Answer Key: Detective Brain: Case of the 4th Grade Logic Labyrinth

Your mind is a courtroom! Synthesize evidence and evaluate complex arguments through tricky dilemmas to see if a conclusion truly holds up under cross-examination.

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1. Scenario: Maya says, 'We should plant a garden to help the bees.' Leo replies, 'So you're saying we should spend all our play time digging in the dirt and never play tag again?' What error is Leo making?

Answer: B) Straw Man Fallacy

> Leo is using a Straw Man fallacy by twisting Maya's specific suggestion into an extreme version that is much easier to attack.

2. If an argument is 'valid,' it means the conclusion must be true even if the starting facts are totally made up.

Answer: B) False

> Validity only means the conclusion follows correctly from the premises; if the premises (facts) are false, the argument is valid but not 'sound.'

3. Look at this pattern: 'The last five mystery books I read had a twist ending. Therefore, the next mystery book I read will likely have a twist ending.' This is an example of _____ reasoning.

Answer: B) Inductive

> Inductive reasoning uses specific past observations to predict a likely future outcome, though it isn't 100% guaranteed.

4. The principal says: 'Either we cancel the field trip or we raise $500 by tomorrow.' What is the problem with this reasoning?

Answer: A) It is a False Dilemma because there might be other options.

> This is a False Dilemma (or False Choice) because it ignores other possibilities, like rescheduling the trip or raising less money.

5. Analyze this argument: 'Anyone who wins the science fair gets a gold trophy. Sam won the science fair. Therefore, Sam got a gold trophy.' This conclusion is:

Answer: C) Logically certain (Deductive)

> This is a perfect example of deductive reasoning (Modus Ponens); if the first two statements are true, the conclusion must be true.

6. When a person claims that a new video game must be great because 'everybody at school is playing it,' they are using a _____ fallacy.

Answer: B) Bandwagon

> The Bandwagon fallacy argues that something is good or true simply because it is popular, rather than looking at its actual quality.

7. If you argue that a scientist's idea about space is wrong simply because they are 'too young to know anything,' you are using an Ad Hominem fallacy.

Answer: A) True

> Ad Hominem means 'to the person.' Attacking the person's age instead of their evidence is a logical error.

8. Evaluating Evidence: Which of these sources would be the MOST reliable for an argument about why a local lake is polluted?

Answer: C) A data report from the Environmental Protection Agency

> Critical thinkers look for neutral, expert, and data-driven sources. The EPA report is the most objective and scientific choice.

9. If 'All mammals have backbones' and 'A blue whale is a mammal,' then the _____ is that a blue whale has a backbone.

Answer: C) Inference

> An inference is the logical step you take to reach a conclusion based on the facts (premises) you already have.

10. A friend says: 'If you don't clean your room today, you'll never get into college.' Why is this argument weak?

Answer: A) It is a Slippery Slope; one small action won't lead to that extreme result.

> This is a Slippery Slope fallacy. It incorrectly predicts a chain reaction leading to a huge disaster without any real proof.