

Hot and Cold Colors Student Worksheet

Does Heating Water Make the Color Change Faster?

Name: Josiah Dodley Date: 12/16/22

Prediction: Which will change color faster when a drop of food coloring is added: cold water, hot water, or room temperature water? Explain your answer. *Hot water will change color the fastest due to the amount of energy facing around. It will dissolve the fastest then room temp and then cold water*

Materials Needed:

- Food coloring
- 3 plastic cups
- Stopwatch
- 1 worksheets per student

Procedure:

1. Pick two people who to get the materials and return them ("Material Managers")
2. Pick one person who will drop the food coloring ("Dropper")
3. Pick one person who will use the stopwatch to measure the time ("Timer")
4. Material Managers gather materials and set up.
5. When all ready, raise your hands so the teacher can bring your group the water.
3. Cold water test:
 - a. The teacher pours cold water into a cup
 - b. The "Dropper" drops 1 drop of food coloring into the cold water
 - c. The "Timer" starts the stopwatch as soon as the food coloring hits the water, and stops the stopwatch when the color is spread throughout the water
 - d. In the data table, each student records the time (in seconds) for the food coloring to spread throughout the water, along with observations
4. Hot water test:
 - a. Repeat the steps for the cold water test, but use hot water instead of cold.
5. Room temperature test:
 - a. Repeat the above procedure using room temperature water.
6. Material Managers return lab materials and clean up.
7. Complete questions 1-3 at the end of this worksheet.

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Data Table

Water	Time	Observation
Cold	5.21s	Almost instantly the color changed.
Hot	53.38s	The water went from clear to dark green in under a minute. The food coloring changed.
Room Temperature	41.46s	The water changed color faster than the hot water did.

1. Compare your predictions to what actually happened in the activity. How were your predictions the same or different? Completely opposite, the cold mixed faster due to the warm food coloring and the cold water.

2. What do you think caused the color to change faster? Why?

Because the difference in temperature with hot and cold creates currents. The warm food coloring mixed with the cold water and mixed it.

3. What do you think would happen if you used a different food coloring than you used (for example, blue or yellow instead of red)?

Nothing would change, unless the temperature of the food coloring was different.

Hot and Cold Colors Summary/Assessment

Name: Josiah Dickey

Date: 12/16/22

Write a paragraph describing something you witnessed in the last week that demonstrates how heating or cooling affected a material (consider what happened in your kitchen, backyard, etc.).

I was cooking eggs and bacon. Of course they aren't just going to heat up themselves, I had to prepare them. They were in the fridge, and they were cold. I cooked them in the pan and made a delicious breakfast. This shows how heating and cooling affects food.