



## Balloon Hovercraft Engineering Activity Worksheet

**Purpose:** Using the basic concepts of thrust, you must design, test, and race your own balloon hovercraft. The main goal of the race is to see who can get their hovercraft successfully through the goal in the shortest amount of time. Unlike your teacher's model, you will be using balloons filled with your own air to propel the hovercraft (much like an air hockey table). You are placed in groups of two to three, and after watching your teacher's demo, you may begin.

**Note:** The balloon receives its thrust by attaching the film canister to the CD (over the opening) and placing a filled balloon over the film canister. The many holes in the sides of the canister can be used in any way to cause the hovercraft move in any direction. It is up to your group to decide how to build your craft, and what combination of holes and straws to use to make it move. (You can cover up unnecessary holes with tape)

**Materials:** Check to make sure you have these items in your inventory

- Balloons
- CDs
- Film Canisters
- Super Glue
- Scissors
- Tape
- Straws

What do you know about thrust? List three things that use thrust to move:

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**After thinking about the previous question, begin to examine all of your materials, your teachers demonstration should give you a better idea of how your hovercraft will actually work.**

**Considerations:**

- How can you use the straws to help you keep your hovercraft in a straight line?
- How do the holes in the film canister help you, or prevent you from reaching the goal?

- Which way will the hovercraft move? And how does the orientation of the holes affect this direction?
- What if you try using the hovercraft and it spins? And how can you stop this?
- Make sure you test your hovercraft early and often to correct all errors before the final races.

**In the space below, sketch your initial and final designs. Comment on how your group decided on the design, and how it actually worked (or didn't work).**

**Initial Design (include notes):**

**Competition Design (include notes):**

**Wrap-Up Questions:**

**What have you learned about the direction that the hovercraft will move depending on where the holes or straws are facing?**

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**How can you prevent the Hovercraft from spinning in place?**

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**What have you learned about how to design something when you are only given the materials and little information?**

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