

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Real-World Application of Density

Here are some Density Calculation Exercises tailored for middle school students to help them practice the concept of density, which is the relationship between mass and volume.

- 1. Ship Buoyancy:** A ship floats on water because its overall density is less than that of water. If the density of water is  $1\text{g/cm}^3$ , what must be the maximum density of the ship (including air-filled parts) to stay afloat?
- 2. Oil and Water:** You pour oil into a glass of water, and the oil floats on top. If the density of water is  $1\text{g/cm}^3$ , and the density of oil is  $0.92\text{g/cm}^3$ , why does the oil float?
- 3. Sink or Float?** A piece of plastic has a density of  $0.85\text{g/cm}^3$ , and a piece of metal has a density of  $7.8\text{g/cm}^3$ . Which one will float in water, and which one will sink?
- 4. Gold vs. Aluminum:** Gold has a density of  $19.3\text{g/cm}^3$ , while aluminum has a density of  $2.7\text{g/cm}^3$ . If you have  $50\text{cm}^3$  of each metal, which one will have a greater mass?