

Materials — Metals, Non-metals and Synthetic Fibres

Science · Class 8 · 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

- Which of these is a **non-metal** that conducts electricity?

(A) Graphite

(B) Sulphur

(C) Phosphorus

(D) Iodine
- Which metal is a **liquid** at room temperature?

(A) Sodium

(B) Aluminium

(C) Lead

(D) Mercury
- The property by which a metal can be drawn into thin wires is called _____.

(A) Ductility

(B) Malleability

(C) Sonority

(D) Lustre
- When a metal reacts with oxygen, the oxide formed is generally _____ in nature.

(A) Acidic

(B) Basic

(C) Neutral

(D) Sublimable
- Which synthetic fibre is known as 'artificial silk'?

(A) Nylon

(B) Polyester

(C) Rayon

(D) Acrylic
- Plastics that can be softened repeatedly on heating and remoulded are called _____.

(A) Fibres

(B) Thermosetting plastics

(C) Elastomers

(D) Thermoplastics
- Which of these is a **thermosetting** plastic used for electrical switches?

(A) Bakelite

(B) PVC

(C) Polythene

(D) Nylon
- Plastics are described as **non-biodegradable** because they _____.

(A) Burn easily

(B) Are not broken down by natural processes for a very long time

(C) Dissolve in water

(D) Rust in damp air

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

Row	Property	Metals
(A)	Lustre	Usually shiny
(B)	Sonority	Produce a ringing sound when struck
(C)	Conductivity	Poor conductors of heat
(D)	Malleability	Can be beaten into sheets

Table 9.1 — Properties of metals

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)
10. An iron nail is dipped in copper sulphate solution. After some time the blue colour fades and the nail turns brownish. Why?
- (A) Iron dissolves without reacting (B) Copper is more reactive than iron
(C) Iron is more reactive than copper, so it displaces copper from the solution (D) The solution evaporates
11. Why are aircraft bodies made largely of aluminium alloys rather than iron?
- (A) Aluminium is cheaper than iron (B) Aluminium melts easily
(C) Aluminium is magnetic (D) Aluminium is light and resists corrosion
12. Why is it dangerous to burn plastic waste in the open?
- (A) It releases toxic gases that pollute the air and harm health (B) It puts out too much light
(C) It uses up too much oxygen (D) It makes plastic biodegradable
13. Which of these makes **nylon** suitable for parachutes and ropes?
- (A) It dissolves in water (B) It is very strong, elastic and light
(C) It conducts electricity (D) It burns easily
14. Sodium metal is stored under kerosene. Why?
- (A) To keep it clean (B) To make it heavier
(C) Because it reacts vigorously with the oxygen and moisture in air (D) Because it dissolves in air
15. Why should cooking utensils made of aluminium not be cleaned with a strongly basic cleaner?
- (A) The cleaner is expensive (B) The cleaner has no effect at all
(C) Aluminium becomes magnetic (D) Aluminium reacts with strong bases, so the surface is damaged

16. Consider the following statements.

- (i) All metals are solid at room temperature.
- (ii) Non-metal oxides are generally acidic.
- (iii) Thermosetting plastics can be remoulded on heating.

Which of the statements is/are correct?

- | | |
|-----------------------|-------------------------|
| (A) (i) only | (B) (ii) only |
| (C) (i) and (ii) only | (D) (ii) and (iii) only |

17. Four metals W, X, Y and Z are tested. X displaces Y from its salt solution, Z displaces X, and W is displaced by all three. Which is the **most reactive**?

- | | |
|-------|-------|
| (A) Z | (B) X |
| (C) Y | (D) W |

18. Plastic is cheap, light, strong and does not rust — yet many countries are banning single-use plastic bags. What is the best explanation?

- | | |
|--|--|
| (A) Plastic bags are too expensive to make | (B) The very durability that makes plastic useful means the waste persists for centuries and chokes drains, soil and marine life |
| (C) Plastic bags are too weak to carry goods | (D) Plastic bags rust in damp weather |

Answer Key

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

Solutions

1. Answer: (A) Graphite

Graphite, a form of carbon, is the one common non-metal that conducts electricity well. This is why it is used for the electrodes in dry cells.

2. Answer: (D) Mercury

Mercury is the only metal that is liquid at ordinary room temperature, which is why it is used in thermometers.

3. Answer: (A) Ductility

Ductility is the property of being drawn into wires. Copper and aluminium are highly ductile, which is why electric wires are made of them. Malleability is the ability to be beaten into sheets.

4. Answer: (B) Basic

Metal oxides are generally **basic** — magnesium oxide dissolved in water turns red litmus blue. Non-metal oxides, such as sulphur dioxide, are acidic.

5. Answer: (C) Rayon

Rayon is made from wood pulp, a natural source, but is chemically treated, so it is called a semi-synthetic fibre or 'artificial silk'.

6. Answer: (D) Thermoplastics

Thermoplastics such as polythene and PVC soften on heating and can be remoulded again and again. Thermosetting plastics such as bakelite set permanently and cannot be softened again.

7. Answer: (A) Bakelite

Bakelite is a poor conductor of heat and electricity and does not soften on heating, so it is used for electrical switches, plugs and pan handles.

8. Answer: (B) Are not broken down by natural processes for a very long time

Bacteria and fungi cannot break plastics down, so they **persist in the environment for hundreds of years**. This is why plastic waste accumulates and why reducing, reusing and recycling matter so much.

9. Answer: (C) Row (C)

Metals are **good** conductors of heat and electricity, not poor ones — which is why cooking vessels are made of them. The other three rows are correct.

10. Answer: (C) Iron is more reactive than copper, so it displaces copper from the solution

Iron is more reactive than copper, so it displaces copper from copper sulphate solution. Iron sulphate (pale green) forms and a reddish-brown deposit of copper settles on the nail, while the blue colour fades.

11. Answer: (D) Aluminium is light and resists corrosion

Aluminium is light and resists corrosion, because a thin oxide layer forms on its surface and protects the metal beneath. Both properties matter greatly in an aircraft, where weight and rust would be serious problems.

12. Answer: (A) It releases toxic gases that pollute the air and harm health

Burning plastics **releases toxic gases** such as dioxins and carbon monoxide, which pollute the air and cause serious health problems. Plastic waste should be segregated and recycled instead.

13. Answer: (B) It is very strong, elastic and light

Nylon is **very strong, elastic and light**, and it dries quickly. Nylon rope is in fact stronger than a steel wire of the same thickness, which is why it is used for parachutes, ropes and seat belts.

14. Answer: (C) Because it reacts vigorously with the oxygen and moisture in air

Sodium is so reactive that it **catches fire on contact with the oxygen and moisture in air**. Kerosene keeps air and water away from the metal.

15. Answer: (D) Aluminium reacts with strong bases, so the surface is damaged

Aluminium is unusual among metals in reacting with **both acids and strong bases**. A strongly basic cleaner attacks the protective oxide layer and then the metal itself, damaging the surface.

16. Answer: (B) (ii) only

Statement (i) is false — mercury is a liquid metal. Statement (ii) is true; sulphur dioxide dissolved in water turns blue litmus red. Statement (iii) is false; it is **thermoplastics** that can be remoulded, while thermosetting plastics set permanently. Hence **(ii) only**.

17. Answer: (A) Z

A more reactive metal displaces a less reactive one from its salt solution.

X displaces Y, so X is above Y.

Z displaces X, so Z is above X.

W is displaced by all three, so W is at the bottom.

The order from most to least reactive is $Z > X > Y > W$, so **Z** is the most reactive.

18. Answer: (B) The very durability that makes plastic useful means the waste persists for centuries and chokes drains, soil and marine life

The properties that make plastic so useful are exactly what make its waste a problem. **Because it is not broken down by microbes, discarded plastic persists for hundreds of years** — blocking drains, damaging soil and killing marine animals that swallow it. Cloth and jute bags, which are biodegradable and reusable, are the alternative.