OBJECTIVE: Comparable To The Beloved Daughtry Times, Create And Solve Five Standards-Based Algebra Inquiries Based Upon Information As Obtained From The Passage. Identify Each Standard(s) Adjacent To Each Respective Inquiry.

Santa Claus: An Engineer's Perspective

There are approximately two billion children (persons under 18) in the world. However, since Santa does not visit children of Muslim, Hindu, Jewish or Buddhist religions, this reduces the workload for Christmas night to 15% of the total, or 378 million (according to the Population Reference Bureau). At an average (census) rate of 3.5 children per house hold, that comes to 108 million homes, presuming that there is at least one good child in each.

Santa has about 31 hours of Christmas to work with, thanks to the different time zones and the rotation of the earth, assuming he travels east to west (which seems logical). This works out to 967.7 visits per second. This is to say that for each Christian household with a good child, Santa has around 1/1000th of a second to park the sleigh, hop out, jump down the chimney, fill the stockings, distribute the remaining presents under the tree, eat whatever snacks have been left for him, get back up the chimney, jump into the sleigh and get on to the next house.

Assuming that each of these 108 million stops is evenly distributed around the earth (which, of course, we know to be false, but will accept for the purpose of the calculations), we are now talking about 0.78 miles (1.3 km) per household; a total trip of 75.5 million miles (125.83 million km), not counting bathroom stops or breaks. This means Santa's sleigh is moving at 650 miles per second (1083 km/s), 3000 times the speed of sound. For purposes of comparison, the fastest manmade vehicle, the Ulysses space probe, moves at poky 27.4 miles per second (45.7 km/s), and a conventional reindeer can run (at best) 15 miles per hour (25 km/h) - that is four thousands of a mile (4/1000) per second (6.9 m/s).

The payload of the sleigh adds another interesting element. Assuming that each child gets nothing more than a medium size Lego set (two pounds, or 0.906 kg, that is), the sleigh is carrying over 500 thousand tons US (508,000 t metric), not counting Santa himself. On land, a conventional reindeer can pull no more than 300 pounds (136 kg). Even granting that the "flying" reindeer could pull ten times the normal amount, the job can't be done with only eight or even nine of them - Santa would need 360,000 of them. This increases the payload, not counting the weight of the sleigh, another 54,000 tons (54,864 t metric), or roughly seven times the weight of the Queen Elizabeth (the ship, not the monarch).

600,000 tons (606,600 t metric) travelling at 650 miles per second (1083 km/s) creates enormous air resistance, and this would heat up the reindeer in the same fashion as a spacecraft re-entering the earth's atmosphere. The lead pair of reindeer would absorb 14.3 quintillion Joules of energy per second each. In short, they would burst in flames almost instantaneously, exposing the reindeer behind them and creating deafening sonic booms in their wake. The entire reindeer team would be vaporized within 4.26 thousands of a second (0.00426 s), or right about the time Santa reached the fifth house on his trip.

Not that it matters, however, since Santa, as a result of accelerating from dead stop to 650 miles per second (1083 km/s) in 0.001 seconds, would be subjected top acceleration forces of 17,500 g's. A 250 pound (113 kg) Santa (which seems ludicrously slim) would be pinned to the back of the sleigh by 4,315,015 pounds of force (195,470 kg force, or 1.9547 MN), instantly crushing his bones and organs and reducing him to a quivering blob of pink goo.

Therefore, if Santa did exist, he's dead now!

Reference: http://www.cvaieee.org/html/humor/santa.html

DUE FRIDAY, DECEMBER 20, 2013 – LATE ASSIGNMENTS WILL NOT BE ACCEPTED.