# Puzzle #78: Who's cooler?

# MoeZone

Real challenges for people living in the real world

**Be safe!**

Can you get hurt?
Can someone else get hurt?

What shape of ice "cube" will take the longest to melt? Why do you think so?

**ELEMENTARY**

Why does an ice (solid water) and liquid water mixture stay at 32F until all of the ice is melted? What is going on?

**ADVANCED**

When the ice in my cooler starts to melt, should I dump out the water or leave it in there to keep my food cold? Why?

**PROFESSIONAL**

Send any solutions by Sept. 17 to Moe Benda at mbenda@d.umn.edu.
Best solutions and next puzzle will appear in HTF on Sept. 22.

**Moe's quote:**
Get out from the shadow and make your own shade.

## MoeZone Puzzle #77 solutions: Frick and Frack!

### ELEMENTARY PUZZLE

***If you dropped the TV remote behind the couch, what are five different ways to get it without moving the couch?***

Paul (14, Virginia): 1: Use a hockey stick. 2: Use the wrong end of a broom. 3: Use a golf ball with a string on it and swing it behind the remote and drag it out. 4: Use a vacuum and suck the remote onto the end and pull it out. 5: Use someone else and each of us get on each side of the couch with an end of a string that we pulled in up and over the remote—then we saw our way out, pulling the remote with us.

***MOE'S NOTE: I really like the idea of the golf ball and string combo! It is interesting to try and figure out different ways to get at stuff when you can't disturb what's around it.***

### ADVANCED PUZZLE

***Why do we need to use frac sand for some petroleum wells?***

Oil and gas are trapped in rock far below the surface and we needed a way to extract them. One way is to fracture the rock; however, the issue is if you create cracks in the rock, the weight of the world is on top and the cracks will close. The trick then is to create the cracks and prop them open (keep them open) by injecting sand into the cracks where fluids will flow and then we can extract the fuels.

### PROFESSIONAL PUZZLE

***What makes some of our Minnesota sand great, if not the best, for fracking?***

Size and shape make our sand great! Plus, the sand we mine is very clean and pure and can be used without post processing—making it a highly desired commodity, not just for fracking operations in the U.S., but also for around the world. We get the sand from southeastern Minnesota. Check out the Minnesota Department of Natural Resources website about it: http://www.dnr.state.mn.us/silicasand/index.html.

***MOE'S NOTE: It isn't currently known what/how much, if anything, fracking does to the environment, but many claim that it is adding to ground instability and even earthquakes. What do you think?***