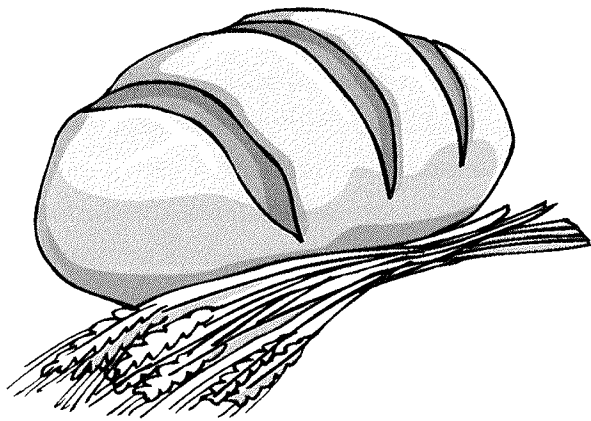


# BREAD IN A BAG

Between pumpkins and cranberries, physics, and chemistry, this bread in a bag activity for kids is a great way to develop math, science, and even fine motor skills! Plus, it tastes amazing!



## SHOPPING LIST

3 cups plain flour, divided  
3 tablespoons granulated sugar  
1 .25oz Packet rapid rise yeast  
1 1/2 teaspoons salt  
1 cup of warm water  
3 tablespoons olive oil

## RECIPE

Open up your zip-lock bag and place it in a large bowl.

Scoop 1 cup flour into a large zip-lock bag, with the sugar, yeast, and the water.

Let the air out of the bag, then seal the bag closed and mix from the outside of the bag with your hands. Let the bag sit for 10-15 minutes.

Now open the bag and add 1 cup of flour, the salt, and the olive oil. Seal the bag, and mix again.

Add 1 more cup of flour, seal, and mix again.

Remove the dough and knead for 10 minutes on a piece of floured parchment paper. Cover with a warm damp hand towel for 30 minutes.

Place in a greased bread pan and bake for 25 minutes at 375 degrees. ENJOY!

# BUTTER IN A JAR

**Delicious homemade butter is minutes away and all you need is one simple ingredient and your own two arms.**



## SHOPPING LIST

**Heavy Whipping Cream  
Mason Jar with Lid**

## RECIPE

**Fill your mason jar about 1/2 way with heavy whipping cream and put the cover on tightly!**

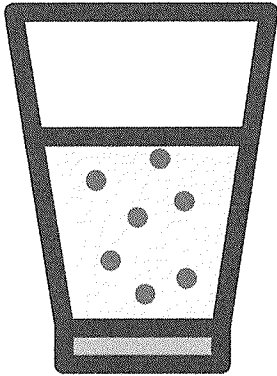
**Shake it up! You will be shaking for at least 15 minutes! Feel free to stop and check at the 5-minute mark. You won't see much of anything just yet, but it's a great way for the kids to see what's going on and give the arms a bit of a rest.**

**Keep going and check in another 5 minutes or at the 10-minute mark. This check-in will be a little more exciting this time because you now have whipped cream. Make sure to take a taste at this point if you want. Remind the kids that there is no sugar in this whipped cream so it won't taste like what they think it might taste like! Put the cover back on and keep shaking!**

**You will want to strain the solid (butter) from the liquid (buttermilk) and put it in a new container. Spread your homemade butter on a piece of bread or muffin and enjoy tasty edible science!**

# DANCING CRANBERRIES

Is it science or magic? This is a simple and fun way to explore states of matter, density, and more for Thanksgiving!



## SHOPPING LIST

Clear glass  
Dried cranberries  
Sprite

## RECIPE

Can you make cranberries dance? You can even try this with raisins, grains of salt, and even popping corn.

Fill the glass almost  $\frac{3}{4}$  full with Sprite.

Add a small handful of dried cranberries to the Sprite.

Watch the cranberries drop to the bottom of the glass, float to the top and back down again for several minutes.

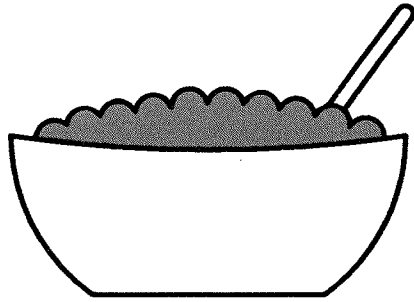
What is buoyancy?

Initially, you observed that the cranberries sunk to the bottom because they are heavier than the water. However, the soda has gas in it which you can see with the bubbles.

The bubbles attach themselves to the surface of the candy and lift it up! When the candy reaches the surface, the bubbles pop and the candy falls back down. The bubbles are key to making the cranberries dance!

# CRANBERRY OOBLECK

Cranberries are a popular side dish for any Thanksgiving feast, and you either hate the sauce or love it! Whether you hate it or love it, you can use this traditional berry for a number of fun and simple Thanksgiving theme science and STEM activities.



## RECIPE

Start by adding the cornstarch to the bowl.

Next, add about 1/2 a can of cranberry sauce and a 1/4 cup of water. Get ready to mix. This can be messy and your hands may be easier than a spoon.

If you add too much cornstarch, go ahead and add back in some water and vice versa. Make small changes at a time. A little can go a long way once you start incorporating it into the mixture.

Your oobleck should be neither soupy and runny or too stiff and dry, but you can mix it up to be thinner or thicker depending on your preference. You can toss around the word viscosity too!

Can you pick up a clump but then it oozes back into the bowl? Yes? Then you have a good oobleck on your hands! It's a great alternative to homemade slime and has similar properties of slime!

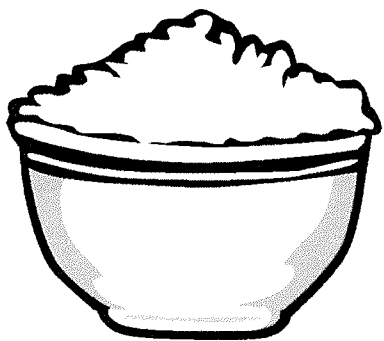
## SHOPPING LIST

3 Cups of corn starch  
1-14oz can jellied cranberry sauce  
1/4 cup of water



# POPCORN SCIENCE

Popcorn is a great example of physical changes in matter including irreversible change. Get set to experiment with our easy microwave popcorn recipe, and find out why popcorn pops.



## RECIPE

Open a brown paper bag and pour in 1/3 cup popcorn kernels.  
Fill the glass almost 3/4 full with Sprite.

Fold the top of the bag down twice.

Place the popcorn in a bag in the microwave and cook on high for about 1 1/2 minutes.

Add melted butter and salt to your heart's desire.

Inside each kernel (solid) of popcorn is a small drop of water (liquid) that is stored within the soft starch. Each kernel needs the right combination of moisture content and heat from an external source like a microwave to produce the awesome popping sounds.

Steam (gas) builds up inside the kernel and eventually bursts the kernel when it becomes too much for the hull to hold. The soft starch spills out into the unique shape you get to see and taste! That is why popcorn kernels pop!

## SHOPPING LIST

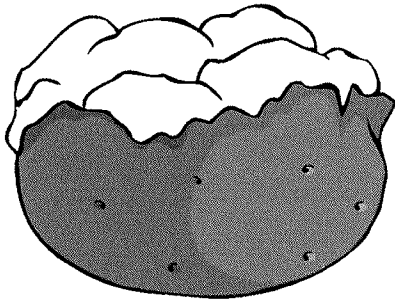
Popcorn kernels  
Brown paper lunch bags  
Optional: Salt and Butter

# POTATO

## IRREVERSIBLE CHANGE

**IS BOILING POTATOES A REVERSIBLE OR IRREVERSIBLE CHANGE?**

**Answer: A cooked potato is the result of a chemical change!**



### RECIPE

### SHOPPING LIST

Raw potatoes  
Potato masher and fork  
Heat source  
(microwave, oven or  
pot of boiling water)

Choose your favorite method to cook a potato! You can still try this experiment in the classroom even without a heat source by bringing in both a raw and cooked potato to test out.

Either before you cook the potatoes or if you can save out a raw potato, have the kids try to "mash" the raw potato with the masher. After the potatoes are cooked and cooled to handle, have the kids repeat their observations. Can they mash the potato now?

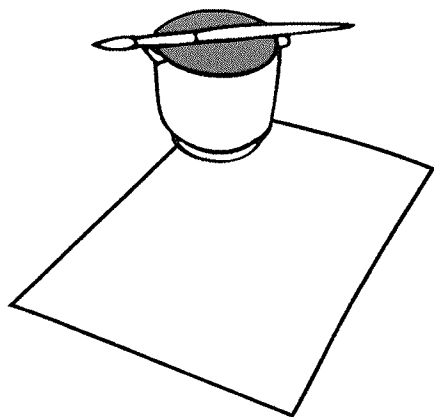
A chemical change is when a new substance is formed and usually in the presence of heat being released or color changes. A physical change is a change in the size or shape or the state of matter (liquid, solid, or gas).

**Why is the baked potato a chemical change?**

With a chemical change, you can not go back to the original substance, so it is called an irreversible change. Once you cook the potato it is cooked, and it can not go back to being a raw potato.

# SECRET MESSAGES

Are you a fan of cranberry sauce? You may not be, but it's great for science! Let's learn about acids and PH with cranberries!



## SHOPPING LIST

Small pot  
Cranberry juice  
Whole berry cranberry sauce  
White paper  
Baking soda  
Water  
Paintbrushes

## RECIPE

Add 2 cups cranberry juice and 1/2 can jellied cranberry sauce to a pot, bring to a boil over medium heat, mixing every few minutes.

Mix 1/3 cup hot water with 4 tablespoons of baking soda.

Use the baking soda mixture and a paintbrush to paint a message or picture onto a piece of paper and let it dry. (or hair dryer)

Carefully pour the cranberry juice into small coffee mugs and let cool. Use the cup of juice as paint and paint the cranberry juice over the dried messages to reveal the secret message.

How does our invisible ink work? Well, the cranberry juice and jellied cranberry mixture is an acid, and also contains a special substance called Anthocyanin. Acids have a pH rating of 4 or lower. Cranberry juice is around a 2.5 pH rating.

The invisible ink we used to write our secret message with, the baking soda mixture, is a base. It dried clear after being applied to the paper.