



# Bread Making Food Science Challenge

Learn about basic chemistry at work in baking with the Illinois 4-H Bread Making Food Science Challenge!

## In this challenge, youth will:

1. Discover the science behind breads and what makes them rise
2. Learn basic baking skills like measuring
3. Get experience reading and following a recipe
4. Make their own bread-in-a-bag and/or banana bread

## Challenge resources:

- [Bread-in-a-Bag Recipe](#) (4-H)
- [Banana Bread Recipe](#) (DKK 4-H)
- [Bread Science Overview video](#) on YouTube
- [Bread-In-A-Bag Tutorial video](#) on YouTube
- [Banana Bread Tutorial video](#) on YouTube
- [How to Measure video](#) on YouTube (Cooking with Kids)

## Challenge details:

Access the challenge resource materials above, which are hosted at <https://4h.extension.illinois.edu/programs/home-activities>. In this challenge, you can make banana bread, bread-in-a-bag, or both. Look at both recipes at the links above to decide what you want to make based on taste preference, ingredient lists, and required supplies. Check your pantry and plan a grocery list using the ingredients on either bread recipe.

Some considerations to help you plan your bake and your ingredient list:

- Yeast is required for the bread-in-a-bag recipe and baking soda is required for the banana bread recipe. If you have trouble accessing one of those ingredients, choose to make the other recipe.
- A number of ingredient substitutions (such as whole wheat flour for regular flour) are possible in the recipes, especially the banana bread recipe (which is more forgiving). Check out a list of possible ingredient substitutions, if needed.
- Once you've decided which bread(s) to make, we encourage you to do the following:
- Watch our Bread Science video on YouTube to learn about the science behind leaveners (like baking soda and yeast) and how they help bread rise.
- If you don't have much experience baking, watch the supplemental How to Measure video on YouTube to get some tips.
- Download the recipe for what you plan to make, then review the recipe or watch the tutorial videos to see the recipe in action.
- Clean and disinfect the area you'll be working in and wash your hands. Get handwashing tips in this video from University of Illinois Extension. Then gather your ingredients and supplies.
- Bake your loaf of bread by following the recipe(s).

During the baking process, notice how your bread changes texture and shape. After the bread is done baking, cut off a slice and observe the inside to see the texture and look for evidence of leaveners at work. If you made both types of bread, compare the structure of both and notice the differences.

# Illinois 4-H At-Home STEM Challenge

Enjoy the bread you baked and share it with members of your household!

With parent/guardian permission, take photos of your bread and post it on social media, and consider tagging "Illinois 4-H" and/or using the hashtag #thats4H.

## Questions?

Email [amyh@illinois.edu](mailto:amyh@illinois.edu) or visit <https://4h.extension.illinois.edu/programs/home-activities>

## Want to learn more about 4-H near you?

Find your local 4-H office at [go.illinois.edu/FindYour4HOffice](http://go.illinois.edu/FindYour4HOffice) or learn more about Illinois 4-H at [4h.extension.illinois.edu](http://4h.extension.illinois.edu)

## Did you have fun with this challenge?

Check out this 4-H project at <https://4h.extension.illinois.edu/members/projects/food-and-nutrition> and here are additional learning resources that may interest you:

- Yeast-Air Balloon Experiment (Exploratorium):  
<https://www.exploratorium.edu/cooking/bread/activity-yeast.html>
- 4-H National Youth Science Day: Biofuel Blast (4-H):  
<https://4-h.org/wp-content/uploads/2016/03/4-h-nysd-biofuel-blast-youth-worksheets.pdf>
- The Industrial Bread Process: An Overview for Children (Grain Chain):  
<https://youtu.be/w3O8lKnBhu8>
- The Grain Chain Grain Video Playlist for Kids (Fun Kids Learn):  
[https://www.youtube.com/playlist?list=PLe-9aCSqLpF9NQxXM7\\_nAM8nJb3kKODy9](https://www.youtube.com/playlist?list=PLe-9aCSqLpF9NQxXM7_nAM8nJb3kKODy9)



Resource originally produced by Amy Henschen for DuPage, Kane & Kendall County 4-H.

If you need a reasonable accommodation to participate in this program, please contact your local University of Illinois Extension office.  
Early requests are strongly encouraged to allow sufficient time for meeting your access needs.  
University of Illinois Extension provides equal opportunities in programs and employment.  
University of Illinois College of ACES • United States Department of Agriculture • Local Extension Councils Cooperating