

Matter and Materials

Science · Class 5 · Topic-wise Practice Worksheet

TIME 40 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Do not use a calculator.
- Study every diagram and table carefully before answering.

Section A — States and Properties of Matter

Q1–Q7 · 1 mark each

- Which state of matter has both a definite shape and a definite volume?
 (A) Solid (B) Liquid
 (C) Gas (D) None of these
- The change of a liquid into its vapour on heating is called _____.
 (A) Condensation (B) Freezing
 (C) Melting (D) Evaporation
- At what temperature does pure ice melt?
 (A) 100 °C (B) 10 °C
 (C) 0 °C (D) –100 °C
- Which of the following substances is **insoluble** in water?
 (A) Sugar (B) Lemon juice
 (C) Common salt (D) Sand
- A material through which you can see clearly is called _____.
 (A) Transparent (B) Translucent
 (C) Opaque (D) Flexible
- Which one of these objects would be attracted by a magnet?
 (A) A plastic ruler (B) An iron nail
 (C) A wooden pencil (D) A rubber band
- The property by which a material can be drawn into thin wires is called _____.
 (A) Transparency (B) Solubility
 (C) Ductility (D) Buoyancy

8. The boxes below show how particles are arranged in three samples of matter. Which box represents a **gas**?

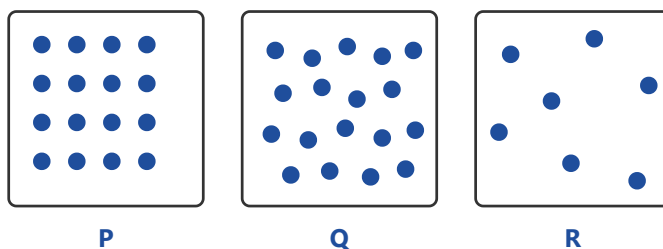


Fig. 8.1 — Arrangement of particles in three samples

- (A) P
(B) R
(C) Q
(D) Both P and Q
9. On a hot day, tiny drops of water appear on the outside of a glass of cold lemonade. These drops are formed because _____.
 (A) Water leaks out through the glass
 (B) The lemonade evaporates through the glass
 (C) The glass melts slightly
 (D) Water vapour in the air condenses on the cold surface
10. **Assertion (A):** Gases can be squeezed into a much smaller volume, but solids cannot.
Reason (R): In a gas the particles are far apart, with large empty spaces between them.
 Choose the correct option.
 (A) Both A and R are true, and R explains A
 (B) Both A and R are true, but R does not explain A
 (C) A is true but R is false
 (D) A is false but R is true
11. The set-up shown is being used to separate a mixture. Which mixture can be separated in this way?

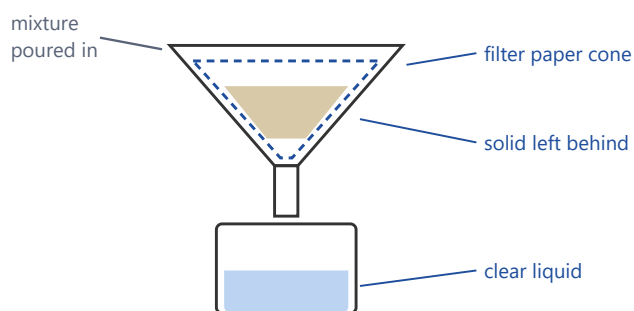


Fig. 11.1 — A separation set-up

- (A) Sand mixed with water
 (B) Salt dissolved in water
 (C) Two different gases
 (D) Sugar dissolved in water
12. How can pure salt be obtained from sea water?
 (A) By filtering the sea water
 (B) By allowing the water to evaporate in the sun
 (C) By adding more water to it
 (D) By using a magnet

13. In the table below, which row is **incorrectly** matched?

Row	Material	Property
(A)	Wood	Opaque
(B)	Butter paper	Translucent
(C)	Cotton wool	Hard
(D)	Rubber band	Elastic

Table 13.1 — Materials and their properties

(A) Row (A)

(B) Row (B)

(C) Row (C)

(D) Row (D)

14. A piece of ice floats on water because ice is _____ than the same volume of water.

(A) Heavier

(B) Colder

(C) Lighter

(D) Harder

15. Wet clothes dry fastest on a day that is _____.

(A) Warm but with no air movement

(B) Cold, damp and still

(C) Cool and rainy

(D) Hot, dry and windy

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.

(i) When water freezes into ice, its mass increases.

(ii) Evaporation takes place at every temperature, not only at the boiling point.

(iii) Melting and freezing are opposite changes.

Which of the statements is/are correct?

(A) (i) and (ii) only

(B) (ii) and (iii) only

(C) (i) and (iii) only

(D) All three

17. Match each mixture in Column I with the best way to separate it, given in Column II.

Column I	Column II
(P) Iron filings and sawdust	(1) Filtration
(Q) Chalk powder and water	(2) Using a magnet
(R) Salt and water	(3) Winnowing
(S) Husk and grain	(4) Evaporation

Table 17.1

(A) P-2, Q-1, R-4, S-3

(B) P-1, Q-2, R-3, S-4

(C) P-2, Q-4, R-1, S-3

(D) P-3, Q-1, R-4, S-2

18. A sealed steel tin containing a little water is heated strongly and then cooled quickly by pouring cold water over it. The tin is seen to crush inwards. The best explanation is that _____.

(A) The steel of the tin dissolves in the water

(B) The steam inside condenses, leaving much less gas, so the outside air pressure crushes the tin

(C) The water inside expands and pushes the walls inwards

(D) Cold water makes steel much softer

Answer Key

1	A	2	D	3	C	4	D	5	A
6	B	7	C	8	B	9	D	10	A
11	A	12	B	13	C	14	C	15	D
16	B	17	A	18	B				

Solutions

1. Answer: (A) Solid

In a solid the particles are packed tightly in fixed positions, so a solid keeps its own shape and volume. A liquid has a definite volume but takes the shape of its container, and a gas has neither.

2. Answer: (D) Evaporation

On heating, the particles of a liquid gain enough energy to escape from the surface as vapour. This change from liquid to gas is evaporation. The reverse change, gas to liquid, is condensation.

3. Answer: (C) 0 °C

Pure ice melts at 0 °C, which is also the temperature at which water freezes. Water boils at 100 °C at normal atmospheric pressure.

4. Answer: (D) Sand

Sand does not dissolve in water — the grains simply settle at the bottom and can be seen. Sugar, salt and lemon juice all mix completely with water to give a clear solution.

5. Answer: (A) Transparent

Transparent materials such as clear glass and water let light pass straight through, so objects behind them are seen clearly. Translucent materials such as butter paper let only some light through, and opaque materials such as wood let none through.

6. Answer: (B) An iron nail

Magnets attract magnetic materials — iron, nickel and cobalt. An iron nail is therefore attracted. Plastic, wood and rubber are non-magnetic materials.

7. Answer: (C) Ductility

Ductility is the property of being drawn into wires; copper and aluminium are highly ductile, which is why they are used for electric wires. Malleability, in contrast, is the property of being beaten into thin sheets.

8. Answer: (B) R

In box R the particles are few and far apart, scattered all over the container — this is how particles are arranged in a gas. Box P shows the neat, tightly packed arrangement of a solid, and box Q shows the closely spaced but irregular arrangement of a liquid.

9. Answer: (D) Water vapour in the air condenses on the cold surface

The air always contains invisible water vapour. When this vapour touches the cold outer surface of the glass it cools down, loses energy and turns back into tiny liquid drops. This change from gas to liquid is condensation — the same process that forms dew and clouds.

10. Answer: (A) Both A and R are true, and R explains A

Both statements are true. Because a gas is mostly empty space, its particles can be pushed much closer together — which is why cooking gas is stored compressed in a cylinder. In a solid the particles already touch one another, leaving nothing to squeeze out.

11. Answer: (A) Sand mixed with water

The set-up shows filtration, in which a filter paper holds back solid particles while the liquid passes through. Sand does not dissolve, so its grains are trapped on the paper and clear water collects below. Salt and sugar dissolve completely, so they pass straight through the filter paper with the water.

12. Answer: (B) By allowing the water to evaporate in the sun

Salt is dissolved in sea water, so it cannot be filtered out. When sea water is spread in shallow pans, the sun's heat evaporates the water and leaves the solid salt behind. This is exactly how salt is obtained in salt pans along the coast.

13. Answer: (C) Row (C)

Cotton wool is soft and easily squashed, not hard. The other three are correct: wood does not let light through, butter paper lets some light through, and a rubber band returns to its original shape after being stretched.

14. Answer: (C) Lighter

When water freezes it expands, so the same mass of ice takes up more space. This makes ice less dense — that is, lighter for the same volume — so it floats. This unusual behaviour lets fish survive under a frozen pond surface.

15. Answer: (D) Hot, dry and windy

Evaporation speeds up when the temperature is high (particles gain energy faster), the air is dry (it can hold more vapour) and the wind blows (it carries the vapour away). A hot, dry, windy day gives all three conditions at once.

16. Answer: (B) (ii) and (iii) only

Statement (i) is false — freezing changes the volume of water (it expands), but the mass stays exactly the same, since no matter is added or removed. Statement (ii) is true; a wet floor dries at room temperature, showing that evaporation happens well below the boiling point. Statement (iii) is true; melting is solid → liquid and freezing is liquid → solid. Hence (ii) and (iii).

17. Answer: (A) P-2, Q-1, R-4, S-3

Iron filings are magnetic, so a magnet lifts them out of the sawdust (2). Chalk powder is insoluble, so the mixture is filtered (1). Salt is dissolved, so the water is evaporated away (4). Husk is much lighter than grain, so the wind blows it aside during winnowing (3). Hence P-2, Q-1, R-4, S-3.

18. Answer: (B) The steam inside condenses, leaving much less gas, so the outside air pressure crushes the tin

Heating turns the water into steam, which drives most of the air out of the tin. On sudden cooling the steam condenses back into a few drops of liquid, which occupy far less space, so the pressure inside the sealed tin falls sharply. The atmospheric pressure outside is now much greater and it crushes the tin inwards. Nothing dissolves, and cooling makes steel harder rather than softer.