

Activity 1.3

Colors collide or combine?

What would the colors look like if we placed two or more M&M's in a plate of water?

When students do this activity, they may be surprised by the way an additional M&M affects the movement of color in the plate. Often students expect the colors from each M&M to blend when they come together, but instead the colors remain separate along a defined border. In *Activity 1.3*, students will explore how the areas of color change shape as M&M's are placed in different positions in the plate. In *Activity 1.4*, students will explore why the areas of color from different M&M's seem to stay separate.

Materials needed for each group

Different colored M&M's
1 White plastic or foam dessert plate
Room-temperature water
Crayons or colored pencils
Bucket or large bowl
Paper towels

Notes about the materials

- Be sure you and the students wear properly fitting goggles.

Activity sheet



Copy *Activity sheet 1.3—Colors collide or combine?*, p. 36, and distribute one per student when specified in the activity.

Assessment

An assessment rubric for evaluating student progress during this activity is on pp. 52–53. For this formative assessment, check a box beside each aspect of the activity to indicate the level of student progress. Evaluate overall progress for the activity by circling either “Good”, “Satisfactory”, or “Needs Improvement”.

Activity 1.3

Colors collide or combine?

Question to investigate

What would the colors look like if we placed two or more M&M's in a plate of water?

1. Ask students to predict what might happen with two M&M's in a plate of water.

Ask students what might happen if they placed two different-colored M&M's in a plate of water at the same time. For example, if they placed a yellow M&M and a blue M&M near the center of a plate somewhat close to each other, what would they expect to see? Would the yellow and blue combine to make green? Ask students to test two different colored M&M's in one plate of water.

2. Have students place two M&M's in a plate of water.



Have each group select two different-colored M&M's. Distribute *Activity sheet 1.3—Colors collide or combine?* and have students follow the procedure described below.

Procedure

1. Pour enough room-temperature water into a white plastic or foam plate so that it covers the bottom of the entire plate.
2. Once the water has settled, place 2 M&M's about 2 centimeters apart near the center of the plate. Be careful to keep the water and M&M as still as possible. Observe for about 1 minute.
3. Record your observations with a colored drawing.
4. Empty the plates of water and M&M's into a bucket, bowl, or sink, and dry them with a paper towel.



3. Have students share their observations.

Expected results: The colors will flow in a circular pattern around each M&M until the color from one M&M approaches the color from the other M&M. The colors will not blend but instead will appear to form a distinct “line” between them.

Note: There may be a small amount of mixing of colors. In some cases, it may also appear that one color has flowed over or under another.

Ask each group to share which colors of M&M’s they used and what they observed. After sharing results and referring to drawings when necessary, students should agree that no matter which two colors they use, the colors tend to stay separate.

4. Have student groups discuss what they might try next, predict what might happen, and then try it.

Ask students what shapes of color they might see if three or more M&M’s are placed in a plate of water at the same time. Ask them how they would like to position the M&M’s and what they would expect to see. Give students a chance to think about what they might like to try on their own and record these ideas on the activity sheet. Once students have considered possible plans on their own, have them discuss their ideas with their groups. Groups can decide what to try and in what order, make informal predictions, conduct the experiments, and record their observations.

5. Ask students to share their observations.

Have groups report on the different arrangements of M&M’s they tested and ask the class to guess what happened. Students should then reveal their results. Encourage students to refer back to *Activity sheet 1.3* as they discuss different groups’ results.

