Name: _____ **Date:** _____

Answer Key: Blast Busy Bot Barriers: Pre-K Problem Solving Quiz

Design efficient pathways and fix broken routines to help robots navigate tricky obstacles through high-level logical reasoning.

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1. A robot needs to reach a battery. One path is short but has a puddle (which breaks robots!). The long path is dry. Which path should the robot choose to succeed?

Answer: B) The long, dry path

Problem solving involves evaluating risks. Choosing the dry path, even if longer, ensures the robot remains functional to complete its goal.

2. A robot is trying to build a tower. It keeps falling over. The robot should _____ the problem to see if the bottom block is too small.

Answer: B) Analyze

Analyzing is an advanced computational thinking skill where students evaluate why an algorithm or physical process is failing.

3. If a robot must pick up a ball and then drop it in a box, it doesn't matter if it tries to drop the ball before picking it up.

Answer: B) False

Algorithms require strict logical sequencing. You cannot perform an action on an object (the ball) until the prerequisite step (picking it up) is completed.

4. A robot gardener has three steps: 1. Dig hole, 2. Put seed in, 3. Water. If the robot misses step 2, what happens?

Answer: C) Nothing grows because a step is missing

This requires the student to evaluate the output of an incomplete algorithm. Missing a core component of the procedure leads to a failure in the logic.

5. When a robot finds a wall in its path, it must _____ its plan to find a way around.

Answer: C) Change

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Flexibility and iteration are key in algorithmic thinking. If a path is blocked, the 'code' or plan must be updated to solve the dilemma.

6. A robot can finish its work faster if it skips important steps like 'Open Door'.

Answer: B) False

Skipping necessary steps in a sequence results in an error (the robot hitting the door) rather than increased efficiency.

7. Two robots are cleaning. Robot A picks up toys one by one. Robot B uses a big bin to scoop them all at once. Which robot is more efficient?

Answer: B) Robot B

Efficiency in algorithms means completing the task with the fewest steps. Grouping tasks (batching) is more efficient than individual repetitions.

8. If a robot is stuck spinning in circles, there is a _____ in its instructions that needs fixing.

Answer: A) Bug

Debugging is the process of identifying an error in a logic sequence. An infinite loop (spinning) is a classic algorithmic bug.

9. To paint a whole house, it is helpful to break the job into small parts, like 'Paint the Door' and 'Paint the Window'.

Answer: A) True

This demonstrates decomposition—breaking down a complex, overwhelming problem into manageable sub-tasks.

10. A robot chef wants to make toast. It has: 1. Put bread in toaster, 2. Take toast out, 3. Push button down. What is wrong with this order?

Answer: C) It needs to push the button before taking the toast out

Logical sequencing is vital. A child must analyze the steps and realize that the 'Take out' action must follow the 'Cook' action.