Name: _____   **Date:** _____

Answer Key: Think and Link: The 5th Grade Logic Lab Riddles

Can you spot the flaw in a faulty argument? Use high-level synthesis to build sound conclusions and evaluate complex reasoning chains.

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1. The local library observes that every 'Mystery' book they buy gets borrowed within one week. They conclude that if they buy the new 'Mystery' book coming out next month, it will also be borrowed in a week. What type of reasoning is being used?

Answer: C) Inductive reasoning

> Inductive reasoning looks at specific past patterns (previous mystery books) to make a probable prediction about the future.

2. Scenario: If a plant is a Venus Flytrap, then it eats insects. This plant is a Venus Flytrap. Conclusion: Therefore, this plant eats insects. Which logical principle does this follow?

Answer: B) Modus Ponens

> Modus Ponens is a valid inference rule that states: If P implies Q, and P is true, then Q must be true.

3. A student says, 'We should start a school garden.' Another student replies, 'Oh, so you want us to spend all our recess time doing manual labor and never play again?' This logical fallacy is known as a ____ argument.

Answer: C) Straw Man

> A Straw Man fallacy occurs when someone distorts or oversimplifies an opponent's argument to make it easier to attack.

4. The argument 'All mammals have fur; a dolphin is a mammal; therefore, a dolphin has fur' is logically valid, even if the premise 'All mammals have fur' is factually incorrect.

Answer: A) True

> Validity refers to the structure of the argument. If the premises were true, the conclusion would HAVE to be true, regardless of the actual facts.

5. Leo says: 'Every time I wear my lucky red socks, my soccer team wins. Therefore, my socks cause us to win.' What logic error is Leo making?

Answer: A) Mistaking correlation for causation

> Just because two things happen at the same time (wearing socks and winning) does not mean one caused the other.

6. Either the school cafeteria is serving pizza today, or they are serving tacos. They are NOT serving pizza. Therefore, they are serving tacos. This is an example of a _____.

Answer: B) Disjunctive Syllogism

> A Disjunctive Syllogism is a valid argument form where you are presented with two options, one is ruled out, and the other must therefore be true.

7. Which of these represents a 'Sound' argument?

Answer: A) An argument that is valid and has true premises.

> In logic, a sound argument must be both logically valid AND based on facts (true premises).

8. Inductive reasoning provides 100% certainty in its conclusions.

Answer: B) False

> Inductive reasoning deals with probability and patterns; it creates strong or weak conclusions, but never 100% absolute certainty.

9. Consider this: 'If it is a holiday, the post office is closed. The post office is NOT closed.' What is the logical conclusion using Modus Tollens?

Answer: B) It is not a holiday.

> Modus Tollens states that if P leads to Q, and Q is false, then P must also be false.

10. Analyze this statement: 'The new coding club will be successful because my brother, who is really good at video games, says it's a great idea.' Why is this argument weak?

Answer: B) It relies on an Appeal to Unqualified Authority.

> Being good at playing video games does not make someone an expert on the organizational success of a coding club.