

## When Reason Meets Reality: 10th Grade Logic & Critical Thinking Challenge

Sophomores sharpen their analytical edge by synthesizing complex arguments and evaluating the structural integrity of formal and informal inferences.

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**1. In the context of categorical logic, if the statement 'No cephalopods are vertebrates' is true, what can we definitively conclude about the statement 'Some cephalopods are vertebrates'?**

- A. It is logically undetermined.
- B. It is necessarily false.
- C. It is likely true based on induction.
- D. It is a valid syllogism.

**2. A deductive argument can be 'valid' even if all of its premises are factually false.**

- A. True
- B. False

**3. A lawyer argues: 'If we allow students to use tablets in class, they will eventually stop reading books, literacy rates will plummet, and our civilization will collapse.' This reasoning is an example of a(n) \_\_\_\_\_ fallacy.**

- A. Red Herring
- B. Hasty Generalization
- C. Slippery Slope
- D. Equivocation

**4. Analyze the following: 'If the economic policy is successful, unemployment will drop. Unemployment has dropped. Therefore, the policy was successful.' This represents which formal fallacy?**

- A. Modus Tollens
- B. Denying the Antecedent
- C. Affirming the Consequent
- D. Post hoc ergo propter hoc

**5. In formal logic, the rule \_\_\_\_\_ states that if we have a conditional 'If P then Q' and we are given 'not Q', we can validly conclude 'not P'.**

- A. Modus Ponens
- B. Hypothetical Syllogism
- C. Modus Tollens
- D. Disjunctive Syllogism

**6. Inductive arguments are evaluated based on their 'strength' and 'cogency' rather than 'validity' and 'soundness.'**

- A. True

Name: \_\_\_\_\_

Date: \_\_\_\_\_

B. False

**7. Suppose a historian uses carbon dating and stylistic analysis of pottery to determine the age of a ruin. What primary mode of reasoning are they utilizing?**

- A. Abductive reasoning (inference to the best explanation)
- B. Circular reasoning (begging the question)
- C. A priori deduction
- D. The Fallacy of Composition

**8. A politician argues that we should ignore a scientist's report on urban planning because the scientist once received a speeding ticket. This is a(n) \_\_\_\_\_ attack.**

- A. Straw Man
- B. Ad Hominem
- C. Appeal to Authority
- D. False Equivalence

**9. Which of the following describes a 'sound' argument?**

- A. An argument that is valid and has at least one true premise.
- B. An argument that is logically strong but factually incorrect.
- C. An argument that is valid and all of its premises are true.
- D. An argument where the conclusion is true, regardless of the logic used.

**10. In a Disjunctive Syllogism, if we are given 'Either the tectonic plates are shifting or the sensor is broken' and we prove the sensor is functional, we must conclude the plates are shifting.**

- A. True
- B. False