Year 5 Science: Mass, volume and density: why things float or sink

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Water in a measuring cylinder is at 40 mL. A toy dinosaur is dropped in and sinks, and the water rises to 52 mL. What is the volume of the toy?

2. A block of wood has a mass of 80 g and a volume of 100 mL. Work out its density. Will it float or sink in water?

3. Which unit would you use for the water in a school swimming pool: millilitres, grams, kilograms or cubic metres?

4. Two balls are exactly the same size. One has a mass of 20 g and the other has a mass of 200 g. Which ball is denser?

5. Ana reads a measuring cylinder from above and writes 47 mL. Her teacher reads it with her eye level with the water and gets 45 mL. Whose reading is better, and why?

Fix the mistake

6. Correct this statement: "Heavy things sink and light things float."

7. Correct this statement: "Density is volume divided by mass."

8. Correct this statement: "Read the measuring cylinder at the top of the curved water edge, looking down."

9. Correct this statement: "Mass and volume are the same thing, because bigger things weigh more."

Answer key (for parents and tutors)

1. Water in a measuring cylinder is at 40 mL. A toy dinosaur is dropped in and sinks, and the water rises to 52 mL. What is the volume of the toy?
   12 mL, because 52 − 40 = 12.
2. A block of wood has a mass of 80 g and a volume of 100 mL. Work out its density. Will it float or sink in water?
   80 ÷ 100 = 0.8 g/mL. That is less than water's 1 g/mL, so it floats.
3. Which unit would you use for the water in a school swimming pool: millilitres, grams, kilograms or cubic metres?
   Cubic metres (m^3), because a pool holds a very large volume. Grams and kilograms measure mass, not volume.
4. Two balls are exactly the same size. One has a mass of 20 g and the other has a mass of 200 g. Which ball is denser?
   The 200 g ball, because it packs more mass into the same volume.
5. Ana reads a measuring cylinder from above and writes 47 mL. Her teacher reads it with her eye level with the water and gets 45 mL. Whose reading is better, and why?
   The teacher's, because you read at eye level at the bottom of the curve. Looking from above makes the reading too high.
6. Correct this statement: "Heavy things sink and light things float."
   Density decides it, not mass: a huge log floats because wood is less dense than water, while a tiny coin sinks.
7. Correct this statement: "Density is volume divided by mass."
   Density is mass divided by volume, so 39 g in 15 mL is 39 ÷ 15 = 2.6 g/mL.
8. Correct this statement: "Read the measuring cylinder at the top of the curved water edge, looking down."
   Read at the bottom of the curve with your eye level with the water, or the reading comes out too high.
9. Correct this statement: "Mass and volume are the same thing, because bigger things weigh more."
   Mass is how much matter there is and volume is how much space it fills; a bag of popcorn is big but light.