

# S U M M A R I E S

## INVESTIGATION 1: Exploring Density

In Investigation One, you began to explore the density of different liquids and solids. During this Investigation, you:

1. compared the densities of rubbing alcohol, vegetable oil, and water by adding them together.
2. tested the density of a metal cube by adding it to rubbing alcohol, vegetable oil, and water.
3. tested the density of an ice cube by adding it to rubbing alcohol, vegetable oil, and water.

Through these experiments, you concluded that:

1. different liquids have different densities.
2. different solids have different densities.
3. a solid with a low density will float on top of a liquid that has a higher density.
4. a solid with a high density will sink below a liquid that has a lower density.
5. a liquid with a low density will float on top of a liquid that has higher density.

## INVESTIGATION 2: Calculating the Density of Water

In Investigation Two, you calculated the density of water. During this Investigation, you:

1. used a graduated cylinder to measure different volumes of water.
2. used a triple beam balance to measure the masses of different volumes of water.
3. calculated the density of water using the formula:  $density = mass \div volume$ .

Through these experiments, you concluded that:

1. the density of water is about 1 g/ml.
2. the density of water is a constant.
3. if the mass or volume of water is change, the density of water does not change.

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**INVESTIGATION 3: Densities of Different Liquids**

In Investigation Three, you compared the densities of different liquids. During this Investigation, you:

1. compared the densities of two different volumes of rubbing alcohol.
2. compared the densities of two different volumes of vegetable oil.
3. used a graduated cylinder and a triple beam balance to measure the volume and mass of rubbing alcohol and vegetable oil.
4. calculated the densities of the rubbing alcohol and vegetable oil using the formula:  $density = mass \div volume$ .

Through these experiments, you concluded that:

1. different volumes of rubbing alcohol have the same density.
2. different volumes of vegetable oil have the same density.
3. the densities of rubbing alcohol and vegetable oil are less than the density of water.
4. the densities of rubbing alcohol and vegetable oil are a constant.
5. the densities of rubbing alcohol and vegetable oil do not change if the mass or the volume is changed.

**INVESTIGATION 4: Densities of Different Solids**

In Investigation Four, you explored the densities of five solids. During this Investigation, you:

1. determined the volumes of five solids using the volume displacement method.
2. calculated the volumes of five solids using the formula for volume.
3. measured the masses of five solids using a triple beam balance.
4. calculated the densities of five solids using the formula:  $density = mass \div volume$ .

Through these experiments, you concluded that:

1. the formula for volume can be used to calculate the densities of solid objects that have regular sides.
2. the volume displacement method can be used to measure the density of solid objects that sink.
3. the density of a solid is a constant.
4. the density of a solid does not change if the mass or volume is changed.

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## **INVESTIGATION 5: Density of Solutions**

In Investigation Five, you explored how the density of water changes when solute is added. During this Investigation, you:

1. compared the densities of an acrylic cylinder and water.
2. created a 20% salt solution and a 45% salt solution.
3. calculated the density of a 20% and 45% salt solution.
4. compared the densities of an acrylic cylinder and 20% salt solution.
5. compared the densities of an acrylic cylinder and 45% salt solution.

Through these experiments, you concluded that:

1. the density of water increases as more solute is added.
2. the acrylic cylinder was more dense than the water and the 20% salt solution.
3. the acrylic cylinder was less dense than the 45% salt solution.