Assertion–Reason Questions: The Four Options, Decoded

Section A · 2 questions × 1 mark · no calculation, pure logic

What the question actually asks

You are given two statements — an **Assertion (A)**, a claim, and a **Reason (R)**, a statement offered as the explanation for that claim. You must judge **three** things: is A true, is R true, and — the deciding one — does R actually **explain** A?

"Both true" is not the same as "one explains the other." That single distinction is where most of these marks are won or lost.

The four options — always the same

OPTION	MEANS
(a)	A is true, R is true, **and R is the correct explanation of A**
(b)	A is true, R is true, **but R is not the correct explanation of A**
(c)	A is true, but **R is false**
(d)	**A is false**, but R is true

The three-question method

1
Is **A** true? Judge the Assertion entirely on its own.

2
Is **R** true? Judge the Reason on its own — not through A.

3
If both are true, does **R explain A**? Yes → (a). No → (b).

Key takeaways

- **Only step 3 is hard.** If A is true and R false → **(c)**; if A is false and R true → **(d)**. Those fall out automatically.
- **The classic trap is (a) instead of (b).** R can be a perfectly true theorem and still have nothing to do with why A holds.
- **Assess R independently.** Reading R "in the light of A" is what makes unrelated statements look connected.
- **Test the link out loud:** say "A is true *because* R." If that sentence sounds wrong, the answer is (b).
- **These are 2 quick marks** — but give step 3 its moment. Rushing, not difficulty, is what costs them.

Worked Example: Both True — But Is It (a) or (b)?

Illustrative question, built to show the method — not a past-paper question.

Assertion (A): The HCF of 12 and 18 is 6.

Reason (R): For any two positive integers, HCF × LCM = product of the two numbers.

Step 1 — Is A true?

$12 = 2^2 \times 3$ and $18 = 2 \times 3^2$. The common prime factors, taken to the lowest power, give HCF = $2 \times 3 = 6$. So **A is true**.

Step 2 — Is R true?

Yes. It is a standard Class 10 result: HCF(a, b) × LCM(a, b) = a × b. Check it here: LCM(12, 18) = 36, and 6 × 36 = 216 = 12 × 18. So **R is true**.

Step 3 — Does R explain A?

No. The HCF came from prime factorisation, not from the HCF × LCM relation. R is a true statement about how HCF and LCM relate *once you already know them* — it never tells you that the HCF of 12 and 18 is 6. Say it out loud: "The HCF of 12 and 18 is 6 *because* HCF × LCM = product." That does not follow.

Answer: option (b) — both statements true, but R is not the correct explanation of A.

Now try this one

A: The number 6^n can end with the digit 0 for some natural number n. **R:** Any number ending in 0 must have both 2 and 5 among its prime factors.

A is false — $6^n = 2^n \times 3^n$ has no factor of 5, so it always ends in 6. R is true. ***Answer: option (d).***

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