



Student Name:

All About Flour

Summary: What is flour? Why are there so many types? What makes them different? If you've ever read a baking recipe that called for bread flour, cake flour, or unbleached flour and wondered any of those questions, this is your chance to learn all about flour. First, you'll note what you already know and what questions you have before diving into Flour 101. Then, you'll have a chance to choose between learning about locally grown grain, freshly milled flour, or misleading labelling on "whole wheat" products.

Time: 90 minutes

DO: Complete the **Know** and **Want to Know** portions of the chart below to start. List any facts you know about wheat, flour, and milling. Write down any questions you have in the center column.

What I Know about Wheat, Milling, and Flour	What I Want to Know about Wheat, Milling, and Flour	What I Learned about Wheat, Milling, and Flour

DRAW: Color in the [Anatomy of a Wheat Kernel](#) sheet and complete the blank fields using the information on the page.

READ: There are many types of wheat. In this section, you'll learn some of the different classifications and learn what they mean.

- Hard and soft are two different types of wheat. **Hardness** refers to how hard the grain is to mill. **Hard wheats tend to have more protein and gluten.** Soft wheats tend to have less protein and gluten.
- There are **red and white wheat varieties.** This refers to the color of the wheat kernel bran, which is the hard outer shell. **Red wheats tend to be harder than white wheats.**

- Wheat is also classified as either **Winter wheat** or **Spring wheat**. Winter wheat is planted in the fall and goes **dormant** over the winter before continuing to grow in the spring. Spring wheat is planted in the Spring. **Winter varieties of wheat tend to be harder than spring varieties.**
- **Durum wheat** is another type of wheat that is used primarily for making pasta rather than bread or pastry. **Durum wheat is the hardest** type of wheat. **Semolina** is a type of flour made from durum wheat that is ground more coarsely than most flour.
 - Semolina can also refer to coarsely ground flour made from grains other than wheat.

SORT: Sort the following wheat varieties by hardness.

- Durum Wheat
- Hard Red Winter Wheat
- Soft White Wheat



WATCH: Watch the following videos about milling and complete the structured notes. Milling is the process of grinding wheat kernels into flour. There are also processing steps that have to be completed before wheat can be milled.

Homesteader Greg Pryor demonstrates the process at small scale in [“processing wheat into flour”](#)

- (1:10) The _____ is the hull on the outside of the wheat berry that must be separated before milling.
- (2:00-2:35) _____ is the process by which wheat is separated from the stems and chaff is broken apart from the wheat.
- (2:50) _____ is the process by which wheat and chaff are separated.

This [How It’s Made: Flour](#) video shows how flour is milled at large scale and discusses which types of wheat are used to make different types of flour.

- (0:05) Hard wheat is used to make _____ flour.
- (0:10) _____ wheat is used to make cake and pastry flour.
- (1:55) White flour milled using only this portion of a wheat kernel: _____.
- Whole wheat flour is milled from these portions of a wheat kernel: _____, _____, _____.

- (2:17) _____ removes the bran and germ from the endosperm.
- (3:05) _____ flour has high protein, allowing dough to rise well.
- (3:13) _____ flour has low protein content, allowing soft, crumbly textures.
- (3:19) All purpose flour is a compromise between the two and has _____ protein content.
- (4:22) White flour is _____ with vitamins and minerals to replace some of those removed in the germ and the bran.

(OPTIONAL) CHOOSE: Choose a subject you want to learn more about and read that subject’s linked article. Once you finish reading, complete the 3, 2, 1 reflection below:

- Freshly Milled Flour - <https://sanfran.com/sourdough-bread-feature-freshly-milled-flour>
- Locally Grown Grain - <https://cuesa.org/article/california-grain-revival>
- Misleading Whole Grain Labels - <https://www.communitygrains.com/the-whole-grain-test-executive-summary/>

Write down **three** facts, phrases, or ideas discussed in the text. Write **two** things you found interesting about the text. Write down **one** question you have after reading the text.

REFLECT: Consider what you’ve learned in filling out the structured notes and complete the **What I Learned** section of the chart (pictured to the right) you started on the first page.

What I Know about Wheat, Milling, and Flour	What I Want to Know about Wheat, Milling, and Flour	What I Learned about Wheat, Milling, and Flour

Student Notes:

- Whole wheat is more perishable than white flour because it contains trace oils from the wheat germ. Store whole wheat flour in the freezer to keep it fresh longer.
- Want to learn more about all the different kinds of seeds we eat? Check out the [Seeds We Eat](#) lesson.
- Apply your flour knowledge by creating your own [Seasonal Fruit Muffin](#).
 - Try making two half-size batches with two different types of wheat flour to see how it affects the texture.
- Spend some time with your family coloring and discussing how you eat wheat using our [Coloring Together: Anatomy of a Wheat Kernel](#) activity.

References:

A California Grain Revival (2017, September 15). *CUESA*. Retrieved from <https://cuesa.org/article/california-grain-revival>

Duffett, B. (2019, September 10). *Embracing Freshly Milled Flour, These Bakers Are Creating Incredible Sourdough Bread*. San Francisco Magazine. Retrieved from <https://sanfran.com/sourdough-bread-feature-freshly-milled-flour>

How It's Made: Flour (2014, March 2). *How It's Made*. [Video]. Retrieved from <https://www.youtube.com/watch?v=u6k9zyi3OKo>

Processing Wheat into Flour. (2017, May 30). [Video] Retrieved from <https://www.youtube.com/watch?v=CwY--P9t8x8>

The Whole Grain Test: Executive Summary (n.d). *Community Grains*. Retrieved from <https://www.communitygrains.com/the-whole-grain-test-executive-summary/>

Disclaimer: All videos and references are used for educational purposes only. The Edible Schoolyard Project does not endorse any brands, labels, organizations, or businesses included in videos or references.

Notes for Teachers and Parents

- This lesson supports students in becoming more confident in cooking.
- This activity supports students in understanding how the foods they consume are produced.
- This activity supports students to connect the food they eat to the plants that produce them.
- This activity supports students to understand the benefits of organic and local agriculture.
- This lesson can be broken out into multiple shorter lessons.
- This lesson can be expanded with a lab in which students bake the same recipe using two different kinds of flour, make hypotheses about texture, and analyze their results.