

Holiday Homework: Assertion & Reason in Science

Class: 8

Subject: Science

Objective: To evaluate scientific statements logically by distinguishing between valid explanations and misconceptions using assertion-reason questions.

Task 1: Concept Building



1. **Define with Examples** (Write in your notebook):
 - **Assertion (A):** A factual statement (e.g., "Plants release oxygen during photosynthesis").
 - **Reason (R):** The justification for the assertion (e.g., "Because photosynthesis splits water molecules").
 - Give **2 examples** each of:
 - A and R both true, with R correctly explaining A.
 - A true but R false.
 - Both true but unrelated.

Task 2:



Instructions:

- Identify if **both A and R are true** and whether **R correctly explains A**.
- Choose:
 - (a) Both true, R explains A.
 - (b) Both true but R doesn't explain A.
 - (c) A is true, R is false.
 - (d) A is false, R is true.

Example Submission Format:

Q. No.	Your Answer	Explanation (1-2 lines)
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1	(a)	Water cools fuel and cuts off oxygen, justifying A.
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Analyze the following and choose the correct option:

- Assertion (A):** Water is used to extinguish fires caused by wood or paper.
Reason (R): Water cools the fuel below its ignition temperature and cuts off oxygen supply.
- Assertion (A):** LPG is a better domestic fuel than wood.
Reason (R): LPG has a higher calorific value and burns without smoke.
- Assertion (A):** A candle flame has three zones.
Reason (R): Different zones have varying temperatures and combustion efficiency.
- Assertion (A):** Spontaneous combustion occurs without an external heat source.
Reason (R): Some materials absorb heat from the surroundings to reach ignition temperature.
- Assertion (A):** CO₂ is used in fire extinguishers for electrical fires.
Reason (R): CO₂ is a non-combustible gas that displaces oxygen.
- Assertion (A):** Coal is a fossil fuel.
Reason (R): It was formed from the remains of ancient plants over millions of years.
- Assertion (A):** Petroleum is called "black gold."
Reason (R): It is expensive and used in making various valuable products.
- Assertion (A):** CNG is a cleaner fuel than petrol.
Reason (R): CNG produces fewer pollutants on combustion.
- Assertion (A):** Fossil fuels are non-renewable resources.
Reason (R): They take millions of years to form and are being depleted rapidly.
- Assertion (A):** Kerosene is used in jet engines.
Reason (R): It has a high calorific value and burns efficiently.

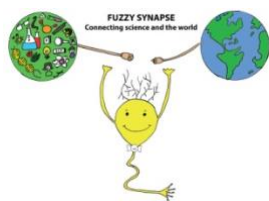


Task 3: Create Your Own Assertion-Reason Pairs

Design 2 original A-R pairs from the chapter "Coal and Petroleum" and explain the logic.

Example:

- **A:** Bitumen is used for road construction.
- **R:** It is a sticky byproduct of petroleum refining.
- **Answer:** (a) Both true, R explains A.



Task 4: Real-Life Science Connections

1. Find **2 news headlines** (e.g., "UV rays cause skin cancer") and write:
 - The **assertion** in the headline.

A possible **scientific reason** supporting it.

Key Learning Outcomes:

- Distinguishes between factual statements and valid explanations.
- Reinforces NCERT concepts with logical reasoning.
- Prepares for CBSE/ICSE-style assertion-reason questions.

Submission Guidelines:

- Handwritten (neatly) on A4 size sheet
- Use diagrams/flowcharts where needed (e.g., for Task 3).
- **Deadline:** First day after holidays.

Note: Parents can discuss but let the child reason independently.



Pick **one assertion-reason pair** from your created questions and design a **1-minute oral explanation** for the class.