

## **Northglenn Pirate Fest**

### *Boat Building Tips*

A wise man said it is not the destination but the journey that counts! Half the fun of the Cardboard Regatta is actually building the boat. The first and most important element of proper boat design is using creativity. So it really is more like, "If you can think it, you can float it!!"

### **Step 1-Materials**

Since this is a Cardboard Regatta, one would assume the most basic ingredient would be...cardboard. You should immediately start to gather materials. Refrigerator boxes are like gold! Try local sources, businesses that package or receive large items. Who uses large amounts of cardboard? How about Costco or Sam's Club? Furniture stores? You can get cardboard "blocks" that protect items in shipping. Cardboard tubes such as carpet or flooring tubes are permissible, but Sona-tubes or waxed and treated tubes are not! Small boxes? Glue them together to make a larger piece!

In this type of construction, duct tape is your friend! Duct tape, masking tape, paint and varnish are your building blocks. Obviously no metal, metal fasteners, wood, plastic, fiberglass, etc.

### **Step 2-The Plan**

First you admit...there is no plan! No step by step procedure to follow. No "kit" or design to buy and assemble. You just have to "wing" it! There is no right way to build this. That's good! It means there is no **WRONG** way! Creative problem solving is the norm here. Combine creativity with some fun and you have a winning combination! While there is no fill-in-the-blank instruction, there are some helpful hints.

### **THE SCIENCE STUFF**

First question people have is "how can a cardboard boat even float?" It's called **displacement**. Water weighs 62.4 pounds per cubic foot. So basically, a boat that is 1 foot by 1 foot by 3 feet will float 180 pounds!

That size boat may be a bit uncomfortable but it shows how much boat is necessary for each person. Try not to overbuild. It will make the boat too difficult to maneuver.

Science aside, let's decide on a basic shape for your boat. How about some helpful hints?

Flat bottomed boats are most favored due to stability. Also, the lowest point of gravity is going to be the most stable. Kneeling or standing might look cool, but

you are much more likely to need swimming lessons! Here are some basic shapes:

### **Design hints:**

- Longer boats go faster, but they are harder to turn.
- Boats shorter than 10 feet are difficult to steer.
- Watch your center of gravity, if you are too top heavy you will topple over.
- For height: allow about 18 inches so you can comfortably sit and paddle effectively.
- For width: figure about 30 inches for one person. 48 inches for two people.
- Try building a smaller model to test your ideas before building the boat full scale.

### **Step 3-Build**

Try not to damage or dent the corrugations, as that will compromise the strength. Try folding the cardboard with the “grain” of the corrugations as it will fold much neater. Score your lines before folding using the handle of a butter knife or similar type edge to make a much neater crease.

Increase strength without adding weight by laminating layers of cardboard. Alternate each layer’s “grain” to also increase strength. It is best to use tapes for covering joints, not for keeping them together.

To keep the cardboard dry, seal the edges. Water will get drawn into the corrugations just like a drinking straw. Keep in mind...most boats sink due to cracks in the hull, not water seeping through the cardboard. Being able to make the boat as sturdy as possible is crucial.

### **Step 4-Paint**

When painting a boat, start off with a primer first. Cover exposed tape with masking tape or something similar; duct tape will shrink when exposed to paint. After priming, applying numerous coats of latex paint can really help in waterproofing your boat. Try to paint both inside and out to prevent your cardboard from getting soggy.

### **Step 5-Decorate**

After your base coats are applied, it is pure decoration from there. Try to be creative and make something you will enjoy!