



“Build-a-Buoy”

with the NOAA Chesapeake Bay Office

You can build your own functional buoy—a junior cousin to NOAA’s data buoys—using materials from a hardware store!

This classroom or home project teaches:

- Principles of engineering, such as balance, buoyancy, and weight distribution
- Scientific method, including developing a hypothesis, planning, testing, observing, and making changes
- Introduction to types of buoys, including navigational and observational

Materials you’ll need:

- Assortment of PVC pipe (we suggest 0.5-inch and 1.5-inch diameter) cut into equal lengths (we use six-inch lengths)
- Assortment of PVC pipe connectors to enable pipe lengths to be assembled in a variety of configurations
- Wire ties (we use 12-inch length) to connect PVC pipe items
- Frisbees to serve as platforms for holding golf balls; drill holes through Frisbees to enable them to be connected to “buoys” using wire ties
- Golf balls to test buoy balance and buoyancy

Process you’ll follow:

- Develop a plan and hypothesis, e.g. “building a buoy with a wide base and a tower with the Frisbee placed on top will result in a buoy that floats and carries the most golf balls without sinking.”
- Build your buoy! Use the assortment of PVC pipe and connectors, Frisbees, and wire ties to create your buoy. It can be as simple or as complex as you want.
- Test your buoy and your hypothesis! Float your buoy in a tub of water. Does it float? Does placing two or three golf balls on the Frisbee cause the buoy to lean to one side or sink?
- If observe that your buoy doesn’t float or the golf balls roll off, think about why that might be. Then make changes to your buoy to achieve your goal.



PVC pipe and connectors (above) and Frisbees, golf balls, and wire ties (below) are all you’ll need.



These are just two examples of buoy designs. You can build any design you want!



For details on how you can use the Build-a-Buoy in your classroom, contact the NOAA Chesapeake Bay Office’s Environmental Literacy Team at 410-295-3145 or email kevin.schabow@noaa.gov. More on the NOAA Chesapeake Bay Office’s work in science, service, and stewardship is available at www.chesapeakebay.noaa.gov.