating too much fat may add extra calories to your meal plan.

Source: *Exchange Lists for Meal Planning* – American Diabetes Association and American Dietetic Association – 2003.



Combination Foods

MIXING IT UP

How can you figure out how many carbs are in mixed foods such as salads, soups and casseroles?

Below are some examples to help you know what you are getting.

1 carb choice = 15g of carbohydrates

Food	Serving Size	# of Carb Choices
Casseroles	1 cup	2
Chili (beef and bean)	1 cup	2
Egg Salad	½ cup	1
Lasagna, meat	1 cup	2
Macaroni and cheese	1 cup	3
Soy Burger	3 ounces	½
Pizza, thin crust, cheese	2 slices (from 12-inch pizza)	½
Pizza, thick crust, cheese	1 slice (from 12-inch pizza)	2
Potato or macaroni salad	½ cup	1
Pot pie	1 small	3
Spaghetti with meat sauce	1 cup	3
Stew	1 cup	1
Taco (meat and cheese)	1 taco	1

Adapted from: *Creative Meal Planner*, developed by the Michigan Diabetes Outreach Network, revised 2006.



Be Choosy When Eating Out!

In order to eat healthy when dining out, choose meals that are within your carb and fat needs.

Remember that you have options when eating out.

- Try different restaurants.
- Look over the whole menu, and then select items that meet your carb needs.
- Ask for your foods to be prepared in another way - see boxes below.

Some of the things to think about when eating out:

- Portion sizes are often large
- You may get more fat and sodium (salt) than you need
- Calories add up quickly
- You may not get many fruits and vegetables
- You often won't get much fiber

HERE ARE SOME TIPS:

Browse the menu for dishes cooked by these healthier methods:

- Steamed
- Grilled
- Roasted
- Broiled
- Baked
- Poached
- Red sauces (instead of white ones)
- Lightly sautéed

Ask for what YOU want

- Nutrition information
- Description about how the food is cooked
- Salad dressing on the side (in order to use less than the whole serving)
- Smaller or half portions
- Less sauce in general
- Extra veggies on the side
- Skip appetizers, bread and butter

Best Choices When Eating Out

Remember also that when eating out you can share or ask for a box/bag to take home half of the food for the next meal.

HERE ARE SOME SUGGESTIONS OF ITEMS TO CHOOSE WHEN YOU EAT OUT:

<p>Chinese: Try brown rice if available, steamed dumplings, lots of veggies, and low salt soy sauce.</p>	<p>Hamburger Fast Food: Order plain hamburger; veggie burger; grilled chicken sandwich; fish sandwich; salads with grilled chicken and low fat dressing; choose apple sauce as side; apple dippers; yogurt parfait; salad or chili instead of fries in value meal; grilled chicken filet; chicken salad; baked potato with chili, broccoli and chives.</p>
<p>Indian: Prefer Lentil soup, chicken tikka; GO EASY on naan bread or get lighter pappadams instead. AVOID fried items.</p>	<p>Fried Chicken Restaurants: Select BBQ chicken sandwich; chicken breast (take off skin and breading); choose green beans, mashed potatoes or corn on the cob as sides.</p>
<p>Italian: Salads with dressing on the side; pasta with tomato (marinara) sauce and vegetables; appetizer servings sizes; baked/broiled/grilled/poached fish/chicken/veal; Italian ice. AVOID cheese stuffed items.</p>	<p>Sandwich Restaurants: Choose veggie sandwiches; turkey-breast sandwich on wheat roll and add extra vegetables; choose baked chips if you decide to have chips.</p>
<p>Japanese: Sushi; light soy sauce; noodles in soup; vegetable rolls; LIMIT starch portions and avoid dishes with mayo and "tempura" (= fried).</p>	<p>Mexican Fast Food: Order food which has fresh salsa, grilled steak, or choose a beef soft taco and items with soft tortillas; AVOID crispy (fried) chips and shells.</p>
<p>Mexican: Vegetarian refried beans; items wrapped in soft (not fried) tortillas, such as burritos, and ask for lots of vegetables. GO EASY on cheese and choose small portions of guacamole and sour cream.</p>	<p>Note that foods in restaurants or fast food places are usually very high in sodium!</p> <p>Many restaurants and food manufacturers now list the nutrition facts of their foods in their websites.</p>
<p>Pizza: Vegetarian; thin crust; AVOID stuffed crust; eat with salad if available or if eating at home; lower-fat toppings like ham, chicken, vegetables, lower-fat or less cheese.</p>	

Sugar Free and Fat Free Foods

Be sure you know what you are getting!

Sugar free foods can be part of a healthy meal plan in small amounts. Keep in mind though that some of them still have carbs (which can be in the form of other sweeteners such as, sorbitol, isomalt, and mannitol) and so may affect your blood glucose levels.

If it is sugar free, I can eat as much as I want, right?

Not really... many sugar free foods have calories and carbohydrates and lots of fat. Therefore make sure you read the labels!

Fat free foods can also be included in healthy meal plans. Many lower fat and fat free foods may have extra sugar or carbs added.

Many foods come in sugar free versions, such as candy, chocolate, frozen pops, gelatin, gum, hard ice cream and pudding. Always remember to count the carbs in these foods to plan into your meals.

Source:

Freeman J, Hayes C. Nutrition FYI: "Low carbohydrate" food, facts and fallacies. *Diabetes Spectrum*. 17(3): 137-140, 2004.

Compare labels below and observe that while regular ice cream has more calories, it may contain less carbs than the no-sugar-added version.

Regular Chocolate Ice Cream

Nutrition Facts			
Serving Size 0.50 cups(s) (66g)			
Amount per serving			
Calories	143	Fat Calories	65
		% Daily Value	
Total Fat	7g		11%
	Saturated Fat 4g		22%
	Trans Fat 0g		
Cholesterol	22mg		7%
Sodium	50mg		2%
Total Carbohydrate	18g		6%
	Dietary Fiber 1g		3%
	Sugar 14g		
Protein	2g		
Vitamin A	5%	Calcium	7%
Vitamin C	1%	Iron	3%

Fat Free No Sugar Added Chocolate Ice Cream

Nutrition Facts			
Serving Size 0.50 cups(s) (71g)			
Amount per serving			
Calories	100	Fat Calories	0
		% Daily Value	
Total Fat	0g		0%
	Saturated Fat 0g		0%
	Trans Fat 0g		
Cholesterol	0mg		0%
Sodium	60mg		3%
Total Carbohydrate	22g		7%
	Dietary Fiber 0g		0%
	Sugar 4g		
Protein	4g		
Vitamin A	6%	Calcium	8%
Vitamin C	0%	Iron	2%

Note that both versions of ice cream have nearly the same amount of carbs. Both still have calories too! Be a label reader and count carbs and calories for a healthy meal plan.



For More Information:

Please note that content in this booklet and the resources below are general. A meal plan to fit your health goals should be individualized according to your needs, so consult your Registered Dietitian for a customized meal plan.

American Dietetic Association (ADA) <http://www.eatright.org>

American Association of Diabetes Educators (AADE) <http://www.diabeteseducator.org>

American Diabetes Association <http://www.diabetes.org>

American Heart Association – Tips for Eating Out

<http://www.americanheart.org/presenter.jhtml?identifier=531>

Diabetes Care and Education Practice Group: <http://www.dce.org/>

Harvard School of Public Health <http://www.hsph.harvard.edu/nutritionsource/>

Healthy Diabetes Plate http://www.cdc.gov/pcd/issues/2007/jan/06_0050.htm

National Diabetes Education Program (NDEP) <http://www.ndep.nih.gov>

National Institute of Diabetes & Digestive & Kidney Diseases (NIDDK)

<http://www.niddk.nih.gov>

Portion Distortion <http://hp2010.nhlbihin.net/portion/>

USDA Food Pyramid <http://www.mypyramid.gov>

- **Assess your food intake and your physical activity**
<http://www.mypyramidtracker.gov/>
- **Video of the Food Pyramid**
http://www.mypyramid.gov/global_nav/media_animation-presentation_eng_pc.html

NHLBI Food Exchange List

http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/fd_exch.htm

For additional books and educational materials on the topic, visit the American Diabetes Association online bookstore: <http://store.diabetes.org>

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Answers That Matter.