

## Solution to February 2008 M<sup>6</sup> Problem

One in seven mathematicians is a philosopher, while one in nine philosophers is a mathematician. Is the total number of mathematicians is greater than the total number of philosopher, or conversely?

*Solution:* Let  $X$  be the total number of mathematicians,  $Y$  be the total number of philosophers and  $Z$  be the number of people who are both mathematicians and philosophers. We are given that

$$\frac{Z}{X} = \frac{1}{7} \text{ and } \frac{Z}{Y} = \frac{1}{9}.$$

Hence

$$\frac{X}{Y} = \frac{7}{9} < 1 \text{ and so } X < Y.$$

Thus there are more philosophers than mathematicians.