**Group Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Division #: \_\_\_\_\_\_\_\_\_\_\_**

**Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ House Colour:\_\_\_\_\_\_\_\_\_**

**Refugee: Build a Boat Challenge**

In our novel Refugee, all three of the main characters travel by boat at some point during their journey. Mahmoud and his family travel by a boat / raft that is barely put together.

The Yorkson Creek Boat Challenge is a competition – and **there are some bragging rights and team points at stake!** Your group will first compete against your classmates and then compete against the rest of the school.

The goal of this challenge is to design a small boat: **20cm long by 15cm wide** using a select number of materials and time, ultimately competing with each other and the school for the best design!

When you design something, there are certain limitations or restriction that you may have to follow. We call these constraints. The constraints for this project include the mass of the boat, the mass of the cargo your boat must carry, and the materials you may use. When designers design a product, they always have certain constraints to keep in mind in order to satisfy the needs of the customers. These constraints may affect the speed, performance, or even the overall look of the product.

**There are three categories in total that you will be judged on:**

1. **Aesthetics (how it looks)**

(Judges will Rank on a Scale with a score out of 10)

1. **Stability**

**Scoring Guide:** 10: straight path

8: Hit side once/swerving in lane

6: Hits side multiple times

4: Rides the side the whole way

1. **Speed (s)**

**Possible Supplies:**

**Supplies will be brought in from home**

**Building supply Ideas:** Styrofoam bowls and plates, aluminum foil, paper, saran wrap, plastic bottles, cardboard, construction paper, straws, bubble wrap, rubber bands, string, paper/binder clips, notecards, tacks, pipe cleaners, clothes/safety pin, popsicle sticks, skewers, plastic silverware, plastic cups, paper plates, cardboard tubes, toothpicks,

**Adhesive and tools:** staplers, duct tape, packing tape, white glue, cement glue, hot glue, tape, scissors, markers and colored pencils, rulers, and protractors

***\*\*All Boats must carry the standardized bag of weight supplied in order to qualify in any category\*\****

**Refugee: Build a Boat Challenge**

**The Design Task:** For this challenge, you need to use a variety of common office and household supplies to design a boat. The goal is not only to have the fastest boat, but to also take into account how much mass (or “cargo”) the boat must carry, the stability of the boat in the water, the total mass of the boat, and boat aesthetics (what it looks like). A fan supplies wind and propels each boat down the lane of a small “pool” of water. Students work through the ADST Process as they ideate with their teams, design and test their boats, redesign, and then retest to make the boats as efficient as possible. Ultimately, sharing the boats to win house points!

**Ideate – It is time to generate ideas.**

**During the Ideate Phase we Brainstorm, Explore Ideas, Look for Various Options.**

**Maximum build size is 20cm long by 15cm wide.**

Look over the possible supplies you can use carefully. Now think of the constraints of the design task.

* Create a sketch of your boat.
* Label the supplies you will need.
* Determine who in your group will bring in which supplies.

|  |
| --- |
|  |

**Prototype**

**During the Prototype phase we make our ideas come to life.**

Make your prototype. While building, remember to stay true to the constraints of the design task.

**Test**

**At the Test Phase we Share, Get Feedback, Reflect, and Refine our designs.**

**Data Collection Chart:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Trial 1** | **Trial 2** | **Trial 3** | **Class Float off!**  (judges scores here) |
| **Aesthetics**  (ask another group for Trials 1 - 3) |  |  |  |  |
| **Stability** |  |  |  |  |
| **Time (s)** |  |  |  |  |

***If the boat does not reach the end of the pond (trial), it will be considered a 0.***

**Document Changes:**

|  |  |
| --- | --- |
| **After Trial #1:** |  |
| **After Trial #2:** |  |
| **After Trial #3:** |  |

**Share and Reflect:**

1. As you were building and testing, what were three specific changes your group made in order to improve your initial design. Explain your reasoning behind each of the changes.

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1. Did your design meet the challenge? Are you happy with how it turned out? If you had to do this whole process again, what would you do differently? Why?

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1. How did your team do overall? Did you expect this result? Why or Why not?

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