I have received the following e-mail:

Hello,

Moisés de la XXXX gave me your email address. My name is Marina XXXXX. I am the pharmacist at the chemist's in the town of Carlet and, with the chemists of my town and of two other nearby towns, we take turns as as duty chemists. In all, there are 11 chemists in three nearby towns:

- *5 in Carlet*
- *5 in L´Alcudia*
- *1 in Benimodo*

The 11 chemists do night shifts alternatively so that "each town never goes more than 1 night with no chemist open, except when it is the turn of Benimodo, whose chemist is closed 2 nights as there is no choice".

In the current situation, we distinguish three types of shift:

1. *Night shifts during week days*
2. *Saturdays*
3. *Sundays and holidays*

In the last meeting held this month, we even considered doing another shift (a fourth one!) to include 24 Dec. (Christmas Eve), 31 Dec. (New Year's Eve) and 5 January (Eve of Epiphany).

Many of us are tired of so many shifts as we do as many as 2 or 3 shifts some weeks because 2 or 3 duty chemists coincide, particularly on bank holidays, and we would prefer one shift every 11 days (which is what other nearby towns normally do). Some of our colleagues say that it is not fair that someone has to do Sundays more than others, etc. My question is if you know any mathematical formula to make it fairer.

After working on this problem, you send this e-mail:

Hello, Marina. Rather than having my doubts about the shifts you do, I would like to know the dates that you consider are holidays in each town because they might not be the same dates. I don't think that doing a special shift at Christmas is practical as you could take 11 years to sort it out.

PS: By the way, what happens when a Saturday coincides with a holiday? Which one is more important?

The response, which ignores the holiday data, is the following:

Good morning,

First of all, many thanks for your interest. To answer your question, when a Saturday coincides with a holiday, the holiday always dominates. So, we do not make special efforts on Saturdays because one chemist opens in each town every Saturday until 5 pm.

Thanks again.