Task: Robots and the Pythagorean Theorem
8th Grade Math

Describe the context of your task here. Separate the parts of the task into A, B, C, etc.

Transmissions R Us uses a robot to load and unload a machine with pistons to be cut. The arm is programed to follow a path to load and a path to unload. In the cycle the robotic arm will move a certain distance between two points, given as ordered pairs. Using the Pythagorean Theorem find the distance the robotic arm travels between these two points.

A) Students will be given two points to plot on the coordinate system.

B) Students will use the Pythagorean Theorem to find the distance between the two points.

Common Core State Standards

List the Common Core State Standards (and math practices if applicable) associated with your task.

CCSS8.G.7 Apply a proof of the Pythagorean Theorem and its converse.

CCSS8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Essential Understandings

What key insights should students take from participating in this task?

Students will see that the distance between two points can be found by finding the square root of the sum of the squares of the legs of a right triangle that students can draw on the coordinate grid.

Possible Solutions/Solution Paths

What solutions or solution paths are acceptable in achieving a correct response for this task? Be sure to address all parts of the task.

1) Students will plot two points on the coordinate grid given two ordered pairs.

2) Students will find the length of each leg.

3) Students will use $a^2 + b^2 = c^2$ to find the distance between to points.

Additional Teacher Information
Add any additional notes that will help the teacher execute the task including necessary manipulatives, equipment, etc., and possible students misconceptions that may need to be addressed.   Students may fail to follow the order of operation when solving the theorem. They may try to add the two addends before squaring them.