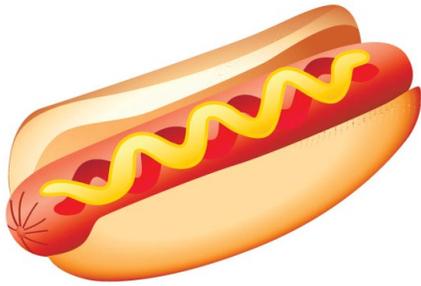


UW Math Circle
November 16, 2017
Homework

1. James is working really hard on a presentation. If he starts working on his presentation at 7 am and works for 516 hours, what time will it be when he stops working?
2. Hot dogs come in packages of 34 and hot dog buns come in packages of 8. Kellie needs hot dogs for a picnic but wants to buy exactly one hot dog for each hot dog bun. How many packages of hot dogs and buns should she buy if she doesn't want any extra hot dogs or extra hot dog buns?



3. What is the last digit of $(\dots((7^7)^7)\dots)^7$ if there are 1000 7s as exponents and only one 7 in the middle?
4.
 - (a) Can you find positive whole numbers n and m less than 4 such that $nm \equiv 0 \pmod{4}$?
 - (b) Can you find positive whole numbers n and m less than 7 such that $nm \equiv 0 \pmod{7}$?
 - (c) In general, when can you find positive whole numbers n and m less than l such that $nm \equiv 0 \pmod{l}$?