

## LEAP YEAR PROBLEMS

CROSSROADS ACADEMY  
MATHCOUNTS PREPARATION

- I) How many leap years are there from 2000 to 3000 inclusive?
- II) Bernard was born on 3/29/1988. How old is he now? Gloria was born on 3/29/1898. How old is she now?
- III) The year 2016 is a leap year whose digits sum to 7. When is the next leap year whose digits have the same sum? When is the next leap year whose digits sum to a prime number? When is the next leap year whose digits product is a prime number?
- IV) Fred and George are twins who were born 3 hours apart. On George's 16th birthday they go to the DMV to apply for driving licenses. They bring the forms to the counter and the clerk accepts George's form, but tells Fred he must come back in two days when he turns 16. How is this possible?

- a) When written in the form MM/DD/YYYY, how many days in 2016 have the property that the four digits of the month and day can be rearrange to form the year? (For example, in October 21, 2011 has this property since it is represented as 10/21/2012 and (1021) can be rearranged to (2011).)
- b) What is the most recent year that did not have any days with this property? What is the next year that does not have any days with this property?
- c) What was the last date in the 20th century that had this property?
- d) The number of days in 2016 that have this property is equal tot he number of days in 2061 that have this property. For what pair of years 20XY and 20YX where X and Y are distinct digits, is this not the case?