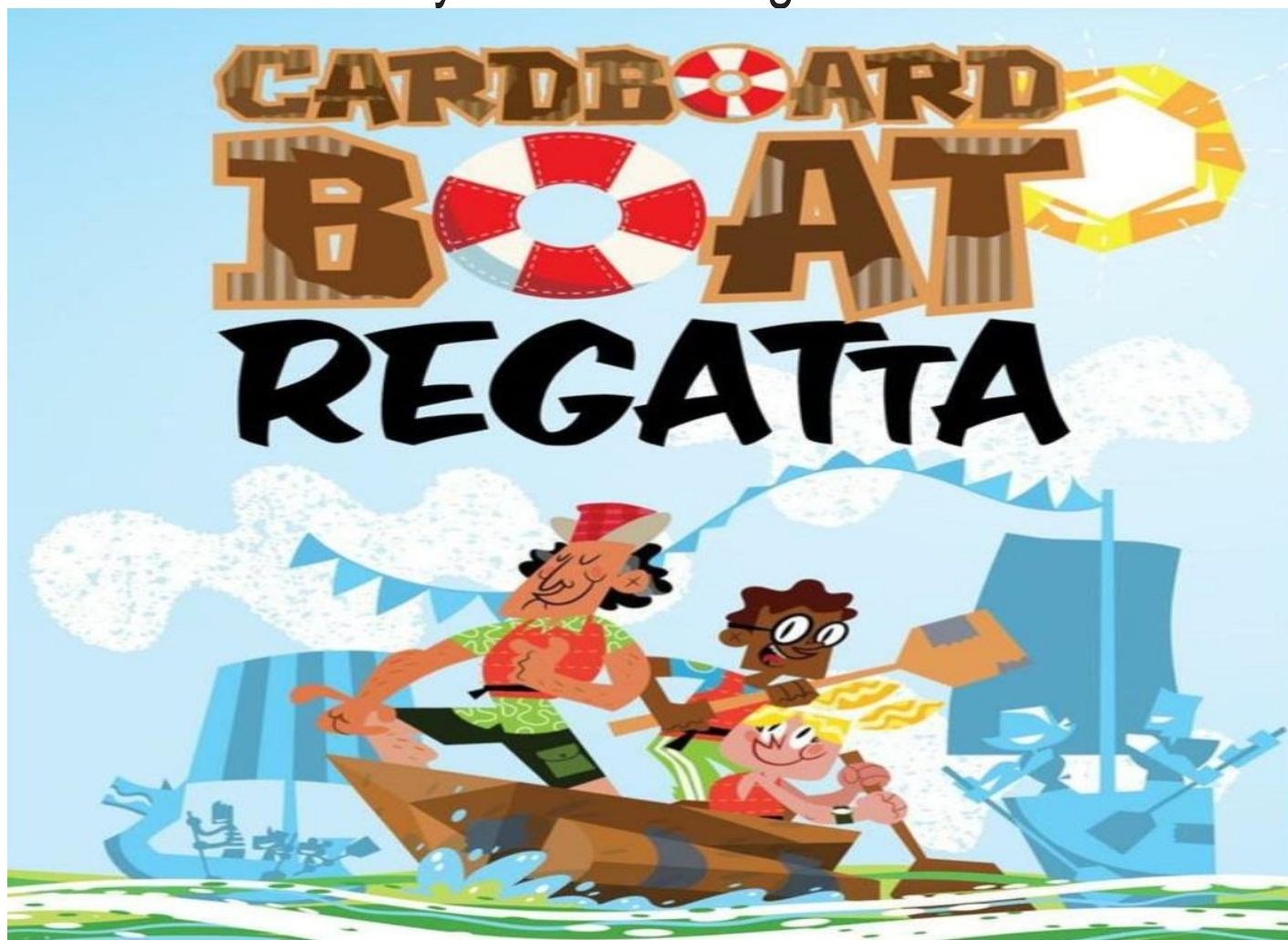


THE COLONIAL HEIGHTS CARDBOARD BOAT REGATTA

INTRODUCTION, BUILDING & RULES

By: Colonial Heights Recreation & Parks



WHEN:
Saturday
July 15
2017

WHERE:
Lakeview Park



INTRODUCTION



Welcome to the First Annual Colonial Heights Cardboard Boat Regatta presented by the City of Colonial Heights Recreation & Parks Department. The idea behind this event is fairly simple boats are made entirely of cardboard and powered by two, three, or four paddlers. They will race around the Lakeview Park Waterfront. Boats compete for honor, glory, and some pretty big trophies.





DETAILS



COMMITMENT

Captains and Crews who wish to participate in the Cardboard Boat Regatta event make a commitment to the following:

- Construct a boat out of cardboard and duct tape.
- All boats are human powered (oars and paddles are acceptable as propulsion tools; you provide the oars/paddles; minimum of 2 people)
- Participate in the entire event which includes:
 - Attending the Pre-Event Boat Crew Orientation on Friday evening (6:00 - 7:00 p.m.).
 - Attend the race on Saturday by checking in by 8:30am at the latest.
 - Stay for brief awards ceremony after the race
 - Dispose of or remove boat from property after the race

IMPORTANT DATES

July 9, 2017

Last day for boat's to register. All boats must have submitted their final Name of Boat

July 14 –Boat Crew Orientation

Boat crews must come to the Boat Crew Orientation. During this time, we will collect team members' signed waivers.

July 15 - RACE DAY!

Boat crews should arrive by 8:30 a.m. At this time they will be introduced to their race liaison and the Guest Judges will also pick their favorite boat. Teams are encouraged to come earlier in order to get through the boat inspection process. The first boats hit the water at 10a.m. Awards ceremony begins immediately after the final race.



AWARDS



RACE COMPETITION

Boats will randomly draw a heat. The winner of each heat will move on to the final race.

AWARDS

First, Second and Third Place Trophies will be awarded for the top three boats in the final heat. A cardboard boat must complete length of the course to qualify as a “finisher.” Swimming crewmembers pushing a boat (or some portion of it) through the course is not considered “racing.” The boat (or some portion of it) must be maneuvered and propelled by at least one paddling crewmember.

Cardboard Crusaders Race- any boat that is still sea worthy (and a “finisher”) and not in the finals is allowed to participate in the Cardboard Crusaders race. This race is a one or two lap race with the winner receiving a special trophy.

Race Medals - Guaranteed to all registered participants including crew members and boat builders. These are handed out during the awards ceremony and each crew is recognized.

Special Trophies will be awarded for the following:

- **Best in Race Award** (1st place) - First boat to cross the finish line in the final heat. Best in Race receives a traveling trophy for one year and will have that trophy replaced at the end of the year with a permanent one they can keep. **Second and Third place trophies** will also be awarded for the final heat.
- **Judge's Choice Award** - Awarded by the judges based on creativity, showmanship and team spirit. Costumes and props are encouraged!
- **People's Choice Award** - Awarded to the boat that receives the most “votes” cast by the spectators throughout the day until the conclusion of all races.
- **Cardboard Crusader Trophy** - goes to the team who wins the Cardboard Crusader heat (see above).
- **The Wonder That Went Down Under Award** (Most Spectacular Sinking) - Awarded to the crew who, in the opinion of the staff, was the most spectacular in the way the ship and its crew went down. (As long as the boat or some part of it is propelled by at least one paddling crewmember, the boat may continue to the finish line.)

Awards Ceremony - after the final heat, after the race and all boats are out of the water and the area is cleaned up.



CONSTRUCTION AND RACE RULES



- The ENTIRE boat must be built of cardboard, duct tape, and one-part polyurethane. (Any part of your boat that touches the water must be cardboard. This includes the hull, decking, keel, cowling, superstructure, oar locks, seating and rudder. Nuts, bolts, washers and staples are **NOT** allowed in hull construction. The cardboard may be as thick as you want, but may **not** be glued or attached to wood, plastic, fiberglass, etc.)
- Only exceptions are the paddles & decorations
- Use cardboard boxes, “blocks”, carpet tubes
- NO pre-treated cardboard allowed
- No Sona-Tubes, Waxed or ‘treated’ cardboard
- NO wood, plastic, Styrofoam or fiberglass
- NO caulking compounds or two-part/mixed adhesives
- NO wrapping in duct tape, plastic or fiberglass or similar product
- Duct tape may be used to reinforce seams





CONSTRUCTION AND RACE RULES



- Duct tape, masking tape, or adhesives such as 'liquid nails' CAN be used to connect cardboard to cardboard and CAN be used to reinforce all seams and stress points. It CANNOT be used to waterproof boats.
- Waterproof the boat with Varnish, Paint or Polyurethane (one-part, paint-like substance). (If you don't want your boat to sink, waterproof the entire boat with any paint-able, one-part substance like Varnish or Polyurethane inside and out.)
- Decorations are encouraged -as long as they don't effect structural strength or buoyancy
- Boats CANNOT tow anything behind them for the safety of other boats.
- The crew compartment CANNOT be enclosed so as to interfere with escape
- **Every crewmember must wear a PERSONAL FLOATATION DEVICE (PFD)** & proper footwear. Please provide your own PFDs.
- All crew members M U S T sign a Participant Waiver/Hold Harmless Agreement on race day. Boats will not be allowed to race without a signed agreement from each race participant
- Minimum of TWO crewmembers and Maximum of FOUR crewmembers
- All boats are human powered (oars and paddles you provide are acceptable as propulsion tools)
- Alcoholic beverages are NOT permitted at any time





CONSTRUCTION AND RACE RULES



- Boats should weigh less than 200 lbs – This rule is for us. (Please keep your boat under 200 lbs. If you need help getting out of the pond, we need the odds stacked in our favor.)
- Boats should be less than 6 feet wide – Here more is not better
- Care should be taken that construction does not include pointed objects and sharp edges that could injure anyone
- Surfboard style designs are NOT allowed. Consider “staying dry” part of the challenge.
- Raft style designs ARE allowed. (The distinguishing feature of a raft design as opposed to a surfboard style is the use of cardboard “logs” and other such accoutrements as one would expect to find in/on a raft.)
- **RACE DAY** - Please check in (entire crew) at the registration table on race day no later than **8:30 a.m.** (Boats arrive the day of the race). Unload your boat in the display area. After unloading, please move your vehicle to the parking lot. Set up your boat display. After the safety inspection is complete, Boats will race other boats. After the race, the boat crews must remove all cardboard, decorations and other materials from the water and the grounds. Volunteers will be on hand to help. You can take your boat home with you or dispose of it in on-site recycling bins.
- If there is any doubt about the construction, the judges reserve the right to use a probe, such as an ice pick, to test and verify that only cardboard has been used. Failure to abide by any design, race rule or the direction of a race official shall be cause for disqualification. The Judges’ decision shall be final. Please contact the Recreation office if you have any questions.



CONSTRUCTION MATERIALS



Permissible Materials

- Corrugated Cardboard
 - Appliance or grocery stores
- Cardboard “blocks”
 - Furniture stores
- Cardboard Tubes
 - Carpet/linoleum stores
- Fastening material
 - Duct or masking tape
 - Liquid nails adhesive
- Latex Paint, Varnish

Materials NOT Allowed

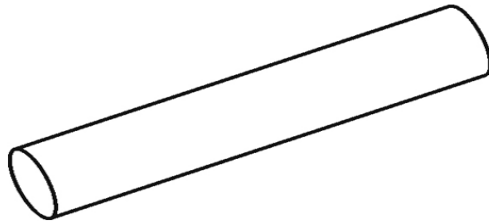
- Wood, Styrofoam
- Plastic sheathing
- Fiberglass
- Sona-Tubes,
- coated cardboard
- Silicon, Wax, Tar
- Caulking compounds
- Metal
- Staples, clamps, screws

Judges decide on the interpretation of the rules

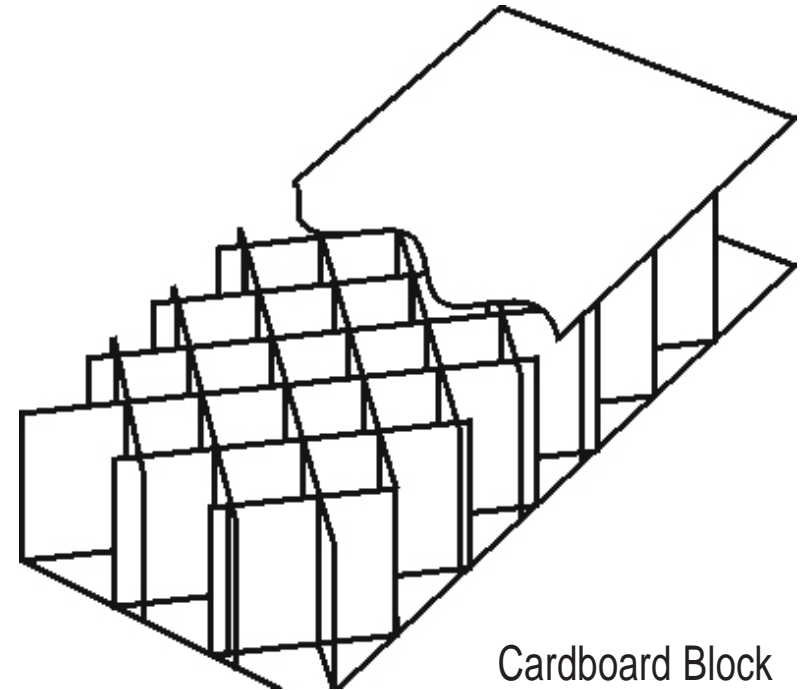


CONSTRUCTION MATERIALS

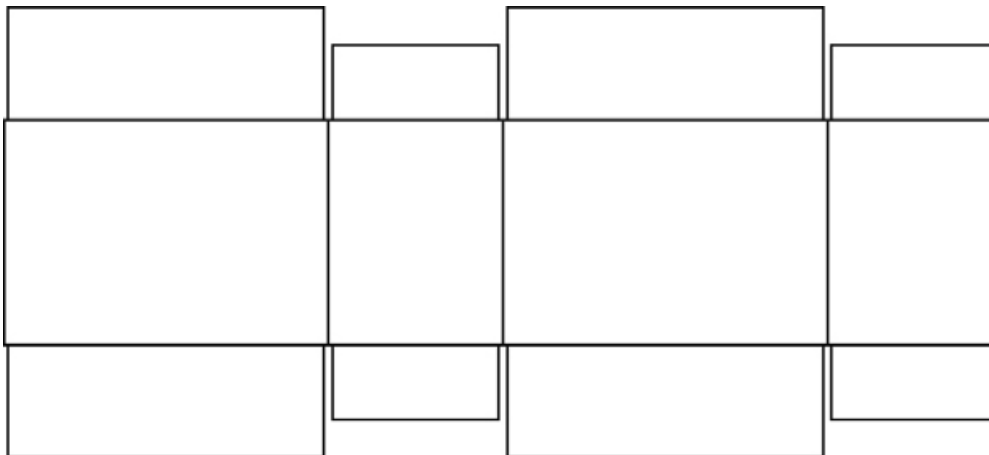
EXAMPLES



Carpet Tube
(about 4 ½" dia.)



Cardboard Block
(2-3" thick)



Cardboard Box - cut open



CARDBOARD BOAT DESIGN



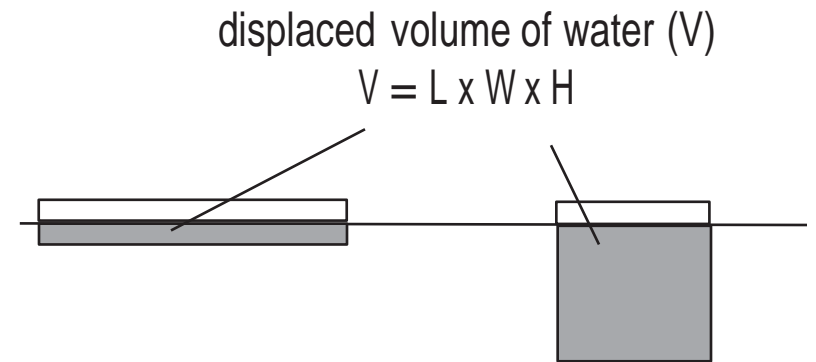
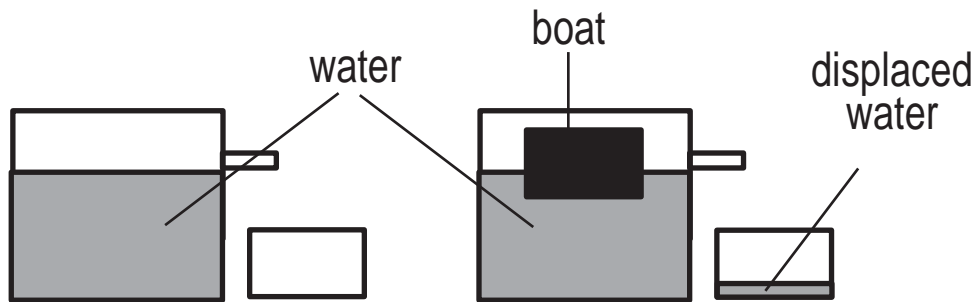
- Consider the size of the boat - building & transporting
 - Big enough to hold crew, small enough to transport and carry
 - Wider is better for stability, but still must be able to paddle
 - **No** surfboard style designs are allowed
 - Rafts are allowed
 - Consider total weight of all materials when wet
 - EVERYTHING must be removed from the pond
- Boat decorations and crew costumes are encouraged - use your imagination; you will be awarded for your creativity!



CARDBOARD BOAT PHYSICS



“How much will you sink?” - Displacement



Weight of Water =
62.4 pounds/cubic-foot

Water Displaced (ft³) = $\frac{\text{Weight-of-boat-}\&\text{people-lbs}}{62.4\text{lbs/ft}^3\text{-H}_2\text{O}}$

Depth (ft) boat sinks

EXAMPLE:

Box boat, 3ft x 6ft, 1 ft tall (high)

Boat volume= 3' x 6' x 1' = 18 ft³

Boat displacement= 18 ft³ x 62.4 lbs/ft³ = 1123.2 lbs

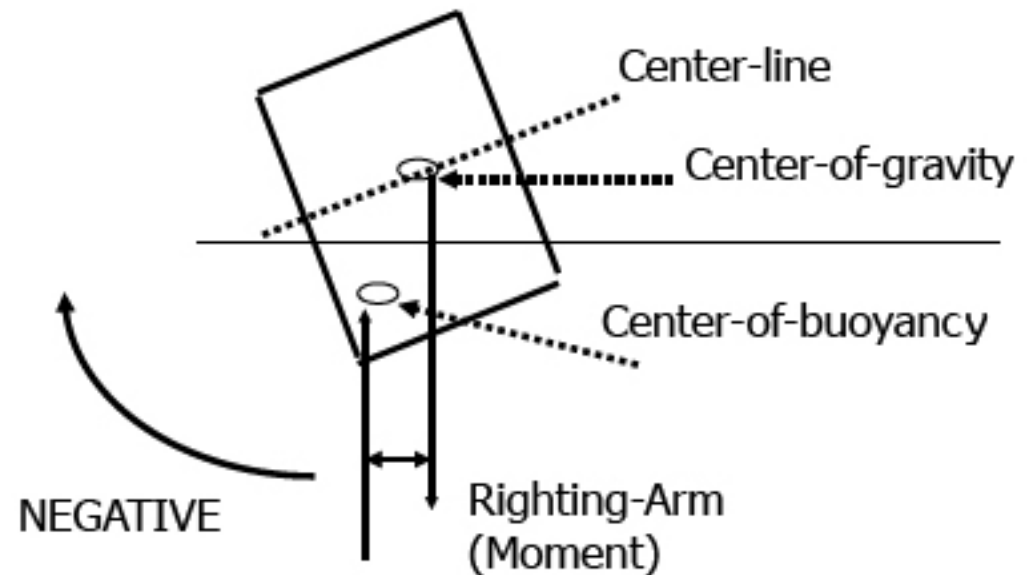
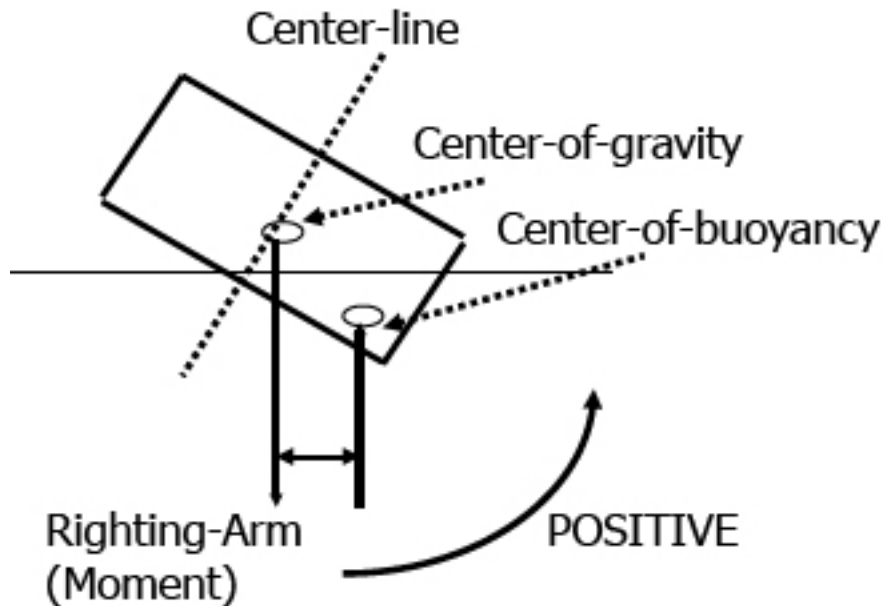
Which equates to 93.6 lbs per inch of boat height



MORE CARDBOARD BOAT PHYSICS



“Wider is Better”- Center of Buoyancy





EVEN MORE CARDBOARD BOAT PHYSICS



Movement Through the Water



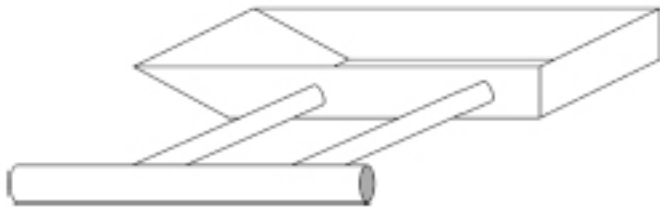
Simple
Box



Slanted
Box



V-Shaped
Bow



Outrigger
Design



Pontoon
Design



Raft
Design



CARDBOARD BOAT DESIGN SUGGESTIONS



- Set the Design Goal: Fun, Speed and Appearance
- Sketch out your design
 - build a scale model from manila paper:
 - estimate materials or plan how to use what you have
 - plan out what construction techniques will be used
- 1'x1'x3' box will float 187 lbs.
 - if it'll hold you, it's big enough to float
- Flat bottom, sit-to-paddle & canoe styles -are the best/easiest
- Rudders help keep you straight but make turning difficult and add complexity to your design.



MORE CARDBOARD BOAT DESIGN SUGGESTIONS



- Long boats go fast - but are harder to turn
- Short boats (<8') - are difficult to keep straight
- Best Length: 8-12 feet
- Best Height: 18 inches
 - allows room to sit/kneel & still paddle over the edge
- Best Width:
 - 18"-30"(max) for 2 or more people front and rear
 - Minimum 48" wide for 2 people side by side
- Kneeling is a "power" position but sitting is more comfortable



CONSTRUCTION TIPS & TECHNIQUES I



- Cover all edges of cardboard -acts like siphon
- Cardboard Tubes make great frames
 - Cut for joining & bending
 - Fasten tubes together
- Cardboard Hull
 - 1-2 layers, fasten & cover the seams
 - With 2 layers, overlap the seams & polyurethane in between
 - Decorate, paint & varnish
 - Reinforce the area where you sit, kneel or stand



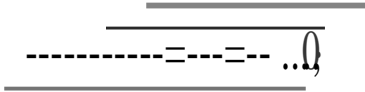
CONSTRUCTION TIPS & TECHNIQUES II



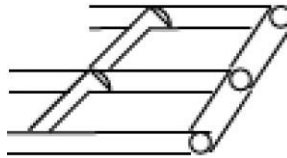
- Carpenter's glue and liquid nails work well
(Hot-melt glues will melt in the heat and sun)
- Duct tape only non-painted surfaces (tubes or frame that will be covered)
 - Duct tape shrinks when painted
 - Duct tape should be covered with masking tape if you need to paint it
 - Clear tape melts when painted
 - Masking tape works well on glued edges & seams
 - Kraft paper with spray adhesive may also be used



CONSTRUCTION TIPS & TECHNIQUES III



Solid Tube
Frame



Center/Cross
Beam
Frame

FRAMES

CONNECTING TUBES

Cardboard
Wrapper for Tubes
End-to-End



Cardboard
Wrapper for Tubes
At Right-Angles

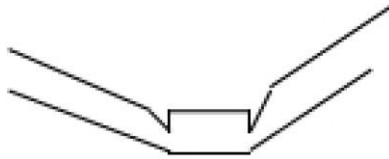




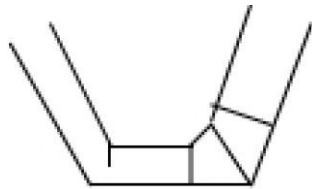
CONSTRUCTION TIPS & TECHNIQUES IV



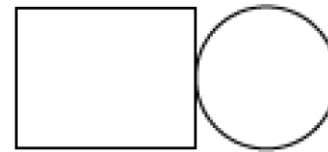
FRAME ANGLES



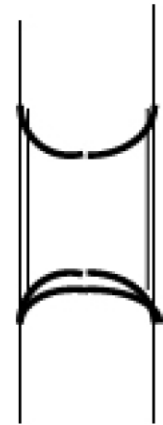
V-Shaped Cuts



Multiple Cuts
or Sharper Angles

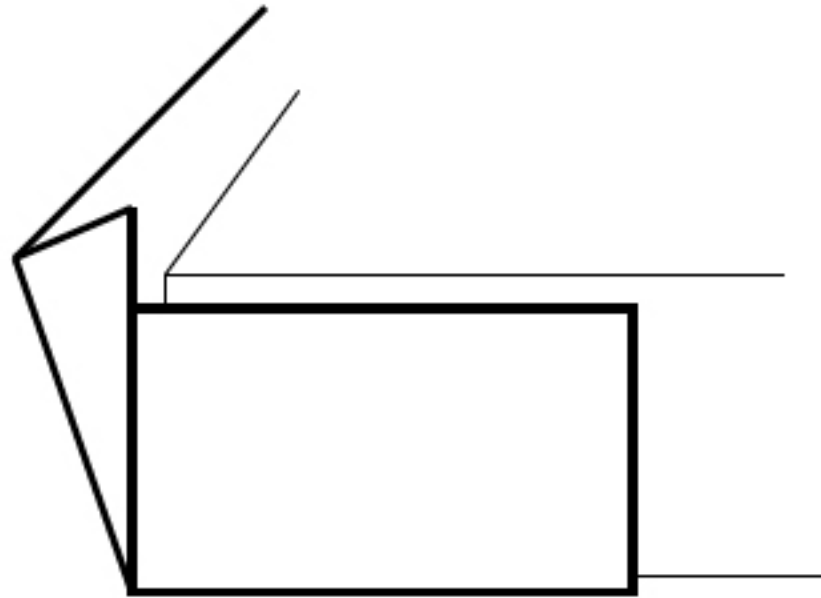


TUBE
CUTTING
TEMPLATE





CONSTRUCTION TIPS & TECHNIQUES V



FOLD & OVERLAP
CARDBOARD
AROUND CORNERS

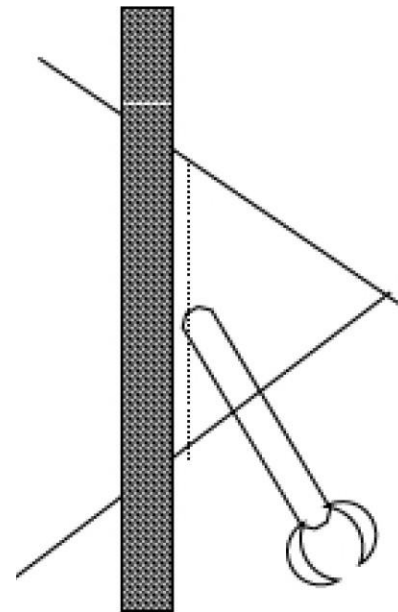


CONSTRUCTION TIPS & TECHNIQUES VI



Grease/Score a line
To form a
crease

STRAIGHT
FOLD



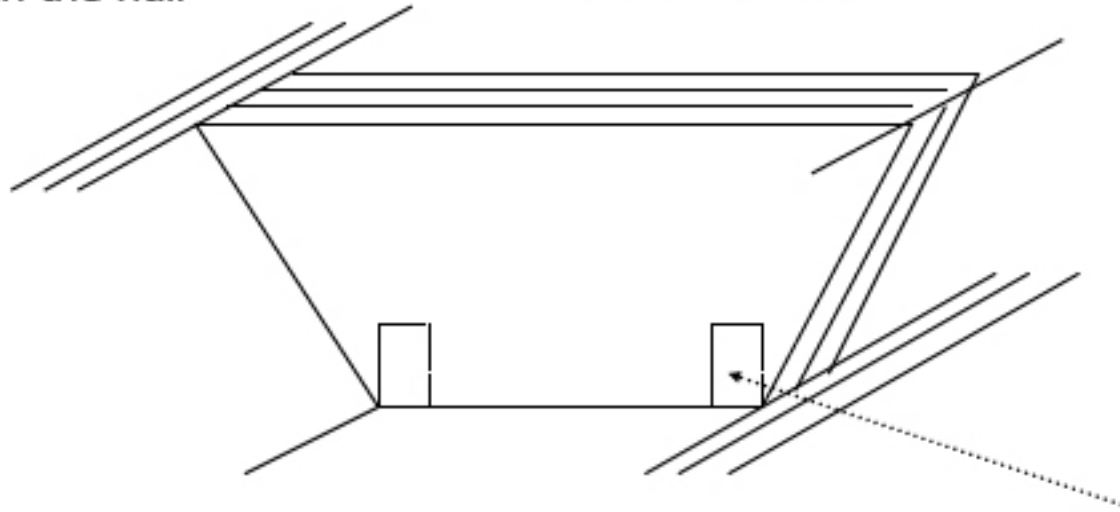


CONSTRUCTION TIPS & TECHNIQUES VII

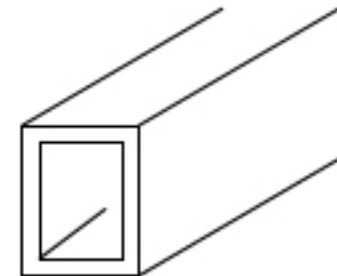


Multiple cardboard layers
"glued" together on the sides
strengthen the hull

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



A sheet of cardboard
could be folded &
"glued" together to
form *tubes/beams*





GO BUILD YOUR BOAT



WE'LL SEE YOU AT LAKEVIEW PARK

July 15, 2017

Boats arrive JULY 15TH at Lakeview Park by 8:30am.

If you have questions, contact

Matt Spruill or Will Bailey

Colonial Heights Recreation & Parks

901 Meridian Ave.

Colonial Heights, VA 23834

Phone: 804-520-9390