

Nova's States of Matter Challenge

Learning objective: To identify and describe the properties of solids, liquids, and gases, and understand the processes of evaporation, condensation, and melting.

Join Nova the barn owl on a scientific quest! Read the questions carefully and select the best answer or provide the specific term required. Aim for full marks!

Answer Key: 1. B (Solid), 2. False, 3. Gas, 4. A (Evaporation), 5. True, 6. Condensation, 7. C (Fixed volume but changing shape), 8. True, 9. Melting, 10. D (Gas).

Word bank: solid · liquid · gas · evaporation · condensation · melting · freezing · particles

1. Which state of matter has particles that are packed tightly together and vibrate in a fixed position? A) Liquid B) Solid* C) Gas D) Plasma (1 mark)

2. True or False: A liquid has a fixed shape and will not take the shape of its container. (1 mark)

3. Which state of matter consists of particles that are far apart and move rapidly in all directions? (1 mark)

4. What is the process called when a liquid turns into a gas? A) Evaporation* B) Melting C) Condensation D) Freezing (1 mark)

5. True or False: Water vapour is an example of water in a gaseous state. (1 mark)

6. When steam hits a cold mirror and turns back into liquid water droplets, what is this process called? (1 mark)

7. Which statement best describes a liquid? A) Particles are fixed in place B) Particles expand to fill the room C) Fixed volume but changing shape* D) Hard and rigid (1 mark)

8. True or False: Heating a solid can cause it to change into a liquid. (1 mark)

9. If you leave an ice cube on a warm plate, what scientific term describes the change occurring? (1 mark)

10. 10. Which state of matter is most easily compressed? A) Solid B) Liquid C) Ice D) Gas* (1 mark)

Draw: Draw three boxes. In the first, draw circles packed tightly together to represent a solid. In the second, draw circles flowing loosely to represent a liquid. In the third, draw circles spaced far apart to represent a gas.



Extension challenge: Greater Depth Challenges: 1. Explain why a puddle disappears on a sunny day despite no one touching it. 2. Compare and contrast the movement of particles in ice versus steam. 3. Justify why gases are easier to compress than solids. 4. What might happen if the particles in a solid were given enough energy to overcome their attractions? 5. If you had a sealed container of water, how could you prove that matter is conserved even if it changes state? 6. Design an experiment to measure the rate of evaporation of 100ml of water in different temperatures.