



Oregon State
University

Oregon Grown

Klamath County Extension



Mrs. Case



Henny Penny



Hello Students! Welcome to the Oregon Grown classroom. In our classroom we'll explore all about food—where it grows, how it grows, who grows it and best of all, how we can eat it! My name is Mrs. Case and I've brought along my friend Henny Penny. Come on in Henny. Can you guess what we'll be talking about today (Hint—what's in my hand?). You guessed it—GRAINS. So many things we eat come from grains. My favorite is popcorn. Henny Penny likes barley. Can you name a grain?

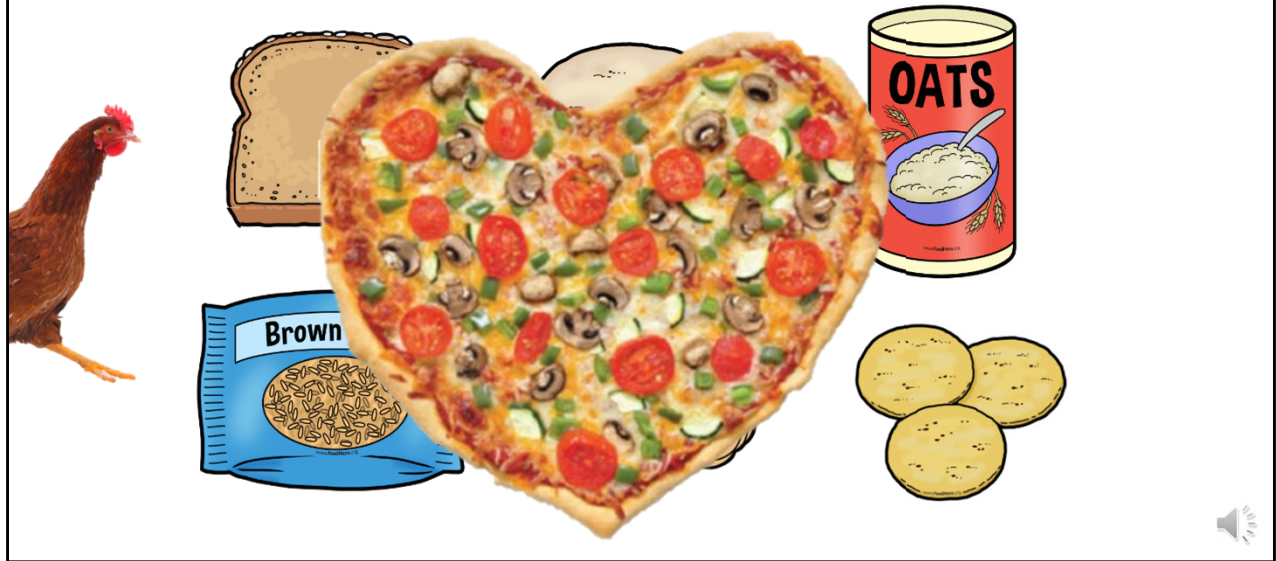
*****TEACHER NOTE:**

Key Message: Students will be able to identify the difference between whole grains and refined grains; identify the parts of the grain; identify how grains are processed or milled; identify where grains are grown in Oregon.

This lesson meets Oregon state Standards: NGSS 3-LS1-1.B; SS 3.10; HE 1.3.3; RI 3.2; Essential Skills 4, 9

Length: 25 minutes without pauses for the activity and discussion. Total of approximately 45-60 minutes with activity and discussion pauses.

SO MANY GRAINS TO EAT!



Did you name bread, tortillas (corn and flour), oats, rice, noodles, and crackers. Well done! There are so many kinds of grains to eat, you're sure to find one you like. In this lesson you'll learn how grains are changed (or processed) into flour and then bread. Some types of grains have extra benefits (or nutrients) for your body—you'll discover which ones to choose more often. How many parts are there to a whole grain? Henny Penny knows and so will you! We'll also look at a recipe made from grains. Yum

Whole-Y Grains



Book: Bread Comes to Life



Lesson: Grains



Activity: Grain Parts



Fun facts and Try it!



Here's our plan. First, we'll read a book about bread; then we'll compare different kinds of bread, see how a grain grows and what 3 parts make a whole grain. Next, we'll dissect a grain and label its parts. Finally, we will end our lesson with fun facts and a recipe you can make at home. Let's get going, with grains!

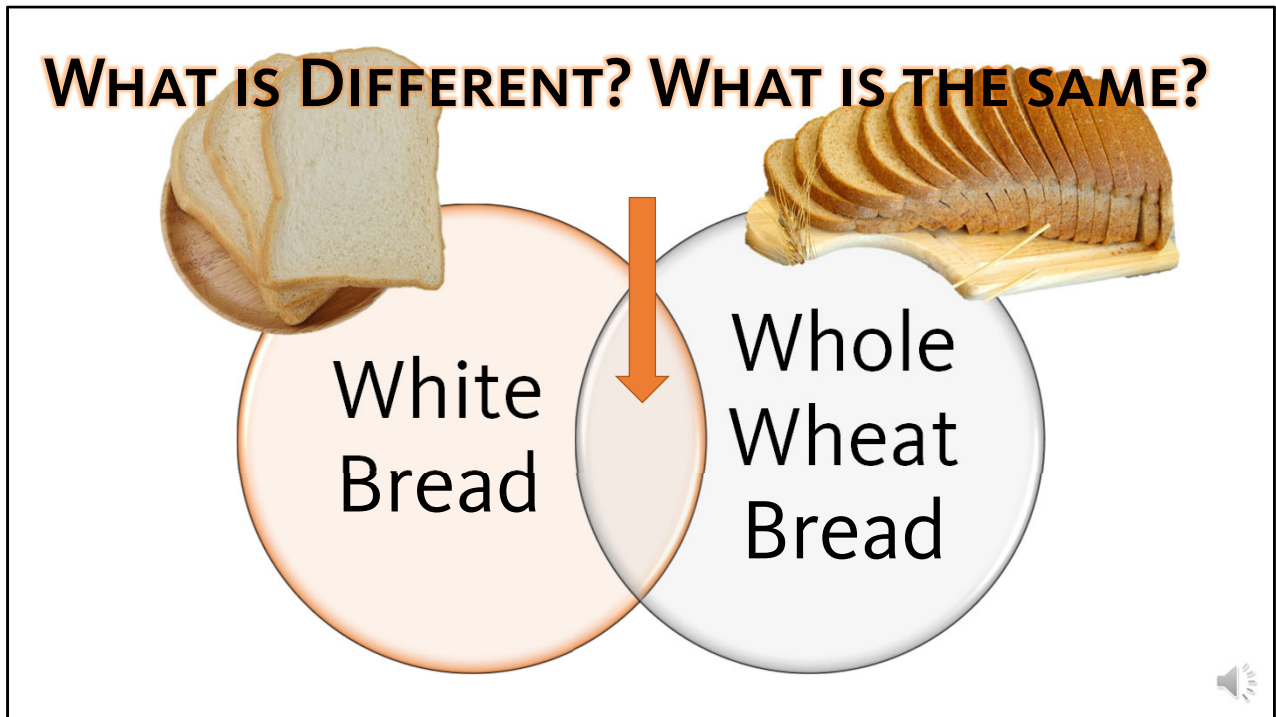


Here's our book: Bread Comes to Life. Henny Penny is interested are you?

This book shows how grain grows from a plant, is harvested, milled or ground up into flour and made into all kinds of grain products we love to eat! Let's stop here and read it. If you've have already read it, let's continue with our lesson.

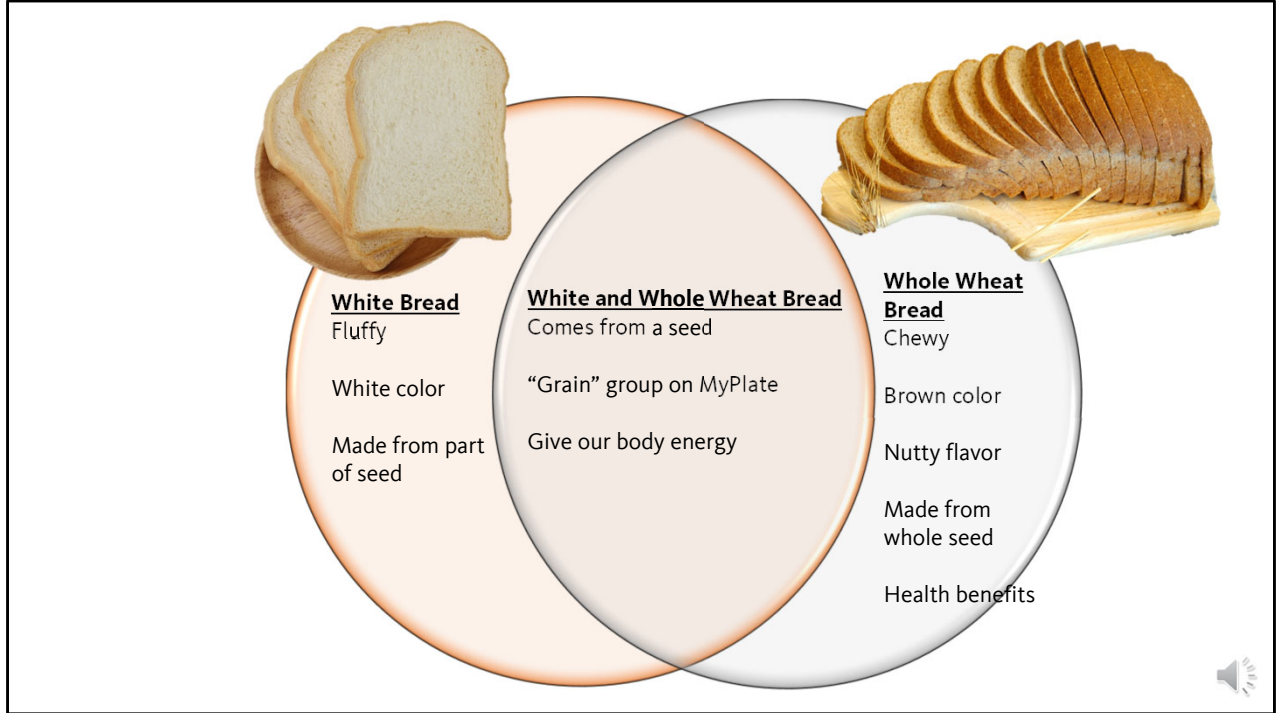
But first, here is a Joke: Why does bread like warmer weather? It gets toasty!

*****TEACHERS NOTE:** You can check this book and/or lesson kit out by contacting your Klamath County's extension office's SNAP-Ed program. The books can be delivered with or without your classroom kit prior to the lesson date. An OSU educator will set up a time to pick up the book and/or lesson kit after the lesson date. Please pause here to read the book to students. If you have already read the book, move on to the next slide for discussion.



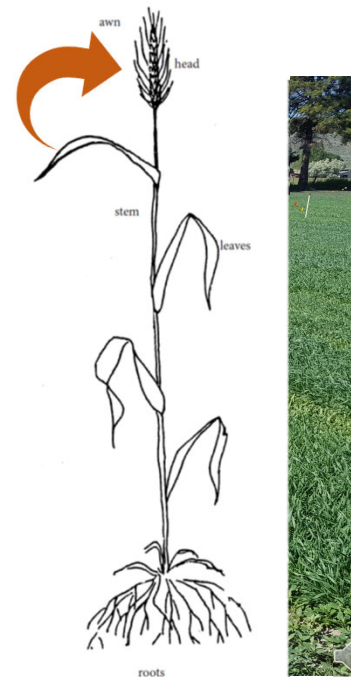
Bread comes in lots of different shapes, sizes, tastes and types. Let's use a Venn diagram to compare two types white bread and wheat bread—what is similar and what is different about these types of breads? What words would you use to describe white bread only? What words would you use to describe wheat bread only? And then what is similar or same about both wheat and white bread, that's what goes in the middle right here. You try and then I'll give you my ideas.

*****TEACHERS NOTE:** STOP HERE: You may wish to stop here and have students draw, label and complete the diagram.



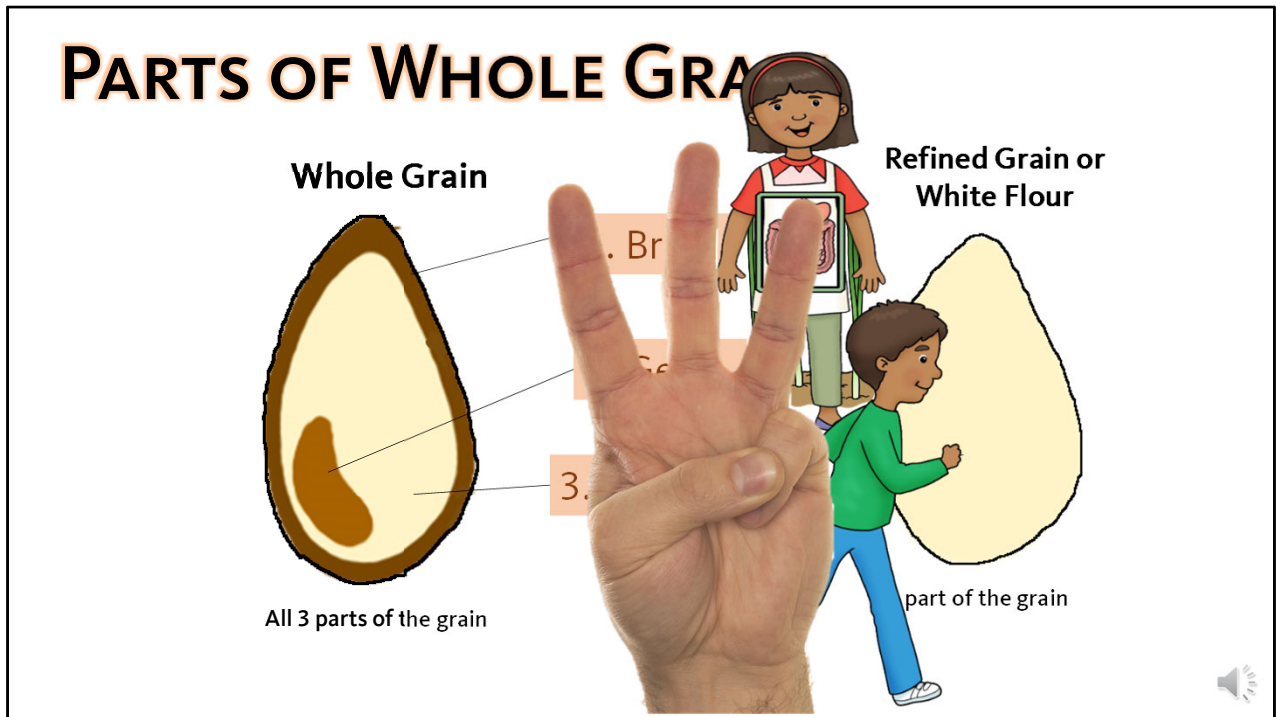
What did you come up with? For White Bread by itself? Here are some words I came up with fluffy, white color, and made from part of seed. What about Wheat Bread? I came up with chewy, brown and nutty, made from the whole seed, and have health benefits. What did you think was similar or the same with both bread types? They both come from a seed, they both are in grain group on MyPlate and they both give our bodies energy. What words did you come up with?

GRAINS ARE SEEDS!



What does a grain plant look like? Grains come from plants called “grasses”. Here’s a picture of how they start to grow. The plant forms a head at the top. That’s where the seeds are. Grains are seeds we eat, also called a kernel. Sometimes we eat the whole kernel like popcorn or rice. Or when its crushed like oatmeal or ground into flour. Lets talk about the parts of the grain.

Grain field picture from Klamath County Research center gain fields. Photo by Tom Silberstein.



If we were to take the wheat kernel apart or dissect it, we would find 3 distinct or different parts that we eat. Can you name one or more of the parts?

Did you guess—the bran, endosperm and germ. You were right! Let me tell you more about each of these and what the parts do for the plant and our bodies when we eat it.

Bran: its like the coat for the seed, it protects it. When we eat the bran, think of a popcorn kernel. how it gets stuck in your teeth. Yes! That part has extra nutrients like B vitamins and fiber. Fiber is like a broom that keeps our guts or intestines clean. And stuff you can't see like B vitamins and phytonutrients keep your heart strong.

Germ: the embryo or baby wheat plant which will sprout into a new plant if we put it in the soil. When we eat the germ we get extra vitamins like B and E and fiber too.

Lastly the Endosperm. Here's the food supply for the germ or baby seed so it can survive until it sprouts out of the ground and reaches for the sun and down into the soil. As you can see it's the biggest part of the wheat kernel. When we eat it, we get starch or carbohydrate that our body uses for energy.

Whole grain has all 3 parts; a refined grain or white flour is one that has the germ and bran removed like the white bread we looked at earlier.

*****Teachers Note:**

Optional Videos:

White Bread Vs Whole Grain: Which is healthier? (from 2 minute school. 3 minutes.

<https://www.youtube.com/watch?v=418KSrmpMwc> (3 min long)

Describes what whole grain is (from Post):

<https://www.youtube.com/watch?v=ggpYTh4NRFg> (1:20 min long)



Activity Time



Find the parts of the grain



Now its time to do an activity together. Lets find out about the different parts of a whole grain.

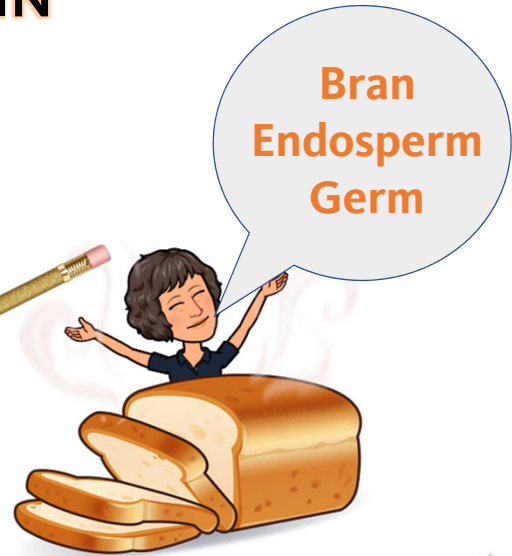
*****TEACHER NOTE:** You can request to check out a lesson activity kit from Klamath County OSU extension office. Activity options for this lesson include a physical (out of desk) Ag Tag relay game or a class set of individual (at desk) Ag Tag cards. Ag tag Cards are available on website to print or in a kit to check out & return.

If you have not received a kit. Pause here and please see the printable alternate activity kit materials and video on this lesson's webpage. You can watch the video and complete the activity using a blank piece of paper or print out the alternate activity page and use it to follow along with the video. Check out the Alternate activity section of Supporting Lesson Materials on this lessons webpage.

PARTS OF A GRAIN



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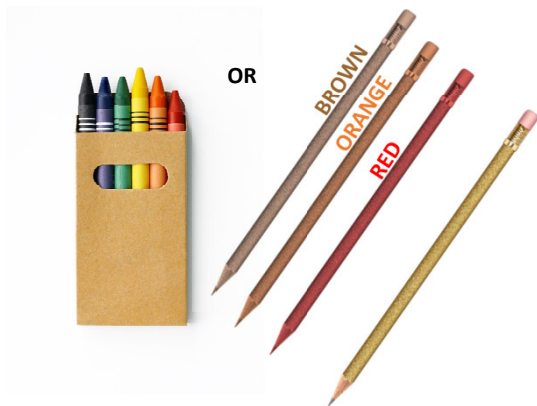
We'll start by naming or labeling the parts of the grain. Do you remember the 3 parts? Bran, endosperm and germ. Good. As you write each part, describe or tell what job it has. Like this. After that we'll use a real head of wheat to find the kernel hiding inside.

*****TEACHER NOTE: ***TEACHER NOTE:** You can request to check out a lesson activity kit (wheat heads) from Klamath County OSU extension office. Availability limited. Activity options for this lesson include a wheat head for dissection and a printable wheat diagram worksheet. The wheat diagram is available on website to print.

If you have not received a kit. Pause here and please see the printable alternate activity kit materials and video on this lesson's webpage. You can watch the video and complete the activity using a blank piece of paper or print out the alternate activity page and use it to follow along with the video. Check out the Alternate activity section of Supporting Lesson Materials on this lesson's webpage.

WHAT YOU WILL NEED:

- Picture of Grain
- Brown, orange and red Crayons/colored pencils
- Head of wheat (1)



Name _____

Parts of a Grain

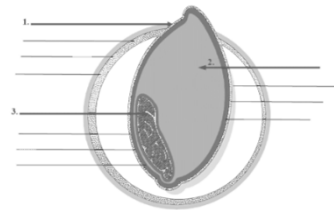


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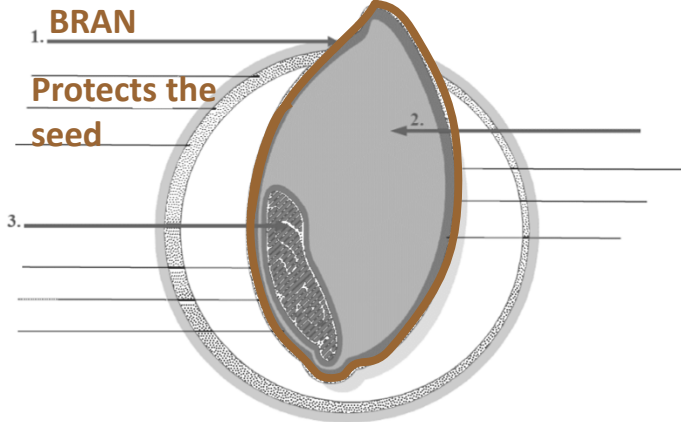
Let's get ready to do the activity. Get out all your supplies. You will need: the Parts of a Grain picture or diagram, colored pencils- brown, orange and red or crayons. A regular pencil. And one head of wheat.

Step 1

Name **Mrs. Case** _____



Parts of a Grain



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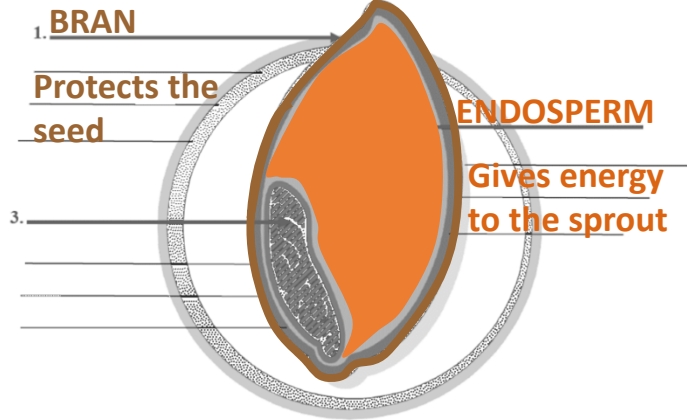
Our first step: write your name with a regular pencil in space, like this. Set your pencil down and grab the brown colored pencil or crayon. With your brown color pencil or crayon color in the outside edge of the grain. This is the BRAN. What's the Bran's job? It the outer shell that protects the seed. With your brown color pencil or crayon write the word BRAN on number one. Then below write what it's job is: "Protects the seed."

Step 2

Name _____



Parts of a Grain



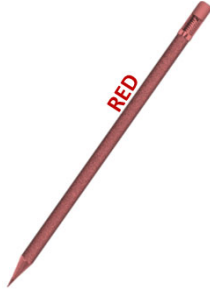
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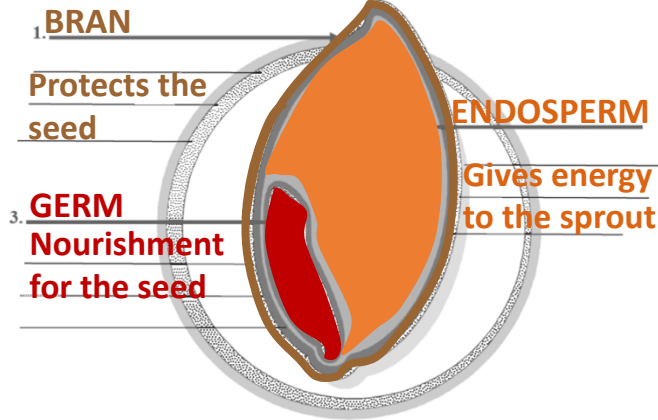
We have labeled one part of the grain kernel! Now it is time to do a second part. Use your orange color pencil or crayon and color in the largest part of the grain kernel illustration. This is the ENDOSPERM. With your orange crayon or color pencil write under number 2 ENDOSPERM. Then write what it's job is on the lines below. This largest part of the kernel "Gives energy to the sprout."

Step 3

Name _____



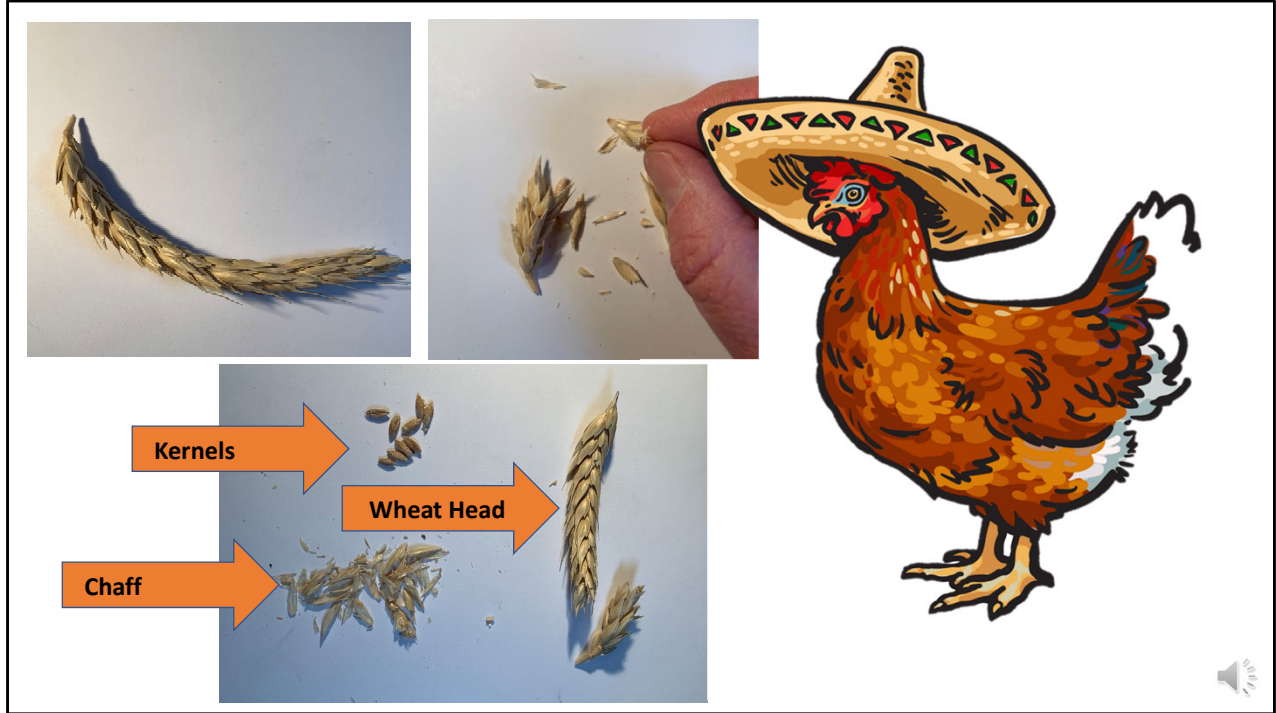
Parts of a Grain



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One more part of the kernel to identify and our diagram will be complete. With your red color pencil or crayon color in the small part of the kernel the bottom. Can you find it? This is the Germ-The part of the kernel that sprouts and grows into a new plant. Write the word GERM with your red color pencil or crayon on line 3. And write what the Germs job is in the space below: provide “nourishment for the seed “
Look at that! We have all 3 parts that make a **WHOLE GRAIN** ! Time now to touch some real grain, not just a diagram.

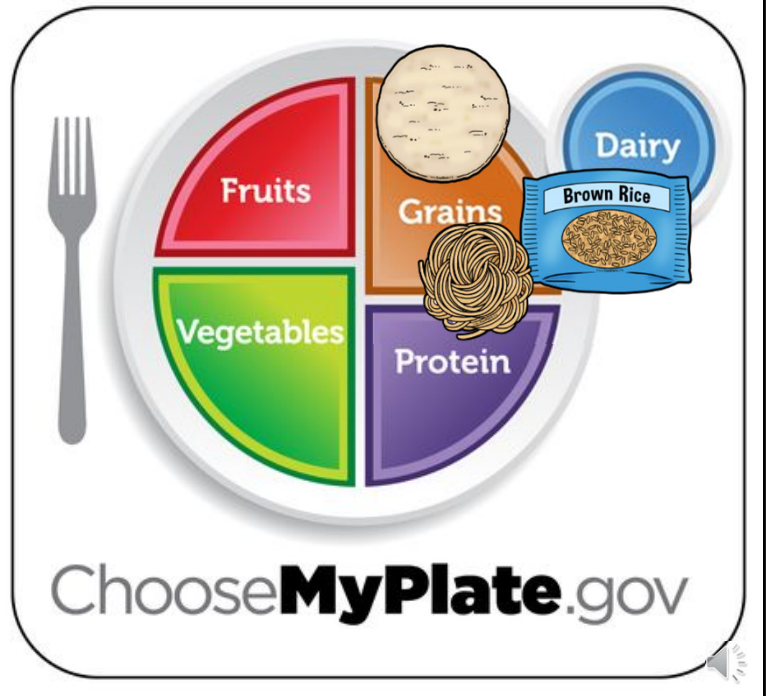
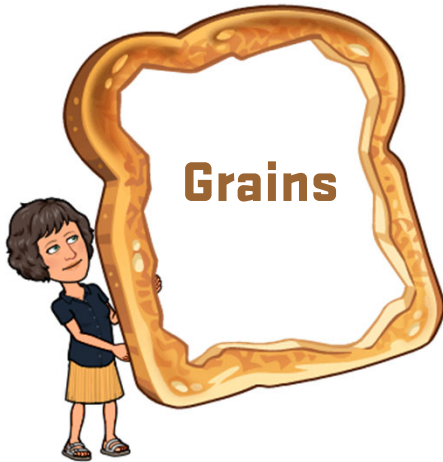


Next, we'll dissect the head of wheat where the kernels are hiding. To get to the kernel inside, we separate it from the chaff by pulling it apart. The chaff is the part we DON'T eat. Surprise! There are the kernels. That's Henny's favorite part. Good job! Count up how many you have. You can tape those to your wheat kernel diagram if you would like. Or with the help of an adult, try crushing them into flour. Do you think that will be easy or hard? Imagine how many wheat kernels it takes to make enough flour for a loaf of bread.

*****TEACHER NOTE:** If you would like, Pause here to ensure everyone is ready for the next step.

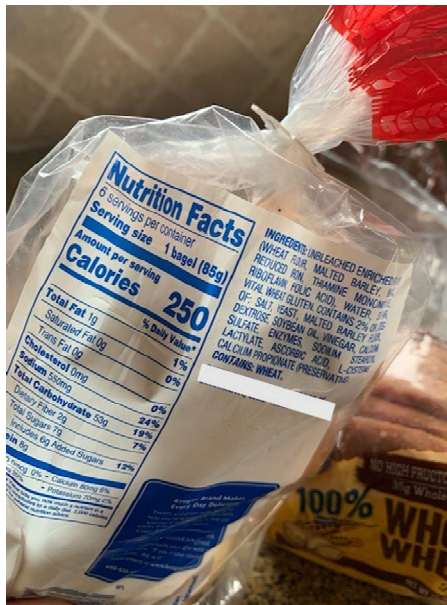
Video: separating chaff. <https://utah.agclassroom.org/matrix/lesson/628/>

MyPlate Fun Facts!



Its time for MyPlate Fun Facts! You've seen this picture of MyPlate that helps us think about the kind of foods we should eat at every meal for a strong and healthy body. Give me names of grains that fit in $\frac{1}{4}$ of your MyPlate. Now let me give you a fun fact on how to find which foods are whole grains.

HOW TO FIND WHOLE GRAINS



... flour, water,
... gluten,
... salt, honey.

is a whole grain

... 100% whole
... corn syrup,
... oil, yeast,



Where do you get your bread? Most of us get it at the store. Since we don't make it ourselves, how do we know if its made from the whole grain? The clue is on the label under ingredient list. The ingredient list tells us everything that's in the food. And the order the ingredients are listed also gives us a clue. If its first on the list—that's the main ingredient. If you want to find the whole grain items, look to see that the first ingredient is a whole grain. Here are two examples. Which is whole grain bread?

HOW TO FIND WHOLE GRAINS



Harvest 7-Grain Bread:

INGREDIENTS: **Enriched wheat flour**, water, high fructose corn syrup, wheat gluten, soybean and canola oil, yeast, salt, honey.

Clue: First ingredient is a whole grain

Honey Oat Bread:

INGREDIENTS: **Stone ground 100% whole wheat flour**, water, high fructose corn syrup, wheat gluten, soybean and canola oil, yeast, salt, honey.



You got it. Now you know how to choose the whole grain food. No one can fool you now. Choose whole grains whenever you can.



Grains and flours made from grains can be made into many recipes. Pizza is easy with this recipe for a quick crust. And of course we'll use whole grain flour!

Try It! No-Yeast Wheat Pizza Crust

Ingredients

- 1 ½ cups white flour, try half whole wheat
- 1 teaspoon baking powder
- ½ teaspoon salt
- ½ cup nonfat or 1% milk
- 2 tablespoons oil

Directions

- Wash your hands
- Mix flour, baking powder and salt in bowl.
- Stir in milk and oil until soft dough forms.
- Turn dough onto a clean, lightly floured and knead 6 to 8 times. Dough should feel soft but not sticky.
- Shape dough into ball. Cover and let sit for 10 minutes.
- On a baking sheet, roll or press dough into a 12 inch circle.
- Bake crust at 400 degrees F for 10 minutes.
- Remove from oven and add your choice of sauce and toppings.
- Return to oven and bake until light brown, 12-20 minutes.
- Refrigerate leftovers within 2 hours.

Eat More Whole Grains

- Look for whole wheat flour as one of the first ingredients on a product you buy – breakfast cereals, pasta, breads.
- Substitute whole wheat flour for up to half the flour in a recipe - try it in cookies, pancakes, pizza crust, muffins or breads.

Visit
FoodHero.org
for easy, delicious
recipes using
whole grains



Give this no yeast, wheat pizza crust a try and use half whole wheat flour! Think of all the wonderful topping you can put on this!

*****TEACHER NOTE:** See individual recipe handout or visit www.foodhero.org to print.

Video of recipe being prepared available at: Video of recipe:

<https://youtu.be/CCK2rEAneaM>

Grown in Oregon

If there are 1 million kernels in a bushel of wheat and that makes 50 loafs of bread, how many kernels does it take to make one loaf of bread (1 pound loaf)

About 20,000 kernels!

Legend

Oregon's Agricultural Regions

- Coast
- Willamette Valley
- Southern Oregon
- High Desert
- High Columbia
- Columbia Plateau
- Northeast
- Southeast

Apples, Beans, Beef, Blackberries, Blueberries, Broccoli, Cherries, Chicken/Eggs, Christmas Trees, Corn, Crab, Cranberries, Dairy, Easter Lily, Fish, Forestry, Grapes, Grass Seed, Greenhouse/Nursery, Hay, Hazelnuts, Hops, Onions, Pears, Peppermint, Potatoes, Pumpkins, Sheep, Shrimp, Sugarbeet, Vegetable/Flower Seed, Watermelon, Wheat/Barley

Its time for Farmer Fun Fact. Bread has been an important part of the human diet since early times. Loaves baked over 5,000 years ago have been found in ancient Egyptian tombs. Now, I'm not sure if Egyptians had farmers or bakers but most of us don't grow our own wheat for flour. So we depend on farmers to grow the grain for us. Let's learn about where grain is grown in Oregon. Before we do that, I have a math problem: 1 million kernels in a bushel makes about 50 loaves of bread (1 pound), how many kernels does it take to make one loaf? About 20,000. WOW! That's a lot kernels!

*****Teacher Note:** If you would like, you can pause here and work out the math problem with the students!



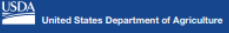

So where are most grains grown in Oregon. Here is a map of our state, with all 36 counties. Can you find Klamath county? Guess what? Klamath county is one of the areas that grows a lot of grains. Another area is the eastern side of Oregon. We also grow lots of grains on the north part of the state near Columbia River. We also grow some in the Willamette Valley. I'm glad farmers grow grains for us aren't you?



That concludes your Oregon Grown lesson. Remember to look for whole grains to eat more often, and see if you can see grains growing in the fields of Oregon. See you next time!

*****TEACHER NOTE:** Please ensure students complete exit quiz after lesson on our website after lesson. This is how we are collecting data on how many students we are reaching and their understanding. It is a simple couple questions, like exit ticket for your lessons.

Grain field picture from Klamath County Research center grain fields. Photo by Tom Silberstein.

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Form AD-475-S SNAP and FDIR Poster Revised September 2019

Afiche del Formulario AD-475-S SNAP y FDIR | Revisado Septiembre 2019

****TEACHER NOTE: If program delivered in a non-school setting, you must read the script below

Oregon State University's Klamath County Extension Service would like to take a moment to share with you the And Justice For All poster, something we display when we are teaching. It provides non-discrimination information stating that our institution is prohibited from discriminating in accordance with civil rights regulations and policies. For more information see this link -> <https://www.fns.usda.gov/cr/and-justice-all-posters-guidance-and-translations>

This program is partially funded USDA's Supplemental Nutrition Assistance Program.

Credits (1 of 1)



Oregon State University
Extension Service



**Oregon Agriculture in the
Classroom Foundation**

Project funded, in part, by Oregon Department of Ed Farm to School & School Garden grant.

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Photos by: FoodHero.org; National Ag in Classroom (Enjoy the Harvest); Wholegrainscouncil.org; Pixabay.com (chickens, tractor, hole punch); shutterstock (Oregon map, chickens, etc); Extension & Experiment Communication (wheat fields)

Sources:

Oregon Ag in the Classroom
National Ag in the Classroom
Oregon Harvest for Schools
Whole Grains Council

Grain field pictures from Klamath County Research center grain fields. Photo by Tom Silberstein.