

m&m PARTICLES IN MOTION

Problem: Does the temperature of the water affect the time it takes the color to dissolve off M&M's?

Hypothesis: _____

Materials: 3 medicine cups, 3 M&M's of the same color, cold tap water, ice cold water, warm tap water, stop watch

Procedures:

- 1 - Lay out 3 medicine cups on a paper towel. Write on the paper towel in front of each medicine cup each of the 3 different temperatures of water.
- 2- Put 20 mL of each temperature of water in each of the 3 medicine cups.
- 3 - One student in the group will need to keep track of time while the 3 other lab group students will place the M&Ms in the water at the same time.
- 4 - At the exact same time, place the M&Ms into the cups.
- 5 - Record how long it takes the **color on top** of the M&M's to completely dissolve along with observation notes.

Type of water	Time for top color to dissolve	Observation Notes
ROOM TEMP. WATER		
COLD WATER		
WARM WATER		

Questions:

1. Identify the independent, dependent, control variables along with the quantitative and qualitative observations made for this activity

INDEPENDENT VARIABLE	
DEPENDENT VARIABLE	
CONTROL VARIABLE	
QUANTITATIVE OBSERVATIONS	
QUALITATIVE OBSERVATIONS	

2. What do you think caused the different results? (Hint: What is the title of this lab?)
3. Do you have any previous experience that might help explain this phenomenon? Explain your answer.

VIDEO: PHASES OF MATTER

1. While you watch the video, list at least 3 examples of substances that go through a phase change.
2. What are the 3 phases of matter?
3. The only difference between liquid steel and solid steel is _____.
4. What does liquid water turn into when heat is added?
5. Where does heat energy from the freezer go?
6. The temperature of liquid nitrogen is _____ degrees Celsius and is in the _____ phase at room temperature.
7. _____ occurs when there is no molecule movement at all. This will never happen on Earth.
8. Molecules in a solid phase move _____, molecules in a liquid phase move _____, and molecules in a gas phase move _____.
9. Why can you pour carbon dioxide gas?
10. Gases and liquids take the shape of their container, but solids _____.