Maryland Teaching Standards:

Standard 6.0 Nutrition and Fitness

- Analyze a Nutrition Facts Label.
- Identify and define functions of nutrients.
- Summarize the Dietary Guidelines for Americans.
- Explain the relationship between nutrition and physical activity.

Time: 30-60 Minutes, can be modified to meet scheduling needs.

Objectives:

Students will be able to identify the different types of grains and products they are used in order to explain how and why they are a part of a healthy diet.

Lesson Plan Outline: 5E Model

- Engagement—What are Grains?
- Exploration—Where Can We Find Grains?
- Explanation—How Many Grains?
- Elaboration—What Type of Grains?
- Evaluation—Can I Make a Plate?

Materials:

- Pencils
- Sticky note pads
- Grain Puzzles (in envelopes)
- Chart paper and markers
- Food containers examples (grain and non-grain products)
- Measuring Cups (variety)
- Bowls/Plates
- Grain to measure—crackers, rice, oatmeal, bread, pasta, cereal
- Whole kernel picture
- Commonly eaten grain product printouts
- Make MyPlate worksheet
- Whole Grains: An Important Source of Essential Nutrients printout
- What Counts as a Serving? printout
- U.S. Dietary Guidelines and Whole Grains printout
What are Grains?: Engagement

**Time:** 5-10 Minutes

1. As the students enter the room, have students use a sticky note page and a marker to write down an example of a grain (or more than one). Have them put their sticky notes on the wall under the “We think...” poster.

   *Helpful Hint: It may be helpful to have the question, “What are Grains?” on the wall or on a table as the students enter and even have examples of grain products such as a bowl of cereal, plate of pasta (plastic versions of these are available) on a table to help focus their thinking.*

2. Review group answers without judging or verifying their ideas/predictions. You may choose to classify them based on common themes that are apparent upon sharing their answers.

3. Discuss a definition of a grain based on the examples given.

   Dictionary definition given by http://dictionary.reference.com
   
   **noun:**
   1. a small, hard seed, especially the seed of a good plant such as wheat, corn, rye, oats, rice or millet
   2. the gathered seed of food plants, especially of cereal plants
   3. such plants collectively

4. Group students into six groups and give each group a puzzle bag and give them 2-3 minutes to put the puzzle together to identify one of six different major grains.

5. Use the puzzle answers to verify their predictions. **Answers are:** wheat, corn, oats, barley, rice, soybean (these are the big name grains; although soybeans are not a grain, they are somewhat of a grain substitute). These and other grains are found below.

   - Amaranth
   - Barley
   - Buckwheat
   - Corn, including whole cornmeal and popcorn
   - Millet
   - Oats, including oatmeal
   - Quinoa
   - Rice, both brown rice and colored rice
   - Rye
   - Sorghum (also called milo)
   - Teff
   - Triticale (hybrid between wheat and rye)
   - Wheat, including varieties such as spelt, emmer, faro, Einkorn, Kamut, durum and forms such as bulgur, cracked wheat and wheatberries
   - Wild rice

Source: http://www.wholegrainscouncil.org/whole-grains-101/definition-of-whole-grains
Where Can We Find Grains?: Exploration

Time: 10-15 Minutes

1. Have each group stand in a line by their table as if they are going to be a part of a relay race, a Product Relay Race, and explain the rules of the game.

   **Product Relay Race Rules:**
   
   **The object of the game is to be the first team with only grain products on their table.**
   
   - Have the product containers displayed on a table at the other end of the room.
   - Team members will walk down to the table and pick an item and return to the end of their line.
   - They, with the help of their group if necessary, must decide if that item is a product made from grain or not (look for the names of grains identified in the engagement activity on the ingredients list).
   - As the line continues to move, each person with a product container moves forward and when they arrive at the front of the line they will either shout out the name of the grain and/or grains in their product.

   **Helpful hint: Identify one person, yourself perhaps, to be the “judge” for the following:**
   
   - If they shout out a grain that is in their product, ex. Corn in cornmeal muffins, have them sit down at their table.
   - If they shout out “whole grains”, send them to the end of their line to find the specific grain as they move up to the front of the line.
   - If their product is not a grain product, send them down to the product table to swap out product containers and then return to the end of the line to move up to the front to shout out their grain.
   - Continue until all groups have grain products on their tables, but be sure to congratulate the team that finished first.

2. Ask how they knew their product was a grain product.

   **Answers may vary, but the key is in the ingredients list.**

3. Ask the students why they chose their item or why they might eat their item.

   **Answers may include: Because it tastes good. Because it fills me up. Because it gives me energy.**

4. Ask the students to look over their product containers and see if there is any information about why they should eat that item.

   **Answers may vary, but they key is the nutritional chart.**
   
   Have them find the nutritional chart and share what they find there. **Calories, vitamins, minerals.**
How many Grains?: Explain

1. Now that we know what products contain grain and we have an idea of what we get from grains: vitamins, minerals, nutrients, let’s discuss how much we should eat everyday.

2. Display the MyPlate poster and discuss components of a balanced diet and what portion of that diet grains should make up. Components: fruit, vegetables, grains, protein, and dairy. Grains should make up approximately 1/4 of their plate.

   http://www.choosemyplate.gov/food-groups/grains.html

3. Explain that it is recommended that they eat 3-6 servings of grain each day and that they should include whole grains as a part of a healthy diet.

4. Ask students to identify different products they could eat to get their daily grain servings. As they list, display the Grains to Measure products as they are named (pasta, crackers, rice, cereal, bread, oatmeal) and place them on individual tables with the measuring cups and plates.

5. Ask students why we eat these items. Answers may include, but not exclusively: Because they taste good. Because it fills me up. Because it gives me energy.

6. Explain that besides being tasty and being in many of our favorite foods, grains do give our bodies many of the important minerals and nutrients it needs for energy and to function properly.

7. Besides knowing what type of grains to eat (whole grain) and how many servings to eat (3-6), it is helpful to know what a serving looks like.

8. Have students/groups share ideas, but discourage them from eating. Review how many servings they are recommended to eat every day, 3-6 servings a day.

   - 1/2 cup cooked brown rice or other cooked grain
   - 1/2 cup cooked 100% whole grain pasta
   - 1/2 cup cooked hot cereal, such as oatmeal
   - 1 ounce uncooked whole grain pasta, brown rice or other grain
   - 1 slice 100% whole grain bread
   - 1 very small (1 oz.) 100% whole grain muffin
   - 1 cup 100% whole grain ready-to-eat cereal

Source: http://www.wholegrainscouncil.org/whole-grains-101/what-counts-as-a-serving
What Type of Grains?: Elaboration

Time: 5-10 Minutes

Explain that grains are grouped into two categories: whole grains and refined grains.

2. Ask the students what they think the difference is. Ask the students which they think is better for them. Whole grains contain the entire grain kernel—the bran, germ and endosperm. Refined grains have been milled, a process that removes the bran and germ. This is done to give grains a finer texture and improve their shelf life, but also removes dietary fiber, iron and many B vitamins. Use the Whole Kernel picture.

Source: [http://www.choosemyplate.gov/food-groups/grains.html](http://www.choosemyplate.gov/food-groups/grains.html)

3. Ask the students if there is anything on their packages that could help them tell whether it was a whole grain or a refined grain. Point out the whole grain stamp if they don’t find it. Some products have whole grain in the title too.

4. Set out the two hula hoops, one to represent whole grains and one to represent refined grains. Have the students work in their six groups to categorize their products into the two hula hoops. When all the products are classified, check their answers with the Commonly Eaten Grain products printout.
## Can I Make a Plate?: Evaluate

**Time:** 5-10 Minutes

1. Give each student a Make MyPlate worksheet and a writing utensil.

2. Ask the students to section off the portion of the plate that represents the amount of grains they should eat each day. **They should section off a quarter of their “plate”**.

3. Ask the students how many servings of grains the should eat each day. **They should say 3-6 servings**. Ask them to list out 3-6 examples of grains (connecting them to the section of their plate) that they could eat to meet the recommendations. Students can share their answers as they write so they can help others.

4. Ask the students to identify general serving sizes for their selected grains. Students can share their answers as they write so they can help others.

5. Have the students share their plates with the group if you have time to have them show you before they leave. Allow them to take their worksheet home to be a resource for them.

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### Resources: Video Clips

https://www.youtube.com/watch?v=OLxVICQaPAM

https://www.youtube.com/watch?v=wmhg1qyhvs&feature=c4-overview- vl&list=PLpnJUeAKfupmt-8SwRvx3XlrLZQhOKYX
Interesting Facts and Information

Cereal crops or grains are mostly grasses cultivated for their edible grains or seeds (i.e., botanically a type of fruit called a caryopsis). Cereal grains are grown in greater quantities and provide more energy worldwide than any other type of crop; they are therefore staple crops. They are also a rich source of carbohydrate. In some developing nations, grain constitutes practically the entire diet of poor people. In developed nations, cereal consumption is more moderate but still substantial.

Cereal grains supply most of their food energy as starch. They are also a significant source of protein, though the amino acid balance, with exceptions as noted below, is not optimal. Whole grains (see below) are good sources of dietary fiber, essential fatty acids, and other important nutrients.

Source: http://en.wikipedia.org/wiki/Cereal

http://www.netrition.com/rdi_page.html

Reference Values for Nutrition Labeling
(Based on a 2000 Calorie Intake; for Adults and Children 4 or More years of Age)

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<th>Unit of Measure</th>
<th>Daily Values</th>
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WHEAT
Commonly Eaten Grain Products

- **Whole Grains**
  - amaranth
  - brown rice
  - buckwheat
  - bulgur (cracked wheat)
  - millet
  - oatmeal
  - popcorn
  - rolled oats
  - quinoa
  - sorghum
  - triticale
  - whole grain barley
  - whole grain cornmeal
  - whole rye
  - whole wheat bread
  - whole wheat crackers
  - whole wheat pasta
  - whole wheat sandwich buns and rolls
  - whole wheat tortillas
  - wild rice

**Ready to eat breakfast cereals**
- muesli
- whole wheat cereal flakes

- **Refined Grains**
  - cornbread
  - corn tortillas*
  - couscous*
  - crackers*
  - flour tortillas*
  - grits
  - noodles*
  - pitas*
  - pretzels
  - white bread
  - white sandwich buns and rolls
  - white rice

**Pastas**
- spaghettini
- macaroni

**Ready to eat breakfast cereals**
- corn flakes

* Most of these products are made from refined grains. Some are made from whole grains. Check the ingredient list for the words "whole grain" or "whole wheat" to decide if they are made from a whole grain. Some foods are made from a mixture of whole and refined grains.

Some grain products contain significant amounts of bran. Bran provides fiber, which is important for health. However, products with added bran or bran alone (e.g., oat bran) are not necessarily whole grain products.

Source: http://www.choosemyplate.gov/food-groups/grains.html