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Regulars



## Puzzle page



### You label my back; I'll label yours



A group of  $N$  friends go into a mirrorless room, in which there is a basket containing labels, each of which is either blue or yellow. None of the friends knows how many of the labels are blue or yellow – the labels may even be all blue, or all yellow.

Each person takes a label from the basket *without looking* and sticks it on his or her own back. When everyone has done this, they all circulate freely and soon everyone knows the colour of everyone else's labels, but still does not know the colour of their own.

## Puzzle page

Another person then enters the room, has a quick look around, and announces:

"Every minute, on the minute, anyone who knows that on their back they have a blue label, must leave the room. Each person must decide whether or not to leave without knowing what other people are deciding to do at that moment. I can now tell you that there is at least one blue label on the back of someone in this room. No talking is allowed. Your first announcement is...now."

If there are in fact  $n$  blue labels, how long will it be before anyone leaves the room? How many people will leave the room in total at that time?

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If you are stumped by [last issue's puzzle](#), here is [the solution](#).

For some challenging mathematical puzzles, see the [NRICH](#) puzzles from [this month](#) or [last month](#).

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*Plus* is part of the family of activities in the Millennium Mathematics Project, which also includes the [NRICH](#) and [MOTIVATE](#) sites.