

Materials, Separation and Changes

Science · Class 6 · Topic-wise Practice Worksheet

TIME 45 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. Study every diagram and table carefully.

Section A — Scientific Reasoning

Q1–Q8 · 1 mark each

- The property by which a metal can be beaten into thin sheets is called _____.
 (A) Ductility (B) Malleability
 (C) Solubility (D) Lustre
- Which of these materials is **translucent**?
 (A) Clear glass (B) Iron sheet
 (C) Wooden plank (D) Butter paper
- The method used to separate grain from stalks by beating is called _____.
 (A) Winnowing (B) Threshing
 (C) Sieving (D) Handpicking
- Which method would you use to separate sand from a mixture of sand and water?
 (A) Evaporation (B) Sublimation
 (C) Filtration (D) Winnowing
- Which of these is a **chemical** change?
 (A) Melting of ice (B) Dissolving sugar in water
 (C) Breaking of a glass (D) Rusting of iron
- A saturated solution is one in which _____.
 (A) No more solute can dissolve at that temperature (B) The solute has settled at the bottom
 (C) No solute has been added (D) The solvent has evaporated
- Which of these substances is **insoluble** in water?
 (A) Sugar (B) Chalk powder
 (C) Common salt (D) Vinegar
- The change of a solid directly into vapour without becoming a liquid is called _____.
 (A) Evaporation (B) Condensation
 (C) Sublimation (D) Melting

9. The set-up shown is used to separate a mixture. Which mixture can be separated in this way?

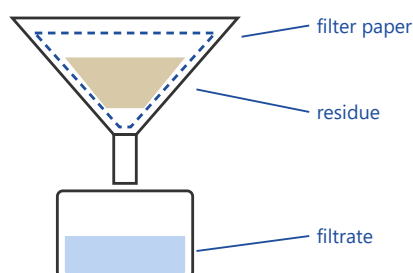


Fig. 9.1 — A separation set-up

- (A) Sugar dissolved in water (B) Salt dissolved in water
(C) A mixture of two gases (D) Chalk powder mixed with water

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

Row	Mixture	Best method of separation
(A)	Iron filings and sulphur powder	Using a magnet
(B)	Salt and water	Evaporation
(C)	Husk and grain	Filtration
(D)	Camphor and salt	Sublimation

Table 10.1 — Separating mixtures

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)
11. Why does a burning candle show **both** a physical and a chemical change?
- (A) The wax melts (physical) and the wax burns to form new gases (chemical) (B) Only the wick burns
(C) The candle only melts (D) The candle only changes shape
12. Common salt is obtained from sea water by which method?
- (A) Filtration (B) Evaporation
(C) Sublimation (D) Threshing
13. Which of these changes can be easily **reversed**?
- (A) Burning of paper (B) Curdling of milk
(C) Freezing of water (D) Cooking of an egg
14. A mixture of sand, salt and water is to be separated completely. Which sequence of methods should be used?
- (A) Winnowing, then evaporation (B) Evaporation, then filtration
(C) Sublimation, then filtration (D) Filtration, then evaporation
15. Why is more sugar able to dissolve in hot water than in cold water?
- (A) Higher temperature increases the solubility of most solids (B) Hot water is heavier
(C) Hot water has more space between the sugar grains (D) Sugar melts in hot water

16. Consider the following statements.

- (i) In a physical change, no new substance is formed.
- (ii) All metals are good conductors of heat and electricity.
- (iii) A mixture always has a fixed composition.

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. A student is given a mixture of iron filings, sand and common salt. Which sequence would separate all three?

- (A) Magnet → add water and filter → evaporate the filtrate
- (B) Add water and filter → magnet → sublimation
- (C) Evaporate → magnet → winnowing
- (D) Winnowing → filtration → magnet

18. An iron nail is left in damp air for several days and gains a reddish-brown coating. Its mass is found to be slightly **greater** than before. Why?

- (A) The nail has absorbed water only
- (B) Iron has combined with oxygen and moisture to form rust, adding matter
- (C) The nail has expanded in the heat
- (D) Some iron has evaporated

Answer Key

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

Solutions

1. **Answer: (B)** Malleability

Malleability is the property of being beaten into sheets — gold and aluminium are highly malleable. Ductility is the property of being drawn into wires.

2. **Answer: (D)** Butter paper

Butter paper lets some light through but you cannot see clearly through it, so it is translucent. Clear glass is transparent, and wood and iron are opaque.

3. **Answer: (B)** Threshing

Threshing separates the grain from the cut stalks by beating them. Winnowing then uses wind to blow away the lighter husk.

4. **Answer: (C)** Filtration

Sand is insoluble, so its grains are held back by a filter paper while the water passes through — that is **filtration**. Salt, being soluble, would pass straight through.

5. **Answer: (D)** Rusting of iron

In **rusting**, iron combines with oxygen and moisture to form a completely new substance, and the change cannot be reversed easily. The other three are physical changes, in which no new substance is formed.

6. **Answer: (A)** No more solute can dissolve at that temperature

A solution is saturated when **no more solute can dissolve in it at that temperature**. Heating it usually allows more to dissolve.

7. **Answer: (B)** Chalk powder

Chalk powder does not dissolve — it stays suspended and settles or can be filtered out. Sugar, salt and vinegar all mix completely with water.

8. **Answer: (C)** Sublimation

Sublimation is the direct change from solid to vapour. Camphor, naphthalene balls and dry ice all sublime.

9. **Answer: (D)** Chalk powder mixed with water

This is filtration. It works only when the solid is **insoluble**, so its particles are held on the filter paper as residue while the liquid passes through as filtrate. **Chalk powder mixed with water** separates this way; sugar and salt dissolve and pass straight through.

10. **Answer: (C)** Row (C)

Husk and grain are both dry solids of very different weights, so they are separated by **winnowing** — letting the wind blow the light husk aside — not by filtration, which needs a liquid. The other three rows are correct.

11. **Answer: (A)** The wax melts (physical) and the wax burns to form new gases (chemical)

Near the flame the solid **wax melts and can set again — a physical change**. At the flame itself the wax vapour **burns, forming carbon dioxide and water vapour — a chemical change** that cannot be reversed.

12. **Answer: (B)** Evaporation

Salt is dissolved in sea water, so it cannot be filtered out. Sea water is let into shallow pans where the sun's heat evaporates the water, leaving the solid salt behind — that is **evaporation**.

13. **Answer: (C)** Freezing of water

Freezing water into ice can be reversed simply by warming it, and no new substance is formed. Burning, curdling and cooking all produce new substances and cannot be undone.

14. **Answer: (D)** Filtration, then evaporation

First **filter** the mixture: the insoluble sand stays on the filter paper and the salt solution passes through. Then **evaporate** that solution to leave the solid salt behind. Doing it the other way round would leave the salt and sand mixed together as one dry solid.

15. Answer: (A) Higher temperature increases the solubility of most solids

For most solids, **solubility increases with temperature**, so hot water can hold much more dissolved sugar than the same amount of cold water. This is why sugar dissolves faster and more completely in hot tea.

16. Answer: (A) (i) and (ii) only

Statement (i) is true. Statement (ii) is true as a general rule for metals. Statement (iii) is false; it is a **compound** that has a fixed composition, while a mixture can be made in any proportion — sugar solution can be weak or strong. Hence **(i) and (ii)**.

17. Answer: (A) Magnet → add water and filter → evaporate the filtrate

Use a **magnet** first to lift out the iron filings while everything is dry — once water is added they would be hard to recover. Then **add water and filter**: the insoluble sand stays as residue and the salt passes through in solution. Finally **evaporate the filtrate** to recover the salt.

18. Answer: (B) Iron has combined with oxygen and moisture to form rust, adding matter

Rusting is a chemical change in which **iron combines with oxygen and moisture from the air**. The oxygen becomes part of the new substance, so the rusted nail contains more matter than the original iron and its mass increases. This is also why painting or oiling a nail, which keeps air and water away, prevents rust.