

## FEBRUARY/MARCH SOLUTIONS

### THE MINIMUM NUMBER OF PEOPLE

What is the minimum number of people in a group so that you would be certain that 3 of them were born in the same month and on the same day of the week? Explain your answer.

SOLUTION:

We consider ordered pairs of natural numbers  $(a, b)$  where  $1 \leq a \leq 7$  and  $1 \leq b \leq 12$  representing days of the week and months of the year, respectively.

There are  $(7)(12) = 84$  unique ordered pairs. We need to have three people who match one of these 84 possibilities. With  $(84)(2) = 168$  people, we could have just two people per possibility, so we must have **169** people to guarantee a three-person match. (Generalized Pigeonhole Principle)

### CORRECT SOLUTIONS

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