Recycle Regatta 2021

RULES AND GUIDELINES

The Recycle Regatta is a fun, hands-on competition that students can participate in from the safety of their own home! Students will build **small-scale, unmanned, model sailboats**, test them, and calculate their speed. Challenge other students from around the world as you do your part for the environment by repurposing and recycling. Prizes will be awarded to our winners!

Competition Guidelines for all fleets:

1. Start by making a blueprint. Engineers always plan before starting to build! This can be a drawing, list of materials, or a write-up of what you plan to do. Your sailboat submission should be small-scale and UNMANNED.
2. Gather materials (safely!) that are recycled or discarded. We do not want you to buy materials for this challenge!
3. Build a prototype, you might end up changing your design and that's perfectly okay!
4. Test and document your speed for at least 3 trials (see submission form). To test speed, place your boat in water and place markers for a distance (try 1 foot with a ruler). Then create "wind" using your breath by blowing on your boat or using a reusable straw (NO fans or blow dryers). Document how much time it takes to travel that distance. Submit your best 3 trials on the entry form.
5. Then using the speed = distance/time, you can calculate speed. Write down your results on a piece of scrap paper, or on the submission form (you can also submit electronically).
6. Improve your design based on the testing process and start the testing process again! Can you make your boat go faster by changing the design?
7. Submit your entry form **by MARCH 31** on our webpage: **educationalpassages.org/recycle-regatta/** or by printing and scanning our paper entry form that is also there and emailing to **nguaratella@nessf.org**. Please note that each fleet will have two winners - *Most Seaworthy (Fastest) and Most Creative*.

Building Requirements:

We encourage you to be a steward of the environment in addition to an honorable mariner. Your boat must be built from recycled or discarded materials- i.e. objects that have already been used at least once. The Recycle Regatta team *strongly discourages* participants to buy new materials for this project. Design is left to engineers! ***Let your imagination take over.*** These lists are not all inclusive. Our goal is to convert and repurpose waste to create fantastic boats. Decorations and crew costumes are allowed and encouraged!

Materials you **may use** in boat construction:

- Plastic or Cans - aluminum, tin, any that will float
- Duct tape, glue
- Cardboard
- Fishing line
- Other recyclable/discarded items with positive buoyancy (they float)! Check guidelines for more information on what can and cannot be recycled.

Materials you **may not use** in boat construction:

- Wood or Fiberglass
- Rubber or Inflatables - raft, pool toys, etc.
- Caulking compounds, Paint or varnish (can be used for decoration, but not for waterproofing)
- Electrical systems
- Engines - gasoline powered, battery powered, etc.
- Raw materials made out of recycled content (Trex decking, etc).

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Safety Requirements:

Please read the following carefully. Failure to comply with safety requirements will result in disqualification.

1. All participating mariners must wear a personal floatation device (PFD) in the water, near the water, or on a dock. If you are testing a boat in a controlled location (such as a bathtub), a PFD is not required.
2. Animals cannot occupy a boat.
3. Sunken or discarded boats must be recycled if possible. Some parts of your boat may not be recyclable. Please check online guidelines for what can and cannot be recycled.
4. You must have a means of recovering your vessel, after launch, from the surface of the water, or, if your vessel sinks, from Davy Jones' Locker.
5. Most importantly, HAVE FUN!! Participants are expected to maintain the decorum and dignity expected of a yachtsperson. Inappropriate behavior at the discretion of the Recycle Regatta team will not be permitted and will disqualify your entry.

Speed Calculations:

1. Measure and record a specific distance that you know your boat is able to travel. Mark this distance (ex. tape on the side of the tub as a start/finish line). Measure this distance with a ruler, meter stick, tape measure, or other device.
2. Time how long it takes your boat to travel that entire distance!
3. Speed = distance/time. So, if your boat traveled 10 centimeters in 2 seconds, you would set up your equation as 10 centimeters/2 seconds. Your final speed would be 5 cm/second. This answer came from dividing 10/2 and combining the units used. Check out the Recycle Regatta website for extra help with speed calculations!
4. Calculate your speed for 3 trials.
5. Find the average distance, time, and speed! We use averages to summarize a group of data or measurements.
   a. Mean average= total sum of the three trials divided by 3
   b. Let's look at an example of finding our average distance in cm.
      i. Add together the 3 distances that we measured: 3cm + 7cm + 6cm = 16cm
      ii. Then take that total, and divide it by the number of trials: 16cm/3 trials=5.333cm
      iii. Here you have your average distance, 5.333cm!

Take it a step further! Conversion from speed in cm/second to Knots

Sailors and mariners use a special type of unit to talk about speed. These units are called knots! They take into account nautical miles, which are used in distance measurements out at sea. We've given you the conversion formula for knots, if you want to see how your boat would compare to a life size sailing vessel!

Knots are Nautical miles per hour

1. Take your speed in cm/second and divide it by 51.4444
   a. Speed = 5.333cm/s ÷ 51.4444 = **0.1036 knots**
2. The speed in knots might seem small, but remember, you are calculating your speed in nautical miles/hour!

Please email Nina Quaratella, Education Specialist, at nquaratella@nessf.org to submit an entry form or receive more information on a discounted Sailing at Home online learning program. Be sure to check the website for all Recycle Regatta updates and other resources, too! **educationalpassages.org/recycle-regatta/**