

JUNK BOX WARS

Ultimate Gumball Machine

Create a machine that will sort gum balls!

Competition Rules:

Each team will be provided with a junk box filled with materials that could be used to create a bubble gum machine. Each team will receive only set of materials. Teams may use all or part of the materials in their junk box and are not allowed to share materials with other teams. All unused materials should be saved in case repairs are needed during competition.

Teams will be allowed time to build and test the machine. Competitors are allowed to bring diagrams to help during the building time. After the time is up, the device will be impounded and no changes will be allowed.

Machine Requirements:

The machine must be able to sit unaided on the testing platform or table. Your machine must also have three individual containers to hold the sorted gumballs with labels for small, medium, and large. The entry point for the gumballs must be at least 30 cm from the testing platform or table. All gumballs must enter at the same location.

Testing Procedure:

Each team will be allowed 5 minutes to prepare their machine for competition. Each team will be allowed three trials with 5 minutes provided between trials for repairs and adjustments using materials left over from construction.

Scores will be calculated based on the number of gumballs sorted correctly. The best trial will be considered for final scoring. The team with the most gumballs sorted correctly will be declared the winner. The shortest time out of the three trials will be considered in the case of a tie. Team members are not allowed to touch or shake the device or gumballs during a trial. Any interference will result in a loss of points for that trial.

Junk Box Possible Supplies

Plastic bottles
Dowel rods
Straws
Film canisters
Rubber bands
Yogurt Cups
Plastic cups
Masking tape
Glue
Wooden craft sticks
Pipe cleaners
Plastic Bags
String
Toilet Paper Rolls
Paper
Index Cards





Ultimate Gumball Machine

Team Name: _____

Team Members : _____

Trial	# Sorted Correctly	Time (s)
1		
2		
3		

Best Score = _____



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Trial	# Sorted Correctly	Time (s)
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Best Score = _____



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Best Score = _____



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Teacher Info

Recommended Supply List

- | | |
|----------------------------------|--|
| 15 Plastic bottles | 1 Roll of masking tape (may limit to 500 cm) |
| 2 Dowel rods (4' long) | 5 Sticks of hot glue and gun |
| 100 Straws | 100 Wooden craft sticks |
| 20 Film canisters | 30 Pipe cleaners |
| 20 Rubber bands | 500 cm String |
| 10 Yogurt cups | 10 Toilet paper (or paper towel) rolls |
| 20 Plastic cups (assorted sizes) | 20 Sheets of paper |
| 5 Plastic bags | 20 Index cards (assorted sizes) |

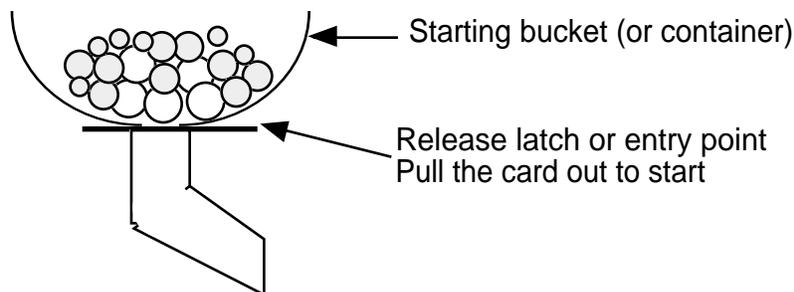
Also needed for competition:

- 20 - 30 Gumballs* in three different sizes - small, medium, and large
 - * May substitute other small candy for the gumballs
- Stop watch

Teacher Notes:

(1) Students may use all or part of the materials in the junk box. I allow the students to use any material inside the box. For example, if any of the materials come in wrappers or boxes, teams may use those for the device. The materials may be modified with the understanding that if a goof is made they will not receive new materials. Leftover materials may be used to make repairs if the device breaks during competition. No major design changes are allowed!

(2) Students may create a storage container similar to the one in the diagram or choose to load the gumballs individually during the trial. If they choose to use the storage container, it must be designed with a release latch or door to allow the gumballs to start their journey through the machine. The release latch or entry point must be at least 30 cm from the testing platform or table. If they choose to load the gum balls one at a time, all the gum balls must enter at the same point and they are not allowed to "help" in any way or modify any part of the machine.



NOTE: This event will be challenging for your students. You may want to provide samples of coin-sorting machines to give them a few ideas.