Mathematics
Lessons
5-8

Investigate! A Day in the Life of a Middle Schooler

Standards References

MATH GLEs
Grade 5: 7, 8
Grade 6: 8
Grade 7: 7

HEALTH Benchmarks
1-M-2
3-M-1
5-M-5

Materials

1. chart "A Day in the Life of a Middle Schooler."
2. calculators
3. paper and pencil

Activity Overview

Participants will look at approximate calorie intake and calories burned during one school day. They will add positive and negative numbers to decide if intake equals output. If input and output are not equal, then they will make decisions concerning lowering calorie intake vs. doing more activities.

Key Concepts

- Make smart choices from every food group.
- Find your balance between food and physical activity.
- Get the most nutrition out of your calories.
- By adding the number of calories you consume (positive numbers) with the amount of calories expended (negative numbers), you can learn how to maintain your weight.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Copy and laminate chart "A Day in the Life of a Middle Schooler."

You will look at approximate calorie intake and calories burned during one school day. By adding positive and negative numbers, you will decide if intake and output of calories are equal. If they are not equal, you will decide how to change your diet and/or activity level.

1. Look at the chart "A Day in the Life of a Middle Schooler." This should be comparable to your school day. Follow the trail from waking in the morning to going to bed at night. (Notice – You should have a minimum of 8 hours of sleep. Most teenagers actually need more sleep than this.)
2. Combine the amount of calories eaten and those burned (add positive and negative numbers).
   - If the answer is zero, the number of calories consumed is the same as the number of calories that you burned. This is how you maintain your present weight.
   - If the answer is a negative number, you burned more calories than you consumed. If you continue doing this, you will lose weight.
   - If the answer is a positive number, you consumed more calories than you burned. If you continue to do this, you will gain weight.
3. If your answer is positive or negative, discuss how you could change the student's diet or amount of activity to help him maintain his present weight.
4. Read and discuss your Key Concepts! What did you find out about the amount of exercise needed as compared to the number of calories you intake?
5. Write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss the importance of balancing your calories and activity.

Investigate! A Day in the Life of a Middle Schooler!

LAB INSTRUCTIONS

You will look at approximate calorie intake and calories burned during one school day. By adding positive and negative numbers, you will decide if intake and output of calories are equal. If they are not equal, you will decide how to change your diet and/or activity level.

1. Look at the chart "A Day in the Life of a Middle Schooler." This should be comparable to your school day. Follow the trail from waking in the morning to going to bed at night. (Notice – You should have a minimum of 8 hours of sleep. Most teenagers actually need more sleep than this.)

2. Combine the amount of calories eaten and those burned (add positive and negative numbers).
   - If the answer is zero, the number of calories consumed is the same as the number of calories that you burned. This is how you maintain your present weight.
   - If the answer is a negative number, you burned more calories than you consumed. If you continue doing this, you will lose weight.
   - If the answer is a positive number, you consumed more calories than you burned. If you continue to do this, you will gain weight.

3. If your answer is positive or negative, discuss how you could change the student's diet or amount of activity to help him maintain his present weight.

Read and discuss your Key Concepts!

What did you find out about the amount of exercise needed as compared to the number of calories you intake?

Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! A Day in the Life of a Middle Schooler

(calories burned are based on 125-174 pound person)

5:30 AM
awake after
8 hrs. sleep;
while sleeping burn
10 cal/10 min.
- 480 calories

6:00 AM
shower, dress; burn
26 cal/10 min.
- 78 calories

6:15 AM breakfast
eat 2 pancakes,
2 strips bacon,
butter, syrup,
orange juice, milk
+ 793 calories

7:00 AM – 11:00 AM
school – burn
25 cal/10 min.
-600 calories

11:00 AM – 12:15 PM
physical education –
play basketball - burn
58cal/10 min.
- 435 calories

12:15 Lunch – hamburger,
potato rounds, fruit cup,
chocolate cake, milk
+ 1111 calories

12:30 PM – 2:30 PM
school – burn
25 cal/10 min.
- 300 calories

2:45 PM
snack - yogurt,
graham crackers
+ 337 calories

3:00 PM – 4:00 PM
after school activity
bicycling, dance,
swim – burn
42 cal/10 min.
-252 calories

4:00 PM – 5:30 PM
homework – burn
12 cal/min.
- 108 calories

5:30 PM dinner
red beans and rice, sausage,
greens, cantaloupe, cola
+ 747 calories

6:00 PM – 9:30 PM
TV, computer, or video games
burn 10 cal/10 min.
-210 calories

9:30 PM
bedtime

Looking at Nutrition through Core Content
Middle Activity Sheet

Investigate! A Day in the Life of a Middle Schooler!

Use the advice "Inside *MyPyramid*" to help you

- Make smart choices from every food group.
- Find your balance between food and physical activity.
- Get the most nutrition out of your calories.

Dietary Guidelines for Americans 2005

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans* fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intakes within energy needs by adopting a balanced eating pattern.
- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.
- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

Standards References

MATH GLEs
Grade 5: 7, 8, 9, 11, 15, 18, 20
Grade 6: 13
Grade 7: 7, 11
Grade 8: 6, 7

HEALTH Benchmarks
1-M-1
1-M-3
3-M-1
3-M-2
6-M-4

Materials

1. Stopwatch, timer or clock with second hand
2. Chart of nutrition facts for a cheeseburger from a fast food restaurant
3. Chart of Easy Ways to Burn 100 Calories
4. Calculators
5. Copies of Student Activity Sheet

Activity Overview

Participants compare the amount of exercise they usually do to how much it actually takes to burn just one cheeseburger.

Key Concepts

- The benefits of physical activity are many, including living a longer life and being less likely to develop major illnesses.
- Substantial health benefits can be achieved from regular physical activity.
- Moderately intense physical activity means using up about an extra 200 calories per day. (http://hcd2.bupa.co.uk/fact_sheets/html/exercise.html)

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Have copies of the Nutrition Facts for a cheeseburger and Easy Ways to Burn 100 Calories available.

1. You will work together with other members of your family to try to burn the calories consumed when you eat a cheeseburger.
2. Jog in place for 3 minutes. Predict whether you did enough exercise to burn off the calories in a cheeseburger.
3. A cheeseburger at a fast food restaurant has about 330 calories. Do you still think that you burned enough calories? If not, how long do you think you will need to jog?
4. Look at the chart entitled "Easy Ways to Burn 100 Calories." How many minutes do you need to jog to burn 100 calories?
5. Set up a proportion to figure how many minutes you would need to jog to burn all 330 calories. (See Student Activity Sheet to see how to set up a proportion.)
6. Compare your prediction to the actual length of time. How good were you at predicting how long to exercise?
7. Now choose other activities from the list in which your family participates. How long would you have to do each of these in order to burn off the calories of a single cheeseburger?
8. Read and discuss your Key Concepts! What did you find out about the amount of exercise needed to burn calories and its importance to your body?
9. Write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss the amount of exercise your family needs. Brainstorm some activities your family can do together that will help burn calories.

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

LAB INSTRUCTIONS

1. You will work together with other members of your family to try to burn the calories consumed when you eat a cheeseburger.
2. Jog in place for 3 minutes. Predict whether you did enough exercise to burn off the calories in a cheeseburger.
3. A cheeseburger from a fast food restaurant has about 330 calories. Do you still think that you burned enough calories? If not, how long do you think you will need to jog?
4. Look at the chart titled "Easy Ways to Burn 100 Calories." How many minutes do you need to jog to burn 100 calories?
5. Set up a proportion to figure how many minutes you would need to jog to burn all 330 calories. (See Student Activity Sheet to see how to set up a proportion.)
6. Compare your prediction to the actual length of time. How good were you at predicting how long to exercise?
7. Now choose other activities from the list that your family participates in. How long would you have to do each of these in order to burn off the calories of a single cheeseburger?
8. Read and discuss your Key Concepts! What did you find out about the amount of exercise needed to burn calories and its importance to your body?
9. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

Fast Food Cheeseburger

Nutrition Facts

Serving Size 1 serving (119g)

Amount Per Serving

Calories 326		Calories from Fat 133	
			% Daily Value*
Total Fat 15g			23%
Saturated Fat 6g			31%
Cholesterol 42mg			14%
Sodium 739mg			31%
Total Carbohydrate 33g			11%
Dietary Fiber 2g			7%
Sugars			
Protein 15g			

Vitamin A	0%	• Vitamin C	1%
Calcium	22%	• Iron	10%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

The American Dietetic Association suggests that subtracting 100 calories a day could help in managing your weight. Instead of eating less, there are many ways to burn 100 calories through physical activities. It can be as simple as walking your dog around the neighborhood, gardening or kicking a soccer ball. Here are some ideas to make fitness fun.

Easy Ways to Burn 100 Calories

Activity	**Minutes Needed***
Gardening	20
Washing the Car	20
Walking the Dog	20
Pushing a Stroller	20
Bicycling	25
Aerobic Dance	15
Skating	15
Jogging	15

* Based on 150 pound person

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

Student Activity Sheet

1. Do you think 3 minutes of jogging is enough to burn the calories in a cheeseburger? _____yes _____no

2. A cheeseburger from a fast food has _____ calories. (Look at Nutrition Facts sheet).

3. Do you still agree with your answer from #1? _____ How long do you think you will need to jog to burn those calories? _____

4. According to the chart, Easy Ways to Burn 100 Calories, how many minutes do you need to jog to burn 100 calories? _____

5. Set up a proportion to find out how long you need to jog to burn the calories from the cheeseburger.

$$\frac{100 \text{ calories}}{15 \text{ minutes}} = \frac{\text{number of calories in cheeseburger}}{X}$$

Use your calculator to cross multiply and divide.

Your answer is how many minutes of jogging it takes to burn the calories in cheeseburger. Was your prediction correct?

If you have time, choose another activity and figure how many minutes you must do that exercise to burn the calories of a cheeseburger.

Brainstorm some activities your family can do together that will help burn calories.

Investigate! How Much Exercise Does It Take to Burn the Calories of a Cheeseburger?

For thousands of years, physical activity has been associated with health. Today, science has confirmed the link, with overwhelming evidence that people who lead active lifestyles are less likely to die early, or to experience major illnesses such as heart disease, diabetes and colon cancer.

Many people put off physical activity because they believe that only vigorous exercise or playing sports counts as healthy activity. But, in fact, substantial health benefits can be achieved from regular activity without the need for special equipment, sporting ability or getting very hot and sweaty.

There is now strong scientific evidence that moderate intense physical activity (for an adult, equivalent to brisk walking for 30 minutes per day on most days of the week; for children 60 minutes of brisk walking) is enough to bring about real benefits in terms of promoting health and preventing illnesses.

Regular activity can also improve the way you look and feel. In combination with a balanced diet, regular activity can help to maintain a healthy weight. It can even boost self-confidence and reduce the risk of depression.

For an adult, regular, moderate intense physical activity means using up about an extra 200 calories per day, most days of the week. This equates to about 30 minutes (adults) or 60 minutes (children) of activity, such as a two-mile brisk walk, that should make you feel warm and mildly out of breath. During moderate intensity activity, you should still be able to talk without panting in between your words.

It's possible to achieve your 30 minute target by making fairly simple changes to your everyday routine, without joining the gym or running a marathon.

Examples of everyday activities that count:

- Walking up stairs instead of using elevators
- Walking up moving escalators
- For short journeys, walking instead of driving
- Doing the housework at "double-time"
- Household jobs and gardening, such as painting or raking leaves

Investigate! How to Eat Healthy Even at Fast Food Restaurants

Standards References

MATH GLEs
Grade 5: 28, 31
Grade 6: 29, 30
Grade 7: 32, 33
Grade 8: 34, 39

HEALTH Benchmarks
1-M-2
1-M-4
3-M-1
5-M-5

Materials

1. Chicken Sandwich Nutrition Fact sheet
2. grid paper (one per family)
3. colored pencils
4. calculators (one per family)
5. Nutrition fact sheets from various fast food restaurants

Activity Overview

Participants will compare the nutrition labels from several fast food restaurants and conclude which foods would be the most nutritious.

Key Concepts

- The USDA has set recommended daily guidelines for the number of calories, grams of fat, grams of protein, etc.
- The amount of each nutrient you should intake depends upon your age, gender, and your daily activity.
- Graphing information helps to visualize differences in data.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Print and post the Chicken Nutrition Fact sheet. Have nutrition fact sheets from various fast food restaurants in your area by using this website the NutritionData website (http://www.nutritiondata.com/).

You will graph the nutrition content of chicken sandwiches from several fast food restaurants. Then you will use your graphs to decide which sandwich would be the most nutritious to buy.

1. Not all chicken sandwiches in fast foods are alike. Some are grilled and some are breaded and fried.
2. Using grid paper provided, make graphs to compare the calories, fat, cholesterol, and sodium content of each chicken sandwich included on the Chicken Sandwich Fact Sheet
3. Considering the information from the graphs, which chicken sandwich do you think is the most nutritious? Why?
4. According to the USDA *MyPyramid*, people need different amounts of calories and fats based on their age, gender, and activity level.
5. Looking at the other menu items on the nutritional facts sheets from various restaurants, can you find something that would more nutritious? (Remember, if you get a salad, you will probably add dressing, which is usually high in fat and calories.)
6. Read and discuss your Key Concepts! What did you learn about making smart choices at fast food restaurants?
7. Write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss how to make smart choices when dining at fast food restaurants.

Investigate! How to Eat Healthy Even at Fast Food Restaurants

LAB INSTRUCTIONS

You will graph the nutrition content of chicken sandwiches from several fast food restaurants. Then you will use your graphs to decide which sandwich would be the most nutritious to buy.

1. Using the Chicken Sandwich Nutrition Fact Sheet and grid paper, identify and graph the calories, total fat, cholesterol, and sodium content of each chicken sandwich.
2. The USDA has set recommendations based on your age, gender and the amount of activity you do. Below are examples of how many calories and fat grams some groups should consume.
   a. Boys and girls ages 2-3 years who are moderately active need an average of 1200 calories. Approximately 360 of those calories, or 40 grams, would come from fat.
   b. Girls, ages 9-13 years, who are moderately active, need an average of 1,800 calories. Approximately 540 of those calories, or 60 grams, would come from fat.
   c. Boys, ages 9-13 years, who are moderately active, need an average of 2,000 calories. Approximately 600 of those calories, or 67 grams, would come from fat.
3. Considering the number of calories and fat grams you should have in one day, which chicken sandwich do you think is the most nutritious? Why?
4. Looking at the other items on the fast foods Nutritional Information sheets, can you find something that would be more nutritious? (Remember, if you get a salad, you will probably add dressing, which is usually high in fat and calories.)

Read and discuss your Key Concepts!

What did you learn about making smart choices at fast food restaurants?
Did graphing the information help to identify the healthier selections?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate! How to Eat Healthy Even at Fast Food Restaurants
Chicken Sandwich Nutrition Fact Sheet

Sandwich 1: Cold Deli Chicken Sub

Nutrition Facts

Serving Size 1 order (326g)

Amount Per Serving		
Calories 400	Calories from Fat 70	
		% Daily Value*
Total Fat 8g		12%
Saturated Fat 3g		15%
Cholesterol 60mg		20%
Sodium 2110mg		88%
Total Carbohydrate 50g		17%
Dietary Fiber 3g		12%
Sugars 7g		
Protein 32g		

Vitamin A	10%	• Vitamin C	35%
Calcium	2%	• Iron	20%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Sandwich 2 : Spicy Chicken Sandwich

Nutrition Facts

Serving Size 1 order (217g)

Amount Per Serving		
Calories 430	Calories from Fat 130	
		% Daily Value*
Total Fat 15g		23%
Saturated Fat 3g		15%
Cholesterol 60mg		20%
Sodium 1240mg		52%
Total Carbohydrate 47g		16%
Dietary Fiber 3g		12%
Sugars 6g		
Protein 27g		

Vitamin A	4%	• Vitamin C	15%
Calcium	10%	• Iron	15%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Sandwich 3: Spicy Chicken Sandwich

Nutrition Facts

Serving Size 1 order (145g)

Amount Per Serving		
Calories 450	Calories from Fat 230	
		% Daily Value*
Total Fat 26g		40%
Saturated Fat 5g		25%
Cholesterol 45mg		15%
Sodium 830mg		35%
Total Carbohydrate 39g		13%
Dietary Fiber 1g		4%
Sugars 5g		
Protein 15g		

Vitamin A	0%	• Vitamin C	0%
Calcium	35%	• Iron	40%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Sandwich 4: Chicken Special Sandwich

Nutrition Facts

Serving Size 1 order (204g)

Amount Per Serving		
Calories 560	Calories from Fat 260	
		% Daily Value*
Total Fat 28g		43%
Saturated Fat 6g		30%
Cholesterol 60mg		20%
Sodium 1270mg		53%
Total Carbohydrate 52g		17%
Dietary Fiber 3g		12%
Sugars 5g		
Protein 25g		

Vitamin A	8%	• Vitamin C	0%
Calcium	6%	• Iron	15%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Investigate! How to Eat Healthy Even at Fast Food Restaurants

Fats supply energy and essential fatty acids, and they help with the absorption of fat-soluble vitamins A, D, E, and K. You need some fat in the food you eat, but choose sensibly. Some kinds of fat, especially saturated fats, increase the risk for coronary heart disease by raising the blood cholesterol. Eating lots of fat of any type can provide excess calories.

- Keep your intake of saturated fat at less than 10 percent of calories and your cholesterol intake to less than 300 mg/day.
- Adults should keep total fat intake between 20 - 30 percent of calories, and children over three years old and adolescents should keep total fat intake between 25 to 35 percent.
- Keep your intake low of foods that are high in saturated fats, cholesterol, and *trans* fatty acids. They tend to raise blood cholesterol.
- Check the Nutrition Facts Label to see how much saturated fat and cholesterol are in a serving of prepared food. Choose foods lower in saturated fat and cholesterol.
- Foods that are breaded and fried generally contain more fat than do foods that are baked, broiled, or grilled.
- Adding fat such as butter, salad dressing, and mayonnaise can increase the calories and cholesterol intake.
- All kinds of unsaturated fats (oils) help keep blood cholesterol low. Unsaturated fats occur in vegetable oils, most nuts, olives, avocados, and fatty fish like salmon.

Avoid the salt habit

You can reduce your chances of developing high blood pressure by consuming less salt. Salt plays an essential role in regulating fluids and blood pressure. But many studies have shown that a high sodium intake is associated with higher blood pressure.

- Choose and prepare foods with little salt.
- The Dietary Guidelines recommend that most people eat less than 2,300 mg of sodium per day. This is the amount of sodium in about 1 teaspoon of salt.
- Persons who have high blood pressure, especially blacks, and middle-aged and older adults, should eat no more than 1,500 mg of sodium per day.
- Processed foods generally have a high sodium content.
- Fruits and vegetables generally are low in sodium and high in potassium.

Investigate! Menu Planning with *MyPyramid*

Standards References

MATH GLEs
Grade 5: 28
Grade 6: 33
Grade 7: 34
Grade 8:

HEALTH Benchmarks
3-M-1
6-M-1

Materials

1. Venn diagram on paper
2. cards with foods printed on them (cut apart and placed in plastic sandwich bag)
3. extra blank cards
4. menu planning sheet

Activity Overview

Participants will categorize foods into food groups by using a 3-circle Venn diagram. They will also plan a one-day menu using the guidelines from the new *MyPyramid*.

Key Concepts

- By combining nutritious foods into body-building meals and snacks, you can eat a healthy diet.
- By selecting body-building snacks and meals, you can eat the recommended number of servings from each of the Five Food Groups each day.
- Venn diagrams are a powerful way to graphically organize information whose items are linked by characteristics or attributes.

Procedure.

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Copy the 3-circle Venn diagram and cards. Cut apart cards and place in plastic sandwich bags. Provide blank cards for participants to add more foods.

In this activity, you will explore three parts of the food pyramid and the foods contained in each. Then you will plan three menus that are considered well-balanced meals.

1. A Venn diagram is one form of graphic organizer. It organizes items that are linked by characteristics or attributes. Look at the 3-circle Venn diagram on the student page. Items that have attributes of more than one circle would go where the circles overlap. For example, a squash casserole with both meat and squash would go into the area where the meat group overlaps the vegetable group.
2. Decide where each food should be placed on the 3-circle Venn. Place each card into the correct circle. When finished check your work with the answer key.
3. Write three more foods on the blank cards provided. Decide where each of them should be placed. Discuss your reasons for placing them where you do. On the back of the card, write where you would place them in the diagram. (This is so the next group will know the answer to those cards.)
4. Next, write a one-day menu (breakfast, lunch, dinner and snack) that would encompass all of the portions suggested by the new *MyPyramid*. Try to include foods that could overlap food groups.
5. Read and discuss your Key Concepts! What did you learn about planning menus based on the new *MyPyramid*?
6. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss planning menus based on the new *MyPyramid*.

Investigate! Menu Planning with *MyPyramid*
LAB INSTRUCTIONS

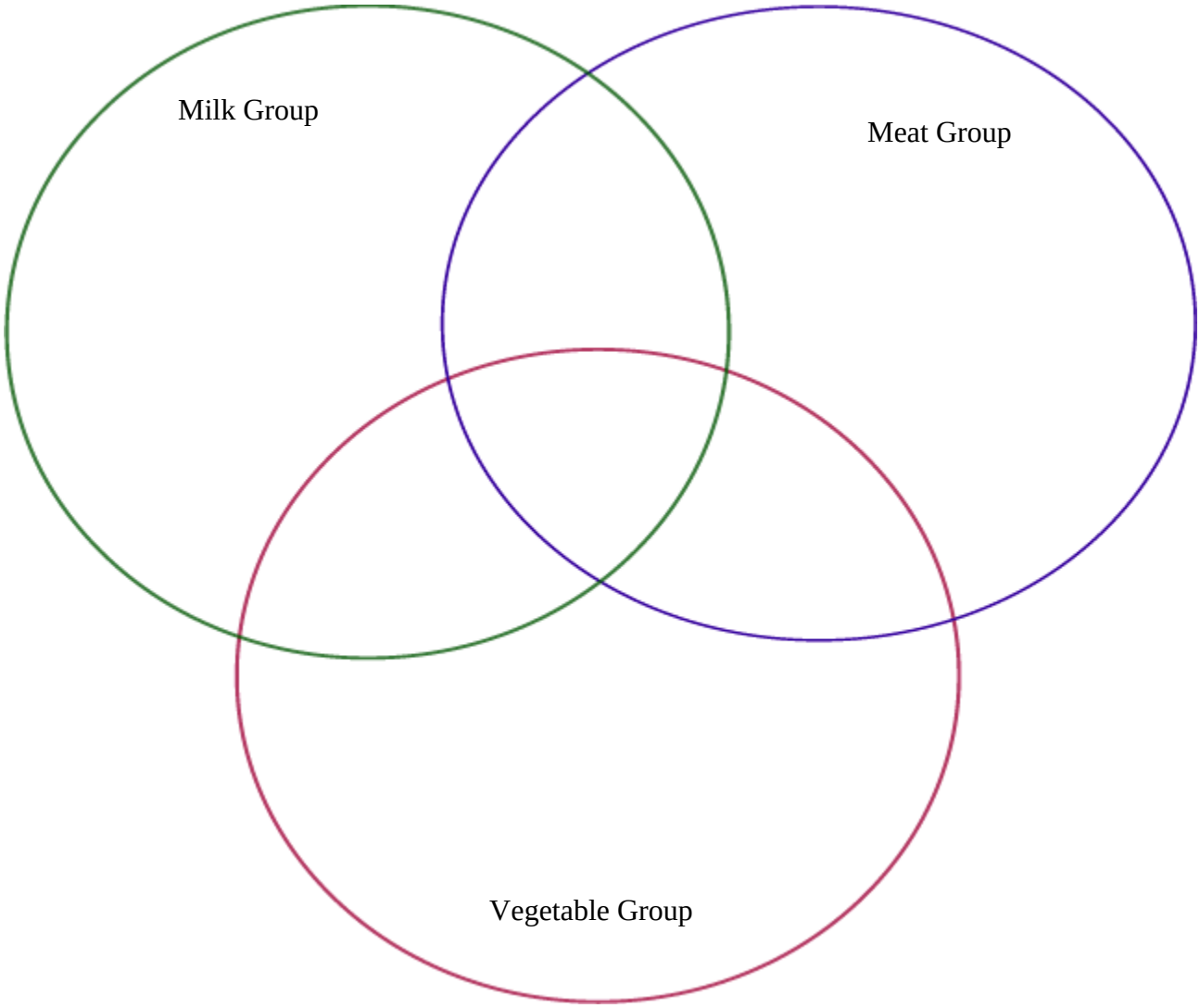
In this activity, you will explore three parts of the food pyramid and the foods contained in each. Then you will plan three menus that are considered well-balanced meals.

1. A Venn diagram is one form of graphic organizer. It organizes items that are linked by characteristics or attributes. Look at the 3-circle Venn diagram on the student page. Items that have attributes of more than one circle would go where the circles overlap. For example, a squash casserole with both meat and squash would go into the area where the meat group overlaps the vegetable group.
2. Decide where each food should be placed on the 3-circle Venn. Place each card into the correct circle. When finished check your work with the answer key.
3. Write three more foods on the blank cards provided. Decide where each of them should be placed. Discuss your reasons for placing them where you do. On the back of the card, write where you would place them in the diagram. (This is so the next group will know the answer to those cards.)
4. Next, write a one-day menu (breakfast, lunch, dinner and snack) that would encompass all of the portions suggested by the new *MyPyramid*. Try to include foods that could overlap food groups.

Read and discuss your Key Concepts!
What did you find out about planning menus based on the new *MyPyramid*?
Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! Menu Planning with *MyPyramid*

Decide where each food should be placed on the 3-circle Venn. Place each card into the correct circle or circle part. When finished check your work with the answer key.



Investigate! Menu Planning with *MyPyramid*

Eggs	Green Beans	Chicken	Salmon	Cheese
Taco	Meat Sauce	Ham and Cheese Omelet	Supreme Pizza	Broccoli with Cheese
Cheesy dog	Beef and Vegetable Stew	Bean Burrito	Potato	Strawberry yogurt
Peanut butter	Chef salad			

Investigate! Menu Planning with *MyPyramid*

What is a "Healthy Diet"?

The Dietary Guidelines describe a **healthy diet** as one that

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products;
- Includes lean meats, poultry, fish, beans, eggs, and nuts; and
- Is low in saturated fats, *trans* fats, cholesterol, salt (sodium), and added sugars.

What foods are in the vegetable group?

Any vegetable or 100% vegetable juice counts as a member of the vegetable group. Vegetables may be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed.

What foods are included in the milk, yogurt, and cheese (milk) group?

All fluid milk products and many foods made from milk are considered part of this food group. Foods made from milk that retain their calcium content are part of the group, while foods made from milk that have little to no calcium, such as cream cheese, cream, and butter, are not. Most milk group choices should be fat-free or low-fat.

What foods are included in the meat, poultry, fish, dry beans, eggs, and nuts (meat & beans) group?

All foods made from meat, poultry, fish, dry beans or peas, eggs, nuts, and seeds are considered part of this group. Dry beans and peas are part of this group as well as the vegetable group. Most meat and poultry choices should be lean or low-fat. Fish, nuts, and seeds contain healthy oils, so choose these foods frequently instead of meat or poultry.

Mixed Dishes in *MyPyramid*

Many popular foods don’t fit neatly into one *MyPyramid* food group. For example, a cheese pizza counts in several groups: the crust in the grains group, the tomato sauce in the vegetable group, and the cheese in the milk group. Some other common mixed dishes and how they count in each food group are listed in the chart. (chart is attached)

Investigate! My Bony Body

Standards References

MATH GLEs
Grade 5: 8, 12, 28
Grade 6: 16
Grade 7: 6, 7, 16
Grade 8: 8, 10, 11

HEALTH Benchmarks
1-M-2
1-M-3
3-M-1

Materials

1. Pictures of bones of foot, hand, skull, and vertebral column
2. calculator

Activity Overview

Participants will learn about the number of bones in different parts of the body and what it takes to keep the bones healthy.

Key Concepts

- Calcium is used for building bones and teeth and in maintaining bone mass.
- A diet deficient in calcium can lead to the condition called osteoporosis.
- Milk products are the primary source of calcium in American diets.
- Diets that provide 3 cups or the equivalent of milk products per day can improve bone mass.
- Large percentages of the 206 bones in the body are located in the hands, feet, and vertebral column.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials.

You will figure what percent of your bones are in different parts of your body and how to keep your bones healthy throughout your lifetime.

1. Your skeletal system is made up of 206 bones. Without your bones your body would be a mass of jelly. Your bones help to keep you upright and also serve to protect your internal organs.
2. Let's figure what percentages of your bones are in different parts of your body. Look at the chart below to see how many bones are in your skull.

Body Parts	# of bones
Skull	28
Hand (one)	27
Vertebral column	36
Foot (one)	26

Now ask yourself: what percent of 206 is 28. (X of 206 = 28) Remember "of" in mathematics means to multiply; therefore, 206X= 28. To solve for X divide 28 by 206. You get 0.1359223. Round to the hundredths place, and then move the decimal forward two places to get the percent - .14 = 14%. So 14% of your bones are found in your skull. Now do the same for <u>two</u> hands, <u>two</u> feet and your vertebral column.

3. Read and discuss your Key Concepts! What did you find out about calcium and your bones?
4. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss the why calcium is important for your body.

Investigate! My Bony Body
LAB INSTRUCTIONS

You will figure what percent of your body are in different parts of your body and how to keep your bones healthy throughout your lifetime.

1. Your skeletal system is made up of 206 bones. Without your bones your body would be a mass of jelly. Your bones help to keep you upright and also serve to protect your internal organs.
2. Let's figure what percentages of your bones are in different parts of your body. Look at the chart below to see how many bones are in your skull.

Body Parts	# of bones
Skull	28
Hand (one)	27
Vertebral column	36
Foot (one)	26

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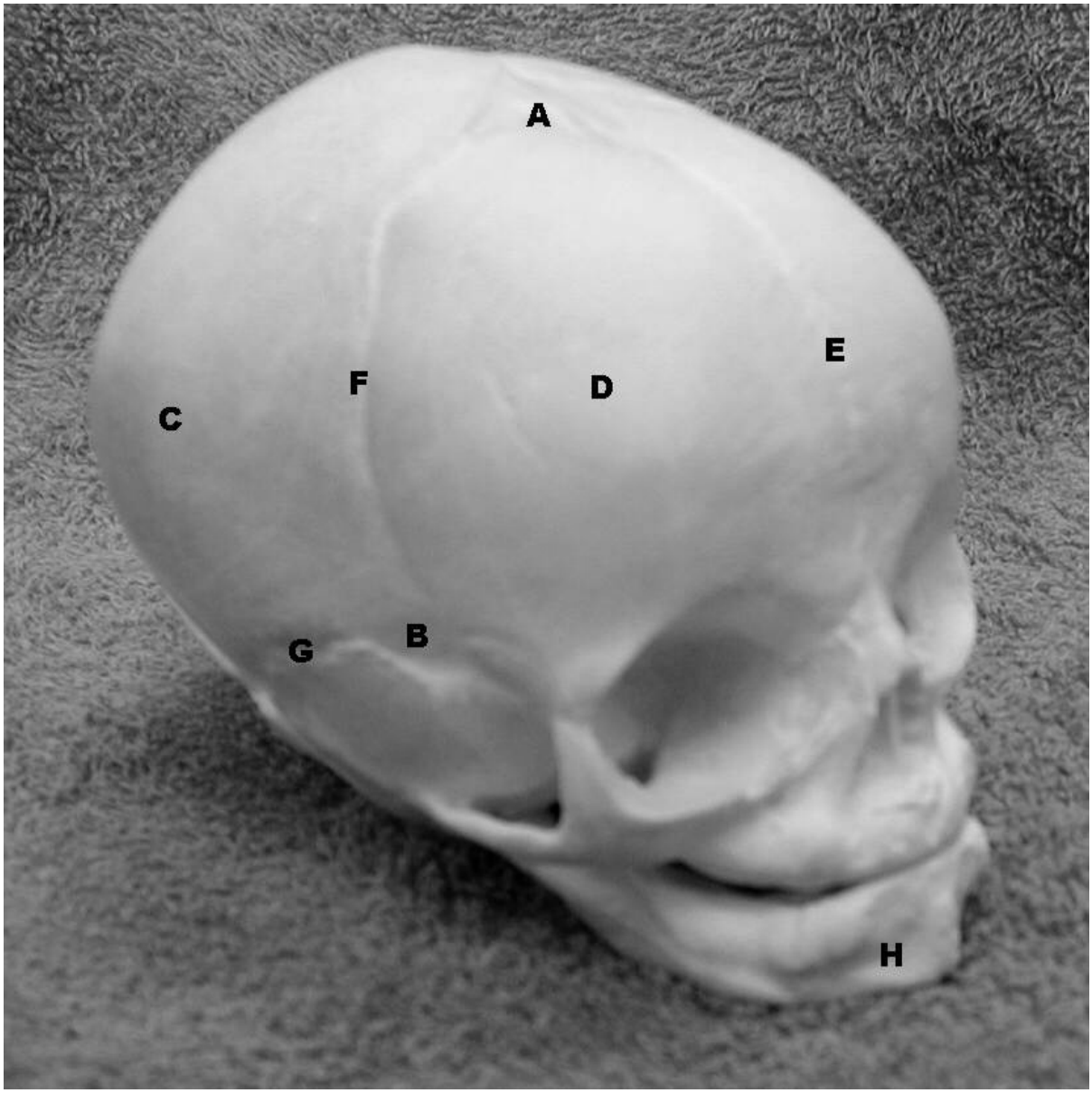
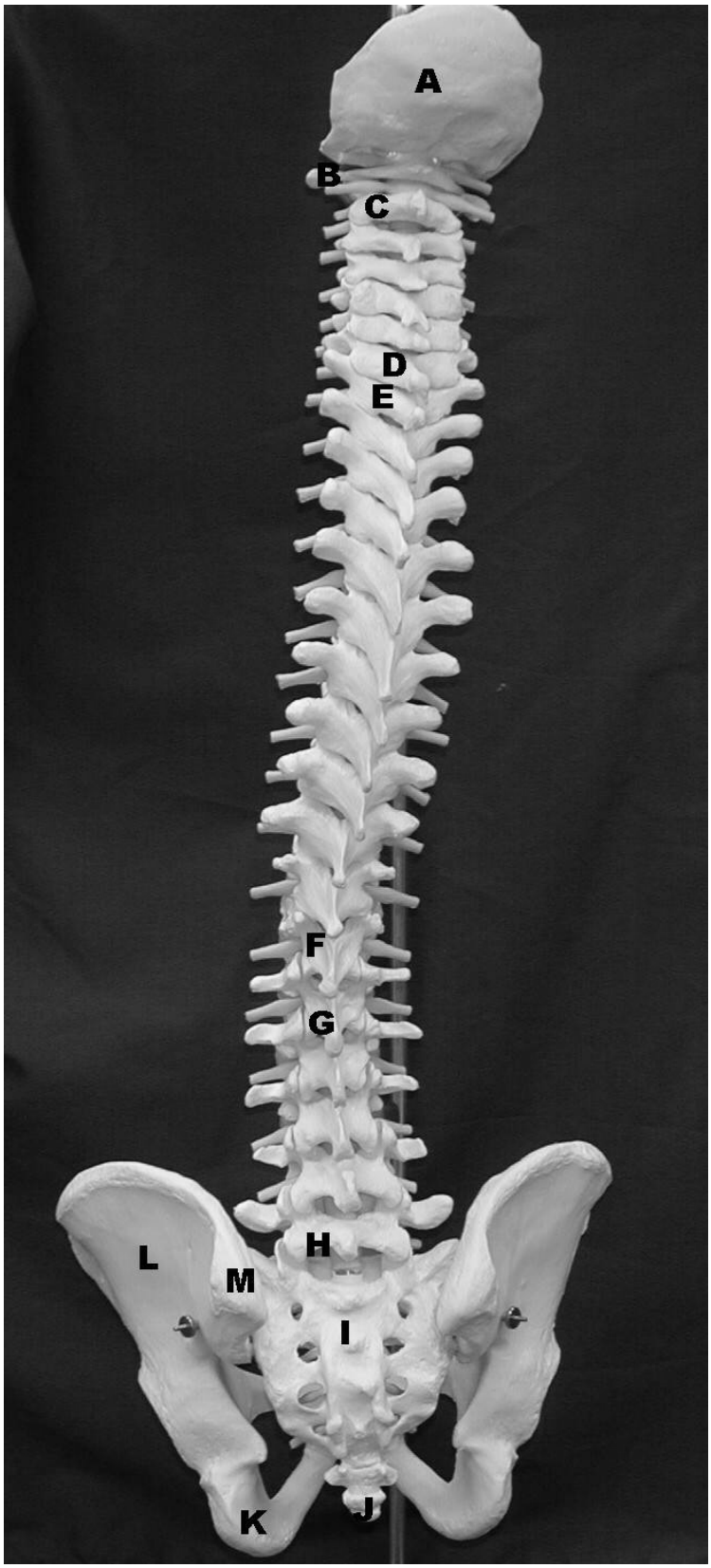
Read and discuss your Key Concepts!
What did you find out about the size of your portions?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Fetal Skull

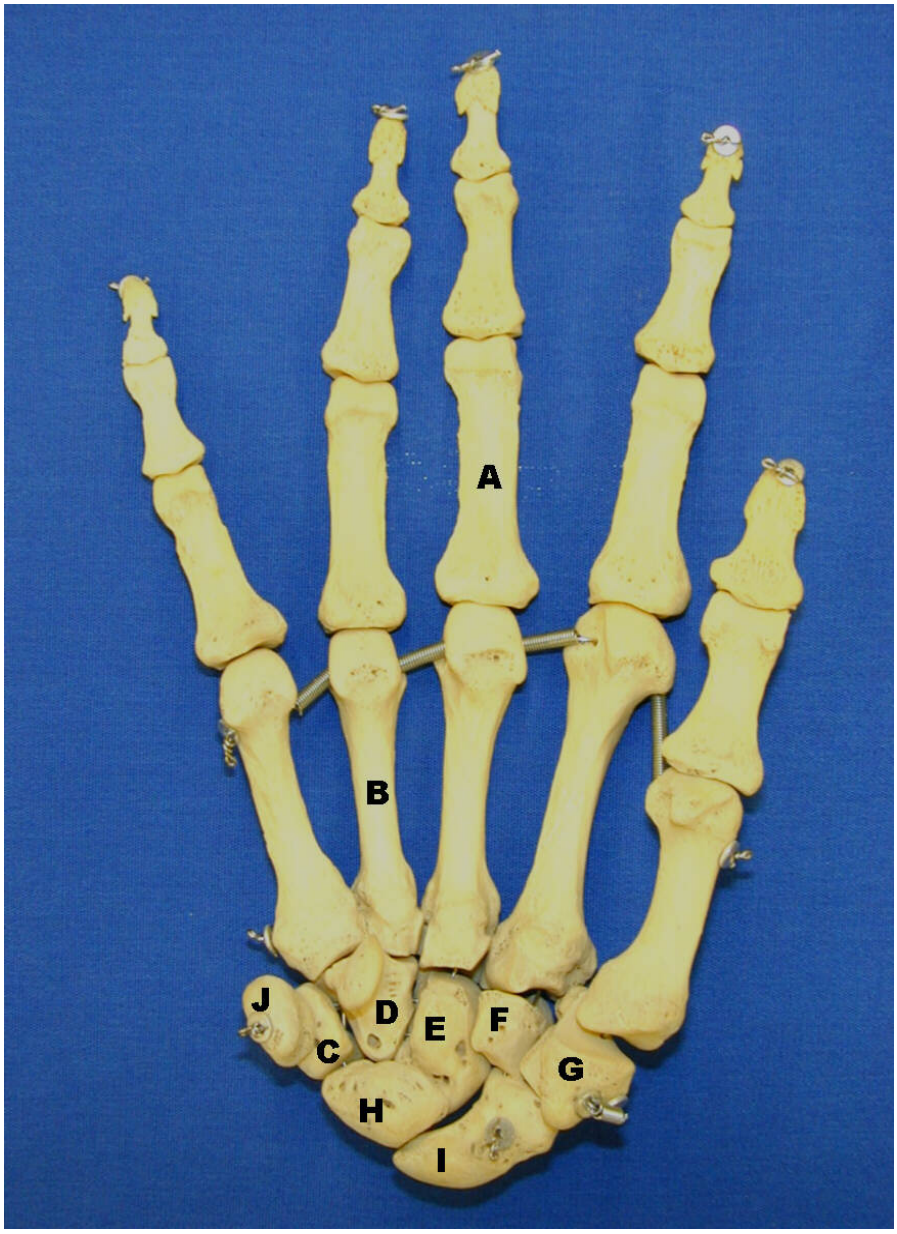


Investigate! My Bony Body



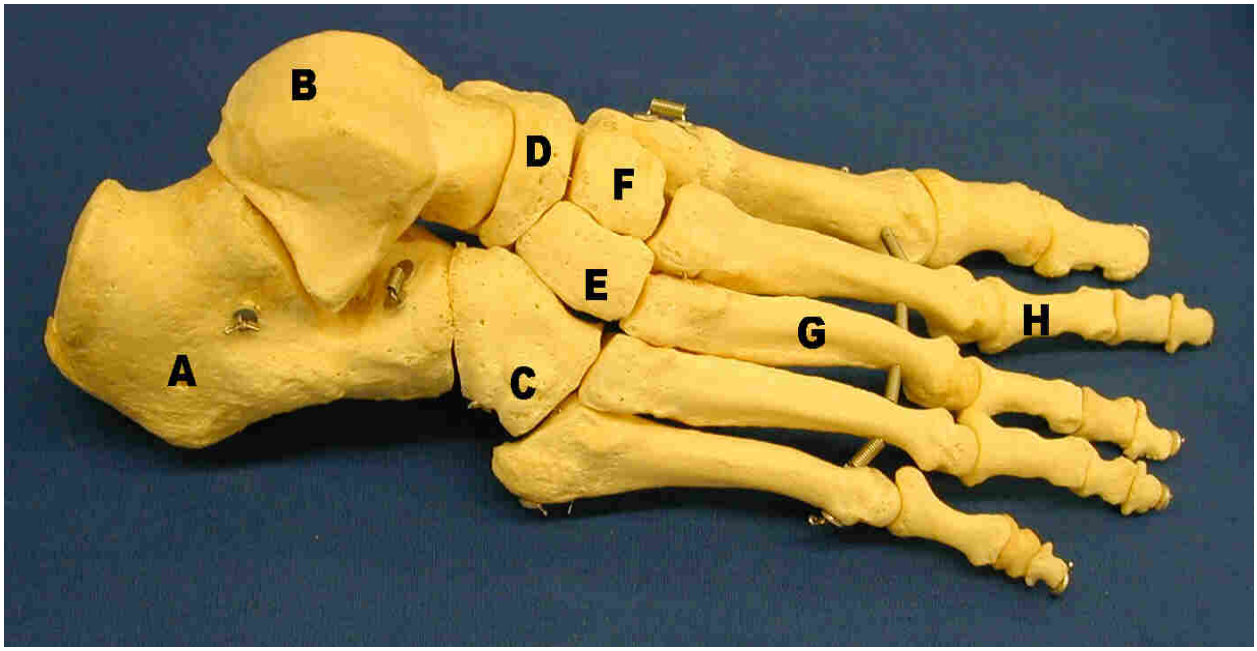
The Vertebral Column

Investigate! My Bony Body



Hand Bones

Bones of the Foot: Lateral View



Investigate! My Bony Body

Calcium

Calcium is the most abundant mineral found in the body. About 99% of the calcium in the body is found in bones. Calcium is used for building bones and teeth and in maintaining bone mass. It plays a role in blood clotting, muscle contraction, nerve transmission, and cell metabolism. A diet deficient in calcium can lead to the condition called osteoporosis. This is characterized by the loss of bone mass, and can lead to loss of teeth and bone fractures.

What foods are included in the milk, yogurt, and cheese (milk) group?

All fluid milk products and many foods made from milk are considered part of this food group. Foods made from milk that retain their calcium content are part of the milk group, while foods made from milk that have little to no calcium, such as cream cheese, cream, and butter, are not. Most milk group choices should be fat-free or low-fat. Milk products are the primary source of calcium in American diets. Diets that provide 3 cups or the equivalent of milk products per day can improve bone mass.

Health benefits and nutrients

- Diets rich in milk and milk products help build and maintain bone mass throughout the lifecycle. This practice may reduce the risk of osteoporosis.
- The intake of milk products is especially important to bone health during childhood and adolescence, when bone mass is being built.
- Diets that include milk products tend to have a higher overall nutritional quality.
- Foods in the milk group provide nutrients that are vital for health and maintenance of your body. These nutrients include calcium, potassium, vitamin D, and protein.

Investigate! The New Food Pyramid

Standards References

MATH GLEs
Grade 5: 21, 24, 28
Grade 6: 26
Grade 7: 5, 24, 31
Grade 8: 8, 36

HEALTH Benchmarks
1-M-2
2-M-1
3-M-1

Materials

1. protractors
2. paper plates
3. MyPyramid guidelines
4. MyPyramid Food Intake Pattern Calorie Levels chart
5. Anatomy of *MyPyramid* Chart
6. *MyPyramid* – Steps for a Healthier You (various calorie levels)
7. calculator
8. colored pencils

Activity Overview

Participants will look at the new food pyramid and USDA guidelines. They will take this new knowledge and design a plate especially for themselves.

Key Concepts

- In 2005, the USDA issued new guidelines for healthier eating.
- *MyPyramid* symbolizes a personalized approach to healthy eating and physical activity.
- Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.
- The widths of the parts of the pyramid suggest how much food a person should choose from each group.
- A circle graph (the shape of a plate) is a good representation of your pyramid.

Procedure

Preparation: Print the *MyPyramid* Food Intake Pattern Calorie Levels, Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Have copies of the different food pyramids for various calorie levels available. For more information on *MyPyramid*, visit http://mypyramid.gov/. Prepare a sample drawing of the circle graph.

1. You will explore the new guidelines in MyPyramid and design a plate with your specific guidelines. (These will be only approximations.)
2. Look at the literature about the new food pyramid, "MyPyramid." These are more personalized guidelines which are dependent upon age, gender and amount of activity. Using the Food Intake Pattern Calorie Levels find what your daily calorie intake should be. This may be different for parent and student.
3. Find the pyramid that corresponds with your calorie pattern. Read this page to see how much of each food group you should have daily.
4. Take one paper plate and a protractor. You will make a circle graph showing what portion of your plate each group should occupy.
5. Begin by drawing a radius on your paper plate. Next, use this line and your protractor to draw a 97º angle. Use one line from that angle to draw the next angle. There are exactly 360º in the circle and in the angles below. If you measure accurately, it should work out exactly.
6. Follow these **approximate** guidelines: (Use the colors from the pyramid)
   Grains - 27% = .27 of 360º = 97º angle (first angle drawn)
   Vegetables - 22% = .22 of 360º = 79º angle
   Fruits - 16% = .16 of 360º = 58º angle
   Milk - 23% = .23 of 360º = 83º angle
   Meats - 10% = .10 of 360º = 36º angle
   Oils - 2% = .02 of 360º = 7º angle
   Make sure you label each section.

Closure/Evaluation

Read and discuss your Key Concepts! What did you find out about the amount of each food group you should eat daily?
Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! The New Food Pyramid
LAB INSTRUCTIONS

You will explore the new guidelines in *MyPyramid* and design a plate with your specific guidelines. (These will be approximations.)

1. Look at the literature about the new food pyramid, *MyPyramid*. These are more personalized guidelines which are dependent upon age, gender and amount of activity. Using the Food Intake Pattern Calorie Levels find what your daily calorie intake should be. This may be different for parent and student.
2. Find the pyramid that corresponds with your calorie pattern. Read this page to see how much of each food group you should have daily.
3. Take one paper plate and a protractor. You will make a circle graph showing what portion of your plate each group should occupy.
4. Begin my drawing a radius on your paper plate. Next, use this line and your protractor to draw a 97º angle. Use one line from that angle to draw the next angle. There are exactly 360º in the circle and in the angles below. If you measure accurately, it should work out exactly.
5. Follow these **approximate** guidelines: (Use the colors from the pyramid). Make sure you label each section.

   Grains - 27% = .27 of 360º = 97º angle (first angle drawn)
   Vegetables - 22% = .22 of 360º = 79º angle
   Fruits - 16% = .16 of 360º = 58º angle
   Milk - 23% = .23 of 360º = 83º angle
   Meats - 10% = .10 of 360º = 36º angle
   Oils - 2% = .02 of 360º = 7º angle

Read and discuss your Key Concepts!
What did you find out about the size of your portions?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate! The New Food Pyramid – 1400 Calories

Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 5 ounces	VEGETABLES 1 1/2 cups	FRUITS 1 1/2 cups	MILK 2 cups	MEAT & BEANS 4 ounces
Make half your grains whole Aim for at least **2 1/2 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 1 1/2 cups **Orange veggies** = 1 cup **Dry beans & peas** = 1 cup **Starchy veggies** = 2 1/2 cups **Other veggies** = 4 1/2 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **4 teaspoons a day.**

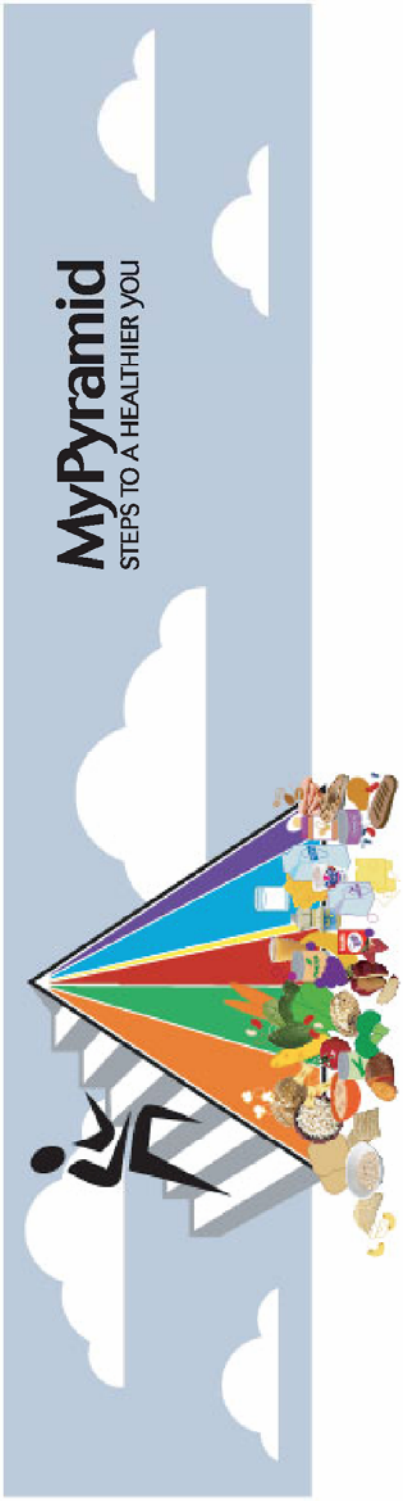
Limit extras—solid fats and sugars—to **170 calories a day.**

Your results are based on a 1400 calorie pattern.

Name: _____

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Investigate! The New Food Pyramid – 1600 Calories



Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 5 ounces	VEGETABLES 2 cups	FRUITS 1 1/2 cups	MILK 3 cups	MEAT & BEANS 5 ounces
Make half your grains whole Aim for at least **3 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 2 cups **Orange veggies** = 1 1/2 cups **Dry beans & peas** = 2 1/2 cups **Starchy veggies** = 2 1/2 cups **Other veggies** = 5 1/2 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **5 teaspoons a day.**

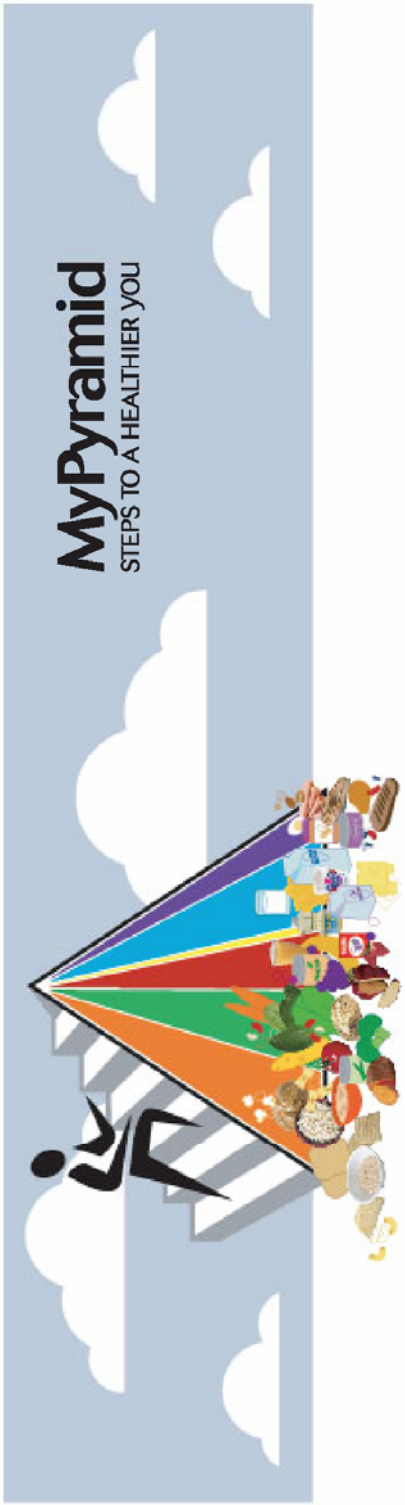
Limit extras—solid fats and sugars—to **130 calories a day.**

Your results are based on a 1600 calorie pattern.

Name: _____

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Investigate! The New Food Pyramid – 1800 Calories



Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 6 ounces	VEGETABLES 2 1/2 cups	FRUITS 1 1/2 cups	MILK 3 cups	MEAT & BEANS 5 ounces
Make half your grains whole Aim for at least **3 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 3 cups **Orange veggies** = 2 cups **Dry beans & peas** = 3 cups **Starchy veggies** = 3 cups **Other veggies** = 6 1/2 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **5 teaspoons a day.**

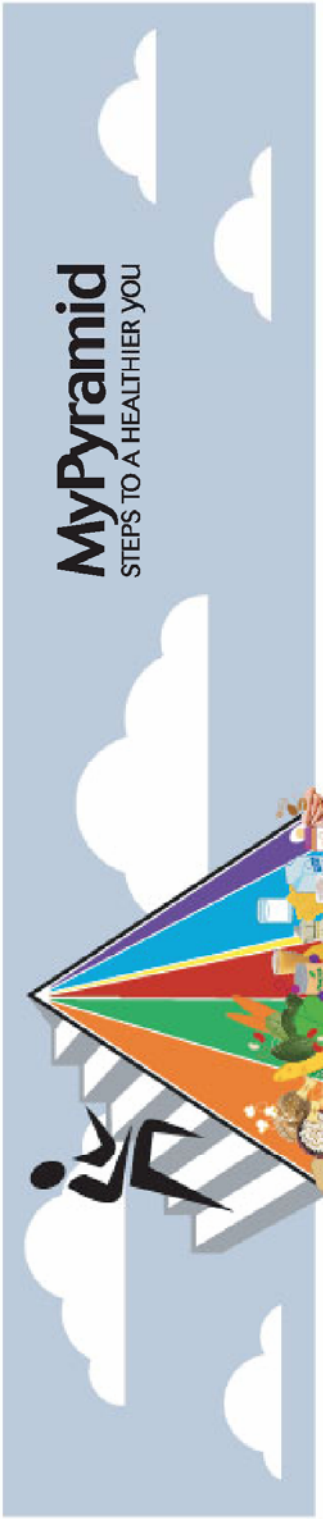
Limit extras—solid fats and sugars—to **195 calories a day.**

Your results are based on a 1800 calorie pattern.

Name: _____

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Investigate! The New Food Pyramid – 2000 Calories



Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 6 ounces	VEGETABLES 2 1/2 cups	FRUITS 2 cups	MILK 3 cups	MEAT & BEANS 5 1/2 ounces
Make half your grains whole Aim for at least **3 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 3 cups **Orange veggies** = 2 cups **Dry beans & peas** = 3 cups **Starchy veggies** = 3 cups **Other veggies** = 6 1/2 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **6 teaspoons a day.**

Limit extras—solid fats and sugars—to **265 calories a day.**

Your results are based on a 2000 calorie pattern.

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Name: _____

Investigate! The New Food Pyramid – 2200 Calories

Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 7 ounces	VEGETABLES 3 cups	FRUITS 2 cups	MILK 3 cups	MEAT & BEANS 6 ounces
Make half your grains whole Aim for at least **3 1/2 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 3 cups **Orange veggies** = 2 cups **Dry beans & peas** = 3 cups **Starchy veggies** = 6 cups **Other veggies** = 7 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **6 teaspoons a day.**

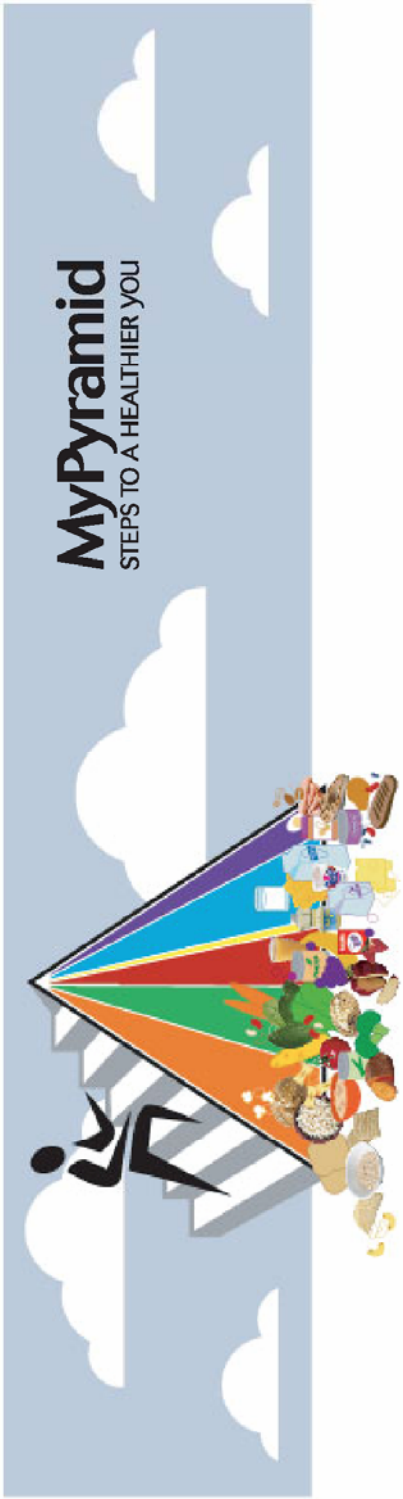
Limit extras—solid fats and sugars—to **290 calories a day.**

Your results are based on a 2200 calorie pattern.

Name: _____

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Investigate! The New Food Pyramid – 2400 Calories



Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 8 ounces	VEGETABLES 3 cups	FRUITS 2 cups	MILK 3 cups	MEAT & BEANS 6 1/2 ounces
Make half your grains whole Aim for at least **4 ounces** of whole grains a day	**Vary your veggies** Aim for these amounts **each week:** **Dark green veggies** = 3 cups **Orange veggies** = 2 cups **Dry beans & peas** = 3 cups **Starchy veggies** = 6 cups **Other veggies** = 7 cups	**Focus on fruits** Eat a variety of fruit Go easy on fruit juices	**Get your calcium-rich foods** Go low-fat or fat-free when you choose milk, yogurt, or cheese	**Go lean with protein** Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds

Find your balance between food and physical activity

Be physically active for at least **30 minutes** most days of the week.

Know your limits on fats, sugars, and sodium

Your allowance for oils is **7 teaspoons a day.**

Limit extras—solid fats and sugars—to **360 calories a day.**

Your results are based on a 2400 calorie pattern.

Name: _____

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

Investigate! The New Food Pyramid

Anatomy of MyPyramid

One size doesn't fit all

USDA's new MyPyramid symbolizes a personalized approach to healthy eating and physical activity. The symbol has been designed to be simple. It has been developed to remind consumers to make healthy food choices and to be active every day. The different parts of the symbol are described below.

Activity
Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.

Moderation
Moderation is represented by the narrowing of each food group from bottom to top. The wider base stands for foods with little or no solid fats or added sugars. These should be selected more often. The narrower top area stands for foods containing more added sugars and solid fats. The more active you are, the more of these foods can fit into your diet.

Personalization
Personalization is shown by the person on the steps, the slogan, and the URL. Find the kinds and amounts of food to eat each day at MyPyramid.gov.

Proportionality
Proportionality is shown by the different widths of the food group bands. The widths suggest how much food a person should choose from each group. The widths are just a general guide, not exact proportions. Check the Web site for how much is right for you.

Variety
Variety is symbolized by the 6 color bands representing the 5 food groups of the Pyramid and oils. This illustrates that foods from all groups are needed each day for good health.

Gradual Improvement
Gradual improvement is encouraged by the slogan. It suggests that individuals can benefit from taking small steps to improve their diet and lifestyle each day.

USDA U.S. Department of Agriculture Center for Nutrition Policy and Promotion April 2005 CNPP-16

USDA is an equal opportunity provider and employer.

Investigate! The New Food Pyramid

MyPyramid Food Intake Pattern Calorie Levels

MyPyramid assigns individuals to a calorie level based on sex, age, and activity level. The chart below identifies the calorie levels for males and females by age and activity level. Calorie levels are provided for each year of childhood, from 2-18 years, and for adults in 5-year increments.

	MALES				FEMALES		
Activity level	Sedentary*	Mod. active*	Active*	**Activity level**	Sedentary*	Mod. active*	Active*
AGE				**AGE**			
2	1000	1000	1000	**2**	1000	1000	1000
3	1000	1400	1400	**3**	1000	1200	1400
4	1200	1400	1600	**4**	1200	1400	1400
5	1200	1400	1600	**5**	1200	1400	1600
6	1400	1600	1800	**6**	1200	1400	1600
7	1400	1600	1800	**7**	1200	1600	1800
8	1400	1600	2000	**8**	1400	1600	1800
9	1600	1800	2000	**9**	1400	1600	1800
10	1600	1800	2200	**10**	1400	1800	2000
11	1800	2000	2200	**11**	1600	1800	2000
12	1800	2200	2400	**12**	1600	2000	2200
13	2000	2200	2600	**13**	1600	2000	2200
14	2000	2400	2800	**14**	1800	2000	2400
15	2200	2600	3000	**15**	1800	2000	2400
16	2400	2800	3200	**16**	1800	2000	2400
17	2400	2800	3200	**17**	1800	2000	2400
18	2400	2800	3200	**18**	1800	2000	2400
19-20	2600	2800	3000	**19-20**	2000	2200	2400
21-25	2400	2800	3000	**21-25**	2000	2200	2400
26-30	2400	2600	3000	**26-30**	1800	2000	2400
31-35	2400	2600	3000	**31-35**	1800	2000	2200
36-40	2400	2600	2800	**36-40**	1800	2000	2200
41-45	2200	2600	2800	**41-45**	1800	2000	2200
46-50	2200	2400	2800	**46-50**	1800	2000	2200
51-55	2200	2400	2800	**51-55**	1600	1800	2200
56-60	2200	2400	2600	**56-60**	1600	1800	2200
61-65	2000	2400	2600	**61-65**	1600	1800	2000
66-70	2000	2200	2600	**66-70**	1600	1800	2000
71-75	2000	2200	2600	**71-75**	1600	1800	2000
76 and up	2000	2200	2400	**76 and up**	1600	1800	2000

*Calorie levels are based on the Estimated Energy Requirements (EER) and activity levels from the Institute of Medicine Dietary Reference Intakes Macronutrients Report, 2002. SEDENTARY = less than 30 minutes a day of moderate physical activity in addition to daily activities. MOD. ACTIVE = at least 30 minutes up to 60 minutes a day of moderate physical activity in addition to daily activities. ACTIVE = 60 or more minutes a day of moderate physical activity in addition to daily activities. United States Department of Agriculture, Center for Nutrition Policy and Promotion, April 2005, CNPP-XX

Investigate! The New Food Pyramid

One size doesn't fit all
USDA's new *MyPyramid* symbolizes a personalized approach to healthy eating and physical activity.

Activity
Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.

Moderation
Moderation is represented by the narrowing of each food group from bottom to top. The wider base stands for foods with little or no solid fats or added sugars. These should be selected more often. The narrower top area stands for foods containing more added sugars and solid fats. The more active you are, the more of these foods can fit into your diet.

Proportionality
Proportionality is shown by the different widths of the food group bands. The widths suggest how much food a person should choose from each group. The widths are just a general guide, not exact proportions.

Variety
Variety is symbolized by the 6 color bands representing the 5 food groups of the Pyramid and oils. This illustrates that foods from all groups are needed each day for good health.

Gradual Improvement
Gradual improvement is encouraged by the slogan. It suggests that individuals can benefit from taking small steps to improve their diet and lifestyle each day.

Investigate: Proportional Portions

Standards References

MATH GLEs
Grade 5: 4, 15
Grade 6: 6
Grade 7: 2, 11
Grade 8: 7, 21

HEALTH Benchmarks
1-M-2
6-M-1

Materials

1. 2 boxes of dry cereal – one unsweetened, the other sweetened (such as corn flakes and frosted flakes)
2. Nutrition labels from both boxes of cereal
3. Cereal bowl
4. Paper plate to use as lab
5. 2 cup Measuring cups (clear)
6. Calculator
7. Copies of Student Activity Sheet

Activity Overview

Participants compare the sizes of their normal food portions to the recommended USDA serving size.

Key Concepts

- The caloric value of a certain food is based on the USDA recommended serving-size.
- Portion sizes, or the amounts individuals eat of a particular food at one sitting, tend to be larger than the recommended serving sizes.
- Candy bars, super sized fast food portions, bags of chips and other snack foods usually contain more than one serving.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Make copies of Student Activity Sheet.

You are going to compare your portion size to a recommended portion size. Then you will set up a proportion to figure the calories in your portion size.

1. Open one box of cereal and pour into the bowl the amount that you eat in a serving. Remember to pour over your lab plate to cut down on cleanup.
2. Use the measuring cup to measure the amount of cereal in your serving. (Measure to the nearest 1/8 cup)
3. According to the USDA, a serving of dry cereal is 1 ounce (usually ¾ to 1 cup). Check the nutrition label from the box the cereal came in to see what is considered a serving. Write this number on your activity sheet. Is your serving more or less than a serving? The caloric value of cereals vary greatly too, depending upon the amount of sugar in the cereal. Read the label to see how many calories are in one serving. Write this number under the serving size (as a ratio or fraction).
4. Now write the size of your serving across from the first number. Set up and solve a proportion to figure the total calories of your serving.
5. Pour the cereal back into the box and repeat the same procedure with the second cereal. Remember to read the nutrition label because the size and caloric value may be different.
6. Clean up your station.

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss how their normal portion sizes affect the caloric value.

Investigate! Proportional Portions
LAB INSTRUCTIONS

You are going to compare your portion size to a recommended portion size. Then you will set up a proportion to figure the calories in your portion size.

1. Open one box of cereal and pour into the bowl the amount that you eat in a serving. Remember to pour over your lab plate to cut down on cleanup.
2. Use the measuring cup to measure the amount of cereal in your serving. (Measure to the nearest 1/8 cup)
3. According to the USDA, a serving of dry cereal is 1 ounce (usually ¾ to 1 cup) Check the nutrition label from the box the cereal came in to see what is considered a serving. Write this number on your activity sheet. Is your serving more or less than a serving? The caloric value of cereals vary greatly too, depending upon the amount of sugar in the cereal. Read the label to see how many calories are in one serving. Write this number under the serving size (as a ratio or fraction).
4. Now write the size of your serving across from the first number. Set up and solve a proportion to figure the total calories of your serving.
5. Pour the cereal back into the box and repeat the same procedure with the second cereal. Remember to read the nutrition label because the size and caloric value may be different.
6. Clean up your station. Replace all other materials as you found them.

Read and discuss your Key Concepts!

What did you find out about the size of your portions?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate: Proportional Portions

Student Activity Sheet

My portion size is _____cup(s) and _____ cup(s).
(sweetened cereal) (unsweetened cereal)

Proportion to figure calories of my portion

$$\frac{\text{Serving size from label}}{\text{Calories per serving from label}} = \frac{\text{Your portion}}{X}$$

Cross multiply and divide to find the number of calories in your serving.

Sweetened Cereal:

Unsweetened Cereal:

Whatever the food you choose, eat a sensible portion size. Knowing the size of a serving can help you determine your portions – the amount of a particular food you eat at a time. Here are some examples of serving sizes, for use in gauging your portions:

What is a serving?	About the size of a ..	What is a serving?	About the size of a ..
½ c. of veg. or fruit	computer mouse	½ c. cooked rice	computer mouse
1 c. raw, leafy veg.	baseball	1 c. dry cereal	baseball
10 French fries	deck of cards	2 oz. string cheese	two markers
1 slice of bread	one CD case	1 ½ oz. cheese	C battery
1 tortilla	7 inches round	2-3 oz. of meat	deck of cards
1 sm. Potato	computer mouse	2 TBS peanut butter	roll of film
½ c. beans	computer mouse	1/2c. cooked pasta	computer mouse

Investigate! Proportional Portions

Did you ever stop to consider if the portions of food you are eating are the "right" size? When trying to determine the caloric value of a meal, you first must examine your portion size. Many foods, such as candy bars, individual bags of chips, and super-sized fast food selections, contain more than one serving. In fact, most candy bars have at least two servings! It's easy to think that a candy bar or bag of chips would be one serving! Sometimes labels on foods lead you to believe that the calories listed are for the entire amount of food in the package.

When reading nutrition labels on packages, the first place to look is the serving size and the number of servings in a package. Serving sizes are standardized to make it easier to compare similar foods. They are given in familiar units, such as cups or pieces, followed by the metric amount.

The size of the serving on the package influences the number of calories and all the nutrient amounts listed on the label. **Pay attention to serving size. Then ask yourself, "How many servings am I consuming?"** (e.g., ½ serving, 1 serving, or more) In the sample label, one serving of macaroni and cheese equals one cup. If you ate the entire package, you would eat **two** cups. That doubles the calories and other nutrient numbers.

Investigate! Proportional Portions

Example					
	Single Serving	**%DV**		**Double Serving**	**%DV**
Serving Size	**1 cup (228g)**			**2 cups (456g)**	
Calories	**250**			**500**	
Calories from Fat	110			220	
Total Fat	12g	18%		24g	36%
Trans Fat	1.5g			3g	
Saturated Fat	3g	15%		6g	30%
Cholesterol	30mg	10%		60mg	20%
Sodium	470mg	20%		940mg	40%
Total Carbohydrate	31g	10%		62g	20%
Dietary Fiber	0g	0%		0g	0%
Sugars	5g			10g	
Protein	5g			10g	
Vitamin A		4%			8%
Vitamin C		2%			4%
Calcium		20%			40%
Iron		4%			8%

Investigate! Pump It Up

Standards References

MATH GLEs
Grade 5: 8, 28, 33
Grade 6: 29, 30, 37
Grade 7: 6, 7, 40
Grade 8: 8, 39

HEALTH Benchmarks
1-M-3
3-M-2

Materials

1. clock with second hand
2. chart of Amount of Blood in Your Body
3. student Activity Sheet
4. 12 ½ cups of water in gallon jug (may want to put in food coloring
5. scale for participants to weigh themselves

Activity Overview

Participants figure their heart rate and the amount of blood that pumps through their bodies.

Key Concepts

- Your heart pumps blood throughout your body.
- The easiest place to feel your pulse is near one of the two big arteries in your neck.
- The more and faster you move, the faster your heart beats.
- The amount of blood in your body depends upon how much you weigh.
- You can figure the amount of blood in your body by discovering the pattern from the data in the pictograph.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Fill a gallon jug with 12 ½ cups of water. (You may want to add food coloring.) Have copies of Measuring Body Blood available.

You will begin by figuring out your heart rate at rest and after exercising. Then you will compute how many cups of blood pump through your own heart.

1. The easiest place to feel your pulse is near one of the big arteries in your neck. Place two fingers just under one of your ears. Slide your fingers down and forward a little under your jawbone. Press your fingertips in just a tiny bit. There's your pulse!
2. Count the number of beats for 10 seconds. Have someone else watch the time and tell you when to start and stop. How many times did your heart beat in 10 seconds? Multiply this number by 6 to see how many times your heart will beat in 60 seconds or 1 minute. This figure is your resting heart rate.
3. Next, do jumping jacks for one minute. Then take your pulse again following the same procedure as above. Compare your resting heart rate with that after exercising. Figure what percent your heart rate went up.
4. Now you are going to figure how much blood is in your body. This depends upon your weight. In the jug is the amount of blood that a person weighing 100 pounds has. Look at the pictograph. Make an input/output chart for the information given. Do you see a pattern? Now continue the chart until you reach the highest weight in your family. This will tell you about how much blood each member of your family has.
5. Read and discuss your Key Learnings! What did you find out about your heart rate?
6. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss what they learned about their heart rate and the amount of blood in each person's body.

Investigate! Pump It Up
LAB INSTRUCTIONS

You will begin by figuring out your heart rate at rest and after exercising. Then you will compute how many cups of blood pumps through your own heart.

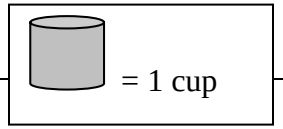
1. The easiest place to feel your pulse is near one of the big arteries in your neck. Place two fingers just under one of your ears. Slide your fingers down and forward a little under your jawbone. Press your fingertips in just a tiny bit. There's your pulse!
2. Count the number of beats for 10 seconds. Have someone else watch the time and tell you when to start and stop. How many times did your heart beat in 10 seconds? Multiply this number by 6 to see how many times your heart will beat in 60 seconds or 1 minute. This figure is your resting heart rate. Record it on your activity sheet.
3. Next, do jumping jacks for one minute. Then take your pulse again following the same procedure as above. Compare your resting heart rate with that after exercising. Figure what percent your heart rate went up.
4. Now you are going to figure how much blood is in your body. This depends upon your weight. In the jug is the amount of blood that a person weighing 100 pounds has. Look at the pictograph. Make an input/output chart for the information given. Do you see a pattern? Now continue the chart until you reach the highest weight in your family. This will tell you about how much blood each member of your family has.

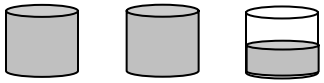
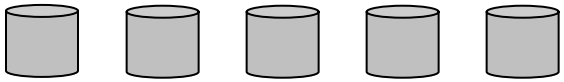
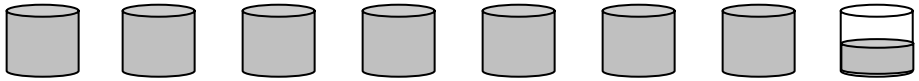
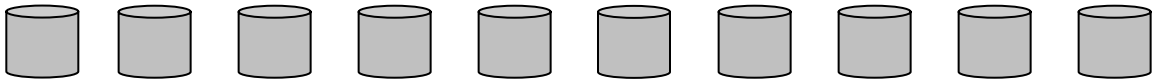
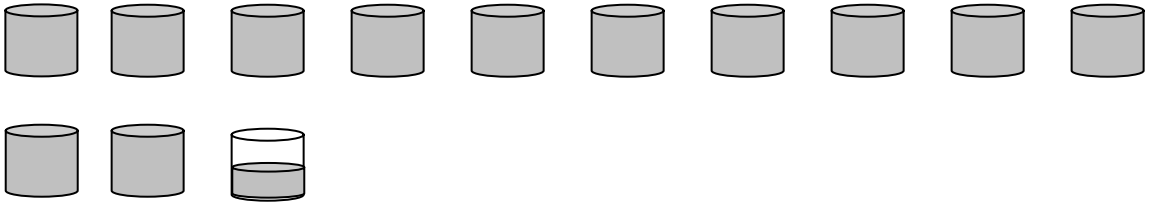
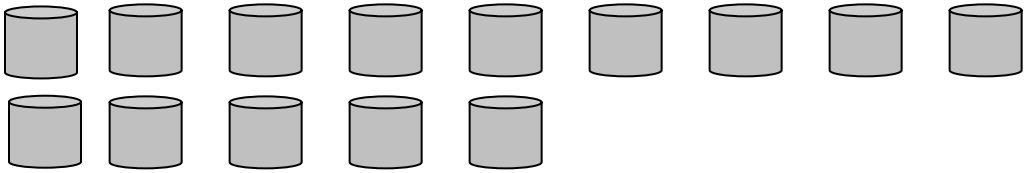
Read and discuss your Key Learnings!

What did you find out about the size of your portions?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate! Pump It Up

How Much Blood



Weight	Cups of Blood in the Body
20 pounds	
40 pounds	
60 pounds	
80 pounds	
100 pounds	
120 pounds	

Investigate! Pump It Up
Student Activity Sheet

1. My resting heart rate is _____ .
2. My pulse after exercising is _____
3. Compare your resting heart rate with that after exercising. To figure what percent your heart rate went up:

   Subtract your resting rate from your exercising rate

   Now divide that number by the resting heart rate. This will give you a decimal number. To change a decimal to a percent, multiply by 100.

4. Make an input/output chart for the information given.

Input (weight) X	Output (cups of blood) Y

Rule for table: _____

Now continue the chart until you reach the highest weight of everyone in your family. This will tell you about how much blood each member of your family has.

Read and discuss your Key Learnings!

What did you find out about your heart rate?

Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! Pump It Up

Heart rate reflects the amount of work the heart must do. The heart rate (HR) is one of the simplest and most informative of the cardiovascular factors. The resting HR represents the minimum number of heart beats needed to sustain the body. It should be taken first thing in the morning upon waking and before getting out of bed. Normal resting HR vary from individual to individual. However, a resting HR that is *below 84 beats per minute* is considered good. The higher resting HR does not indicate cardiovascular disease but lack of aerobic conditioning. Physical condition, exercise, and stress have an affect on resting heart rates.

Average resting HR are:

- Children 1 to 10 years: 70 to 120 beats per minute
- Children over 10 and adults: 60 to 100 beats per minute
- Well-trained athletes: 40 to 60 beats per minute

Drugs affect the resting heart rate. Drugs such as caffeine and those found in cold medications raise the heart rate and do not give a true indication of the resting count. Some drugs, such as LSD, have been known to increase the resting heart rate for months after a single dose has been taken.

The heart of a normal individual beats about 40 million times a year. During this time, over 4,000 gallons, or 10 tons, of blood are circulated each day, and every night the heart's workload is equivalent to a person carrying a thirty pound pack to the top of the 102 story Empire State Building.

Sudden cardiac death occurs in 400,000 to 460,000 people in the United States each year. An elevated resting HR was one of three relatively simple heart rate tests that seem to predict a person's future risk of sudden cardiac death, according to a study in the *New England Journal of Medicine.*

Investigate! Snacking the Healthy Way

Standards References

MATH GLEs
Grade 5:
Grade 6: 34
Grade 7: 35
Grade 8: 34, 42, 43

HEALTH Benchmarks
1-M-2
3-M-1
4-M-5
6-M-1

Materials

1. set of cards – Which Is Healthier (cut sheets apart into individual cards and put in sandwich bag)
2. set of cards - 10 Great Foods and 10 Not-So-Great Foods (cut sheets apart into individual cards and put in sandwich bag)
3. answer key for cards
4. blank paper for combination activity

Activity Overview

Participants will look at different snacks and decide which would be most nutritious to eat. Different combinations of ingredients can give more variety when preparing snacks.

Key Concepts

- When deciding on what snack to eat, pick foods to fill in your Pyramid gaps.
- If you snack on foods that have some fat or sugars keep it sensible.
- Slow down, eat and enjoy your snacks. Eating too fast does not allow time for your brain to get the message from your stomach.
- Make snack drinks count toward food-group servings.
- Different combinations of ingredients can give more variety when preparing snacks.
- A tree diagram can be used to show all of the different combinations that can be made from several choices.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Print and cut apart cards on healthy choices. Place the cards in a sandwich bag.

In this activity, you will predict which snacks are healthiest. Then you will use a tree diagram or chart to make as many different flavors of juice floats as possible when given certain ingredients to use.

1. Using the cards, *Which is Healthier*, decide which snack or food choice is most nutritious. Read the reasons given for the dietitian's choice.
2. Now you will separate the second set of cards into two stacks – 10 Great Foods and 10 Not-So-Great Foods
3. Use the different ingredients provided to make as many different kinds of smoothies as possible. You many use only one ingredient from each category. Use a tree diagram for this activity.
4. Read and discuss your Key Concepts! What did you find out about choices made when snacking?
5. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and decide if the snacks you usually eat are the healthiest choices.

Investigate! Snacking the Healthy Way
LAB INSTRUCTIONS

In this activity, you will predict which snacks are healthiest. Then you will use a tree diagram or chart to make as many different flavors as juice floats as possible when given certain ingredients to use.

1. Using the cards, Which is Healthier, decide which snack or food choice is most nutritious. Check your answers with the answer key. Read the reasons given for the dietitian's choice.

2. Now you will separate the second set of cards into two stacks – 10 Great Foods and 10 Not-So-Great Foods. Check your answers with the key.

3. Use the different ingredients provided to make as many different kinds of smoothies as possible. You must use only one ingredient from each category. For example, you can make a juice float with orange juice, plain yogurt and fresh fruit. (A tree diagram can help you find all of the combinations.) List all of the different combinations.

Fruit Juice	**Fozen Yogurt**	**Add-Ins**
Orange	Plain	Fresh fruit
Grape	Vanilla	Nuts
Apple	Strawberry	Granola
Pineapple		

4. You should have found 36 different Juice Floats to make!

Read and discuss your Key Concepts!
What did you find out about choices made when snacking?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate! Snacking the Healthy Way

Which Is Healthier?

A ham, egg and cheese English muffin sandwich OR Plain bagel with 2 oz. cream cheese	Peanut butter and jelly on white bread (with 2 Tbsp each peanut butter and jelly) OR Roast beef on a white roll (3 0z. sliced lean roast beef)
Fast food Cobb salad with crispy chicken and dressing OR Fast food cheeseburger	1 oz. salted dry-roasted peanuts OR 1 oz. plain salted pretzels

Investigate! Snacking the Healthy Way

The Centre for Science in the Public Interest (CPSI) has created a list of 10 great and 10 not-so-great foods for kids.

Divide the cards below into two categories – Great and Not-So-Great Foods.

Skinless chicken breast & drumstick	Whole milk	Seasoned, air-popped Popcorn
Chocolate candy bar	Skim or 1% milk	Hamburgers
Extra lean ground beef burgers	Low-fat hot dogs	Ice cream

Investigate! Snacking the Healthy Way

Animal crackers	Whole grain, low sugar cereals	Hot dogs
Soft drinks	Cheesy, pepperoni pizza	Fresh fruits and veggies
Bologna	French fries	American cheese (like cheese slices)
Fat-free potato chips	Non-fat frozen yogurt	

Investigate! Snacking the Healthy Way

Answer key for cards

Which is Healthier? According to Elisa Zied, RD:

Ham, Egg and Cheese English muffin sandwich is the better choice because it has fewer calories (cream cheese is high calorie) and less artery-clogging saturated fat and more protein, which builds muscle and keeps you feeling full.

The roast beef sandwich is the better choice because lean roast beef has more protein and iron, which gives you energy and protects against infection. Just be sure to order lean roast beef – regular roast beef is high in fat.

The peanuts are a better choice because peanuts have more protein and fiber, which helps you feel full and may lower cholesterol. Peanuts do have more fat, but it's mostly unsaturated – the good kind.

The cheeseburger is the better choice because it has fewer calories (310 versus 490) and less than half the fat. The salad's crispy (fried) chicken and high-fat dressing make it a bad choice.

10 not-so-good foods	10 great foods
soft drinks	fresh fruits and veggies
hamburgers	chicken breast & drumstick (without skin)
hot dogs	whole-grain cereal
whole milk	skim or 1% milk
American cheese	extra-lean burger
French fries	low-fat hot dogs
pizza	fat-free potato chips
chocolate candy bar	air-popped popcorn
ice cream	animal crackers
bologna	non-fat frozen yogurt

Investigate! Snacking the Healthy Way

Is snacking okay? Yes! Growing preteens need more energy and nutrients than do younger children. That nourishment can come from snacking: mostly low-fat choices from the food groups, less high-fat, low-nutrient snack choices, and not overdoing it with "too much" of a high-calorie food. Be careful on serving sizes for snacks. Remember snacks should be a small percentage of your daily calories.

How do snacks fit in? No matter what your age, snacks can help you fill in the Pyramid gaps by helping you get enough of the foods and nutrients your body needs. Make snacks count toward food-group servings by choosing:

- *Plenty from the Grain Group:* whole-grain bagel, pretzels, popcorn, muffin, breakfast cereal, or oatmeal cookie, among others.
- *More from the Vegetable and Fruit Groups:* raw vegetables, dried fruits, frozen fruit-juice bars made with 100% fruit juice, or whole fruits.
- *Enough from the Milk Group:* string cheese, low-fat yogurt, frozen yogurt, or flavored or unflavored low-fat milk.
- *Enough from the Meat & Beans Group:* hard-cooked egg, slice of lean meat, or peanuts.
- *Less often Fats, Oils, and Sweets:* soda or candy.

Make Drinks Count!

More milk:

- Choose flavored low-fat and fat-free milk—chocolate, strawberry, or other flavors—for a sweet and fun treat.
- Make a Cool Smoothie fast in the blender: low-fat milk, or yogurt, plus juice, and/or cut-up fruits.
- Choose 1% milk for the same amount of calcium but less fat and fewer calories than whole milk.

More juice:

- Drink 100% fruit juice.
- Make a Juice Float for an easy and delicious thirst quencher: several fruit juices and frozen-fruit yogurt.
- Freeze boxes or cans of juice; tuck them in your backpack for later.

Less soda:

- Drink water if you like to sip while you read, watch TV, or work on the computer.
- Order the regular-size drink instead of the large, jumbo, or super-size cup.

Investigate! Sugar – How Much Is Too Much?

Standards References

MATH GLEs
Grade 5: 8, 28
Grade 6: 29, 30, 32
Grade 7: 32
Grade 8:

HEALTH Benchmarks
1-M-2
3-M-1
6-M-1

Materials

1. copies of student activity sheet
2. calculators
3. kitchen scale that measures in grams (preferably with dish to hold food)
4. sugar in tub or bowl
5. scoop for sugar

Activity Overview

Participants will construct a graph designed to create an awareness of high levels of sugar found in desserts. A scale will be used to weigh different amounts of sugar found in certain desserts.

Key Concepts

- Health experts agree that most Americans consume too much sugar which leads to many health problems, including obesity and tooth decay.
- Sugar or sucrose is defined as a simple carbohydrate derived from sugar cane and sugar beets. Other sugars on the market include fructose, glucose, lactose and maltose.
- Desserts and snacks contain large amounts of sugar and have very little nutritional value.
- A stem-and-leaf plot is a way to compare the number of grams of sugar in food items.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Set up scale, sugar, etc. for weighing. Have copy of directions for making stem-and-leaf plot.

You will look at the sugar content of various dessert choices and then compare them by making a stem-and-leaf plot.

1. Look at the chart on the student activity sheet. This chart lists some favorite desserts and the amount of sugar in each. Pick one dessert that you eat often. Using the scoop, measure out the amount of sugar that you think is in the dessert. Use the scale to weigh the sugar. Were you correct? Is there more sugar than you realized in the dessert?
2. Use the data from the table to make a stem-and-leaf plot. (If you don't know how to make a stem-and-leaf plot, refer to "Directions for a Stem-and-leaf Plot.") Then answer the questions on the student activity sheet.
3. Read and discuss your Key Concepts! What did you find out about the amount of sugar found in desserts and what it does to your body?
4. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss the sugar content in foods and what sugar does to your body.

Investigate! Sugar – How Much Is Too Much?

LAB INSTRUCTIONS

You will look at the sugar content of various dessert choices, and then compare them by making a stem and leaf plot.

1. Look at the chart on the student activity sheet. This chart lists some favorite desserts and the amount of sugar in each. Pick one dessert that you eat often. Using the scoop, measure out the amount of sugar that you think is in the dessert. Use the scale to weigh the sugar. Were you correct? Is there more sugar than you realized in the dessert?

2. Use the data from the table to make a stem and leaf plot. (If you don't know how to make a stem and leaf plot refer to "Directions for a Stem and Leaf Plot.") Then answer the questions on the student activity sheet.

Read and discuss your Key Concepts!

What did you find out about the amount of sugar found in desserts and what it does to your body?

Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! Sugar – How Much Is Too Much?

Stem and Leaf Plots

When there are many numbers in a set of data, one way to show the data and make it easy to read is to construct a stem-and-leaf plot.

- Find the least number and the greatest number in the set of numbers. Make note of the digit in the tens place of each of these numbers.
  Example: In our data, 4 is the least number and 45 is the greatest number. "0" is the number in the tens place of 4, and "4" is the number in the tens place of 45.
- On the stem and leaf plot drawn on the student sheet, write the digits in the tens places from 0 through 4 to the left of the line. The tens digits form the stems.

Stem	Leaves
0	
1	
2	
3	
4	

- The units digits are written to the right of the line. They form the leaves.

Stem	Leaves
0	4 9 (all of the numbers with 0 in the tens place)
1	(list here all of the numbers with 1 in the tens place)
2	
3	
4	

- Finally, rewrite the units digits in each row from the least to greatest.

Investigate! Sugar – How Much Is Too Much?

Student Activity Sheet

Below is a chart of some favorite desserts and their sugar content. Use the information to make a stem-and-leaf plot.

Dessert	Sugar (g)	Dessert	Sugar (g)
Apple pie	28	Brownie	17
Carrot cake with frosting	47	Cherry cheesecake	28
Chocolate chip cookie	4	Chocolate fudge cake	20
Chocolate ice cream	14	Chocolate pudding	19
Doughnut, raspberry	17	Ice cream cone	23
Caramel custard	26	Fruit cocktail	22
Ginger bread	20	Ice cream sandwich	16
Oatmeal cookie	9	Pecan pie	45
Flavored ice cream bar	11	Pumpkin pie	18
Strawberry gelatin	19	Vanilla ice cream	13

Stems	Leaves

Which dessert has the most sugar?

Which dessert has the least sugar?

Order the numbers, and then circle the median (middle number).

Find the mean (average) for the amount of sugar in desserts. (Add all of the amounts, then divide by the number of numbers:20)

Investigate! Sugar – How Much Is Too Much?

Foods high in both sugars and fat contain calories but often are low in vitamins, minerals, or fiber.

People who do not need many calories or who must restrict their food intake need to choose nutrient-rich foods from the five major food groups with special care. They should obtain most of their calories from foods that contain a high proportion of essential nutrients.

Some foods that contain a lot of sugars supply calories but few or no nutrients. These foods are located at the top of the pyramid. For very active people with high calorie needs, sugars can be an additional source of energy. However, because maintaining a nutritious diet and a healthy weight is very important, sugars should be used in moderation by most healthy people and sparingly by people with low calorie needs. This guideline cautions about eating sugars in large amounts and about frequent snacks of foods and beverages containing sugars that supply unnecessary calories and few nutrients.

Both sugars and starches can promote tooth decay. The more often you eat foods that contain sugars and starches and the longer these foods are in your mouth before you brush your teeth, the greater the risk for tooth decay. Thus, frequent eating of foods high in sugars and starches may be harmful to your teeth.

Advice for today

Use sugars in moderation -- sparingly if your calorie needs are low. Avoid excessive snacking, and brush and floss your teeth regularly.

Investigate! What's Your BMI?

Standards References

MATH GLEs
Grade 5: 8, 12, 15, 23
Grade 6: 9, 12
Grade 7: 5, 22
Grade 8: 5, 35

HEALTH Benchmarks
1-M-2
3-M-1
3-M-2
6-M-4

Materials

1. 2 tape measures taped to the wall
2. scale that measures weight in pounds
3. student activity sheet
4. BMI chart for boys and BMI chart for girls
5. calculators

Activity Overview

Participants will find their BMI (Body Mass Index) and discover what it can tell you about your health.

Key Concepts

- Body Mass Index (BMI) is just one of many factors related to developing a chronic disease (such as heart disease, cancer, or diabetes).
- In children and teens, body mass index is used to assess underweight, overweight, and risk for overweight.
- BMI for children, also referred to as BMI-for-age, is gender and age specific.
- By using a mathematical formula, you can determine your BMI if you know your weight and height.

Procedure

Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials. Copy BMI charts for boys and girls onto cardstock. Tape 2 tape measures to the wall (one on top of the other) for students and parents to measure heights. A nurse or dietitian could assist with monitoring this station. For more information concerning BMI, visit the CDC website at http://www.cdc.gov/nccdphp/dnpa/bmi/index.htm.

One of the biggest questions guys and girls have as they grow and develop is whether they're the right weight. One place to start is by learning about body mass index, or BMI, a calculation that estimates how much body fat a person has based on his or her weight and height. Although you can calculate BMI on your own, it's a good idea to ask a doctor or health professional to help you figure out what it means.

1. Refer to the student activity sheet on how to find your BMI.
2. Students: find the BMI chart for your gender. Look along the X-axis and find your age. Look along the Y-axis and find your BMI number. Go up and over to where these two intersect. Finally, follow the curved line to see which percentile you are between and see what it means.
3. Parents: For adults, use your BMI # and the chart on the Key Concepts page.
4. Read and discuss your Key Concepts! What did you find out about your BMI and what it may mean?
5. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation

After completing the activity, families read the information found under "Key Concepts" and discuss your BMI and what it may mean.

Investigate! What's Your BMI?
LAB INSTRUCTIONS

One of the biggest questions guys and girls have as they grow and develop is whether they're the right weight. One place to start is by learning about body mass index, or BMI, a calculation that estimates how much body fat a person has based on his or her weight and height. Although you can calculate BMI on your own, it's a good idea to ask a doctor or health professional to help you figure out what it means.

1. Refer to the student activity sheet on how to find your BMI.

2. Students: find the BMI chart for your gender. Look along the X-axis and find your age. Look along the Y-axis and find your BMI #. Go up and over to where these two intersect. Finally, follow the curved line to see which percentile you are between and see what it means.

3. Parents: For adults, use your BMI # and the chart on the Key Concepts page.

Read and discuss your Key Concepts!

What did you find out about your BMI and what it may mean?
Be sure to write what you have learned and stamp your
Passport to Good Health!

Investigate! What's Your BMI?

Student Activity Sheet

1. The first step in computing your BMI is to find your height in inches and your weight in pounds. Use the tape measure and scale provided to get these measurements. Record your measurements. Ht.: _____ Wt.: ____
2. Because most of the world uses the metric system, the BMI charts are determined by height in meters and weight in kilograms. So the next step is to change your customary units to metric units by using the following formulas.
   - Change weight in pounds (lbs.) to kilograms (kg):
     ____ lb. ÷ 2.2 kg = _____weight in kg
   - Change height in inches (in.) to meters (m):
     _____ in. ÷ 39.37 m = ____ height in m
   - Now, square your height in meters:
     ___ m x ____ m = ____ m^2
   - Now figure your BMI:
     _____ (weight in kg) ÷ _____ (height in meters)^2 = BMI # _____

   Round your BMI to the nearest whole number.

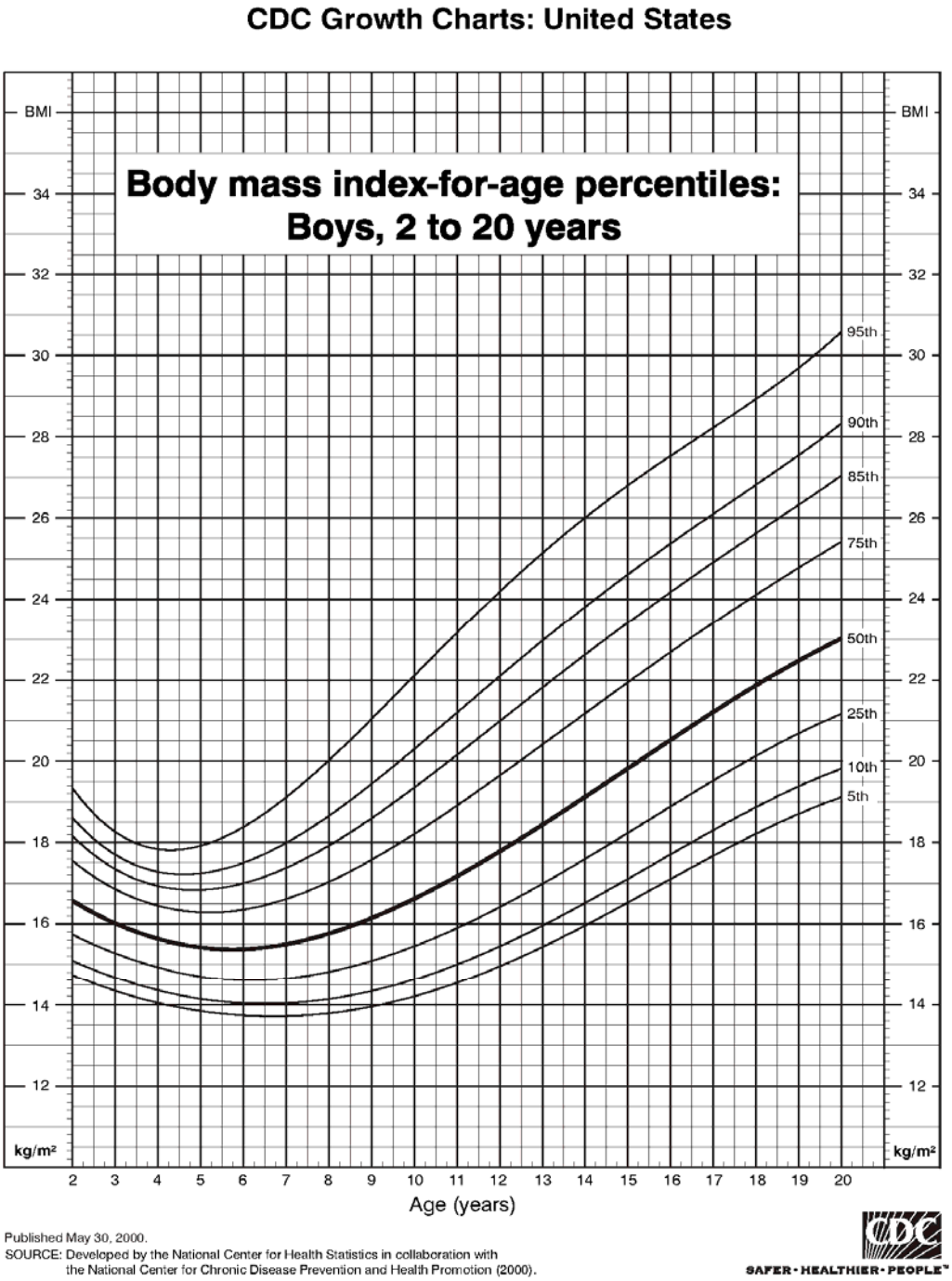
<u>Students</u>: find the BMI chart for your gender. Look along the X-axis and find your age. Look along the Y-axis and find your BMI #. Go up and over to where these two intersect. Finally, follow the curved line to see which percentile you are between.

Look at the chart below to see if you are within the normal weight range for your age and gender.

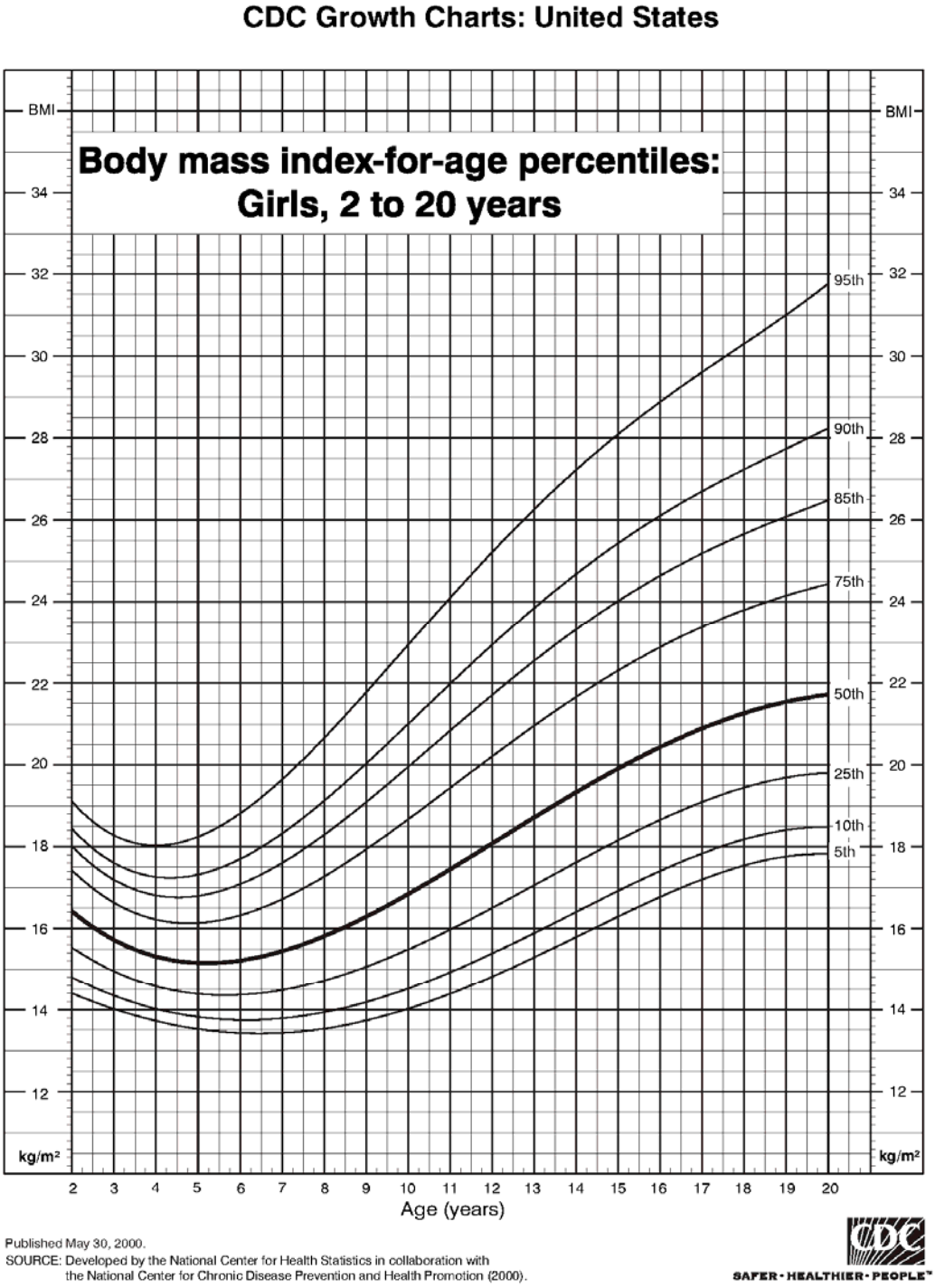
	BMI-for-age
Underweight	< 5th percentile
Normal	5th percentile to < 85th percentile
At risk of overweight	85th percentile to < 95th percentile
Overweight	≥ 95th percentile

<u>Parents</u> – refer to the chart on the Key Concepts page.

Investigate! What's Your BMI?



Investigate! What's Your BMI?



Looking at Nutrition through Core Content
Middle Chart

Investigate! What's Your BMI?

There's no one perfect body size. So don't waste your time trying to look like someone you're not. Don't try to compare yourself to the fashion models, popular athlete, movie stars or even your best friend. Be yourself. Be proud and happy with who you are. So you have calculated your BMI and found which weight category your BMI matches. What does this all mean?

Body mass index, or BMI, is a new term to most people. Body mass index (BMI) is measure of body fat based on height and weight that applies to both adult men and women.

BMI is not the only indicator of health risk.
BMI is just one of many factors related to developing a chronic disease (such as heart disease, cancer, or diabetes). Other factors that may be important to look at when assessing your risk for chronic disease include:

- Diet
- Physical Activity
- Waist Circumference
- Blood Pressure
- Blood Sugar Level
- Cholesterol Level
- Family History of disease

BMI for children, also referred to as BMI-for-age, is gender- and age-specific. It is used to assess underweight, overweight, and risk for overweight.

For adults, determine your BMI based on the chart.

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

Above all: <u>Aim for a healthy weight based on your body type</u>.

Investigate! Your Height – Is It Predictable?

Standards References

MATH GLEs
Grade 5: 9, 11, 15, 20
Grade 6: 13, 18
Grade 7: 6, 7, 10, 11
Grade 8: 7, 8

HEALTH Benchmarks
1-M-1
1-M-3

Materials

1. cm measuring tape or string and meter sticks
2. calculator
3. student activity sheet

Activity Overview
Participants will take body measures and decide if they accurately predict their height. Based on height of parents and chart, students will predict their final height.

Key Concepts
- Genes, nutrition, and overall health have their effects on your height right from the beginning.
- We achieve about half of our adult height by age 2 — so, one way to predict ultimate height is simply to double the height achieved by the second birthday.
- Other ways to predict height are take information from childhood growth charts, your parents' height, and a reading of your "bone age."

Procedure
Preparation: Print the Key Concepts Card and Lab Instructions Card on heavy cardstock and place at the Explore Station with the materials.

You will measure different body parts and discover a relationship between them and your height. Then you will predict what your final height might be.

1. The easiest and most accurate way to measure your height is to stand up straight against a flat surface (wall, door). Then take a ruler and have someone else put it resting on your head parallel to the floor with the end of the ruler touching the wall. Mark this spot. Then take your tape measure and measure from that spot to the floor. Use centimeters and round to the nearest ½ centimeter. Record your height on the student activity sheet.
2. Now measure your kneeling height (height from floor to top of head when kneeling on knees). It is said that your kneeling height to your standing height is a ratio 3:4. Set up a problem to determine if this is true for your height.
3. Another proportional relationship is your arm span to your height. There is generally a 1:1 relationship between stature and arm length. Measure your arm span (from tip of one hand to tip of other had when spread wide). Is this proportional to your height?
4. Lastly, you are going to try to predict what your final height will be. There are two ways to do this.
    - Using the table on the student activity sheet, multiply your height by the percentage of final height. This is one prediction.
    - Use your parental height and gender to predict your adult height (in inches) as follows:
        For men: (height of mother + height of father + 5)/2
        For women: (height of mother + height of father – 5)/2
    - Are your predictions the same or nearly the same?
5. Read and discuss your Key Learnings! What did you find out about how proportional your body is?
6. Be sure to write what you have learned and stamp your *Passport to Good Health*!

Closure/Evaluation
After completing the activity, families read the information found under "Key Concepts" and discuss what you've learned about your height.

Investigate! Your Height: Is it Predictable?
LAB INSTRUCTIONS

You will measure different body parts and discover a relationship between them and your height. Then you will predict what your final height may be.

1. The easiest and most accurate way to measure your height is to stand up straight against a flat surface (wall or door). Have someone take a ruler and put it resting on your head parallel to the floor with the end of the ruler touching the wall. Mark this spot. Then take your tape measure and measure from that spot to the floor. Use centimeters and round to the nearest ½ centimeter. Record your height on the student activity sheet.
2. Now measure your kneeling height (height from floor to top of head when kneeling on knees). It is said that your kneeling height to your standing height is a ratio 3:4. Set up a problem to determine if this is true for your height. (See Student Activity Sheet for how to do this.)
3. Another proportional relationship is your arm span to your height. There is generally a 1:1 relationship between stature and arm length. Measure your arm span (from tip of one hand to tip of other hand when spread wide). Is this proportional to your height?
4. Lastly, you are going to predict what your final height might be. There are two ways to do this.
    - Using the table on the student activity sheet, multiply your height by the percentage of final height. This is one prediction.
    - Use your parental height and gender to predict your adult height (in inches) as follows:

      For men: (height of mother + height of father + 5)/2

      For women: (height of mother + height of father – 5)/2
    - Are your predictions the same or nearly the same?

Read and discuss your Key Concepts!

What did you find out about your height?

Be sure to write what you have learned and stamp your *Passport to Good Health*!

Investigate! Your Height – Is It Predictable?

1. Participant's Age: 1) _____ Height in cm: _____
   2) _____ _____

2. Kneeling Height in cm 1) _____ 2) _____

   To set up proportion $\frac{\text{Kneeling}}{\text{Standing}} \frac{3}{4} = \frac{\text{Participant's kneeling ht.}}{\text{Participant's standing ht.}}$

   Cross multiply (4 x kneeling ht.) and (3 x standing height)

   Are the products equal? If so, than your two heights are proportional.

3. Arm span in cm 1) _____ 2) _____
   Is this the same length as your height? If so, then your arm span is proportional to your height.

4. Now to predict your future height:

- Find your age and gender on the table below and prepare to do some simple math.

Age	Girls - % of Final Height	Boys - % of Final Height
11-12	88%	80%
12-13	92%	87%
13-14	95%	90%
14-15	98%	95%

  Your predicted future height = (Present height x 100) ÷ % from table

- Use your parental heights (if known) and gender
  For boys: (height of mother + height of father + 5) ÷ 2

  For girls: (height of mother + height of father – 5) ÷ 2

Investigate! Your Height – Is It Predictable?

If you are like most healthy people, your height is somewhere between that of your parents, closer to your father's if you are male, closer to your mother's if you are female.

Genes, nutrition, and overall health have their effects right from the beginning. Rather predictably, we achieve about half of our adult height by age 2 — so, one way to predict ultimate height is simply to double the height achieved by the second birthday. Other ways to predict height take information from childhood growth charts (see below), your parents' height, and a reading of your "bone age." Bone age is assessed by X-rays that indicate how much development has already occurred in the skeleton and how much more is possible; for example, if the growth plates are still open, more growth is likely. The closer you are to final height (by virtue of your age or the finding of closed growth plates on X-rays), the better these formulas predict height.

The observation that family members tend to be of similar stature is born out by formulas designed to predict height. One commonly quoted formula uses parental height and gender to predict adult height (in inches). For most people, this will accurately predict your height within 2 or 3 inches.

All of these methods can only approximate ultimate height; they cannot predict with precision. In addition, formulas and growth charts to predict height are based on large numbers of typical or average children and do not perform well in predicting the ultimate height of an individual child who is unusually short or tall, has been ill, or has a genetic disorder. For some conditions, including Down's syndrome, separate growth charts have been developed.