

Quality Control with ORA

Name: _____

Lesson 9

Date: _____

Quality Control - a system of maintaining standards in manufactured products by testing a sample of the output against the specification.

Sample Set- a subset of samples that represents a larger set or group of items.

Criteria - a list of requirements that have to be met for the product to be of sufficient quality

Pass/Fail - a quality control method that evaluates products by classifying them as either passing or failing based on predefined criteria.

Job Outlook - the likelihood that the selected occupation will be available and hiring in the future

Engage

Thinking back to the inspection and logic lesson, how did randomness play a part in the lesson or board game?

Answers may vary, but a random number generator was used to determine which board game squares were “swept” in the game.

How can randomness be useful in quality control?

Answers may vary, but random samples are a good way to do quality control so you can assure a batch meets standards.

Explore

While robotic arms have a key role in today's lesson, we will explore the related career of Quality Control Inspector. After watching the video, find the following information about Quality Control Inspectors:

Education needed to be a Quality Control Inspector	They typically need a high school diploma to enter the occupation and receive on-the-job training once employed.
Skills Needed to be a Quality Control Inspector	Attention to detail, technical skills, safety skills
Duties of a Quality Control Inspector	Quality control inspectors examine products and materials for defects or deviations from specifications.
What kind of work environment does a Quality Control Inspector work in?	Many quality control inspectors work in manufacturing. Most work full-time, and overtime may be required to meet production deadlines.
Average Salary in your state	Depending on location, the national average is \$45,850 per year
What is the job outlook for this career?	Employment of quality control inspectors is projected to decline by 3 percent from 2023 to 2033.

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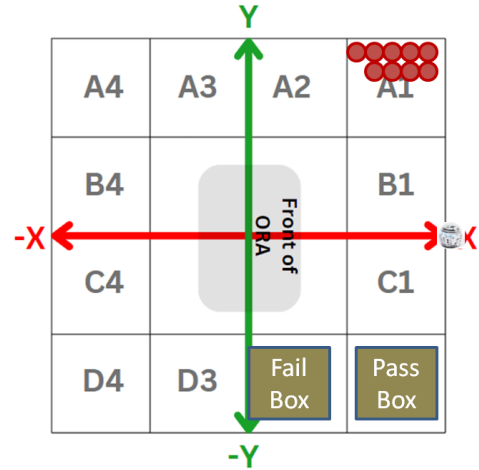
Date: _____

Elaborate

In this challenge, students will modify the Elaborate Starter Code to include the X, Y, and Z values of the cylinders in A1 in the Starter Cylinder lists. Students will then modify the Evo Scan and ORA Reaction functions to code ORA and Evo's reactions to the passed or failed tests.

Task Requirements:

1. ORA must start in the initial position.
2. Students must measure (using the Printable ORA Coordinate Tool or ruler) and record the X, Y, and Z coordinates for ORA's end tool to pick up each cylinder.
3. These values must be entered into the lists in the Elaborate Starter Code.
4. ORA must pick up each cylinder and place it in front of Evo.
5. Students must program Evo to react differently when a cylinder passes or fails a test. This includes saying 1 or 0 for a binary pass/fail indicator.
6. ORA will move the cylinder to the appropriate box.
7. This process will occur for all 9 cylinders.
8. ORA must finish in the Initial Position.



Pseudocode	Code Blocks
Answers may vary	Example Solution Code

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Evaluate

Please answer the following prompts.

Remember to include your **name** and **date** on this paper!

1. Other than the challenge you participated in during this lesson, how could you apply lists to a different project? How are lists useful?

Answers may vary. Students could apply lists to many other repetitive tasks. Lists are useful because they cut down on the number of Move to Coordinate blocks ORA uses and simplify the code.

2. After testing your code in the Elaborate section, what was the most difficult part? What about that process made it most difficult?

Answers may vary based on student experience.

3. After learning about quality control inspectors as a career, would this be a job you'd like to have in the future? Why or why not?

Answers may vary, but since this is a job that is seeing a decline in employment, it may not be a good, long-term career choice!