

# Hovercraft Project

## Objectives:

- Work through the process of research, design, building, testing, troubleshooting/redesign, and final demonstration of an end product.
  - Design a small hovercraft from scratch.
  - Build a small functioning hovercraft.
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## Directions:

- Build a small hovercraft.
  - It must be able to “float” above the ground. (No hopper crafts!)
  - It must be able to move “forward” without it being attached to anything.
  - It cannot be constructed from any kit, model, or design from the internet (i.e. it must be your original work.)
  - It may not use prefabricated propellers.
  - It must have a power switch.
  - You must prevent shorts in the wiring.
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## Guidelines:

- Research
  - Complete any necessary research
  - Things to consider...
    - Lift
    - Propulsion
    - Propeller design
    - Power and wiring for the batteries, switch, and motor(s)
- Design
  - Work with your group to design a small hovercraft.
  - Draw a design for the propeller(s), material(s) that will be used, and method for attaching to the motor.
  - Draw a basic plan of how it will be constructed and what it will be constructed of.
  - You may use any of the materials we provide and any approved materials that you bring to class.
  - Discuss and get approval of your initial plan with Mr. Evans.
- Construction
  - Build the hovercraft.
  - Attention to detail and neatness is very important (i.e. make sure to use a ruler.)
  - During construction keep the batteries out of the battery holders
- Testing
  - Before testing any propellers...
    - Everyone in the classroom must have **safety glasses** on!
    - Keep you fingers and everything else out of the propeller!
  - Be very careful not to short out the batteries!
  - After testing, more then likely it will not work flawlessly. Go back to the research faze and work through the problems until you are back at testing. Repeat until the hovercraft works.
  - Record in your lab notebooks observations of each test and make notes of successes and shortcoming. Also include proposed adjustments.

- Final presentation of the hovercraft
  - You will demonstrate to the class your functioning hovercraft.
  - You will turn in a typed paper which provides the following...
    - Materials & tools
    - Directions for construction
    - Diagram of the hovercraft
      - If done by hand, make sure it is scanned into a computer and part of your paper.
      - It must be to scale.
      - It must have appropriate labels.
  - Your lab notebook will be turned in with the notes about each trial.

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**Timeline:**

- Thursday 5/17/07 – Research (Paper can be obtained from <http://scienceandmathacademy.com/academics/srt10/srtB4.html>)
  - Homework: Draw initial designs and bring in materials
- Wednesday 5/23/07 – Propellers/Fans started
- Friday 5/25/07 – Propellers/Fans complete
- Wednesday 5/30/07 – Initial wiring complete
- Friday 6/1/07 – Body complete (I need to see hovercrafts assembled)
- Tuesday 6/5/07 – Problem solving
- Thursday 6/7/07 – All hovercrafts are complete
- Monday 6/11/07 – Hovercrafts will be tested, lab notebooks are due, and typed paper are due