

## Blueprint Architect: 5th Grade Logical Scaffolding Quiz

Students dismantle towering computational puzzles and construct sturdy, efficient pathways to solve high-stakes automation challenges through rigorous mental modeling.

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**1. A city needs an automated system to sort recycling. To create an efficient algorithm, which sub-problem should you solve FIRST?**

- A. Counting the total number of items
- B. Identifying the material type of a single item
- C. Hiring truck drivers for the route
- D. Painting the recycling bins blue

**2. True or False: If two different algorithms provide the correct answer to a problem, they are considered equally 'good' even if one takes 100 more steps than the other.**

- A. True
- B. False

**3. When designing a system for a solar-powered rover, checking the battery level before every movement is an example of a physical \_\_\_\_.**

- A. Optimization error
- B. Infinite loop
- C. Conditional logic step
- D. Debugging tool

**4. You are writing steps for a robot to navigate a library. The robot keeps hitting a wall because it turns left 90 degrees instead of 45. What process are you performing when you find and fix this error?**

- A. Encryption
- B. Debugging
- C. Decomposition
- D. Hardware assembly

**5. To find a specific book in an unorganized pile of 500 books by checking them one by one, you are using a technique called \_\_\_\_ search.**

- A. Linear
- B. Binary
- C. Random
- D. Recursive

**6. True or False: Breaking a large project into smaller parts (decomposition) makes it easier to assign specific tasks to different team members.**

- A. True

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

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

B. False

**7. In a logistics algorithm designed to deliver packages, which factor would be the MOST important 'efficiency consideration' for a delivery drone?**

- A. The color of the delivery drone
- B. The font used on the package labels
- C. The total distance traveled to all stops
- D. The name of the person receiving the package

**8. An algorithm that repeats a set of instructions until a specific goal is met (like 'stir until smooth') is using a technical structure called a \_\_\_\_.**

- A. Variable
- B. Loop
- C. Hardware
- D. Comment

**9. True or False: In a 'Search' algorithm, 'Input' refers to the information the computer outputs after it finds a solution.**

- A. True
- B. False

**10. If you are designing a high-speed traffic light system, why is it critical to test 'edge cases,' such as what happens during a power outage?**

- A. Because edge cases happen most of the time
- B. To ensure the algorithm handles unusual but dangerous situations safely
- C. To make the traffic lights look more colorful
- D. To reduce the amount of electricity used