Cardboard Boat Races

2014 TTU - LISD Middle School STEM Challenge

A One Week Challenge Guide
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Please note: All photos used by permission from Texas Tech University and Lubbock ISD unless otherwise referenced. http://www.stem.ttu.edu/challenge/
Cardboard boat races- What are they?

Quite simple:

- Design and build boats out of cardboard and duct tape.
- Race them for the fastest times.

Construction rules:

- The ENTIRE BOAT must be built of cardboard and duct tape
  - Only exceptions are the paddles & decorations
- NO outside materials – you can only use what is provided for you.
- Only adults can handle the knives.
- Follow all shop safety rules.
- If you have any questions, ask us!
Participant rules:

- During competition, the crew must be IN the boat.
  - This means no towing, holding, swimming, or allowing the life jacket to provide floatation of the vessel.

- Throwing water on another boat is reason for disqualification, unless it is from the normal incidental splash of paddles.
Participant rules:

- Participants are expected to maintain the dignity of a yachtsman.
  - (But without the language of a sailor.)

Safety rules:

- EVERY participant in a boat must be wearing a Personal Floatation Device (PVD).
- The crew compartment of a boat CANNOT be enclosed so as to interfere with escape.
- Follow all posted and stated safety rules.
Boat Design

Things to consider:

- Size
- Stability
- Mobility
- Strength
- Weight of materials when wet

Note:
  - *Everything must be removed from the pool.*
Boat Design Suggestions

Set the design goal: Fun, Speed, Looks

- Sketch the design

Set the design goal: Fun, Speed, Looks

- Estimate time and materials
Set the design goal: Fun, Speed, Looks

- Decide construction techniques
Sample construction designs:
Simple Box:
Boat Design Examples

Slanted Box:
Boat Design Examples
Boat Design Examples

V-Shaped Bow:
Boat Design Examples

http://www.capecoralregatta.com/Index/BoatBuilding
Boat Design Examples

http://www.blue-room.com/onetruth/archive/000591.html
Boat Design Examples

Pontoon/ Raft:
Boat Design Suggestions

- Flat bottoms/ sit to paddles are the best/ easiest

Boat Design Suggestions

- Long boats go fast but are harder to turn

Boat Design Suggestions

- Short boats (<10 feet) are harder to keep straight

http://ualr.edu/forum/index.php/2011/02/24/sink-or-swim-cardboard-boat-regatta-yields-mostly-sinkers/
Boat Design Suggestions

- Kneeling is a “power” position, but sitting is more comfortable

Tips and Techniques

- Have strong corner and supporting edges

http://riverheadnewsreview.timesreview.com/tag/riverhead-cardboard-boat-race/
Tips and Techniques

- Have clean crease for a straight fold
Tips and Techniques

- Strengthen the boat with what you can!

Multiple cardboard layers "glued" together on the sides

"strengthen the hull"

Multiple trapezoid-shaped pieces "glued" together to form a

"support block"

A sheet of cardboard could be folded & "glued" together to form tubes/beams
Boat Construction
And remember, have fun with it…
Really...

http://imgur.com/YfXU1
Or else…

http://www2.ljworld.com/photos/galleries/2005/aug/21/cardboard_boat_race/
www.stem.ttu.edu/challenge