IB Statistics and Probability Problem 008

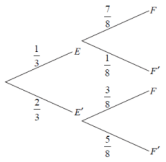
José travels to school by bus. Each day, the probability that José misses his bus is $\frac{1}{3}$.

If he misses his bus, the probability that he is late for school is $\frac{7}{8}$.

If he does not miss his bus, the probability that he is late is $\frac{3}{8}$.

Let E be the event "he misses his bus" and F the event "he is late for school".

The information above is shown in the following tree diagram.



A. Find

i. $P(E \cap F)$

ii $P(F)$

.

B. Find the probability that

i. José misses his bus and is not late for school;

ii José missed his bus, given that he is late for school.

.

The cost for each day José takes the bus is 3 euros. José goes to school on Monday and Tuesday.

C. Copy and complete this probability distribution table.

X (coût en euros)	0	3	6
$P(X)$	$\frac{1}{9}$		

D. Find the expected cost over the two days for José.