Sujet n°25

Please do not write on this document, and do not forget to hand it back to the jury at the end.
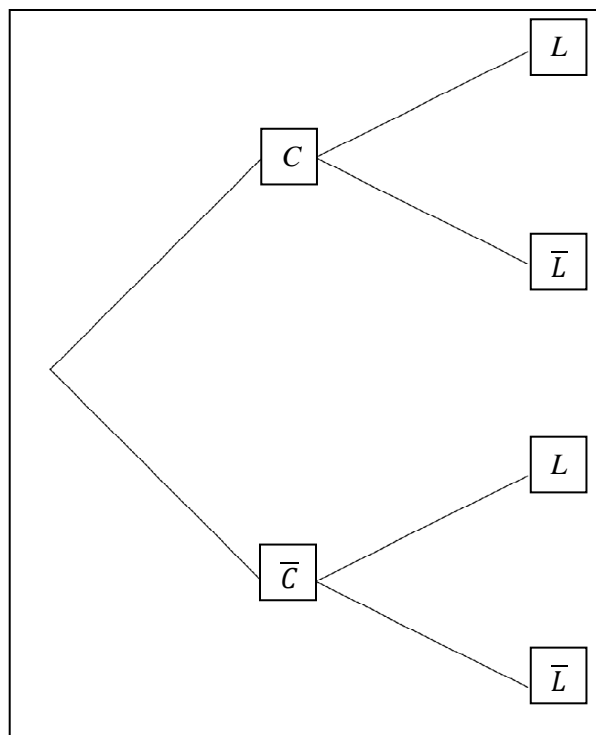
PROBABILITY

To go to work, a man takes either his own car or the bus. The probability he takes his own car equals $\frac{1}{3}$. If he takes his own car, he arrives late at work half of the time. If he travels by bus, he arrives late 25% of the time.

When this man arrives on time, he will choose the same means of transport for the next day.

Let us call C the event: "this man takes his own car".

Let us call L the event: "this man arrives late at work".

1. Copy and fill in the following probability tree with the missing probabilities. Answer with simplified fractions.

2. Compute the probability of this man arriving late on the first day.
3. Compute the probability of this man taking his own car, knowing that he did not arrive late at work.
4. We do not know how he travelled on the first day. Compute the probability of him taking his own car on the second day.