Les probabilités

Exercice 1.

a) $p = 0.45 + 0.4 - 0.55 = 0.3 = \boxed{30\%}$

b) $p(A|B) = \dfrac{p(A \cap B)}{p(B)} = \dfrac{0.3}{0.45} \simeq \boxed{66.67\%}$

$p = 0.5 + 0.25 - 0.65 = 0.1 = \boxed{10\%}$

$p(A|B) = \dfrac{p(A \cap B)}{p(B)} = \dfrac{0.1}{0.5} = \boxed{20\%}$

Exercice 2.

a) $p = 0.65 \cdot 0.05 + 0.35 \cdot 0.4 = \dfrac{69}{400} = \boxed{17.25\%}$

b) $p = \dfrac{0.35 \cdot 0.4}{\frac{69}{400}} = \dfrac{56}{69} \simeq \boxed{81.16\%}$

c) $1 - \left(\dfrac{331}{400}\right)^n > 0.99 \quad \Rightarrow \quad \left(\dfrac{331}{400}\right)^n < 0.01$

$\Rightarrow \quad n > \log_{\frac{331}{400}}(0.01) \simeq 24.32$

$\Rightarrow \boxed{25 \text{ perroquets}}$

$p = 0.7 \cdot 0.08 + 0.3 \cdot 0.35 = \dfrac{161}{1000} = \boxed{16.1\%}$

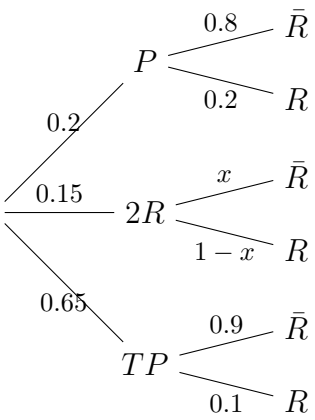
$p = \dfrac{0.3 \cdot 0.35}{\frac{161}{1000}} = \dfrac{15}{23} \simeq \boxed{65.22\%}$

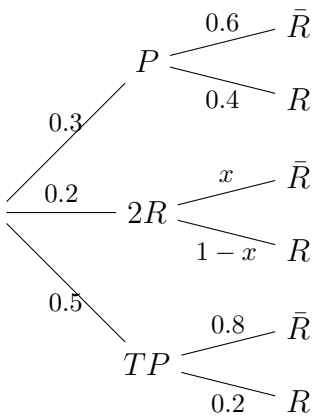
$1 - \left(\dfrac{839}{1000}\right)^n > 0.99 \quad \Rightarrow \left(\dfrac{839}{1000}\right)^n < 0.01$

$\Rightarrow \quad n > \log_{\frac{839}{1000}}(0.01) \simeq 26.23$

$\Rightarrow \boxed{27 \text{ perroquets}}$

Exercice 3.





a) $p = 0.65 \cdot 0.9 \simeq \boxed{58.5\%}$

b) $p(A|B) = \dfrac{p(A \cap B)}{p(B)} = \dfrac{0.2 \cdot 0.2}{0.15} \simeq \boxed{26.67\%}$

c) $y = 1 - x$

$0.15 = 0.2 \cdot 0.2 + 0.15y + 0.65 \cdot 0.1$

$\Leftrightarrow \quad 0.15y = 0.045 \quad \Leftrightarrow \quad y = 0.3 = \boxed{30\%}$

$p = 0.5 \cdot 0.8 = \boxed{40\%}$

$p(A|B) = \dfrac{p(A \cap B)}{p(B)} = \dfrac{0.3 \cdot 0.4}{0.25} = \boxed{48\%}$

$y = 1 - x$

$0.25 = 0.3 \cdot 0.4 + 0.2y + 0.5 \cdot 0.2$

$\Leftrightarrow \quad 0.2y = 0.03 \quad \Leftrightarrow \quad y = 0.15 = \boxed{15\%}$