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Slow Down

Traffic safety bulletin

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When was the last time you thought about kinetic energy? Probably during a grade 13 physics exam wondering why you slept through that class. We car nuts never slept through John Grainger's classes at the Hon. J.C. Patterson C.I. in Windsor. You see John had a way of turning boring equations and calculus into the fascination of spring rates, shock absorber valuing and fuel/air mixtures. Although one might have questioned the ethics of teaching teenagers the science of making cars go faster, John also instilled in us a healthy respect for the object of our desire.

That was kinetic energy, or the energy of moving things. Any moving thing required energy to get it moving. Energy cannot be created or destroyed, only changed from one form to another, so moving car represents a bunch of energy that has the potential to be changed into other forms. Most of the time, kinetic energy is converted into heat energy through friction between the brake pads and rotors and the n dissipated into the air. Sometimes this energy provides the force to twist cars into pretzels when they slam into other objects.

This brings us to this week's question. If a car takes a certain distance to stop from 49 km/hr, how much slower must it be going to stop in 2/3 the space?

The formula for kinetic energy is: K.E. = ½ mass x velocity *squared.* Doubling the mass of a moving vehicle means doubling the stopping distance because twice the K.E. has to be converted to heat through friction at the brakes. This assumes that other factors like the road surface grip and tire condition are the same.

Squaring a number means multiplying it by itself. Doubling the speed increases the K.E. by four times, requiring four times the distance to stop. We all know it takes more space to stop from higher speed, but most of the time we don't think in exponentially greater distances.

Conversely, if we go slower, braking distances will be exponentially shorter. Our starting speed of 49 km/hr is the square root of 2401 (49 x 49).The number we are looking for is the square root of 2/3 of 2401. The square root of 1600 is 40, which is the answer to our question. The point is that we only have to bring our speed down from the speed we think we can get away with in school zones to the actual speed limit to shorten our stop by a third.

An ABS braking test was conducted at the Skid Control School and published in Carguide magazine in the fall of 1992. The braking distance not including perception and response time from 50 km/hr was on average 12.16 meters on a dry asphalt surface.

Braking from 40 km/hr would have shortened the stop by 4 meters. Not a huge amount, but it could mean the difference between hitting a child or not

Along with observing speed limits, the re are a lot more things that drivers can do to keep kids safe in September. The best way to brake in time for kids is to spot them early. Open up the width of the territory you scan, so that you will see the child running across the lawn or skateboarding down the driveway, well before they get to the edge of the road.

Stop fully before the stop line. Even if you can't see past the hedge or fence, stop early. Check both ways and creep slowly as you keep checking the blind side for the bicycle on the sidewalk. Before turns, check over your shoulder for the first-time roller-blader who hasn't master stopping yet.

Something else drivers forget over the summer is what the flashing lights on school buses mean. Stop in both directions when you encounter a bus with the alternating red lights flashing. Whenever you see a school bus, search for kids that the bus might stop to pick up.

A little known law is that vehicles must stop 20 meters behind a bus with its lights flashing. That's about a bus and a half length. This gives you and the bus driver a better view of the kids who swarm from all directions. Anytime you are stopped behind a bus in traffic, leave a couple car lengths, in case the bus has to be evacuated through the emergency door. The chances of this happening are really small, but would you want 40 kids jumping on your hood?

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