PROBABILITY

1a) A and C.

b) A and B are independent. $\therefore P(A) \times P(B) = P(A \text{ and } B)$

$$0.4 \times P(B) = 0.15$$

$$P(B) = \frac{0.15}{0.4}$$

$$= 0.375$$

$$p = 0.375 - 0.1 - 0.15$$

$$= \underline{\underline{0.125}}$$

$$q = 0.3 - 0.125$$

$$= \underline{\underline{0.175}}$$

$$r = 1 - 0.25 - 0.15 - 0.1 - 0.125 - 0.175$$

$$= \underline{\underline{0.2}}$$

2a) A and C <u>or</u> B and C

b) $p = 0.2$

$q = 0.3$

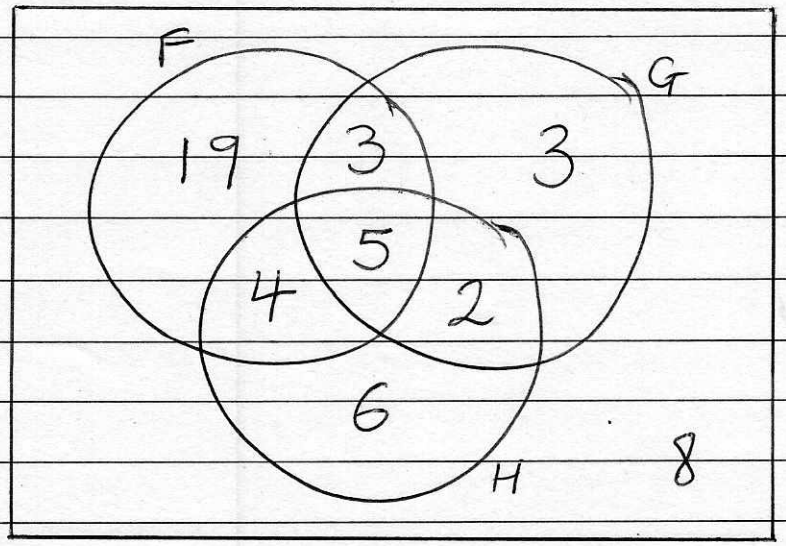
$r = 0.2$

c) If independent $P(A) \times P(B) = P(A \text{ and } B)$

$$0.4 \times 0.5 = 0.2$$

They are independent.

3a)

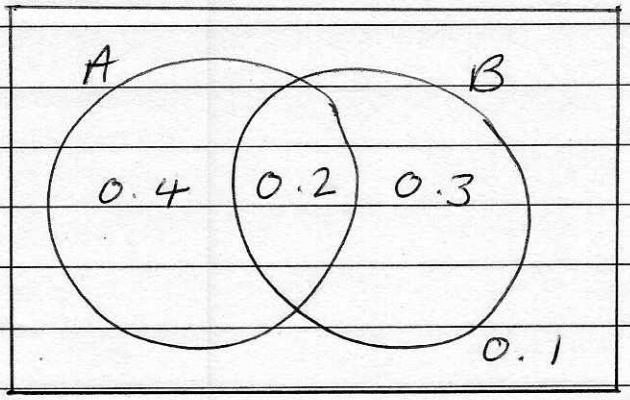


b) $\frac{31}{50} \times \frac{30}{49} = \frac{93}{245}$

4a) $P(A \text{ and } B) = 0.9$

$0.6 + 0.5 - 0.9 = 0.2$

b)



c) $0.6 \times 0.5 = 0.3$

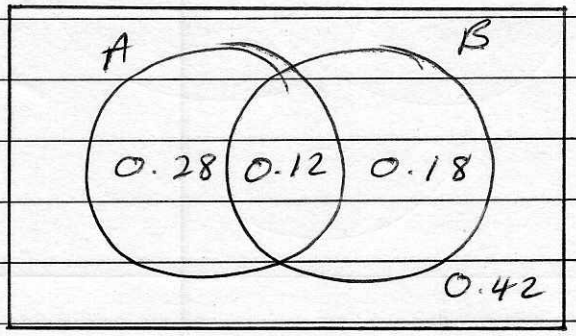
$0.3 \neq P(A \text{ and } B)$

They are not independent.

5a) $0.4 \times 0.3 = 0.12$

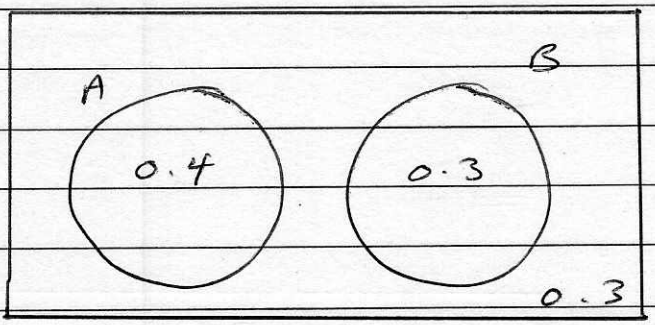
$P(A \text{ and } B) = 0.12$

b)

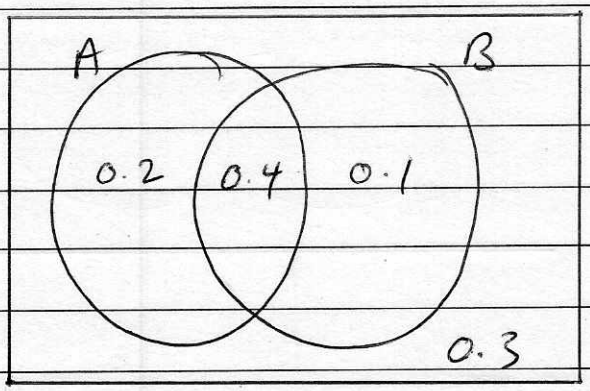


6a) $P(A \text{ and } B) = 0$

b)



7)



1a) $\frac{8}{18} \times \frac{7}{17} = \frac{28}{153}$

b) $\frac{10}{18} \times \frac{8}{17} + \frac{8}{18} \times \frac{10}{17} = \frac{80}{153}$

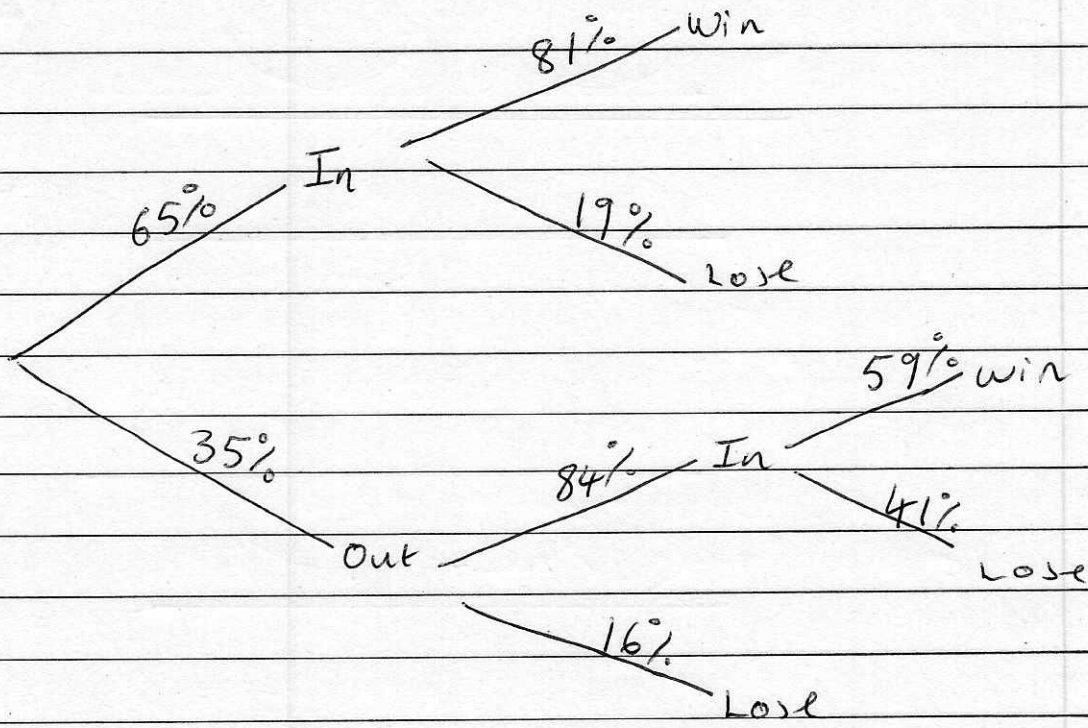
2a) $\frac{8}{24} \times \frac{7}{23} = \frac{7}{69}$

b) BR BG RB RG GB GR

$\left(\frac{10}{24} \times \frac{8}{23}\right) + \left(\frac{10}{24} \times \frac{6}{23}\right) + \left(\frac{8}{24} \times \frac{10}{23}\right) + \left(\frac{8}{24} \times \frac{6}{23}\right) + \left(\frac{6}{24} \times \frac{10}{23}\right) + \left(\frac{6}{24} \times \frac{8}{23}\right)$

$\frac{47}{69}$

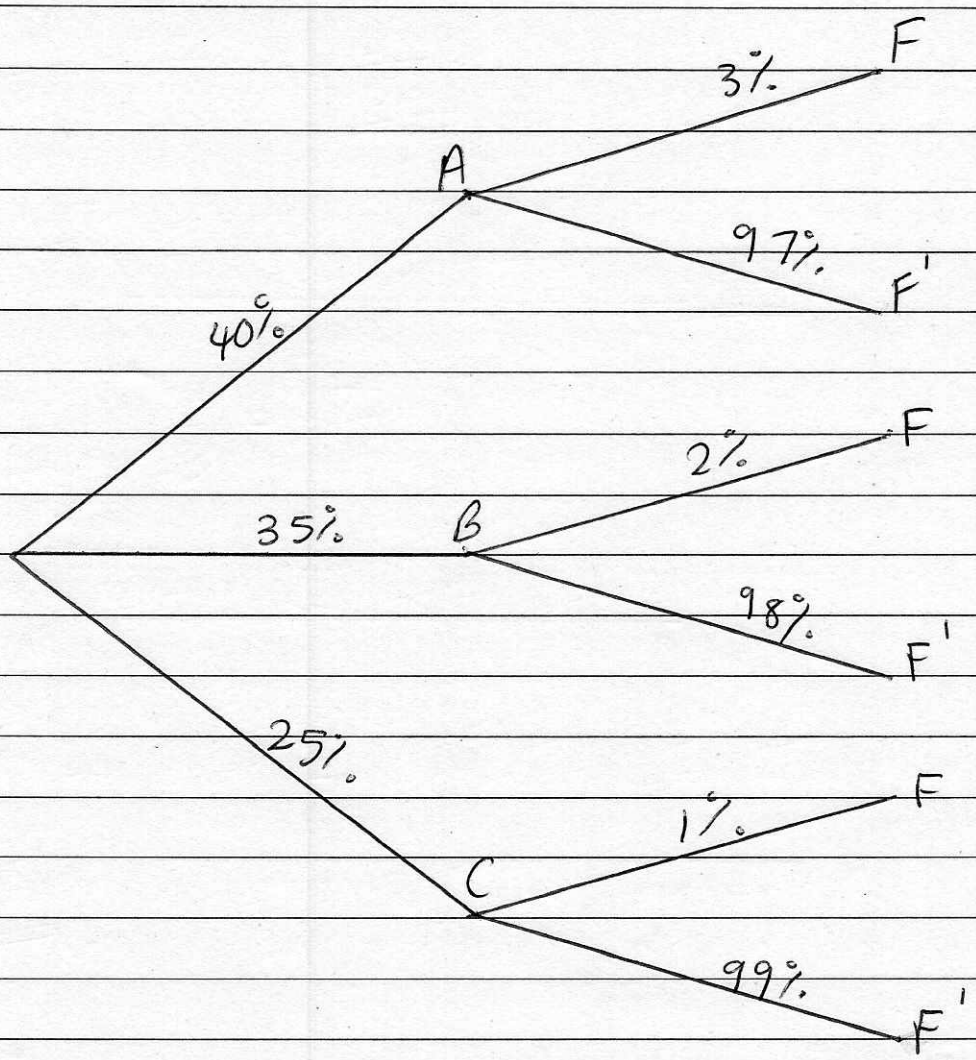
3a)



b) $0.65 \times 0.81 + 0.35 \times 0.84 \times 0.59$

$= 0.69996$

4a)



b) $0.4 \times 0.03 = \frac{3}{250}$

c) $0.4 \times 0.03 + 0.35 \times 0.02 + 0.25 \times 0.01$

$= \frac{43}{2000}$