TEACHER ANSWER KEY -- WORKSHEET

Movement and Manipulators

Background Knowledge: 5 Basic Parts of a Robot

Robots can seem very complex, but all those bits and pieces can be divided into five main categories:

- Controller
- Power supply
- Movement
- Manipulators
- Sensors

The controller is the robot's brain, and the micro:bit microcontroller is the brain for the micro:bot. Either a battery pack or the USB cable functions as the robot's power supply.

This challenge focuses on movement and manipulators. Our micro:bots will all move using motors and wheels. Your team will need to adjust the code to make sure your robot goes straight and fast enough to beat the other robots to the targets.

The manipulator for this robot will be an arm. Your team will need to design and build an arm to lift, capture, and return the plugs to your base. The arm must be light-weight enough to be moved by a standard servo motor. The arm must be made of the materials provided in the classroom. The arm must not be permanently attached to the servo or the robot, and the arm must not intentionally interfere with the other team's arm or robot.

Make a note of the criteria and constraints for the robot arm.

Criteria What the arm must do	The arm must be able to lift, capture, and return the plugs to base.
Constraints What limits you have on your design	The arm must ● be built only from the materials provided in the classroom ● not be permanently attached to the servo or the robot ● not intentionally interfere with the other team ● be constructed and tested within the time allowed