



PRACTICING CLASSIFICATION AND DEMONSTRATING
THE LAW OF CONSERVATION OF MASS

OBJECTIVE:

Students will demonstrate that regardless of how parts of an object are assembled, the mass of the whole is identical to the sum of the mass of the parts; however, the volume can differ from the sum of the volumes. (Law of Conservation of Mass)

MATERIALS:

- 20-25 grapes per group
- Cups
- Plastic baggie that can be tightly sealed
- Scale

PROCEDURE:

1. Provide each group with a sample of 20-25 red grapes. Have students measure the total mass of the sample using the scale. Record mass.
2. Students should then come up with 2-3 different classification systems based on the physical features of the grapes. (Size, shape, coloring, etc.) Students should create a data table for their classification systems and record the total number of grapes in each group as well as the mass of the group. (See example) While each classification system will have a different number of grapes per group, the total mass should remain the same.

| Size | Small | Medium | Large |
|------------|-------|--------|-------|
| Amount | 5 | 14 | 6 |
| Total Mass | 6g | 18g | 9g |

Total Mass: 33g

3. Students will then add all of their grapes to the plastic baggie and seal it. Make sure the baggie is completely sealed. If any of the grape juice leaves the baggie, the demonstration will not work. Students should measure and record the mass of the grapes in the baggie.
4. Grape Smash! Students can then use any means to smash the grapes as much as they can.
5. Once the grape sample has been smashed to an acceptable degree, students should measure the mass. According to the Law of Conservation of Mass, the mass should be the same, despite the grapes now occupying a different volume in the baggie.
6. Students should record the mass and their observations. (See example)

| | Solid Grapes | Smashed Grapes |
|---------------------------|--------------|----------------|
| Total Mass | | |
| Description of Appearance | | |
| Sketch of Baggie | | |

