



# OVERNIGHT RAINBOW

By Scarlett & Mr. Bear



Rainbows are one of the prettiest sights in the sky. If you've checked out our first book *What Color Will It Be?* then you know how much we love the science behind the color mixing of light! Rainbows in the sky are formed when white light rays from the sun pass through water in the air. The water acts like a **prism** and causes the light to bend, or **refract**, and bounce, or **reflect**, in different directions off the raindrops. This separates the white light into its primary three colors: red, green, and blue. As those colored rays of light travel through the air, those colors mix together to form all of the others. And *voila*, you see a rainbow! In this experiment, we want to help you see that same color mixing that takes place when a rainbow is formed, but up close and with food-colored water instead of sunlight.

The best part is you'll set the experiment up before you go to bed and wake up to the final product. It's such a fun surprise to see in the morning. **Happy rainbow making!**

1

## Materials



- 6 strips of paper towel (two extra, just in case)
- 6 plastic cups / glasses
- food coloring (red, yellow, blue)
- water
- white paper (or a white surface underneath)
- cotton swap to help move the paper strips

2

## Red Water Cup



Fill one of the cups about halfway with water and add 3-5 drops of **red** food coloring.

3

## Yellow Water Cup



Fill another one of the cups about halfway with water and add 3-5 drops of **yellow** food coloring.

4

## Blue Water Cup



Fill the third of the cups about halfway with water and add 3-5 drops of **blue** food coloring.

LEARN MORE AT [SCIENCEWITHSCARLETT.COM](http://SCIENCEWITHSCARLETT.COM)

5

### Place Cups



Arrange the 3 filled cups and 3 empty cups into a triangle with the colors at the corners.

6

### Connect Yellow



Dip a paper towel strip into one of the colors, remove it halfway, and lay it half in one of the adjacent empty cups.

7

### Connect Blue



Dip the next paper towel into the next color and place it half into the empty cup, half in the colored cup.

8

### Connect Red



Repeat the dipping process until there is a dipped strip going from each color into each adjacent empty cup.

9

### Take a Picture



When all the strips are dipped and placed accordingly, it should look like this. You might notice the water starting to move through the paper towel into the empty cups—or even mixing!  
***Be sure to take a before picture!***

✓

### Capillary Action



Make sure to set this up before you go to bed, and overnight more colored water will transfer to the empty cups and the colors will mix together in them.  
***Be sure to take an after picture!***

## Time to Share!

When you wake up in the morning, your rainbow should be finished! Research **capillary action** to find out why this happens and discuss with someone else.

*What other colors could you produce if you started your rainbow with more cups and colors?*

Scarlett & Mr. Bear would LOVE to see your rainbow!  
Be sure to share your experiment photos to our [@ScienceWithScarlett Facebook Page!](#)

