



Academic Activity Chapter 13

Sorter System Design

Engineer a sorting device that will differentiate and select for a certain size battery, ball, or other small object. This is a two-part activity that requires the student engineer to design and prototype a part of a system and then integrate that design with that of the other student engineers to create one efficient system.

Part 1 Individual Sorting System

Materials:

- Notebook for documentation
- Poster board or manila folder
- 20 to 25 craft sticks
- Glue
- 5–16 ounce plastic cup

Assignment 1 Using the materials provided, design, document, and prototype a sorter that meets the following constraints.

Single item sorter design constraints:

- The range of objects you are sorting must be able to pass through it.
- It must sort for a certain size item assigned by the instructor or decided in a group and drop it into a plastic cup.
- It must have an efficiency of 95% or better (it must correctly sort the item at least 19 out of 20 times minimum).



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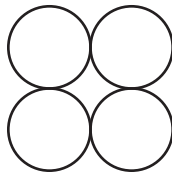
Part 2 Integrating Systems as a Team

Materials:

- Notebook for documentation
- Poster board or manila folder
- 30 to 40 craft sticks
- Glue
- (4) 5–16 ounce plastic cups

Assignment 2 As a team, integrate your sorter systems and design, document, and prototype one compact sorter that will sort four items into a group of four cups, taped together, and marked for the specific object they are to contain.

Cups should be spaced like this.



Integrated sorter design constraints:

- All of the objects must be able to pass through the opening.
- It must sort each item into the designated plastic cup.
- It must have an efficiency of 98% or better (it must sort 50 trials of random sized objects correctly at least 49 times minimum).