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Mathematics Through Nutrition

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The energizing effects and sheer pleasure one experiences through the eating of various foods, for whatever reasons, can be enjoyable and nourishing as well as essential. The information in this unit incorporates in a natural manner the history of foods, the six categories of nutrients, their uses, and math which is a major component of the unit.

Because these factors are integrated into a unit which provides information necessary for daily maintenance and pleasure, it carries with it easy motivation for student exploration.

A unit devoted to nutrition and math makes attainable the standard objectives for middle school students. Additionally, math and nutrition, by its specialized characteristics, make it productively relevant to a classroom composed of the several ethnic groups typical in the New Haven school system. My overall strategy is to raise pertinent questions and present materials which will allow students to focus on issues dealing with good nutrition and its cost through mathematics.

Good food is essential for growth and development and to help maintain body functions. Food is one of our most basic needs, and we cannot live without it. It gives us the energy for everything we do, playing, walking, talking, breathing, reading, thinking and it also provides the energy our nerves, muscles, heart, and glands need to work. In addition, food supplies the nourishing substances our bodies need to build and repair tissues and to regulate body organs and systems. Food is material needed by all living things for growth and development and to sustain life.

The first food may have been eaten raw because early people did not use fire for cooking until they discovered by accident that cooked food tasted better and was easier to digest. As time passed people found that by living in groups they could secure food and protect themselves more easily. The hunters became herders after they discovered animals could be captured and domesticated and that seeds could be planted to produce large amounts of food.

Culture affects food habits and food affects cultures. The food customs in America are as diverse as the people who have come to this country. As civilization progressed, people searched for food in different places. Explorers and new settlers introduced foods they carried with them in the new lands to which they traveled. The Spanish introduced cane sugar, wheat, orange, and sheep. The English explorers brought walnuts, apples and pears. The Germans brought sausages; the Dutch waffles, cookies, and coleslaw; the Italians, pastas, and tomato sauces; the Hungarians, goulash, and spiced paprikas; the Chinese introduced stir-fried foods; the

Poles introduced pierogi; and the French, chowders.

When the settlers reached America they also found new foods which made up the menus of the Indian who lived here. Those foods were corn, beans, tomatoes, pumpkins, peppers, peanuts, and squash, and they were supplemented by wild berries, game and fish.

As groups of these Americans settled in various areas, certain foods became typical of those regions. The Germans, Dutch, and Scandinavians settled in the Midwest and they contributed sauerkraut, sausages, potato pancakes, apple cakes, shoofly pie, apple butter, waffles, scrapple, dried codfish, fruit soup, cheeses, rye bread and pastries. The French, Africans, Spanish and America Indians of the South came together and formed a type of cooking known as Creole. Other southern specialties were and still are, fried chicken, blackeyed peas, biscuits, sweet potato and pecan pies. Cooking in New England States was influenced by the English, Indians and French. Their contributions are cornbread, johnnycake, Indian pudding, succotash, seafood, chowders, cranberry sauce, pumpkin pie, Boston brown bread, baked beans, red flannee hash, and corn chowder.

Southwestern cuisine was influenced by the Mexicans and Spaniards. Seeds needed to grow grapes, lemons, oranges, apples, olives, peaches, figs, and apricots were contributed by Spanish, and corn, a Mexican staple, was used, and still is, to make tortillas and tacos. Other popular foods were tamales, chili con carne, refried beans and barbecued foods of all kinds. The Americans who settled in the Rocky Mountain states learned to make do with foods which were readily available and they hunted, fished, and grew small gardens.

The people who settled along the Pacific coast turned to growing vegetables and fruits because of the rich farm land and mild climate. The growing of fruits and vegetables became profitable year round business. The ocean provided a variety of fish and shellfish. To these foods southern Californians added foods like refried beans, spanish stew, tacos, and the Asians contributed rice dishes and their stir-fry techniques.

The food in America is as diverse as its people. The variety of foods available in the super markets is virtually unlimited, yet many people do not choose foods that really meet their needs. Food is what you eat and nutrition is how your body makes use of the food that you eat and it is so important that the federal government has developed a national nutritional program.

Eating enough food does not mean the individual is eating all the food that is needed. The amounts of food eaten are not as important as the right variety and mixture of foods. No matter what people do or what they want to do they need good health to enjoy life. Food supplies the body with energy and nourishment that keep the body in good health. Children and teenagers often eat too many sweets, fats and cereal products and not enough vegetables, fruits and milk. When food is chosen for consumption, the individual is deciding on good nutrition or poor nutrition. No single food supplies all the nutrients the body needs to function. Over fifty nutrients are needed to maintain good health.

Most nutrients needed for good health have been divided into six categories and they are:

1. Proteins
2. Fats or lipids
3. Carbohydrates
4. Vitamins

5. Water

6. Minerals

Proteins

Every cell in the body contains proteins and they are made up of units called amino acids. Twenty-two amino acids have been isolated, eight of which are essential. Essential amino acids must be supplied by the food that is eaten because the body cannot make its own supplies. The other fourteen are called non-essential amino acids and they can be synthesized by the body fast enough to meet its needs. Proteins which contains all eight essential amino acids are complete proteins and they will support growth and normal maintenance of body tissues. Proteins which are lacking in one or more amino acids are incomplete proteins and they will not support growth nor provide for normal maintenance of body tissues.

Proteins provide amino acids which are needed for growth, the formation of new tissues, maintain and repair body tissues. They also aid in the formation of enzymes, some hormones, and antibodies and provide energy. A person's need for protein is influenced by age, body size, quality of the proteins, and physical state. Proteins are provided by several animal and plant foods. Protein sources are lean red meats, poultry, fish, milk, milk products, eggs, dried beans and peas, peanuts and other nuts. If the food eaten does not contain enough protein, lack of energy, tiredness, and loss of weight may occur and the children's growth may be stunted.

Fats or Lipids

Fats are an important source of energy and fat is stored in the body in special cells called adipose cells. It is needed by the body to act as an insulation, give and reserve a supply of energy and help vital organs such as the heart and kidneys. Too much fat can cause health problems. Fats belong to a large group of compounds called lipids which include fats and oils. Fatty acids are organic compounds containing carbon, hydrogen and oxygen. They can be saturated depending upon the amount of hydrogen in the molecule. Polyunsaturated fatty acids are the ones missing four or more hydrogen atoms.

The body can produce some fatty acids from the chemical found in fats. A small amount of essential fatty acids cannot be produced by the body and they must be obtained from the foods that are eaten. Linoleic acid is an essential fatty acid which must be supplied by food. Cholesterol, a fat-like substance is found in every cell in the body and it serves several important functions. It is part of the skin tissue and aids in the transport of essential fatty acids in the body, and in the production of hormones. The body makes the cholesterol that it needs.

Energy is stored in the form of body fat and fats protect internal organs from injury and insulate the body from shock and temperature changes. The fats also carry vitamins and serve as a source of essential fatty acids. Sources of fat are butter, margarine, salad dressings, oils, vegetable shortenings, egg yolks, many dairy product, nuts, meats and avocados.

Carbohydrates

Carbohydrates are the body's most important source of energy and they include starches, sugar, and cellulose. They are produced in plants by a process known as photosynthesis and carbohydrates are divided into three classes: monosaccharides, disaccharides, and polysaccharides. Monosaccharides are the simplest and glucose and fructose are two important ones. Glucose occur naturally in corn syrup, vegetables, honey

and molasses. Glucose is formed in the body when complex carbohydrates are broken down during digestion and it is carried throughout the body by the bloodstream and it provides constant and immediate energy for all body cells and tissues. Fructose commonly found in molasses, fruits, vegetables and honey is the sweetest of all sugars and it is easily absorbed by the body.

Disaccharides include sucrose, lactose, and maltose. Sucrose is ordinary table sugar and it is found in sugar beets, maple syrup, sorghum, corn syrup, molasses and sugar cane. Lactose is found in the milk of mammals, maltose is found in sprouting cereal grains, malted milk, and malted cereals. During digestion, disaccharides are broken down, absorbed, and used by the body.

Polysaccharides are the most complex carbohydrates, and they include cellulose, starch, dextrin, and glycogen. Cellulose is a fibrous material in plants and it provides bulk in the diet and stimulates the action of the muscles in the digestive tract.

Starch is the most abundant carbohydrate in the diet. Starch is found in roots, seeds and tubers. It must be broken down into glucose before it can be absorbed.

Dextrin is a by-product of the breakdown of starch and it is present in the preparation of foods. Sources of dextrin are rice, wheat flour, peanuts, corn and beans.

Glycogen is form of carbohydrate in animals. It must be converted into glucose before it can be absorbed. Liver and muscle meats are a good source of glycogen. Carbohydrates furnish the body with energy, provide cellulose needed for bulk, help the body digest fats and make foods agreeable to the sense of taste.

Vitamins

Vitamins help speed up the chemical processes in the body and they are usually made up of carbon, oxygen, hydrogen, sulfur, and nitrogen. They are needed in small amounts for normal growth, maintenance and reproduction. Most vitamins must be produced by food because, with few exceptions, they cannot be produced by the body. If a diet is well-balanced, usually all of the needed vitamins are provided. If not, serious vitamins deficiencies may result.

Vitamins can be either fat-soluble or water-soluble. Fat-soluble vitamins mix only with fat and they are A, D, E, and K, all of which can be stored in the body. Vitamin A is needed for growth of bones and teeth, healthy skin tissues, epithelial tissue and it is an important chemical compound for the eyes. Vitamin A is obtained in foods such as butter, fish, oils, spinach and squash.

Vitamin D promotes the growth and proper mineralization of bones and teeth, it also aids the body in the use of calcium and phosphorus. Vitamin D is found in foods such as egg yolk, tuna liver, sardines and fish liver oils.

Little is known about the uses of Vitamin E in the body, however, it is believed that it combines with oxygen, is readily oxidized and it reduces the amount of oxygen inhibiting the oxidation of fatty acids, and carotene. It is commercially used to slow spoilage. Major sources are shortenings, margarines, salad oils, fats and other oils. Other sources are leafy green vegetables, breads and whole grain cereals.

Vitamin K is the blood clotting vitamin. It performs the function by helping the liver make a substance known as prothrombin, a protein that blood needs to clot. If vitamin K is not available, the liver cannot form this substance and other similar substances and as a result the blood cannot clot properly. Sources if vitamin K are found in leafy green vegetables, cauliflower, organ meats and egg yolks. Vitamin K is found in many well-liked

foods and therefore enough vitamin K is received from the foods that are eaten.

Vitamin C is water-soluble, it cannot be stored in the body and it must be supplied each day. Vitamin C helps in the formation and maintenance of collagen, helps make the walls of blood vessels firm, wounds heal and broken bones mend. It aids in the formation of hemoglobin and helps the body fight infection. Important sources are fresh fruits and vegetables such as citrus fruits, strawberries, cantaloupe, green peppers, broccoli and cabbage.

The B vitamins are the most complex of all and are water-soluble. Although each has its own characteristics, they all work together in the body.

B-1 (thiamin) helps promote normal appetite and digestion. Forms parts of the coenzymes needed for the breakdown of carbohydrates, keeps the nervous system healthy, and helps release energy from food.

b-2 (riboflavin) aids cells in the use of oxygen, keeps tongue and lips normal, and prevents scaly, greasy areas around the mouth and nose. Riboflavin also forms part of the coenzymes needed for the breakdown of carbohydrates in the body.

Folic acid is essential for all vertebrates, including human beings. It keeps the body producing normal blood cells and plays a part in biochemical reactions in cells whereby food is converted to energy.

Niacin helps the nervous system, skin, mouth, tongue and digestive tract stay healthy, aids cells in the use of other nutrients and forms parts of two coenzymes involved in complex chemical reactions in the body.

B-6 (pyridoxine) aids in nervous tissue functioning normally, has a say in the breakdown of proteins, fats and carbohydrates, and plays a role in the regeneration of red blood cells.

B-12 protects against pernicious anemia and plays a role in the normal functioning of cells. Sources of vitamin B complex are liver, muscle meats, poultry, fish, other meats, eggs, ice cream, whole grain bread, cereals, milk, cheese, dried beans and peas, and leafy green vegetables.

Water

Since about 70% of fat-free body mass is water, its not surprising that the body must have water to function. An individual might live for more that a month without food but only a few days without water. Water is needed for proper digestion, cell growth, and maintenance. Water also lubricates the joints, body cells, and helps regulate the body temperature. Water is inside and outside of all cell walls. The body takes the water it needs from the liquids and foods that are taken into the body. Most of the water comes from the liquids that are ingested and they can be in the form of water, milk, coffee, tea, fruit juices, clear soups and other beverages. Eight glasses of liquid a day supplies enough water for most individuals.

Minerals

Minerals are found in all foods except sugar, oil and wheat fat. Minerals are an inorganic substance in the body. They are needed to build bones, tissues and other compounds. Several minerals are needed for development and good health. Some minerals are found in the body in large amounts. They are calcium, phosphorus, magnesium, sodium, potassium and chloride. Other minerals found in the body in small amounts are just as important. They are iron, iodine, zinc, and fluoride.

Calcium combines with phosphorus to build and strengthen bones and teeth. Approximately half of the body's

magnesium is found in the skeleton. The other is found in the soft tissues and body fluids. Sodium and chloride are found in the blood plasma, in bones; some chloride is found in gastric juice; and most of the potassium is found within the cells. These minerals work together to control osmosis. Important sources of the minerals are milk, milk products, fish, meat, poultry, bananas, citrus fruits, and dark leafy green vegetables.

Trace elements are found in the body in very small amounts. Some are essential for good health. Iron is found in the blood. It combines with a protein to form hemoglobin. Iron is stored in the body and used over and over again. Liver is one of the best sources of iron. Iodine is a nutrient stored in the thyroid gland located at the base of the neck. Iodine is an essential part of the hormone thyroxine which is produced by the thyroid gland and it increases oxidation rates in the cells. Seafood, seaweed, and iodized salt are good sources of iodine. Manganese combine with certain enzymes in order for them to function properly. A source of manganese is instant coffee, bran flakes, and shredded wheat.

Copper is another nutrient needed in the body for the formation of hemoglobin which is necessary for red blood cells. Foods rich in copper are beef, pork liver, and bran flakes. Zinc is involved in the release of oxygen from the lungs and it helps in the digestion of proteins. Food sources are eggs, milk, seafood, meat and poultry.

Finally, fluoride, a substance found in the bones and teeth, is needed for resistance to dental caries. Fluoride is most helpful during the development of teeth. Some toothpaste contain fluoride and the public drinking water contains fluoride.

The body needs all six of the different categories of the nutrients for good health and to maintain it. If a good nutrient program is not followed certain diseases can occur such as high blood pressure, dental caries, adipose tissues, kwashiorkor, rickets, night blindness, stunted growth, headaches, fatigue, hemorrhaging, pernicious anemia, osteoporosis, and many others.

People of different age groups need different amounts of nutrients. The Recommended Dietary Allowance is a dietary standard. The RDA was developed by the Food and Nutrition Board and published in 1943. A daily food guide consists of milk and milk products, bread and cereals, fruits and vegetables, and meat and meat alternatives.

A family of an individual can carry out its own daily nutrition program by making use of the Daily Food Guide and the servings according to age and needs. A six-year old does need as much food as a twelve-year old. All teenagers undergo what is called a growth spurt. This period of rapid growth varies from person to person. During this period both sexes need more energy and this calls for more nutrients and calories per day. The family meal plan should be satisfactory for adolescents. Portion sizes can be increased or decreased where needed.

A Sample of a Daily Food Guide

Breakfast	Fruits-Vegetables Meat-Poultry-Fish-Beans Bread-Cereals Milk-Cheese (for teenagers)
Lunch	Fruits-Vegetables Meat-Poultry-Fish-Beans Breads-Cereals

	Milk-Cheese (for teenagers)
Snack	Fruits-Vegetables Meat-Poultry-Fish-Beans Breads-Cereals Milk-Cheese
Dinner	Fruits-Vegetables Meat-Poultry-Fish-Beans Breads-Cereals
Late snack	Fruits-Vegetables Milk-Cheese

Lesson Plans

Divide class or classed into groups and have them plan a meal. Include shopping, preparing and meal and serving it. This activity can be accomplished in the Mathematics and Home Economics classes (see sample menu and Daily Food Guide).

In order to have the students become aware of different foods from different ethnic backgrounds divide students according to ethnic groups.

Combine Math and Home Economic classes and invite someone from the Public Relations Department of Stop & Shop, Pathmark or Waldbaum’s supermarket to speak to the students. Ask the speaker to answer questions such as:

- What kind of groceries and fresh vegetables do you sell and why?
- Describe the displays in the store and why the items are displayed as they are.
- What does “opening price” mean?
- Are there any items that never go on sale?

Word Problems

- The total expenses of a family of four during the first six months of the year for food were
1. \$456.45, \$525.32, \$475.84, \$375.95, \$520.22 and \$472.89. What was their average monthly food expense?
 2. For food during the year of 1990, Mr. Dol spent \$4,756.52. What was the average expenditure per month for food?

- During the week of March 5, seven farmers delivered to a cheese factory the following
- amounts of milk: 680 lbs., 425 lbs., 650 lbs., 580 lbs., 780 lbs., 600 lbs., and 900 lbs. What was the average amount delivered by each of the seven men?
 - Find the cost of:
 - 8 lbs. of butter at \$1.79 a pound
 - 7 1/2 dozen eggs at 98¢ each
 - 6 1/2 lbs, of cheese at \$2.79 a pound
 - Find how much you save on each can when you buy the greater quantity:
 - 3 cans of beans for 87¢ or 33¢ each
 - 6 jars of tomato sauce for \$4.20 or 75¢ each
 - 4 packages of salad dressing for \$3.40 or 89¢ each
 - What is the total weight of turkeys that weigh 15 1/2 lbs., 23 1/3 lbs., 12 1/4 lbs., 24 1/4 lbs. respectively?
 - One roast of beef weighs 5 1/2 lbs., and a second weighs 7 1/4 lbs. What is the total weight? What is the cost of the two roasts if one pound costs \$2.98?
 - Amanda who had \$8.52 stops at the store to purchase some grape jelly for her mom. If the grape jelly was selling at \$2.99 per jar, how many jars could Amanda buy?
 - When sugar sells for \$179.00 hundred pounds, what is the price per pound?

Recipe Problems

The following table is used by cooks.

Table of Liquid Units

1 Tablespoon (T)	= 3 teaspoons (t.)
1 cup (c.)	= 16 tablespoons
1 pint (pt.)	= 2 cups
1 quart (qt.)	= 2 pints
1 gallon (gal.)	= 4 quarts

When a cook changes a recipe so that he will have enough for more or fewer persons that are provided for by a given recipe, he must multiply or divide the quantities names in the recipe.

- How many tablespoons are there in:

(a) 1 pint	(b) 1/2 cup	(c) 3/4 cup	(d) 1/8 cup
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- How many teaspoons are there in:

(a) 1 cup	(b) 1/4 cup	(c) 3/4 cup	(d) 1/8 cup
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- How many cups are there in:

(a) a quart	(b) a gallon
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4. A recipe for enough oatmeal for six people include:
1 c. of oatmeal, 1 t. of salt, and 2 c. of boiling water. What quantities should be used for:

(a) 3 people

(b) 2 people

(c) 4 people

5. (a)

What quantities of the ingredients would you use for one half of the following recipe?

1 c. water

2 egg whites 4T lemon juice

1 c. sugar

2 c. orange juice

(b)

What quantities would you use for 2 1/2 times the given recipe?

Saving in Buying Food

Sometimes money can be saved in purchasing foods in large quantities or by buying where foods of the same quality are offered at sale prices.

1. If round steak costs \$2.99 a pound at one store and \$3.29 a pound at another store:

(a)

How much a pound is saved by buying at the first store?

(b)

What percent of the higher price is the saving?

2. One day at one store, potatoes were on sale at 10 lbs. for \$2.39. Potatoes of the same kind were sold at 5 lbs. for \$1.79 at another store

(a)

What did ten pounds of potatoes cost at the second store?

(b)

How much was the saving by buying at the first store?

(c)

What percent of the cost at the second store?

3. A standard brand of flour is offered at one store in 10 lb. bags at \$1.89, and in 25 lb. bags at \$3.50:

(a)

What is the average price of a pound of flour bought?

in a 10-
lb.
bag?
(2) in a
25-lb.
bag?

(1)

(b)

How much a pound is saved by buying the 25-lb. bag?

(c)

What percent of the higher price per pound is the saving? (find correct to .1%)

- If a brand of packaged butter costs \$1.75 a pound at one store and \$1.89 a pound at a second store, what percent of the higher price is the saving if a pound of butter is bought at the lower price?

4. A half pound package of crackers can be bought for 48¢ a lb. package of the same kind cost 56¢.
5. What percent of the cost of 2 1/2 lb. package is saved by buying the 1 lb. package?
6. A brand of instant coffee sells at \$1.29 for a 2 oz. jar, and at \$2.98 for a 6 oz. jar:

(a)

What do 6 oz. cost when bought in small jars?

(b)

What percent of the cost in (a) is saved by buying one 6 oz. jar?

Sample Calorie Chart

Food	Serving	Calories
Apple medium	80	
Beef stew	1 cup	220
Celery	1 stalk	6
Hamburger bun	1	120
Milk, nonfat	1 cup	90

Sample Menu

Breakfast

1 medium orange

1/2 cup (125 mL) wheat flakes with milk

2 poached eggs

2 corn muffins with 4 teaspoons (20 mL) butter or fortified margarine and 4 teaspoons (20 mL) jam

1 cup (250 mL) milk or hot chocolate

Lunch

- 1 large serving macaroni and cheese
- 2 sliced tomatoes with 1 tablespoon (15 mL) mayonnaise dressing
- 1 slice whole wheat bread with 1 teaspoon (5 mL) fortified butter or margarine
- 1 large apple
- 1 cup (250 mL) milk

Dinner

- 1 large serving roast beef
- 1 medium over browned potato with gravy
- 1 cup (250 mL) shredded cabbage with 2 tablespoon (30 mL) salad dressing
- 2 slices rye bread with 1 tablespoon (15 mL) butter or fortified margarine
- 1 serving rice pudding with raisins
- 1 cup (250 mL) milk

Snacks

sandwiches, cookies, fruit milk

Calories Used for Activities

- Types of Activities Calories per hour
- Sedentary. Done while sitting using little of no arm movement. Eating, reading, writing. 80 to 100
 - Light. Done while standing, using some arm movement. Also moderate activities done while sitting. Preparing food, ironing, walking slowly, personal care, rapid typing. 110 to 160
 - Moderate. Done while standing, using moderate arm movement. Making beds, carpentry work, walking moderately fast. 170 to 240
 - Vigorous. Heavy scrubbing, hanging out clothes, walking fast, gardening, bowling. 250 to 350
 - Strenuous. Heavy labor such as construction work, action sports such as fast dancing 350 or more

Field Trip

Commons Dining Hall

Contact person

Charles L. Bennett : Director of Dining Halls

Telephone # 432-0400

Bibliography

Reference and Suggested Reading List

1. Bingham, Jean and Riccio, Delores, *The Smart Shopper's Guide To Food Buying and Preparation* . New York: Charles Scribner's Sons, 1982.
This book is a primer on the four basic food groups and vitamins. It is also a guide to selecting quality foods while saving money.
2. Debruyne, L.K.F. and Raufes, S.R., *Life Cycle Nutrition : Conception Through Adolescence* . St. Paul: West, 1989.
This book contains helpful information concerning nutrition in adolescence.
3. Gibson, R.S., *Principles of Nutritional Assessment* . New York: Oxford, 1990.
This text discusses good nutrition in a variety of ways and in depth.
4. Kamen, Betty and Kamen, Si, *Kids Are What They Eat* . New York: Arco Publishing, Inc., 1983.
This book discusses good nutrition, providing regular meals and keeping junk food at a minimum.
5. Kowtaluk, Helen, *Discovering Food* . Peoria: Bennett & McKnight Publishing Company, 1982.
This book include planning and preparing meals for the family and friends. How to use a recipe, basic equipment and appliances.
6. Kowtaluk, Helen, *Discovering Nutrition* . Encino: Bennett & McKnight, 1986.
Discovering Nutrition introduces you to the fascinating world of nutrition, relationship between nutrition and your health and how to make nutritious food choices.
7. Largen, Velds L., *Guide To Good Food* . Peoria: The Goodheart Wilcox Company, Inc., 1982.
This text is an excellent resource for information on food from the beginning to present day.
8. Long, Patricia, *The Nutritional Ages of Women* . New York: Macmillan Publishing Company, 1986.
In this book the author pinpoints your individual needs and shows how to fulfill them. She tells how eating habits change during adolescence, young and middle adulthood.
9. Plecry, Linda and Smith, Ursula, *Food, Nutrition and You* . New York: Charles Scribner's Sons, 1982.
How the food you eat becomes you.
10. Ruben, David, M.D., *Everything You Always Wanted To Know About Nutrition* . New York: Simon Schuster, 1987.
This book discusses nutrition in ways that not only help the consumer but families on different financial levels.
11. The World Book Encyclopedia, Vol. F, 1991, pages 328-352.

Suggested Reading List for Students

1. Bershada, Carol and Bernick, Deborah, *Bodyworks: the Kids* . New York: Random House, 1980.
This book is a very good guide to good food and physical fitness. It assists today's adolescence in developing and maintaining a healthy way of life.
2. Bingham, Jean and Riccio, Delores, *The Smart Shopper's Guide to Food Buying and Preparation* . New York: Charles Scribner's Sons, 1982.
This book is concerned with making every dollar count for high nutrition and good eating. It also helps in balancing your diet and budget.
3. McWilliams, M., *Nutrition For The Growing Years* . New York: John Wiley, 1986.
This book will give students information concerning nutrition for their growing years.
4. Netzer, Corine T., *The Brand Name Calorie Counter* . New York: Dell Publishing Company Inc., 1981.
This book deals with calorie counting and based upon a variety of foods.
5. Ward, Brian R., *Diet and Nutrition* . New York: Franklin Watts, 1987.
This book discusses what we eat and why we eat.

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