

## What's the Matter?

1. **DESCRIPTION**: Teams will be assessed on their knowledge of the physical properties of matter and the behavior of solids, liquids, and gases before and after they undergo changes or interactions.
2. **ESSENTIAL STANDARDS ALIGNMENT**: 2.P.2, 3.P.2, 4.P.2, 5.P.2, 6.P.2
3. **TEAM OF UP TO**: 2
4. **MAXIMUM TIME**: 60 min.
5. **TEAMS**: Teams must bring writing instruments and goggles (in-person tournaments only). Teams may not bring resources to this event.
6. **EVENT LEADERS**: Will provide an event with all necessary items, objects, materials, questions, and response sheets for participants to complete exam.
7. **SAFETY REQUIREMENTS**: None
8. **IMPOUND**: No
9. **THE COMPETITION**: The competition will consist of an exam that covers any or all of the following topics.
  - a. Understand the size, parts (and their charges) of an atom.
  - b. Understand that the behavior of atoms in different states of matter (solid, liquid, gas) regarding shape and volume and relative speed.
  - c. Know how to measure and/or calculate volume of a rectangular prism or a liquid in a container.
  - d. Be able to measure mass and calculate density.
  - e. Understand the concept of relative density and how it can be changed in solids, liquids, and gases.
  - f. Differentiate between a solution and a mixture and understand how they can be separated.
  - g. Understand the difference between physical and chemical changes and signs that each has taken place.
  - h. Understand dissolving and concentration of substances such as food dye, salt, and sugar in water, and the factors that affect solubility such as stirring and heat.
  - i. Observe or test for other properties of matter: magnetism, flexibility, hardness, opacity, strength, viscosity (runniness), and buoyancy.
10. **SCORING**:

Points will be awarded for the accuracy of responses. Ties will be broken by the accuracy or quality of responses to pre-selected questions chosen by the event leader.
11. **EVENT RESOURCES**:

See the Event Resources tab on our website for instructions, videos and more.