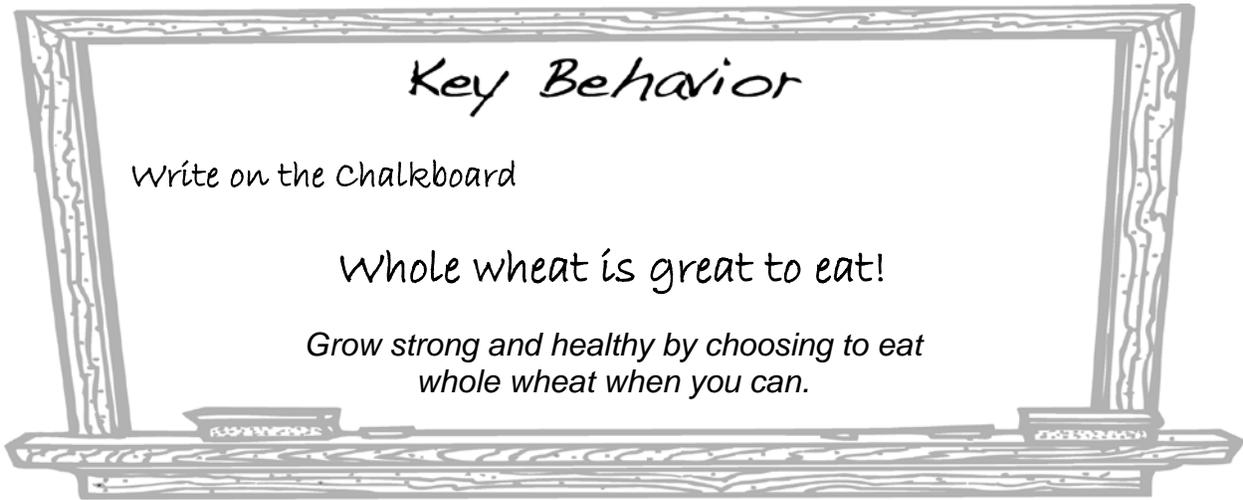


# Whole Grains (4<sup>th</sup> Grade)



## NUTRITION OBJECTIVES CHECK LIST

Students will be able to:

- Students **prepare** and **taste** a healthy pizza with whole wheat bread.
- Students **express ways** they can **choose to eat whole grain foods.**
- Students **explain** the **health benefits** of eating whole grain foods.
- Students **identify** where various pizza ingredients fit in MyPlate.

## MATERIALS AND INGREDIENTS

Bins	Teacher Provides	Will be Delivered
<b><i>In Kitchen Bin</i></b> - cutting board (teacher only) - chef knife (teacher only) - can opener <b><i>In Paper Goods Bin</i></b> - small paper plates* - plastic spoons for serving	- "Whole Grains" text sheet copies* (or use overhead) - activity sheet copies* - MyPlate poster - family letter/recipe copies* - napkins*	- 1 green bell pepper - grated mozzarella cheese (16 oz) - ½ whole wheat English muffin* - pizza sauce (15 oz) - pineapple tidbits (20 oz) - sliced olives (4 oz) - 12 serving containers

\*one per student

## EXPERIMENT MATERIALS

Bins	Teacher Provides	Will be Delivered
<b><i>In Kitchen Bin</i></b> - measuring spoon	- 8 ½ " x 11" black construction paper* - light colored pencils or crayons (white, pink, yellow, blue) - glue (optional)	- dried wheat stalks (3) - ¼ cup whole wheat flour - ¼ cup all-purpose flour - ½ cup brown rice - ½ cup white rice

\*one per student

## SET-UP

### Copies:

- Make copies of activity sheet (each student) and “Whole Grains” text (each student) or plan to display text on overhead device.

### Work area:

- Students will work individually at their desks.
- Have nutrition table ready for lesson ingredients and materials.

### Food-prep:

- Wash green bell pepper and cut into very small pieces.
- Open cans of olives, pizza sauce and pineapple tidbits. Drain pineapple.
- Divide each of the ingredients (olives, pizza sauce, pineapple, tomatoes, green bell pepper and grated mozzarella cheese) into 2 serving containers.
- Divide the English muffins in half. **Tip:** Use a knife to gently divide the muffins as they break easily. Divide English muffins into the two bowls ( $\frac{1}{2}$  per student).
- Set up 2 stations for making the pizzas. Put a plastic spoon as needed in the serving containers.
- Have small paper plates and napkins ready for each pizza station.

### Other-prep:

- Hang MyPlate poster on the board.
- Have dried wheat stalks ready to show.
- Have black paper, light-colored pencils or crayons (to draw and write on black paper), glue (optional) ready to pass out. **Note:** Students will draw four circles on the black construction paper and label each circle (flour #1, flour #2, rice #1, rice #2). Teacher will pass out flour and rice to students without telling them which type of flour and rice they are getting in each circle. Students will then observe flours and rice and decide for themselves which is which.
- Have whole wheat flour, white (all-purpose) flour, brown rice and white rice ready to pass out to students.

## INTRODUCTION WITH STUDENTS



### Let's Wake Up Our Brains! Brain Boost Exercise!

### Move Your Body! Let's get our hearts pumping!

- ♥ Jog in place. (30 seconds)
- ♥ Jump in place. (30 seconds)
- ♥ Squat up and down. (30 seconds)
- ♥ High knees in place. (30 seconds)

Now that our minds are ready to go, let's get started on our nutrition lesson.

- Show students a whole wheat English muffin and ask them to tell you how whole wheat bread is different from white bread.
- Ask them which bread they prefer to eat. Tell them bread is healthy and gives their bodies energy but that some breads are healthier than others.

- **Refer to the Key Behavior on the board and tell students that “whole wheat is great to eat”. In this lesson students will learn what whole grains are and why they are healthier than other grain foods.**
- Show them the dried wheat stalks and ask them to describe what they think the stalks may be.
- Tell students that the stalks come from a wheat plant.
- Ask them which part of the wheat plant they think we eat.
- Tell them that we eat the kernels, or seeds of the plant.
- Remove the kernels from the wheat plant and pass them to students. Have them observe the kernels. **Note:** The long thin needle-shaped thing is called the “beard” and the wheat kernel is inside the chaff (hull or husk).
- Ask students how they think we eat the seeds.
- Tell them that at first the seeds are ground into flour by machines and then made into all types of food, such as bread, pizza crust, noodles, cereals and crackers.
- All of the foods made from wheat seeds fit in the grain group of MyPlate.
- Tell students another example of a grain food is rice. Tell them that the rice we eat is really the seed or kernel of the rice plant.
- Show the MyPlate poster to students and ask them to locate the grains group. Explain to students that this group gives us energy and we should eat from this group every day.
- Pass out or use overhead device to read the text on “Whole Grains” with students.
- **Important:**
  - ✓ white bread and whole wheat bread are both made from wheat flour
  - ✓ whole wheat bread, made from whole wheat flour, contains all parts of the wheat seed
  - ✓ white bread, made from white flour, only contains one part of the wheat seed
  - ✓ brown rice and white rice are both kernels (seeds) from the rice plant
  - ✓ brown rice contains all parts
  - ✓ white rice only contains the endosperm

## PROCESS

- Step 1: Tell students that they are going to compare the two different types of wheat flour: white flour and whole wheat flour and two different types of rice: brown rice and white rice.
- Step 2: Pass out the activity sheet and read over as a class.
- Step 3: Pass out the black construction paper and light-colored pencils or crayons to students. Show students how to make circles and label them. **Note:** See the sample sheet for teacher only.
- Step 4: Pass out white rice, brown rice, white flour and brown flour to students. Have student helpers help with passing out. **Remember not tell students which flour or rice is which.** Let them try to figure it out for

themselves. Have students follow the instructions on the activity sheet and fill in the answers.

- ✓ The white rice kernels are a very clear white, shiny and polished where as the brown rice looks rough and tan.
- ✓ The whole wheat flour has brown flecks in it and the white flour is pure white.

Step 5: Have students complete their activity sheets as they observe the different kinds of flour and rice kernels. **Tip:** Have students glue the flour and rice on their paper to take home and show their family.

Step 6: Have students wash their hands with soap and warm water.

Step 7: Go over the “English Muffin Pizza” recipe with students and why it is a great snack with foods from each of the food groups and demonstrate how to make a *Whole Wheat English Muffin Pizza*.

**whole wheat English muffin** -grains group - *Foods from this group provide carbohydrates, which give us energy.* Choose whole wheat when you can. Today’s snack uses whole wheat English muffins for the pizza crust. “Whole wheat is great to eat!”

**mozzarella cheese** - dairy group – *Foods from this group provide calcium, which is good for our teeth and bones.* “Keep your bones strong, calcium can’t be wrong!”

**green bell pepper, tomatoes, tomato sauce, olives** - vegetable group – *Foods from this group provide vitamins, minerals and fiber.* “Vary your veggies!”

**pineapple** - fruit group – *Foods from this group provide vitamins, minerals and fiber.* “Focus on fruit!”

*Both fruits and vegetables provide vitamins, minerals, and fiber to keep us healthy and strong and help our bodies grow and fight off germs.* “Make half your plate fruits and vegetables!”

Step 8: Have students make their pizzas at one of the pizza stations. Remind them to only use a little of each ingredient so there is enough for everyone.

Step 9: **Let’s Eat, Let’s Talk.** While students are eating ask them what they learned. Encourage students to think up ways they can eat more whole grains. Ask and discuss the questions in the box **Make Health Happen.**

Step 10: Pass out recipe and have students take home to share with their family.

## Make Health Happen

- Name some ways you can eat more whole grains. Oatmeal is another popular whole grain.
- How could you start to eat more whole wheat bread and brown rice at home?
- Some cereals also are made from whole grains. How could you find out if your cereal is made with whole grains? (Look at the nutrition label.)

### REINFORCING STANDARDS

#### Comprehensive Health

- **GR.4-S.2-GLE.1** Demonstrate the ability to set a goal in order to enhance personal nutrition status.
- **GR.4-S.2-GLE.2** Examine the connection between food intake and physical health.
- **GR.4-S.2-GLE.3** Explain that the dimensions of wellness are interrelated and impact personal health.

#### Reading, Writing and Communicating

- **GR.4-S.1-GLE.1** A clear communication plan is necessary to effectively deliver and receive information.
- **GR.4-S.2-GLE.2** Comprehension and fluency matter when reading informational and persuasive texts in a fluent way.
- **GR.4-S.2-GLE.3** Knowledge of complex orthography (spelling patterns), morphology (word meanings), and word relationships to decode (read) multisyllabic words contributes to better reading skills.
- **GR.4-S.3-GLE.2** Informational and persuasive texts use the recursive writing process
- **GR.4-S.3-GLE.3** Correct sentence formation, grammar, punctuation, capitalization, and spelling are applied to make the meaning clear to the reader

#### Science

- Scientific Processes-Organizing Concept- gather, analyze and interpret data, use evidence, develop an evidence based explanation, evaluate reasoning and conclusions

# BACKGROUND INFORMATION

- MyPlate recommends that we eat 3 to 6 servings of grain products (such as bread, cereals, rice, pasta, and crackers) each day to stay healthy. The bulk of these grains should be unrefined, or whole grains. “Make half your grains whole.”
- Whole grains are grains that retain the bran, the germ and the endosperm of a kernel when used in food.
- Wheat is a member of the grass family. The cultivation of wheat started as early as 6,000 to 8,000 B.C. in the Tigris and Euphrates river valley in western Asia, known as the “cradle of civilization”.
- Wheat has steadily spread around the world and has become a staple food for many people. Today, wheat has become the most valuable grain crop in the United States. The U.S. grows nearly 2.4 billion bushels of wheat on 63 billion acres of land and exports half of it to other countries.
- The kernels of wheat, called the wheat berries, are the seeds of the wheat plant. Each small seed contains three distinct parts: the bran, germ, and endosperm.
- Whole wheat flour made from the entire “whole” wheat kernel, provides all three valuable parts. The bran provides fiber (primarily insoluble), most of the three major B vitamins (niacin, riboflavin, and thiamin), and minerals (magnesium and iron). The endosperm, or the starchy part of the kernel, provides mainly carbohydrate and some protein. The germ, the embryo or sprouting part, provides polyunsaturated fat, protein, iron, and vitamins E and B. White, or refined flour, is pure endosperm with both the bran and the germ removed.
- Until steel rollers replaced the old-fashion millstones in the 1880’s, the flour milled from wheat was made by crashing the entire kernel between two heavy slowly rotating stones, leaving all the nutrients in the kernels intact. The modern technology with steel rollers separated each part automatically and made it easy to sell each part individually. White flour became widely available to the public.
- To buy whole wheat bread, look at the ingredients on your bread wrappers. Look for the word “whole wheat”; it should be the first ingredient on the label, not just “wheat” flour or “enriched wheat” flour.
- Brown rice is another example of a whole grain. When we eat brown rice we are eating the whole rice kernel including the bran, the germ and the endosperm. The entire “brown” rice kernel, provides all three valuable parts. The bran provides fiber, most of the three major B vitamins (niacin, riboflavin, and thiamin), and minerals (magnesium and iron). The endosperm, or the starchy part of the kernel, provides mainly carbohydrate and some protein. The germ, the embryo or sprouting part, provides polyunsaturated fat, protein, iron, and vitamins E and B.
- White rice does not provide as many of the important vitamins, minerals and fiber that brown rice does. The processing of white rice removes the outer covering of hull, bran, and germ, and is called “polishing”. Polishing rice also removes nutrients resulting in vitamin B deficiencies in many rice eating Asian countries, causing the disease Beriberi. Beriberi causes muscle weakness in the lower body and the heart muscle. After discovering the reason for this disease in 1936, white rice is now enriched with B vitamins.

Dear Family,

Today I learned that whole wheat bread is better for my body than white bread. Our class also made and ate this delicious pizza snack that is made with whole wheat English muffins. This would be a great snack for me to eat when I come home from school!

Parent Tip: When trying new foods, its best to suggest, but not force your child to take a bite. Give lots of praise when they do try something new.

## Whole Wheat English muffin Pizza

**Makes: 6 servings**

**Total Cost: \$3.61**

**Serving Cost: \$0.60**



### Ingredients

Whole wheat English muffins cut in half

1/4 can pizza sauce (15 oz.)

1/4 green bell pepper

sliced olives (4 oz.)

1/4 can pineapple tidbits (20 oz.)

1/2 cup mozzarella cheese

### Directions

1. Wash green bell pepper and cut into small pieces.
2. Open can of pineapple and drain.
3. Slice English muffins in half for pizza crust.
4. Spread about 1 tablespoon of pizza sauce onto half of an English muffin.
5. Add pineapple, green pepper, and olives on top.
6. Spread about 1 tablespoon of shredded mozzarella cheese on top.
7. With an adult helper warm up your pizza in a microwave or eat it cold.
8. Eat and enjoy!

### Nutrition Facts

Serving Size 1 Pizza (94g)	
Servings Per Container 6	
Amount Per Serving	
<b>Calories</b> 110	<b>Calories from Fat</b> 15
% Daily Value*	
<b>Total Fat</b> 1.5g	<b>2%</b>
Saturated Fat 0.5g	<b>3%</b>
Trans Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 230mg	<b>10%</b>
<b>Total Carbohydrate</b> 19g	<b>6%</b>
Dietary Fiber 3g	<b>12%</b>
Sugars 6g	
<b>Protein</b> 6g	
Vitamin A 8%	• Vitamin C 25%
Calcium 15%	• Iron 6%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000    2,500
Total Fat	Less than 65g    80g
Saturated Fat	Less than 20g    25g
Cholesterol	Less than 300mg    300mg
Sodium	Less than 2,400mg    2,400mg
Total Carbohydrate	300g    375g
Dietary Fiber	25g    30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

**Whole wheat is great to eat!**

**Eat this snack; it has healthy foods from all the food groups!**

Querida Familia,

Hoy aprendí que el pan de grano entero es mejor para mi cuerpo que el pan blanco. Nuestra clase también hizo y comió este delicioso aperitivo de pizza que se hace con panecillos ingleses integrales. ¡Este puede ser un buen aperitivo para mí cuando regrese a casa después de escuela!

***Consejo para padres:** Al probar alimentos nuevos, es mejor sugerir, pero no obligara su hijo(a) a tomar un bocado. De mucho elogios cuando su hijo(a) pruebe algo nuevo.*

## Pizza de panecillo inglés

**Rinde: 6 porciones**

**Costo Total: \$3.61**

**Costo por Porción: \$0.60**



### Ingredientes

Panecillos Ingleses (*English Muffins*) de grano entero cortados por la mitad

1/4 lata de salsa de pizza (15 oz.)

1/4 pimiento verde

aceitunas picadas (4 oz.)

1/4 lata de piña en trocitos (20 oz.)

1/2 taza de queso mozzarella

### Instrucciones

1. Lavar el pimiento verde y cortar en trocitos.
2. Abrir la lata de piña y escurrir.
3. Cortar los panecillos por la mitad para usar como masa de pizza.
4. Untar 1 cucharada de salsa de pizza sobre una mitad del panecillo.
5. Añadir la piña, el pimiento verde y olivas a por encima.
6. Colocar encima una cucharada de queso mozzarella.
7. Con la ayuda de un adulto, caliente la pizza en el microondas o comer fría.
8. ¡A comer y disfrutar!

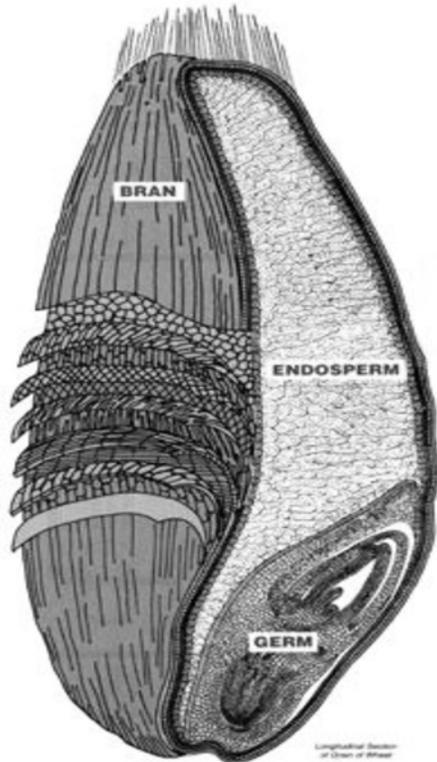
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Trans Fat 0g	
<b>Cholesterol 0mg</b>	<b>0%</b>
<b>Sodium 230mg</b>	<b>10%</b>
<b>Total Carbohydrate 19g</b>	<b>6%</b>
Dietary Fiber 3g	12%
Sugars 6g	
<b>Protein 6g</b>	
Vitamin A 8%	Vitamin C 25%
Calcium 15%	Iron 6%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000    2,500
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Cholesterol	Less than 300mg    300mg
Sodium	Less than 2,400mg    2,400mg
Total Carbohydrate	300g    375g
Dietary Fiber	25g    30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

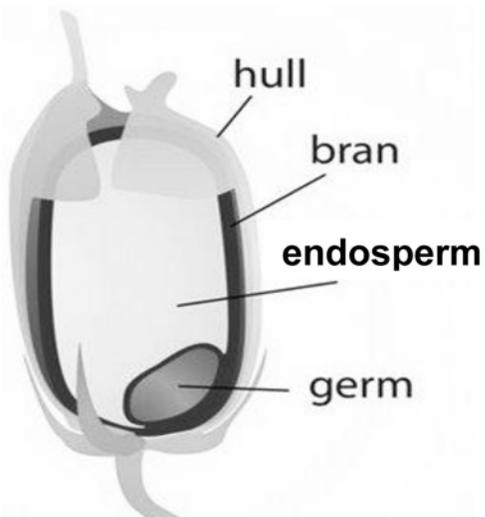
**¡El pan integral es genial para comer!**  
**¡Come este aperitivo; tiene alimentos saludables de todos los grupos alimenticios!**

# Whole Grains

## Wheat Kernel



## Rice Kernel



MyPlate recommends that we eat **whole grain foods** from the grain group. **What are whole grains foods?**

Foods from the grain group are made from the **kernels** (seeds) of certain plants such as **wheat** and **rice**. For example, **bread** is made from the seeds of the wheat plant and **rice** comes from the seeds of rice plants.

**Whole grains** are foods that are made from the whole seed and not just part of the seed.

Wheat kernels and rice kernels have at least three separate parts: the **bran**, the **germ**, and the **endosperm**. The bran is the outer covering that protects the kernel. The germ is the part where a new plant sprouts. The endosperm contains **starch** that provides food for the new wheat or rice plant until it can make its own food.

**Whole wheat flour (whole wheat bread)** and **brown rice** are made from the entire kernel which includes all three parts.

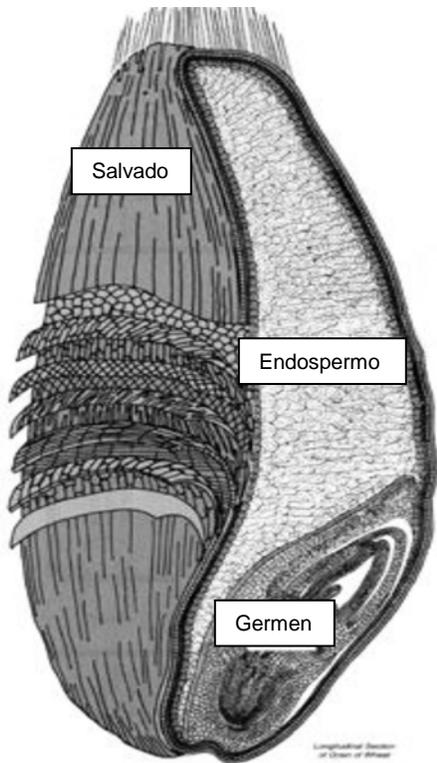
**White flour (white bread)** and **white rice** contain only the endosperm of the kernel. The bran and the germ of the kernel are removed.

Whole wheat flour and brown rice contain more valuable **vitamins**, **minerals**, and **fiber** than white flour and white rice. Therefore, when you eat **whole grains** you get more of the valuable **vitamins**, **minerals** and **fiber** your body needs. That is why eating whole wheat bread and brown rice is healthier than eating white bread and white rice.

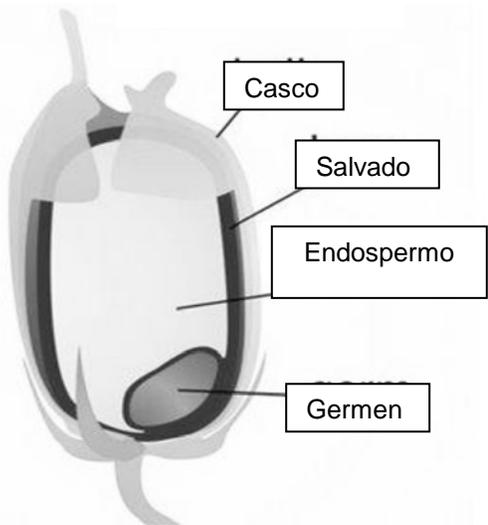
**Choose whole grains every day  
for better health!**

## Granos Integrales

### Grano De Trigo



### Grano De Arroz



Mi Plato recomienda que comamos alimentos del grupo de los granos integrales. **¿Cuales son las comidas que tienen granos integrales?**

Los alimentos del grupo de los granos integrales están hechos por el grano (semilla) de ciertas plantas como el trigo y el arroz. Por ejemplo, el pan está hecho de la semilla de la planta del trigo y el arroz viene de la semilla de la planta del arroz.

Los **granos integrales** son comidas que están hechas con el grano completo y no solo con parte del grano.

Los granos del trigo y del arroz tienen al menos tres partes separadas: el **salvado**, el **germen**, y el **endospermo**. El salvado es la parte de afuera que cubre al grano. El germen es la parte de donde la planta brota y el endospermo contiene el almidón, el cual provee alimento a la nueva planta de trigo o arroz hasta que esta pueda hacer su propio alimento.

La **harina integral** o de granos enteros (pan integral) y el **arroz color marrón** (integral) provienen de granos enteros el cual incluye esas tres partes.

La **harina blanca** (pan blanco) y el **arroz blanco** solo tienen la parte del endospermo del grano. Se les ha quitado el salvado y el germen del grano.

La harina integral y el arroz color marrón tienen más **vitaminas, minerales valiosos** y **fibra** que la harina blanca y el arroz blanco. Por eso cuando comes **granos integrales**, estás comiendo más de las **vitaminas, los minerales valiosos** y la **fibra** que tu cuerpo necesita. Es por eso que comer pan integral y arroz color marrón es más saludable que comer pan blanco y arroz blanco.

**¡Escojan granos integrales todos los días para una mejor salud!**

# Whole Grains

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

## **Spend time observing and feeling the two different kinds of flour.**

Rub the flour carefully between your fingers to feel the difference.  
Describe the differences below.

**Flour #1** looks \_\_\_\_\_. **Flour #2** looks \_\_\_\_\_.

Which flour feels smoother? \_\_\_\_\_

1. Why do you think there are there brown flecks in one of the flours?

---

---

2. Which flour is a whole grain and why? \_\_\_\_\_

---

## **Spend time observing and feeling the two different kinds of rice.**

Roll the rice carefully between your fingers to feel the difference.  
Describe the differences below.

**Rice #1** looks \_\_\_\_\_. **Rice #2** looks \_\_\_\_\_.

Which rice kernel feels smoother? \_\_\_\_\_

1. Which rice kernel is a whole grain and why? \_\_\_\_\_

---

2. Explain why whole grains are healthy for you.

---

---

# Granos Enteros

**Nombre:** \_\_\_\_\_ **Fecha:** \_\_\_\_\_

## Observa y palpa los dos diferentes tipos de harina.

Frote la harina con cuidado entre los dedos para sentir la diferencia.  
Describe las diferencias a continuación.

**Harina #1** luce (se ve) \_\_\_\_\_. **Harina #2** luce (se ve) \_\_\_\_\_.

¿Cuál se siente más suave? \_\_\_\_\_

1. ¿Por qué crees que hay manchas marrones en una de las harinas?

---

---

2. ¿Que harina es la de grano entero y por qué? \_\_\_\_\_

---

## Observa y palpa los diferentes tipos de arroz.

Pon el arroz cuidadosamente entre los dedos y siente la diferencia.  
Describe la diferencia a continuación.

**Arroz #1** luce \_\_\_\_\_. **Arroz #2** luce \_\_\_\_\_.

¿Cual grano de arroz se siente más suave? \_\_\_\_\_

1. ¿Cual es el grano entero y por qué? \_\_\_\_\_

---

2. Explica por qué los granos enteros son más saludables para tu salud.

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## Whole Grains (Teacher Only Answer Sheet)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Spend time observing and feeling the two different kinds of flour.**

Rub the flour carefully between your fingers to feel the difference.  
Describe the differences below.

Flour #1 looks white. Flour #2 looks brown.

Which flour feels smoother? **Flour #1 feels smoother.**

1. Why do you think there are there brown flecks in one of the flours?

**I think there are brown flecks in one of the flours because it is whole wheat flour and has the bran, the germ and the endosperm in it.**

2. Which flour is a whole grain and why?

**Flour #2 is a whole grain because it has all three parts in it. I think this is true because it looks like it has more parts than flour #1.**

**Spend time observing and feeling the two different kinds of rice.**

Roll the rice carefully between your fingers to feel the difference.  
Describe the differences below.

Rice #1 looks clear white. Rice #2 looks tan.

Which rice kernel feels smoother? **Rice #1 feels smoother.**

1. Which rice kernel is a whole grain and why?

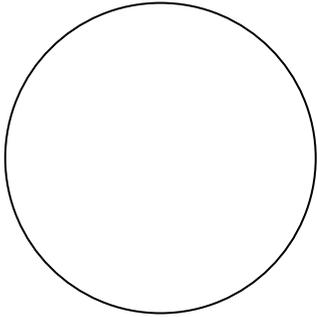
**Rice #2 is a whole grain because it has all three parts in it. I think this is true because it looks like it has a covering on it and rice #1 looks clear white.**

2. Explain why whole grains are healthy for you.

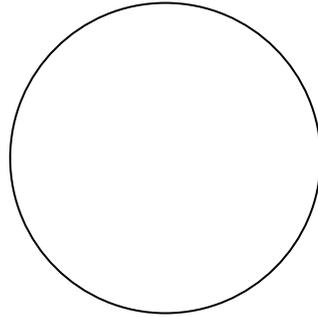
**Whole grains are healthier for you because they have more vitamins, minerals and fiber in them. Our bodies need vitamins, minerals and fiber to stay healthy.**

# Whole Grain Experiment

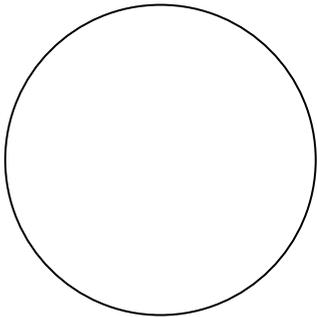
Sample (Teacher Only)



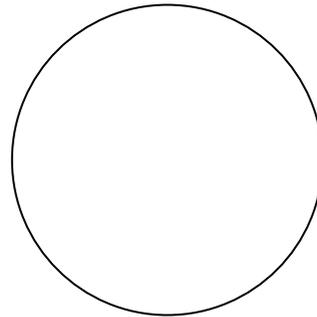
**Flour #1**



**Flour #2**



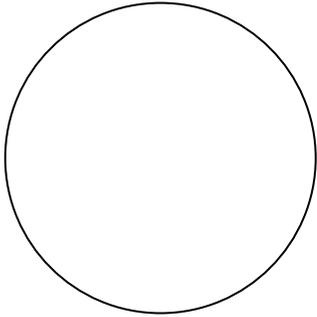
**Rice Kernel #1**



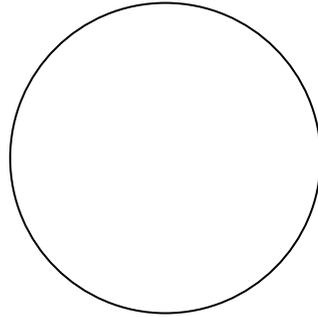
**Rice Kernel #2**

# El Experimento de Granos Enteros

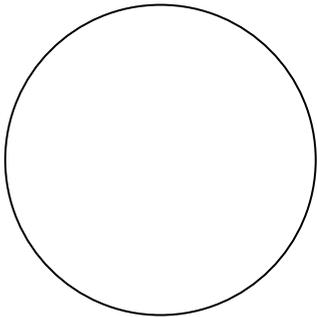
Ejemplo (Profesores solamente)



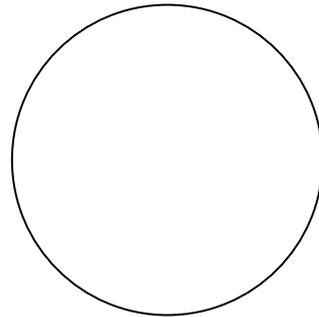
**Harina #1**



**Harina #2**



**Grano de arroz #1**



**Grano de arroz #2**