

Fit with Fiber

Grades 6-8

Math, Health



Objectives

Students will read and discuss background and vocabulary, then will use cereal boxes to graph and calculate the mean, median and mode for data collection. Graphs will be utilized to plot data. Students will analyze cereal box labels to determine the nutrient content, they then will list each ingredient and cereal in a health category based on the profile of the cereal. Students will use recommendations from My Plate to demonstrate an understanding of the functions of fiber in the body and make suggestions for increasing fiber in the diet.

Vocabulary

bulgur—dried cracked wheat

diabetes—an abnormal bodily condition in which less than the normal amount of insulin is produced

diverticular—an abnormal pouch or sac opening from a hollow organ (as the intestine or bladder)

fiber—mostly indigestible material in food that stimulates the intestine to move its contents along

insoluble—impossible or difficult to dissolve

soluble—capable of being dissolved in a liquid

Background

Fiber is present in all plants that are eaten for food, including fruits, vegetables, grains, and legumes. Fiber passes through our bodies undigested. It is therefore not absorbed into the bloodstream. Instead of being used for energy, fiber is excreted from our bodies.

Not all fiber is the same. One way to categorize fiber is by how easily it dissolves in water. **Soluble** fiber acts like a sponge in the stomach and intestines. It slows how fast food is digested, which can help lower blood sugar and it binds with cholesterol before it gets to the bloodstream. **Insoluble** fiber passes through our stomach and intestines quickly and almost unchanged. The skin of a plum is an example of insoluble fiber, while the pulp is a source of soluble fiber. Both kinds of fiber are important in a healthy diet. They help the body function more efficiently and reduce the risk of heart disease, **diabetes**, and **diverticular** disease.

Many crops grown in Oklahoma are sources of soluble and insoluble fiber. Hard red winter wheat, our number one grain crop in 2017, is used to make whole wheat breads and cereals. Oklahoma is normally among the top five states in winter wheat production. Hard red winter wheat, the primary class of wheat, is grown on over 3 million acres in every county of the state. In an average year, over 100 million bushels of wheat are harvested, with a yield of around 35 bushels per acre. Some of the wheat grown in Oklahoma is used to produce flour in the state's flour mills. The rest is exported to other states or foreign countries. About forty- five 24-ounce boxes of wheat flakes cereal can be made from a bushel of wheat.

Other crops grown in our state that are good sources of fiber include vegetables, like tomatoes and squash; legumes, like black-eyed peas and lima beans; and fruits, like peaches, plums, apricots, strawberries, blackberries, apples and pears.

Fit with Fiber (continued)

Fiber on Food Labels

The Nutrition Facts Panel on food labels lists the number of grams of fiber per serving of food. The label also lists the percent Daily Value one serving provides for fiber, based on a 2,000 calorie diet. The Daily Value for fiber on food labels is 28 grams (14 grams per 1000 calories). The following terms are used on food labels to describe the fiber content:

- High Source - 20 percent or more of the fiber Daily Value per serving
- Good Source - 10-19 percent of the fiber Daily Value per serving

The general guideline for dietary fiber is 14 grams per 1,000 calories. The list below takes into account the differing caloric needs during the life cycle.

- Children 1 to 3 years: 19 grams of fiber/day
- Children 4 to 8 years: 25 grams of fiber/day
- Boys 9 to 13 years: 31 grams of fiber/day
- Girls 9 to 13 years: 26 grams of fiber/day
- Boys 14 to 19 years: 38 grams of fiber/day
- Girls 14 to 19 years: 26 grams of fiber/day
- Men 19-50 years: 38 grams of fiber/day
- Women 19-50 years: 25 grams of fiber/day
- Men 51 and older: 30 grams of fiber/day
- Women 51 and older: 21 grams of fiber/day

Additional Reading

Boothroyd, Jennifer, *What's on My Plate?: Choosing from the Five Food Groups*, Lightning Bolt Books, 2016

Hermann, Janice R., *Dietary Fiber*, OSU Extension Fact Sheet, October 2019

King, Hazel, *Carbohydrates for a Healthy Body (Body Needs)*, Heinemann, 2009.

Lackey, Jennifer, *The Biography of Wheat (How Did That Get Here?)*, Crabtree, 2007.

Macaulay, David, *The Way We Work*, Houghton Mifflin, 2008.

Miller, Edward, *The Monster Health Book: A Guide to Eating Healthy, Being Active and Feeling Great for Monsters & Kids*, Holiday House, 2008.

Royston, Angela, *Water and Fiber for a Healthy Body (Body Needs)*, Heinemann, 2009.

Waxman, Laura Hamilton, W.K. Kellogg (History Maker Bios), Lerner, 2006.

Websites

<https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/high-fiber-foods/art-20050948>

<http://sci.washington.edu/info/forums/reports/FiberFacts.pdf>

<https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/appendix-13/>

<https://health.clevelandclinic.org/figuring-dietary-fiber-child-need/>

Fit with Fiber

Activity 1

Grade 6-8 Teacher Resources and Standards

Activity 1: Graphing Cereal, (Math) 1 50 minute class period

Students will read and discuss background and vocabulary, then will use cereal boxes to graph and calculate the mean, median and mode for data collection. Graphs will be utilized to plot data.

Oklahoma Academic Standards

Activity 1: Graphing Cereal (Math)

- 6.D.1.1 Calculate the mean, median, and mode for a set of real-world data.
- 6.D.1.2 Explain and justify which measure of central tendency (mean, median, or mode) would provide the most descriptive information for a given set of data.
- 6.N.3.3 Apply the relationship between ratios, equivalent fractions and percents to solve problems in various contexts, including those involving mixture and concentrations.
- 7.D.1.1 Design simple experiments, collect data and calculate measures of central tendency (mean, median, and mode) and spread (range). Use these quantities to draw conclusions about the data collected and make predictions.
- 7.D.1.2 Use reasoning with proportions to display and interpret data in circle graphs (pie charts) and histograms. Choose the appropriate data display and know how to create the display using a spreadsheet or other graphing technology.

Materials:

- cereal boxes
- colored pencils
- calculator
- compass
- protractor
- ruler/Straight Edge
- Activity 1 Worksheet 1 “**Graphing Data - Circle Graphs**”
- Activity 1 Worksheet 2 “**Graphing Data - Bar Graphs**”
- Information Sheet - **Parts of a Nutrition Fact Label**
- Information Sheet - **Sample Nutrition Facts Labels**

Procedures

1. Read and discuss background and vocabulary.
—Ask for a show of hands to determine how many students ate cereal for breakfast.
2. Discuss graphing, using the information on Activity 1 Worksheet 1 “**Graphing Data - Circle Graphs**” and Activity 1 Worksheet 2 “**Graphing Data - Bar Graphs**”
3. Show students the five cereal boxes you have brought to class.
—Poll the class regarding their favorite cereals and use tally marks to keep track
—Calculate the mean, median and mode. Explain and justify which measure of central tendency (mean, median, or mode) would provide the most descriptive information for the data.

Fit with Fiber

Activity 1 Continued

Grades 6-8 Teacher Resources and Standards

4. Students will follow instructions on the worksheet to record the results of the poll on the circle graph.
 - Determine the total of the parts (total of votes for the five top cereals). Make tally marks in each column to determine the popularity of the cereals.
 - From the total votes for each of the five cereals, determine what fraction they are of the total.
 - Assume 360 degrees in a circle. Determine what fraction of 360 each part would be. To determine this, set up a ratio and solve for x .
 - Use a compass to mark the center of the circle.
 - Draw a straight line from the center to the edge of the circle.
 - Using the degrees calculated, use a protractor to measure the portion of the circle for each cereal. Place the center of the protractor over the center of the circle and line the base of the protractor over the straight line. Continue around the circle until 100% is complete.
 - Color each piece of the pie chart and label with the name of the cereal.
5. Students will gather information from the Nutrition Facts labels of the cereal boxes or use the Nutrition Facts Labels information sheet provided in this activity
6. Give students a copy of **Parts of a Nutrition Fact Label** and **Sample Nutrition Facts Labels** information sheets.
 - Discuss each section of the label and be sure students can identify fiber, sugar and fat on the label.
7. Students will find the fiber, sugar and fat content for each cereal and use the information to complete the table on Activity 1 Worksheet 2 “**Graphing Data - Bar Graphs.**”
 - Students will use the information in the table to make a bar graph showing the amount of dietary fiber, sugar and fat in each cereal. In a bar graph the x-axis variable is divided into parts. The parts can be the nutritional categories from the table (fiber, sugars and fat). The y-axis is a number (grams in this case) and increases continuously along the axis.
8. Student will analyze the information in the graph to decide which cereals have the best balance of fiber, sugars and fat.
 - Students will reflect on and justify the reliability of their graphs.
9. Discuss additional nutrition facts for each cereal, including calories per serving, serving size and percent daily value.

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Parts of a Nutrition Fact Label

1. Serving Size

This section is the basis for determining the number of calories, amount of each nutrient, and percent Daily Value (%DV) of a food. Use it to compare a serving size to how much you actually eat. Serving sizes are given in familiar units, such as cups or pieces, followed by the metric amount, e.g., number of grams. The serving size reflects the amount people typically eat and drink today. It is not a recommendation of how much to eat.

2. Amount of Calories

If you want to manage your weight (lose, gain, or maintain), this section is especially helpful. The key is to balance how many calories you eat with how many calories your body uses.

3. Nutrients

You can use the label to support your personal dietary needs—look for foods that contain more of the nutrients you want to get more of and less of the nutrients you may want to limit.

- **Nutrients to get more of: Dietary Fiber, Vitamin D, Calcium, Iron and Potassium.** The recommended goal is to consume at least 100% Daily Value for each of these nutrients each day.
- **Nutrients to get less of: Saturated fat, Sodium, and Added Sugars.** The recommended goal is to stay below 100% Daily Value for each of these nutrients each day.

4. Percent Daily Value

This section tells you whether the nutrients (for example, saturated fat, sodium, dietary fiber, etc.) in one serving of food contribute a little or a lot to your total daily diet: **5%DV or less is low and 20%DV or more is high.**

5. Footnote

The footnote explains that the %Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Nutrition Facts	
8 servings per container	
Serving size 2/3 cup (55g)	
Amount per serving	230
Calories	
Total Fat 8g	10%
Saturated Fat 1g	5%
<i>Trans</i> Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

(For educational purposes only. These labels do not meet the labeling requirements described in 21 CFR 101.9.)

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Activity 1 Worksheet 1: Graphing Data - Circle Graphs



Name: _____ Date: _____

Graphs display data as an easy-to-understand visual reference. Sometimes the data is confusing when expressed as text. Graphs make it easier to understand complex information or view the results of an experiment. Circle graphs show the parts of a whole. Circle graphs are sometimes called pie charts. Each piece of the pie visually represents a fraction of the total. Each piece can represent what percent of the class chose which cereal.

1. First determine the total of the parts (total of votes for the five top cereals). Make tally marks in each column to determine the popularity of the cereals.

Cereal 1	Cereal 2	Cereal 3	Cereal 4	Cereal 5

2. From the total votes for each of the five cereals, determine what fraction they are of the total.

Tally marks in each column

Total

3. Assume 360 degrees in a circle. Determine what fraction of 360 each part would be. To determine this, set up a ratio and solve for x:

$$\frac{\text{Tally marks in each column}}{\text{Total}} = \frac{x}{360} = \text{degrees in circle each cereal represents}$$

4. Use a compass to mark the center of the circle.
5. Draw a straight line from the center to the edge of the circle.
6. Using the degrees you calculated in # 3, use a protractor to measure the portion of the circle for each cereal. Place the center of the protractor over the center of the circle and line the base of the protractor over the straight line. Continue around the circle until 100% is complete.
7. Color each piece of the pie chart and label with the name of the cereal.

(See next page for graph)

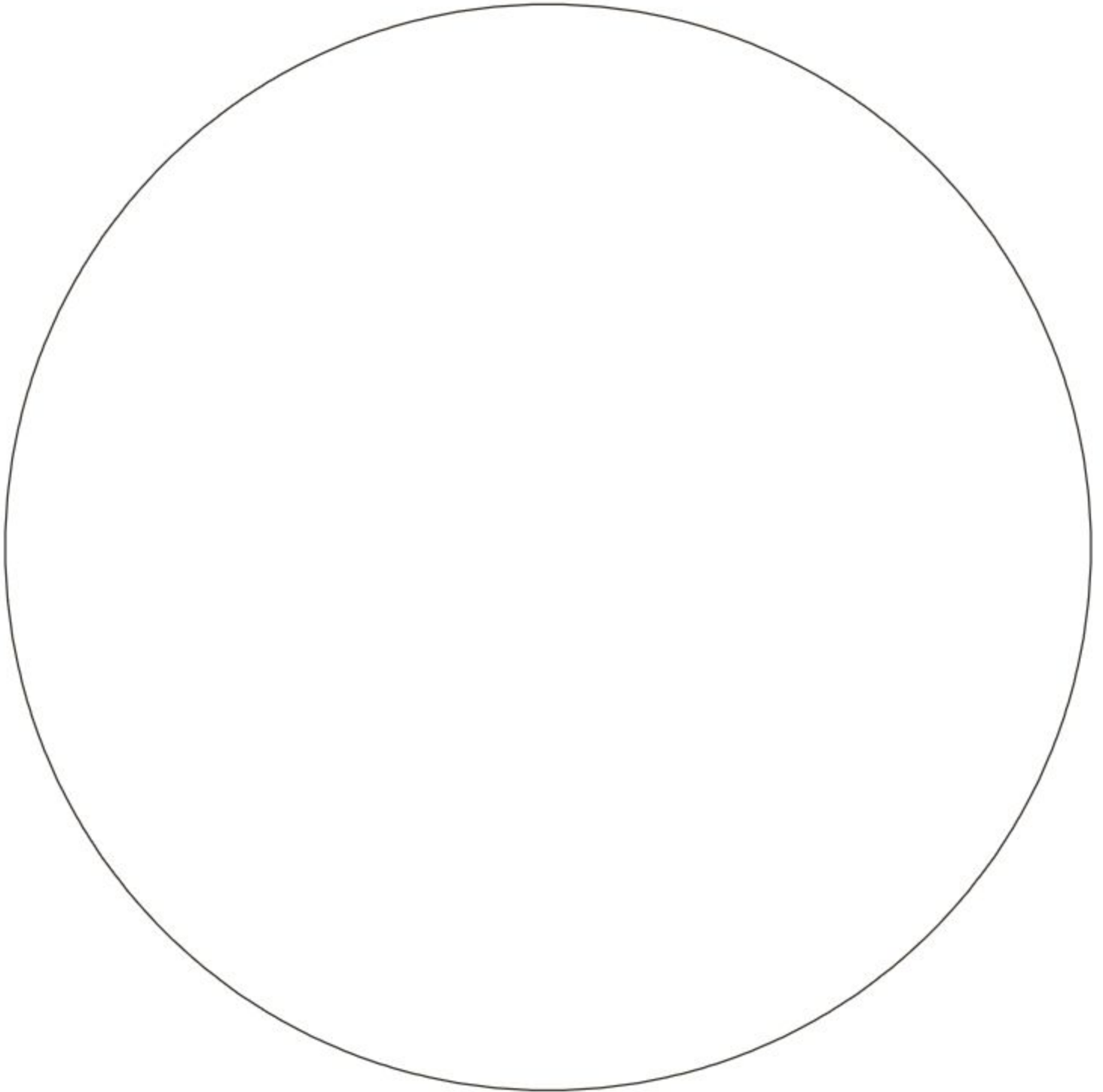
Fit with Fiber

Activity 1 Worksheet 1: Graphing Data - Circle Graph



Name: _____ Date: _____

Most Popular Cereals



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Activity 1 Worksheet 2: Graphing Data - Bar Graphs

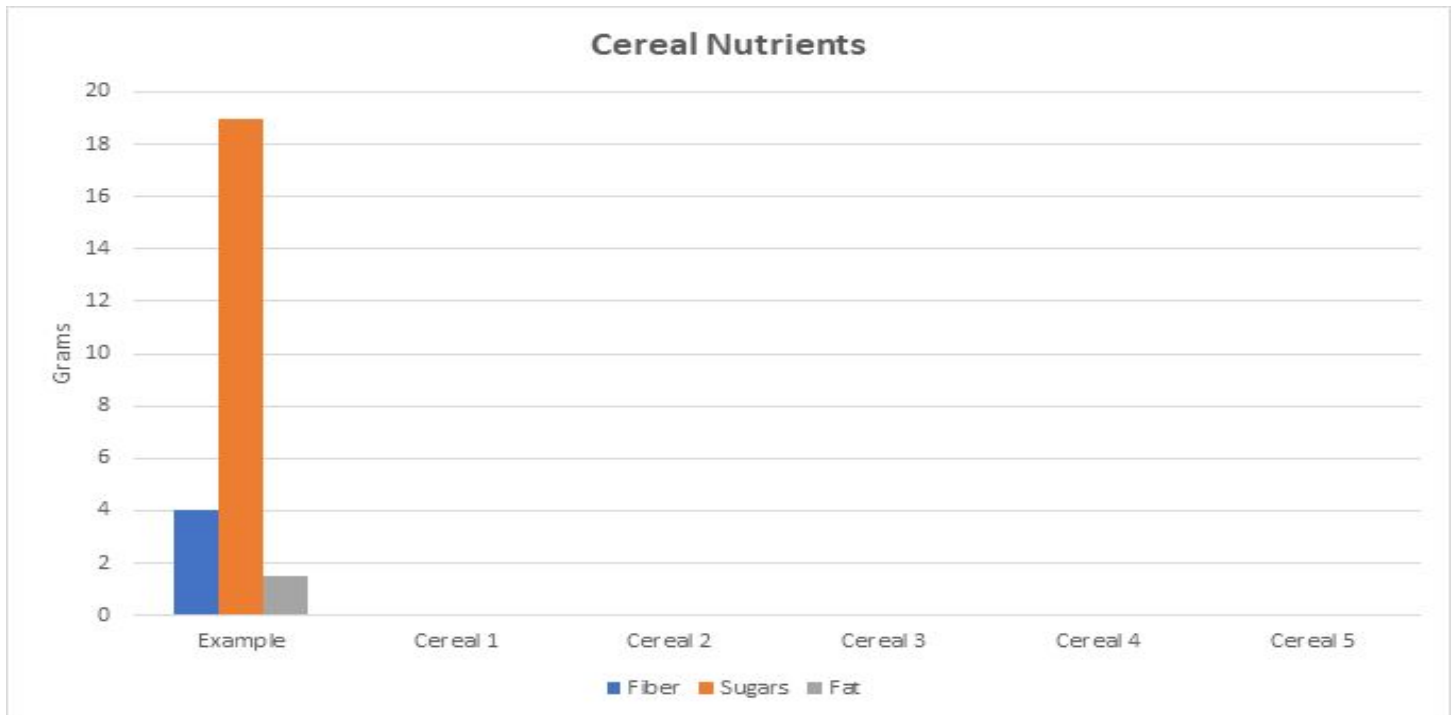


Name: _____ Date: _____

A bar graph uses rectangular blocks, or bars, of varying sizes to compare variables. Use the cereal boxes from the previous activity or the sample Nutrition Facts labels included with this lesson to find the fiber, sugars, and fat in each product. Record the information in this table.

	Fiber (grams)	Sugars (grams)	Fat (grams)
Cereal 1			
Cereal 2			
Cereal 3			
Cereal 4			
Cereal 5			

Use the information from the table to create a bar graph below. Use colored pencils and follow the example in the first column.



Which cereal is the best source of dietary fiber? _____

Which cereal has the best balance of fiber, sugars, and fat? _____

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Activity 2

Grade 6-8 Teacher Resources and Standards

Activity 2: Cereal Comparison, (Health) 1 50 minute class period

Students will analyze cereal box labels to determine the nutrient content, they then will list each ingredient and cereal in a health category based on the profile of the cereal.

Oklahoma Academic Standards

Activity 2: Cereal Comparison (Health)

- 3.8.1 Health Analyze the validity of health information, products and services
- 5.8.6 Health Choose healthy alternatives over unhealthy alternatives when making a decision
- 5.8.4 Health Distinguish between healthy and unhealthy alternatives of health-related decisions.

Materials:

- **Sample Nutrition Facts Labels** information sheet
- Information sheet “**Parts of a Nutrition Facts Label**”
- Activity 2 Worksheet 1 “**Breaking Down the Nutrition Facts Label**”

Procedures

1. Using the the **Sample Nutrition Facts Label** information sheet students will identify the first ingredients listed for each cereal.
 - Discuss why the first ingredient is listed first. (Ingredients are listed in descending order by weight. Generally, the first ingredient is also the largest quantity by volume as well.)
 - Students will read through the list of ingredients to find those that might be considered sweeteners (sugar, dextrose, fructose, corn syrup, molasses, honey, etc.)
 - Discuss how near to the beginning of the list sugars are listed impacts the nutritional value of the cereal.
2. Use Activity 2 Worksheet 1 “**Breaking Down the Nutrition Facts Label**” to study and then record ingredient list on the sample labels. Ingredients are listed in descending order by weight. The first ingredient listed makes up the largest proportion of the ingredients. In the table below, list the first 3 ingredients, then list all sugars (sugar, dextrose, fructose, corn syrup, molasses, honey, etc.), serving size, fiber and calories per serving for each cereal.

Fit with Fiber

Sample Nutrition Facts Labels

Cereal 1

Nutrition Facts	
Serving size 1 1/4 cup (41g)	
Amount per serving	
Calories 190	% Daily Value*
Total Fat 7g	9%
Saturated Fat 6g	30%
<i>Trans</i> Fat 0g	
Cholesterol 0mg	0%
Sodium 140mg	6%
Total Carbohydrate 30g	11%
Dietary Fiber less than 1g	2%
Total Sugars 17g	
Incl. 17g Added Sugars	33%
Protein 1g	
Vitamin D 0mcg	0%
Calcium 120mg	8%
Iron 5.4mg	30%
Potassium 30mg	0%
Thiamin	60%
Niacin	10%
Vitamin B6	10%
Folate 40mcg DFE (25mcg folic acid)	10%
Pantothenic Acid	10%
Phosphorus	2%
Zinc	15%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Dextrose, Sugar, Corn Flour, Hydrogenated Vegetable Oil (Coconut and Palm Kernel Oils), Wheat Flour, Whole Grain Oat Flour, Corn Syrup, Salt, Canola Oil, Calcium Carbonate, Titanium Dioxide (color), Natural and Artificial Flavor, BHT added to preserve freshness.

Cereal 2

Nutrition Facts	
About 7 servings per container	
Serving size 1 Cup (40g)	
Amount per serving	
Calories 150	% Daily Value*
Total Fat 1g	1%
Saturated Fat 0g	0%
<i>Trans</i> Fat 0g	
Polyunsaturated Fat 0g	
Monounsaturated Fat 0g	
Cholesterol 0mg	0%
Sodium 105mg	5%
Total Carbohydrate 34g	12%
Dietary Fiber 3g	11%
Soluble Fiber 2g	
Insoluble Fiber 1g	
Total Sugars 7g	
Incl. 7g Added Sugars	14%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 120mg	10%
Iron 1mg	6%
Potassium 100mg	2%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Whole Grain Brown Rice, Cane Sugar, Fructooligosaccharides, Unsulfured Molasses, Sea Salt, Calcium Carbonate, Organic Honey, Tocopherols (antioxidants to maintain freshness), Natural Flavor.

Cereal 3

Nutrition Facts	
About 10 servings per container	
Serving size 1 Cup (40g)	
Amount per serving	
Calories 140	% Daily Value*
Total Fat 1.5g	2%
Saturated Fat 0g	0%
<i>Trans</i> Fat 0g	
Polyunsaturated Fat 0.5g	
Monounsaturated Fat 0.5g	
Cholesterol 0mg	0%
Sodium 210mg	9%
Total Carbohydrate 31g	11%
Dietary Fiber 5g	18%
Soluble Fiber 2g	
Insoluble Fiber 3g	
Total Sugars 7g	
Incl. 7g Added Sugars	14%
Protein 5g	
Vitamin D 0mcg	0%
Calcium 20mg	2%
Iron 1mg	6%
Potassium 170mg	4%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Whole Grain Oats, Whole Grain Wheat Flour, Corn Flour, Cane Sugar, Unsulfured Molasses, Oat Fiber, Salt, Baking Soda, Vitamin C (Ascorbic Acid), Tocopherols (Antioxidants To Maintain Freshness).

Cereal 4

Nutrition Facts	
Serving size 1 cup (42g)	
Amount per serving	
Calories 170	% Daily Value*
Total Fat 1.5g	2%
Saturated Fat 0g	0%
<i>Trans</i> Fat 0g	
Cholesterol 0mg	0%
Sodium 240mg	10%
Total Carbohydrate 37g	13%
Dietary Fiber <1g	2%
Total Sugars 18g	
Includes 18g Added Sugars	37%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 5.4mg	30%
Potassium 60mg	2%
Thiamin	70%
Folate 40mcg DFE (25mcg folic acid)	10%
Pantothenic Acid	10%
Phosphorus	0%
Zinc	10%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Rice, Sugar, Cocoa (processed with alkali), Canola Oil, Salt, Caramel Color, Natural Flavor, Rosemary Extract (antioxidant).

Cereal 5

Nutrition Facts	
Serving size 1 cup (60g)	
Amount per serving	
Calories 200	% Daily Value*
Total Fat 1g	1%
Saturated Fat 0g	0%
<i>Trans</i> Fat 0g	
Polyunsaturated Fat 0g	
Monounsaturated Fat 0g	
Cholesterol 0mg	0%
Sodium 140mg	6%
Total Carbohydrate 48g	17%
Dietary Fiber 8g	29%
Soluble Fiber 2g	
Insoluble Fiber 5g	
Total Sugars 8g	
Includes 0g Added Sugars	0%
Protein 6g	
Vitamin D 0mcg	0%
Calcium 20mg	2%
Iron 3.1mg	15%
Potassium 300mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Whole Grain Wheat, Raisins, Barley Malt, Salt.

Fit with Fiber

Activity 2 Worksheet 1: Breaking Down the Nutrition Facts Label



Name: _____ Date: _____

Study ingredient list on the sample labels. Ingredients are listed in descending order by weight. The first ingredient listed makes up the largest proportion of the ingredients. In the table below, list the first 3 ingredients, then list all sugars (sugar, dextrose, fructose, corn syrup, molasses, honey, etc.), serving size, fiber and calories per serving for each cereal.

	First 3 ingredients	All Sugars	Fiber (grams)	Sugars (grams)	Calories
Cereal 1					
Cereal 2					
Cereal 3					
Cereal 4					
Cereal 5					

Which cereal has the most sugar? _____

The most fiber? _____

Cereal 5 does not list sugar in the ingredients, but Nutrition Facts indicate 8 grams of total sugars. How can that be correct? _____

Fit with Fiber

Activity 2 Worksheet 1: Breaking Down Nutrition Facts Labels



ANSWER KEY

Name: _____ Date: _____

Study ingredient list on the sample labels. Ingredients are listed in descending order by weight. The first ingredient listed makes up the largest proportion of the ingredients. In the table below, list the first 3 ingredients, then list all sugars (sugar, dextrose, fructose, corn syrup, molasses, honey, etc.), serving size, fiber and calories per serving for each cereal.

	First 3 ingredients	All Sugars	Fiber (grams)	Sugars (grams)	Calories
Cereal 1	Dextrose	Dextrose	Less than 1 g.	17 g	190
	Sugar	Sugar			
	Corn Flour	Corn syrup			
Cereal 2	Whole Grain Brown Rice	Cane sugar, Honey	3 g	7 g	150
	Cane Sugar	Fructooligosaccharides			
	Fructooligosaccharides	Unsulphured Molasses			
Cereal 3	Whole Grain Oats	Cane Sugar	5 g	7 g	140
	Whole Grain Wheat flour	Unsulphured Molasses			
	Corn Flour				
Cereal 4	Rice	Sugar	Less than 1 g	18 g	170
	Sugar				
	Cocoa				
Cereal 5	Whole Grain Wheat	No added sugar	8 g	8 g	200
	Raisins				
	Barley Malt				

Which cereal has the most sugar? Cereal 4 The most fiber? Cereal 5

Cereal 5 does not list sugar in the ingredients, but Nutrition Facts indicate 8 grams of total sugars.

How can that be correct? All of the total sugars comes from the raisins

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Activity 3

Grade 6-8 Teacher Resources and Standards

Activity 3: Build a Better Diet, (Health, FACS) 1 50 minute class period

Students will use recommendations from My Plate to demonstrate an understanding of the functions of fiber in the body and make suggestions for increasing fiber in the diet.

Oklahoma Academic Standards

Activity 3: Build a Better Diet (Health, FACS)

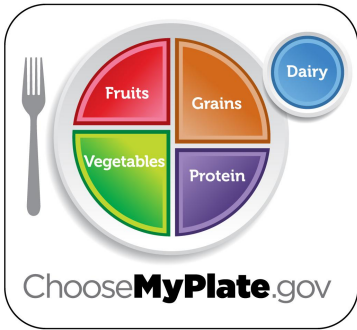
- | | |
|--------------|---|
| 3.8.1 Health | Analyze the validity of health information, products and services |
| 5.8.6 Health | Choose healthy alternatives over unhealthy alternatives when making a decision |
| 5.8.4 Health | Distinguish between healthy and unhealthy alternatives of health-related decisions. |
| 2.1.3 FACS | Analyze decisions about providing safe and nutritious food for individuals and families |

Materials:

- Activity 3 Reading Page 1 “**Dietary Fiber and My Plate**”
- Information sheet “**Fiber Content of Foods**”
- Activity 2 Worksheet 1 “**Small Changes Make a Difference**”

Procedures

1. Read and discuss the reading page, “**Dietary Fiber and My Plate.**”
—Discuss the benefits of adequate fiber in the diet
 - Help you feel full longer - helps with weight management
 - Fiber can absorb substances like cholesterol before they are absorbed in the digestive system.
 - Emphasize that fiber only comes from plant sources. Meat and Dairy products provide many essential nutrients, but they do not contain fiber.
 - Adequate fiber helps prevent diverticular disease (pockets in the colon that can result from constipation).
—Have students call out foods they believe are high in fiber and write them on the board
—Distribute information sheet, “**Fiber Content of Foods**” and have them compare their list to the foods listed on the sheet
2. Hand out Activity 2 Worksheet 1 “**Small Changes Make a Difference**”
—Students will use **Fiber Content of Foods**, internet resources and food labels to determine the fiber content of the sample food choices listed and determine the total fiber for the day
—Using the same resources, students will propose different food choices to increase fiber and total the fiber for the day
3. Each student will write a letter home explaining the benefits of fiber and suggesting some fiber-rich foods to add to the household grocery list.



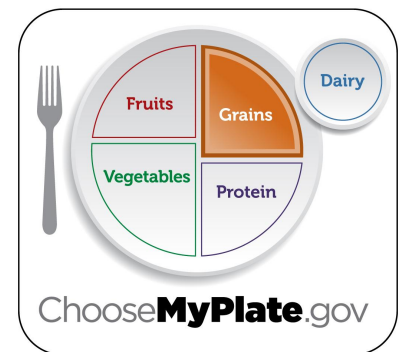
Dietary Fibers come from plant foods. The best sources fiber are whole grain breads and cereals, fruits and vegetables, legumes, nuts and seeds. Foods are the best source of dietary fiber. You can get enough dietary fiber by choosing foods high in fiber and following the USDA MyPlate Plan recommendations based on a 2,000 calorie diet:

- 2 ½ cups of vegetables
- 2 cups of fruit
- 6 oz. of grains

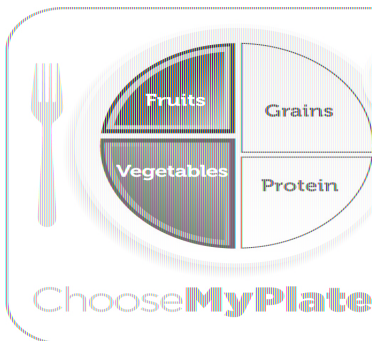
Healthy Choices to Increase Fiber through the USDA MyPlate Food Groups

Grain Group

- Look for whole-grain breads with “whole wheat flour,” “stone-ground whole wheat flour” or “100 percent whole wheat flour” as the first ingredient on the Nutrition Facts label.
- In cereals look for “whole-grain wheat,” “whole-grain oats” or “whole-grain rice” as the first ingredient on the Nutrition Facts label.
- Brown rice is higher in fiber than refined white rice.
- Experiment with different food such as couscous, barley, bulgur, quinoa and kasha in salads, soups and casseroles to increase fiber.



Fruit and Vegetable Groups



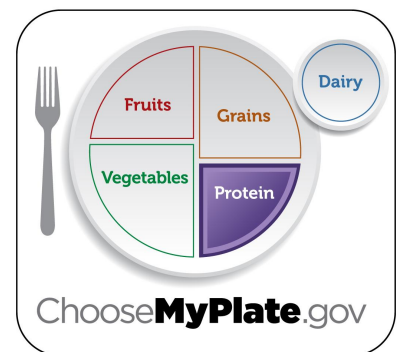
- Fruits are naturally high in fiber. Fresh fruits are higher in fiber than frozen or canned. Peels and seeds in fruits increase fiber.
- Vegetables are also naturally high in fiber. To keep the fiber content of vegetables high, try eating them raw or steam just until tender. Leaving the skins on vegetables can also increase fiber.
- Add dried fruits to cereal, muffins and quick breads to increase fiber.

Protein Group

- Dried beans and peas are low in fat and a great source of fiber, vitamins and minerals. Add beans, peas and lentils to soups, stews, salads and rice dishes.
- Nuts are a good source of fiber but are also high in fat.

Guidelines for Increasing Dietary Fiber

- Increase dietary fiber intake slowly.
- Drink plenty of fluids (at least 6--8 cups per day).
- Try to spread out high fiber foods throughout the day



For a more complete list of the fiber content of foods, visit:

<https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/appendix-13/>

Fruits	Serving	Fiber (grams)
Apple with skin	1 medium	3.7
Avocado	½ cup	5.0
Banana	1 medium	2.7
Blackberries	1 cup	7.6
Blueberries	1 cup	4.0
Grapes	1 cup	1.2
Orange	1 medium	3.0
Peach	1 medium	1.7
Pear	1 medium	4.0
Pineapple	1 cup	2.0
Prunes	10 prunes	6.0
Raisins	⅔ cup	4.0
Raspberries	1 cup	8.4
Strawberries	1 cup	3.4
Watermelon	1 cup	0.8
Most fruit juice	1 cup	0.2-0.5
Vegetables	Serving	Fiber (grams)
Asparagus, steamed	½ cup	1.4
Broccoli, raw	1 cup	2.6
Broccoli, cooked	½ cup	2.3
Carrots, raw	1 cup	3.3
Carrots, fresh cooked	½ cup	2.6
Corn, cooked	½ cup	1.9
Green Beans	½ cup	2.0
Kale, raw	1 cup	2.6
Lettuce	1 cup	1.0
Peas, green, cooked	½ cup	4.0
Potato, baked w/skin	1 medium	5.0
Potato, mashed/fried	½ cup	1.9
Pumpkin, canned	½ cup	5.0
Spinach, raw	1 cup	1.6
Spinach, cooked	½ cup	2.2
Squash, summer	½ cup	1.3
Squash, winter	½ cup	3.0
Sweet Potato, baked	1 medium	3.0
Tomato	1 medium	1.0

Grains	Serving	Fiber (grams)
Breads		
Bagel	1 bagel	1.5
Bread, White	1 slice	1.0
Bread, Whole Wheat	1 slice	2.0
Muffin, Blueberry	1 medium	0.9
Muffins, Bran	1 medium	2.6
Muffin, Carrot	1 medium	1.0
Pancake/Waffle, White	1 medium	1.0
Pancake, Whole Wheat	1 medium	1.8
Cereals		
All Bran	½ cup	10.0
Cheerios	1 cup	3.0
Corn Flakes	1 cup	0.8
Cream of Wheat	1 cup	1.2
Frosted Mini Wheats	1 cup	5.9
Oatmeal, regular	1 cup	4.0
Raisin Bran	1 cup	8.0
Rice Krispies	1 cup	0.3
Other Grains		
Bulgur	1 cup	7.9
Pasta, white	1 cup	1.8
Pasta, whole wheat	1 cup	4.0-6.3
Popcorn, air popped	3 cups	3.5
Quinoa, cooked	1 cup	9.3
Rice, white	1 cup	1.0
Rice, brown	1 cup	3.5
Proteins	Serving	Fiber (grams)
Almonds	1 ounce	3.5
Beans, w/pork, canned	1 cup	5.3
Beans, dried, cooked	1 cup	11.4-14.7
Black Eyed peas,	1 cup	11.0
Chickpeas, canned	1 cup	12
Lentils, cooked	1 cup	15.6
Peanuts or Pecans	1 ounce	2.7
Peanut butter	1 Tbsp.	1.0
Tofu	1 ounce	1.0

Fit with Fiber

Activity 3 Worksheet 1: Small Changes Make a Difference



Name: _____ Date: _____

Use resources from this lesson, food packaging, and internet sources to help this middle school student make food choices to increase fiber. The goal for girls in this age group is 26 grams of fiber per day. For boys, the goal is 31-38 grams of fiber per day. The suggestions on the Dietary Fiber and My Plate reading page will help. Assume standard serving sizes. Use the table on the right to suggest changes or additions to help the student increase fiber in their diet.

Sample Food Choices	
Breakfast	Fiber (g)
Bagel w/cream cheese	
Apple Juice	
Lunch	
Turkey sandwich on white bread	
Potato chips	
Packaged cookies	
Dinner	
Roast Beef	
Roasted potatoes	
Glazed carrots	
Salad (Iceberg lettuce)	
Ice Cream	
TOTAL FIBER	

Food Choices to Increase Fiber	
Breakfast	Fiber (g)
Lunch	
Dinner	
TOTAL FIBER	

Fit with Fiber



Activity 1 Worksheet 1: Small Changes Make a Difference **ANSWER KEY**

Changes in 2nd column are examples of minimal changes to increase fiber

Name: _____ Date: _____

Use resources from this lesson, food packaging and internet sources to help this middle school student make food choices to increase fiber. The goal for girls in this age group is 26 grams of fiber per day. For boys, the goal is 31-38 grams of fiber per day. The suggestions on the **Dietary Fiber and My Plate** reading page will help. Assume standard serving sizes. Use the table on the right to suggest changes or additions to help the student increase fiber in their diet.

Sample Food Choices	
Breakfast	Fiber (g)
Bagel w/cream cheese	1.5
Apple Juice	0.5
Lunch	
Turkey sandwich on 2 slices of white bread	2.0
Potato chips	1.4
4 Oreo cookies	1.6
Dinner	
Roast Beef	0.0
Roasted potatoes	1.9
Glazed carrots	2.6
Salad (Iceberg lettuce)	1.0
Ice Cream	0.0
TOTAL FIBER	12.5

Food Choices to Increase Fiber	
Breakfast	Fiber (g)
Frosted Mini Wheats	5.9
Blueberries	4.0
Lunch	
Turkey Sandwich on 2 slices Whole Wheat Bread	4.0
Avocado slices on sandwich	5.0
Carrots, raw	3.3
Whole grain chips	2.0
Dinner	
Roast Beef	0.0
Baked Potato w/skin	5.0
Glazed carrots	2.6
Spinach/kale salad	2.1
Ice Cream w/strawberries	3.4
TOTAL FIBER	37.3