

JUNK BOX WARS

Battle of the Boats

Create a boat that will travel a specified distance in the shortest amount of time.

Competition Rules:

Each team will be provided with a junk box filled with materials that could be used to create your boat. Each team will receive only one 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 their boat. Competitors are allowed to bring diagrams to help them build their boat. After the time is up, all boats will be impounded and no changes will be allowed.

Machine Requirements:

Your boat must be powered by the air stored in a balloon or the energy stored in the rubber band(s). The boat may not be aided by a helping hand or other energy source.

At least one-half of your boat must be above the water. Height will be measured from the bottom of the hull to the top edge of the boat. Objects extending past the top level will not be included in the height.

Testing Procedure:

Each team will be allowed 5 minutes to "power up" their boats for the first trial. Teams are not allowed to add additional air or rewind the rubber band(s) during the race. No electric winders or air pumps are allowed.

Each team will be allowed two trials with 5 minutes allowed between trials to inflate the balloon or rewind the rubber band(s) and to make repairs and adjustments using materials left over from construction.

The best time out of the two trials will be considered for final results. If the boat fails to make it to the finish line, no points will be awarded for that trial. The lightest boat will be declared the winner in case of a tie.

Junk Box Possible Supplies
Dowel rod
Straws
Spools
Film canisters
Rubber bands
Small plastic containers
Milk cartons
Masking tape
Index cards
Paper
Pipe cleaners
Hot glue
Styrofoam cups
Balloons
Wooden craft sticks
Aluminum Foil
Modeling clay



Event Score Sheets



Battle of the Boats

Team Name: _____

Team Members : _____

Mass of boat = _____ g

Trial 1:

Time = _____ s

Trial 2:

Trial 2 = _____ s



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Team Name: _____

Team Members : _____

Mass of boat = _____ g

Trial 1:

Time = _____ s

Trial 2:

Trial 2 = _____ s



Battle of the Boats

Team Name: _____

Team Members : _____

Mass of boat = _____ g

Trial 1:

Time = _____ s

Trial 2:

Trial 2 = _____ s



Battle of the Boats Teacher Notes

Recommended Supply List:

- 2' Dowel rod (may be cut into smaller sections)
- 10 Straws
- 6 Spools
- 6 Film canisters
- 4 Small plastic containers (butter dishes) with lids
- 2 Small milk cartons
- 500 cm of Masking tape
- 20 Index cards
- 5 Pieces of paper
- 10 Pipe cleaners
- Hot glue gun with 5 sticks of glue
- 6 Styrofoam cups
- 10 Rubber bands (at least one needs to be saved for power)
- 3 balloons (at least one needs to be saved for power)
- 20 Wooden craft sticks (Popsicle sticks)
- 2' Aluminum foil
- 1 Stick of modeling clay

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.

(2) Teams may choose to power their boats with either rubber bands or balloons, but cannot use them together. The list of supplies has been created to provide a wide range of possibilities for either choice. Decide if you will allow teams to use both options on one boat - you may have a few who ask!

(3) To test the boats, provide a water track that is at least 1 meter long. Options would include a small swimming pool, large stream table, wallpaper basins (cut off ends and seal together), or a garden pond.