



FEBRUARY 15-APRIL 30

5TH ANNUAL RECYCLE REGATTA

K-12 TEACHER TOOLKIT

Apply the engineering method and help your students become environmental stewards as you repurpose recyclables into seaworthy vessels! Master buoyancy, engineering, and physics obstacles to race your boat creations to victory.

The Recycle Regatta is a free, fun, hands-on competition for K-12 students to participate in from anywhere! Students build a model sailboat from recycled and repurposed materials and race to victory while discovering engineering, mathematics, sailing, buoyancy, and stewardship. Two awards will be given for each fleet, including the fastest and most creative vessels.

Classrooms, boating centers, and community organizations are invited to host their own "Regatta" and submit their students' entries!

BRING THE RECYCLE REGATTA INTO YOUR CLASSROOM

1 Prepare

Gather recyclables or otherwise discarded materials. Students can bring these items from home or encourage a Recycle Regatta donation bin in your school, classroom, or meeting space. If you are able, organize a litter clean up and repurpose the materials! All items should be washed and safe for handling (no sharp edges, etc.).

Please note – other supplies will need to be accessible, including: scissors, tape, glue, pencil, paper, testing bin, calculator, and stopwatch).

2 Introduce

Set students up for success by introducing key concepts needed for the Recycle Regatta. Visit the Recycle Regatta website for free educational videos on the physics of sailing, marine debris, buoyancy, the engineering method, and more.

You can also register your class for Online Experiential Learning Programs with New England Science & Sailing!

3 Design

Allow students to design a blueprint. This step is imperative for the engineering process! Students will brainstorm what materials they will use for their boat and draw out a sketch. This can be done on scrap paper, in a class journal, and on the Student Data Form (below).

5 Test

Set up the testing bin - a container with water - and mark a "Start" and "Finish" line; This will be your distance. Students will first put their boat in the bin to test if it stays upright and floats. Then, measure speed by providing a wind source and time how long the boat takes to cross the finish line. The wind source can be anything from a small paper fan to a piece of cardboard, a powered fan (spaced away from water source). Be sure to keep it consistent for all students. Each student should have a minimum of three trials so there is an opportunity to learn more about scientific averages. Students should record their data on the Student Data Form (below).

7 Modify

Engineers rarely get it right the first time, and learn from their mistakes! Allow students to modify and improve their vessels for re-testing until they feel confident in their fastest or most creative submissions. Refer to the Engineering Design Process as you work.

4 Build

Students will bring their blueprints to life with the materials they are repurposing, working alone or with a partner. Critical thinking and perseverance skills will allow students to make changes and modify their designs!

Boats cannot exceed 40cm. Review the full rules and guidelines for acceptable materials. Continue to the next step when your students feel their boat is ready for testing.

6 Calculate

Students will "race" against others in their fleet by recording and submitting speed calculations. To calculate speed, use the formula: $SPEED = DISTANCE/TIME$.

Measure the overall distance from "Start" to "Finish" in cm. Students will record how long it takes for the boat to travel this distance in seconds. Make sure to record all data on the Student Data Form. To find the SPEED, divide the length of the bin (DISTANCE) by how long it takes the boat to travel (TIME). Do this for each trial and then find the average (add all 3 SPEED trials together and divide by 3).

EXAMPLE:

Bin length (distance) = 10 cm

Time to sail across bin distance (time) = 2 seconds

Speed = $10 \text{ cm} / 2 \text{ seconds}$ (which is 5 cm/sec)

8 Document & Submit

All student submissions for the Recycle Regatta must include a photo or video of the completed vessel (photos do not need to include the student.) Additional photos of blueprints, group collaboration, or any step of the process are also encouraged for submissions.

Once students have completed all the steps, submit official entries by using our online form between February 15-April 30 at midnight. Entries may be submitted by students individually or in small groups of 2-4 students.

Additional Resources

Print and display these signs for your classroom and school to help collect materials and spread excitement!



5th Annual Recycle Regatta
February 15-April 30

STOP!

Can that item be used for
the Recycle Regatta?

If yes, please put it in the
Recycle Regatta
collection bin!

Please Do Not Dispose



**RECYCLE REGATTA
COLLECTION BIN**

5th Annual Recycle Regatta
February 15-April 30



**WE ARE ENTERING
THE 5TH ANNUAL
RECYCLE REGATTA**

GO TEAM _____

5th Annual Recycle Regatta | February 15 - April 30, 2024

Hosted by: New England Science & Sailing (NESS), Educational Passages, and
North American Marine Environment Protection Association (NAMEPA)

Questions?

Full rules, guidelines, classroom resources, and official entry forms, can be found at RecycleRegatta.info or email: info@educationalpassages.org

RECYCLE REGATTA INCORPORATES CURRICULUM STANDARDS

NEXT GENERATION SCIENCE STANDARDS (NGSS)

Grades K-2: K-PS2-2, K-ESS3-3, 2-PS1-2, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

Grades 3-5: 5-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

Grades 6-8: MS-ESS3-3, MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4

Grades 9-12: HS-ESS3-4, HS-ETS1-2

OCEAN LITERACY PRINCIPLES (OLP)

Principle 6: The ocean and humans are inextricably linked.

Grades K-2: 6.A.1, 6.A.5, 6.C.3, 6.C.5, 6.C.6

Grades 3-5: 6.A.6, 6.B.1, 6.C.1, 6.C.3, 6.C.7, 6.C.8, 6.C.11

Grades 6-8: 6.A.10, 6.B.2, 6.D.20, 6.D.21, 6.E.7, 6.E.12

Grades 9-12: 6.D.11, 6.E.6, 6.E.9, 6.E.14

CASEL SOCIAL-EMOTIONAL LEARNING (CASEL)

Relationship Skills, Self-Awareness, & Social Awareness:

- Learning how to communicate effectively, resolving conflicts, and showing leadership when working together in teams

Responsible Decision-Making:

- Recognizing how critical thinking skills are useful both inside and outside of school
- Reflecting on one's role to promote personal, family, and community well-being
- Evaluating personal, interpersonal, community, and institutional impacts

Self-Management:

- Setting personal and collective goals
- Using planning and organizational skills

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RECYCLE REGATTA STUDENT DATA FORM

ENGINEER NAME(S):

FLEET (Check One): MINIBOAT (Grades K-2) OPTI (Grades 3-5) HARTLEY (Grades 6-8) LASER (Grades 9-12)

VESSEL NAME:

SKETCH YOUR DESIGN:

BRIEF LIST OF RECYCLABLE MATERIALS USED:

DATA ENTRY:	TRIAL 1	TRIAL 2	TRIAL 3	AVERAGE
DISTANCE (cm)				
TIME (s)				
SPEED (cm/s)				
SPEED IN KNOTS (nm/hr)				

CHALLENGES OVERCAME TO SUCCEED:

This is not an official entry form. To submit your entry into the 2024 Recycle Regatta, visit RecycleRegatta.info.

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