

Puzzle #71: Can't take the heat?

MoeZone

Real challenges for people living in the real world



Be safe!

Can you get hurt?

Can someone else get hurt?



If you have ice cubes in water and heat it up in a pan, why doesn't the temperature increase until all of the ice is melted?

ELEMENTARY



Which do you think will freeze more quickly, a cup of cold water or a cup of hot water? Test out your theory and let us know.

ADVANCED



On the side of the box, we see how many calories are in the things we eat. How are calories measured in food?

PROFESSIONAL

Send any solutions by June 11 to Moe Benda at mbenda@d.umn.edu.

Best solutions and next puzzle will appear in HTF on June 16.

Moe's quote:

May there always be road!

MoeZone Puzzle #70 solutions: Up and at 'em!

ELEMENTARY PUZZLE

Sometimes I like to fly a kite even when there is no wind. How fast do you have to run if there is no wind and you want to fly a kite?

Dave (11, Hibbing): This weekend I got to try it and got tired of it really quick. I had to run as fast as I could just to keep it in the air!

MOE'S NOTE: Usually we walk about 3 miles per hour and mostly when we run we are around 10-15 miles per hour. Usain Bolt can run 28 miles per hour though! But that's only for 10 seconds. I'll bet you ran much further, Dave!

ADVANCED PUZZLE

Making paper airplanes. If you want to make the plane go farther, do you want long narrow wings or short wide wings? How about if you wanted it to fly longer?

Mike (Proctor): My kids and I love making planes and we have a rule of thumb: the narrower the farther, the wider the longer!

MOE'S NOTE: I love rules of thumb!

PROFESSIONAL PUZZLE

This is the puzzle of puzzles. My family and I saw an ad of a truck towing a commercial airplane and it flew. Can a truck do that?

It appears we don't have an answer for this challenge, but I've received ideas to help us solve this. I've been on gliders before that were pulled up into the air by trucks and then released, but a commercial plane weighs much more than a glider! Last time I flew, the pilot announced that we had a take-off weight of 690,000 pounds; we were in a 777 (that's incredible!). The pilot also indicated that our take off speed was 180 mph—that is relative air speed. And it appears that the land-speed record for trucks is over 200 mph, so we should be able to get to the top speed—but what about the enormous weight? Well, in the World Strongman Competition, a human can pull a plane, so a truck should be able to as well. And a Toyota pulled the Space Shuttle. But what about the physics involved? The only force the truck has to overcome to start pulling it is the friction of the wheels and as it gets faster, the drag on the aircraft. So theoretically, how much force would be required to pull a 777 at 179 mph? Could the truck pull that much? And once the plane is airborne, the towrope will be lifting the truck up a bit, which we could accommodate with an extremely long rope, but would it reduce the amount of force the truck could pull? By how much? To be continued. :)

MOE'S NOTE: If you have a chance, do an Internet search on "Toyota Tundra pickup Space Shuttle" and you'll see a truck tow a 300,000 pound vehicle.