

High School Standards Relevant to Cardboard Boat Regatta:

PHYS.PS2: Motion and Stability: Forces and Interactions

Phys.PS2.6 Using experimental evidence and investigations, determine that Newton's second law of motion defines force as a change in momentum, $F = \Delta p / \Delta t$.

Phys.PS2.7 Plan, conduct, and analyze the results of a controlled investigation to explore the validity of Newton's second law of motion in a system subject to a net unbalanced force, $F_{\text{net}} = ma$ or $F_{\text{net}} = \Delta p / \Delta t$.

Phys.PS2.12 Use experimental evidence to demonstrate that air resistance is a velocity dependent drag force that leads to terminal velocity

PSCI.PS2: Motion and Stability: Forces and Interactions

PSCI.PS2.1 Use mathematical representations to show how various factors (e.g., position, time, direction of force) affect one-dimensional kinematics parameters (distance, displacement, speed, velocity, acceleration). Determine graphically the relationships among those one-dimensional kinematics parameters

PSCI.PS2.2 Algebraically solve problems involving constant velocity and constant acceleration in one-dimension

PSCI.PS2.3 Use free-body diagrams to illustrate the contact and non-contact forces acting on an object.

PSCI.PS2.4 Plan and conduct an investigation to gather evidence and provide a mathematical explanation about the relationship between force, mass, and acceleration. Solve related problems using $F=ma$.

PSCI.PS2.5 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

CHEM2.PS1: Matter and Its Interactions

CHEM2.PS1.3 Compare and contrast crystalline and amorphous solids with respect to particle arrangement, strength of bonds, melting and boiling points, bulk density, and conductivity; provide examples of each type.