Year 7 Science: Expansion, density, and why ice floats

Name: _____ Date: _____

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

Practice

1. Why do railway lines have small gaps between sections of track?

2. A solid block of chocolate sinks when dropped into melted chocolate. What does that tell you about the density of solid chocolate?

3. A 200 g ice block melts in a sealed bag. What is the mass of the water afterwards?

4. A student says that when water boils, its particles grow bigger to make steam. Correct the student.

5. Why does a can of fizzy drink left in the freezer sometimes burst?

Fix the mistake

6. Correct this statement: "Things expand when heated because the particles themselves get bigger."

7. Correct this statement: "Ice floats because it has air bubbles trapped in it."

8. Correct this statement: "When water evaporates, its mass is destroyed."

9. Correct this statement: "Ice has a bigger volume than the water it came from, so it must have more mass."

Answer key (for parents and tutors)

1. Why do railway lines have small gaps between sections of track?
   The steel expands on hot days, and the gaps give it room so the track does not buckle.
2. A solid block of chocolate sinks when dropped into melted chocolate. What does that tell you about the density of solid chocolate?
   Solid chocolate is denser than liquid chocolate, like most substances.
3. A 200 g ice block melts in a sealed bag. What is the mass of the water afterwards?
   200 g, because mass is conserved in a change of state.
4. A student says that when water boils, its particles grow bigger to make steam. Correct the student.
   The particles stay the same size; they move much faster and spread far apart.
5. Why does a can of fizzy drink left in the freezer sometimes burst?
   Most of the drink is water, which expands as it freezes, so the ice needs more room than the can has.
6. Correct this statement: "Things expand when heated because the particles themselves get bigger."
   The particles stay the same size; they move faster and spread further apart.
7. Correct this statement: "Ice floats because it has air bubbles trapped in it."
   Even clear ice floats, because its particles are held in an open pattern that makes it less dense than water.
8. Correct this statement: "When water evaporates, its mass is destroyed."
   The particles spread into the air as water vapour, so the mass is still there, just in the air.
9. Correct this statement: "Ice has a bigger volume than the water it came from, so it must have more mass."
   The mass stays the same; the same particles just take up more room, so the density goes down.