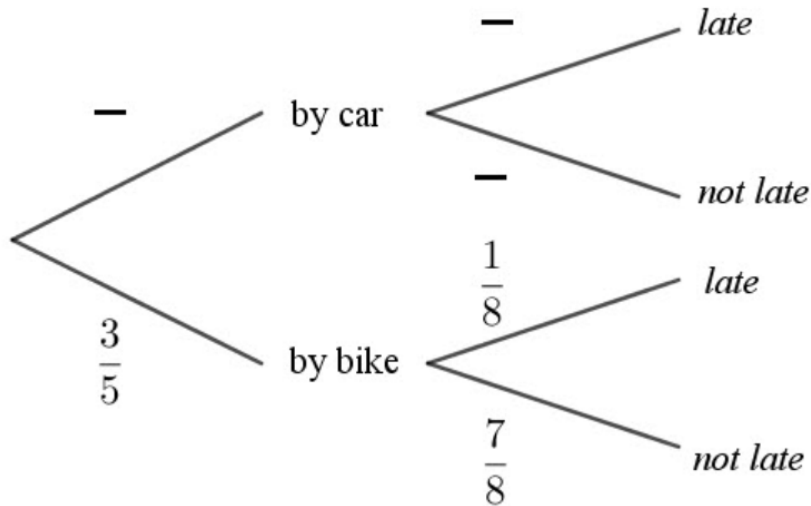Henri Tarr travels to school by bike $\frac{3}{5}$ of the week and by car the rest of the time.

If he travels by bike, the probability that he is late is $\frac{1}{8}$.

If he travels by car, the probability that he is late is $\frac{3}{8}$.
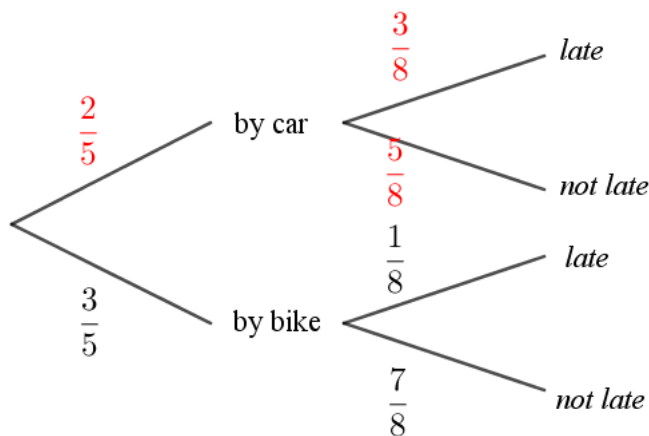
a) Copy and complete the following tree diagram

b) Find the probability that Henri goes to school by car and is late for school.

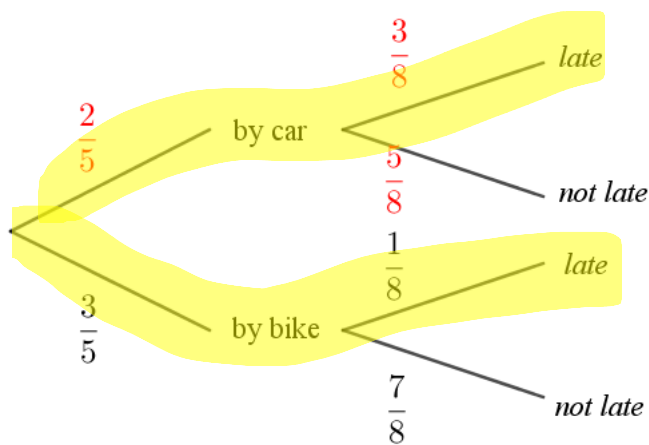c) Find the probability that he is late for school.

d) Given that he is late, find the probability that he travels to school by car.

a)

b) probability that Henri goes to school by car and is late for school $= \frac{2}{5} \times \frac{3}{8} = \frac{3}{20} \left(= \frac{6}{40} \right)$

INTHINKING

c) probability that he is late for school

$$P(late) = \frac{2}{5} \times \frac{3}{8} + \frac{3}{5} \times \frac{1}{8} = \frac{9}{40}$$

d) $$P(car/late) = \frac{P(car \cap late)}{P(late)} = \frac{\frac{3}{20}}{\frac{9}{40}}$$

$$= \frac{3}{20} \times \frac{40}{9}$$

$$= \frac{2}{3}$$