

5th Grade - Lesson 1.2

Dissolving an M&M

NGSS Alignment

Performance Expectations

5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.

Disciplinary Core Ideas

PS1.A: Structure and Properties of Matter

- Matter of any type can be subdivided into particles that are too small to see but even then the matter still exists and can be detected by other means. (5-PS1-1)

Students put an M&M in water and observe the color and sugar dissolving in the water. An explanation is developed that water molecules interact with the sugar and coloring molecules and make them dissolve. These phenomena, observations, and explanations help students develop an understanding that matter is made from particles that are too small to be seen.

Science and Engineering Practices

Developing and Using Models

- Develop a model to describe phenomena. (5-PS1-1)

After seeing the M&M dissolve, a molecular model is used to explain the phenomenon of dissolving. Students do a follow-up investigation and use this model to help explain their observations.

Planning and Carrying Out Investigations

- Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials is considered.

Students help design an investigation to see how well an M&M dissolves in water compared to a sugar solution. They consider different variables to develop a fair test.

Crosscutting Concepts

Scale, Proportion, and Quantity

- Natural objects exist from the very small to the immensely large. (5-PS1-1)

Students use molecular-level models to explain how water dissolves the color and sugar from an M&M. Students realize that extremely tiny invisible particles can be used to explain phenomena they can observe.

Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change.

Students develop an understanding that the interactions of water molecules with the molecules of sugar and coloring is the cause for the sugar and coloring dissolving from the M&M.