MODULAR PREVIEW

CROSSROADS ACADEMY
MATHCOUNTS PREPARATION

I) The current month is December. What month will it be in 1275 months? What month was it 126 months ago?

II) If the time is currently 3 p.m. what time will it be in 485 hours? What time was it 100 hours ago?

III) Janice goes running every morning on a 400 meter track. If she runs 7543 meters, how much farther does she have to run in order to return to her original starting place?

IV) During penmanship class, Jasmine writes her name, letter by letter, over and over again for 20 minutes. If at the end of the time she has written 2015 letters, what is the last letter that she writes?

V) What is the 1,000,000th digit of the decimal expansion for $\dfrac{1}{7}$?

a) What is the last digit of 2^{2016}?

b) What is the value of $123 * 45$ modulo 11?

c) What is the remainder when $8475 * 987 * 29$ is divided by 6?

d) James has 30 boxes of peaches with 47 peaches in each box. If he divides them into groups of one dozen each, how many peaches will be left over¿

e) While organizing her pencils, Faith notices that when she puts them in groups of 3, 4, 5, or 6 she always has exactly one pencil left over. If Faith has between 10 and 100 pencils, how many pencils does she have?

f) While organizing her pencils, Francis notices that when he puts them in groups of 3, 4, 5, or 7 he is always exactly one pencil short of even groups. If Francis has between 10 and 100 pencils, how many pencils does he have?