

CLASS 8

SCIENCE

EXTRA QUESTIONS

Extra Questions for Class 8 Science Chapter 9: The Amazing World of Solutes, Solvents and Solutions

Original extra practice questions for Class 8 Science Chapter 9 (The Amazing World of Solutes, Solvents and Solutions), going beyond the textbook exercise with fresh numbers and applied reasoning. Full explanations included.

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Q1 (Floating fraction). A block of wood has mass 540 g and volume 900 cm³. Will it float or sink in water? Find the fraction of its volume that stays submerged when floating.

Solution: Density = $540/900 = 0.6 \text{ g/cm}^3$, which is less than water's density (1 g/cm³), so it **floats**.

Submerged fraction = object density ÷ water density = $0.6/1 = 0.6$, i.e. **60% of its volume stays submerged**.

Q2 (Solubility scaling). At 20°C, 36 g of salt dissolves fully in 100 g of water to make a saturated solution. If you have 250 g of water at the same temperature, what is the maximum mass of salt that can dissolve?

Solution: Solubility ratio = 36 g per 100 g water. For 250 g water: $36 \times (250/100) = 90 \text{ g}$.

Q3 (Assertion–Reason). Assertion (A): A saturated solution can never dissolve any additional substance. Reason (R): Solubility is a fixed, temperature-independent property.

Solution: A saturated solution CAN dissolve more solute if the temperature is raised (solubility of most solids increases with heat), so **Assertion is false**. Solubility does change with temperature, so **Reason is also false**.

Q4 (Identify the metal). An unknown metal cube has side 2 cm and mass 63.2 g. Using standard densities (iron ≈7.9, aluminium ≈2.7, copper ≈8.9, lead ≈11.3 g/cm³), identify the metal.

Solution: Volume = $2^3 = 8 \text{ cm}^3$. Density = $63.2/8 = 7.9 \text{ g/cm}^3$ — this matches **iron**.

Q5 (Displacement + density). A stone is lowered into a measuring cylinder containing 40 mL of water; the level rises to 65 mL. The stone's mass is 87.5 g. Find its density and predict whether it would float in mercury (density ≈13.6 g/cm³).

Solution: Volume displaced = $65 - 40 = 25 \text{ cm}^3$ = stone's volume. Density = $87.5/25 = 3.5 \text{ g/cm}^3$. Since $3.5 < 13.6$, the stone **would float in mercury**.

Q6 (Spot the error). A student says: "Since a sponge floats in water, its density must be greater than water's density." Is this correct?

Solution: Incorrect. An object floats specifically because its (effective) density is LESS than water's density, not greater — a sponge floats partly because trapped air pockets lower its overall density below 1 g/cm³.

Q7 (Applied reasoning). Using the concept of solubility and temperature, explain why a warm soft drink loses its fizz faster than a cold one.

Solution: Carbon dioxide gas is more soluble in cold liquid than in warm liquid. As a drink warms up, its dissolved CO₂ escapes more readily because gas solubility falls with rising temperature — so a warm drink holds less dissolved gas and goes flat faster than a cold one.

Q8 (Two-object displacement). Two stones together displace water from 50 mL to 78 mL in a cylinder. If Stone A alone displaces water from 50 mL to 62 mL, find Stone B's volume.

Solution: Total combined volume = $78 - 50 = 28 \text{ cm}^3$. Stone A's volume = $62 - 50 = 12 \text{ cm}^3$. Stone B's volume = $28 - 12 = 16 \text{ cm}^3$.

Q9 (Classification). Classify each as a solution or a non-uniform mixture (suspension): sugar syrup, muddy river water, seawater, chalk powder shaken in water.

Solution: Solutions (uniform): sugar syrup, seawater. **Non-uniform mixtures (suspensions):** muddy

river water, chalk powder in water (both settle on standing).

Q10 (Identify by density). A rectangular metal block has dimensions 5 cm × 4 cm × 2 cm and mass 316 g. Find its density, and state whether it's closest to aluminium (2.7), iron (7.9) or lead (11.3) g/cm³.

Solution: Volume = 5×4×2 = 40 cm³. Density = 316/40 = **7.9 g/cm³** — closest to **iron**.

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