Build a Boat
Hope it Floats

Guidelines and Regulations

Guidelines

Build a boat capable of floating as many pennies as possible.

Provided a list of materials and their "prices".

Build your boat to meet the time and size regulations . . .

Regulations

The Build a Boat Hope it Floats Boat Float-Off begins 15 minutes from the time I say "Build Your Boat".

Boats cannot be larger than 5 x 7 x 12 centimeters.

Calculate the total cost of your boat.

How to Win

The winner of the Boat Float-off is the group earning the lowest score based on the following equation:

$$\text{Score} = \frac{\text{Total Cost}}{\text{\# of pennies floated}}$$

Material Price List

(Boat dimensions cannot exceed 5 cm x 7 cm x 12 cm)

Paper	\$0.10 for each cm^2
Aluminum Foil	\$0.20 for each cm^2
Clear Plastic	\$0.30 for each cm^2
Cardboard	\$0.50 for each cm^2
Paper Clips	\$0.25 each
Rubber Bands	\$0.50 each
Plastic Straws	\$0.10 for each 1 cm length
Clear Tape	\$0.15 for each 1 cm length
Duct Tape	\$0.75 for each 1 cm length

Presenting Your Results

Track the following to share with the group:

- A complete list of materials & individual costs
- Total cost
- Your calculated score = $\frac{\text{total cost}}{\text{\# of pennies}}$
- A list of things you discussed when designing the boat
- A list of any obstacles that kept you from building a better boat
- What were your boat's best/worst features?

Debrief

How many of you built the best boat possible?

How many of you could build a better boat now that you've tested yours *and* seen others tested?

Why did we do this?

In a modeling shop such as this, students will learn from each other.

We construct models, test them, then improve upon them - just like we have done in this activity.

Companies continously try to improve processes to reduce costs and increase efficiency and profitability.