Name: _____ **Date:** _____

Code Crusaders: Conquer the Logic Lab for 7th Grade

Nested logic, boolean operations, and modular design. Students tackle complex problem-solving scenarios to see how professional developers structure sophisticated software.

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1. Imagine you are designing a smart thermostat. You want the heater to turn on only if the temperature is below 68 degrees AND it is currently 7:00 AM. Which logic operator best connects these two conditions?

A. OR
B. AND
C. NOT
D. ELSE

2. In programming, a variable can only hold numerical data and cannot store text or snippets of words.

A. True
B. False

3. A developer wants to create a 'Level Up' message that appears once for every 500 points earned. To make the code efficient and reusable across different levels, they should place the message logic inside a _____.

A. Loop
B. Variable
C. Function
D. Boolean

4. Which of these is the best example of 'nesting' in programming logic?

A. Setting a variable to equal 10
B. Using an 'if' statement inside of a 'for' loop
C. Naming a function 'calculate_total'
D. Printing a list of strings to the console

5. You are coding an automated inventory system for a drone delivery service. To ensure the drone continues checking items until the bin is empty, you should use a _____ loop.

A. While
B. Constant
C. Static
D. Binary

6. A conditional statement (if-then-else) allows a program to follow different paths of execution based on whether a statement is true or false.

A. True

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B. False

7. If you define a variable named 'player_health' and set it to 100, but then subtract 20 every time the player hits an obstacle, what is the primary purpose of that variable?

A. To repeat a task
B. To organize code into modules
C. To track and update a changing state
D. To connect the program to the internet

8. In a social media app, if you want to display 'Verified' next to a user's name only if they have more than 10,000 followers, you are using the concept of _____.

A. Iteration
B. Abstraction
C. Concatenation
D. Conditionals

9. A function must always return a value back to the main program; otherwise, it is considered an error.

A. True
B. False

10. To create a program that draws a perfect octagon (8-sided shape), which combination of concepts would be most efficient?

A. One variable and 8 separate print statements
B. A loop that repeats a 'draw' command 8 times
C. An 'if-else' statement checking if the side is 8
D. Using only variables without any loops