



## Challenger's Morning Science Segment:

November 21, 2016

**Topic:** Refraction of Light

**Build:** Reverse the Arrow

### Credit:

<https://www.childrensmuseum.org/blog/saturday-science-the-reversing-arrow>

### Materials Needed:

Paper / marker / water / cylindrical glass

**Reversing an Arrow:** First draw an arrow on the piece of paper. The arrow should be smaller than the width [diameter] of the glass. Next place the arrow behind the glass, and place yourself so that you can see your arrow when looking through the empty glass. Then fill the glass with water and watch as your arrow changes direction! Take your experiment further by trying different shapes/drawings and even different glasses. It isn't magic...it's refraction!

**The science [credit: <https://www.childrensmuseum.org/blog/saturday-science-the-reversing-arrow>]**

"The idea of this experiment is to show how the refraction of light through water changes things. It is an optical illusion, called refraction. Light only bends when it passes from a substance of one density into a substance of a different density—in this case from air to water." The curved surface of the glass also bends the light and causes the light path to cross and thus flip before reaching the eye.

**This activity ties into the Challenger Learning Center of Maine,** where students experience a newfound excitement for science, technology, engineering and math.

**What's up next?** Visit Challenger on Small Business Saturday from 10:30 AM till 1:30 PM on November 26, 2016. We will have our gift shop open with all kinds of science gifts, and local vendors will be selling holiday merchandise. All visitors will be entered into prize drawings! FMI- [www.astronaut.org](http://www.astronaut.org)