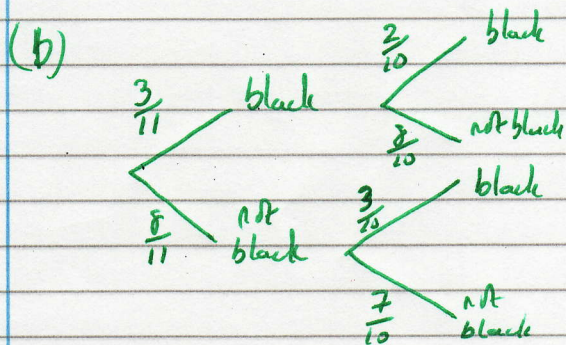


## CONDITIONAL PROBABILITY PPO

(1) (a)  $P(\text{both yellow}) = \frac{6}{11} \times \frac{5}{10} = \frac{30}{110}$



$$P(\text{no black}) = \frac{8}{11} \times \frac{7}{10} = \frac{56}{110}$$

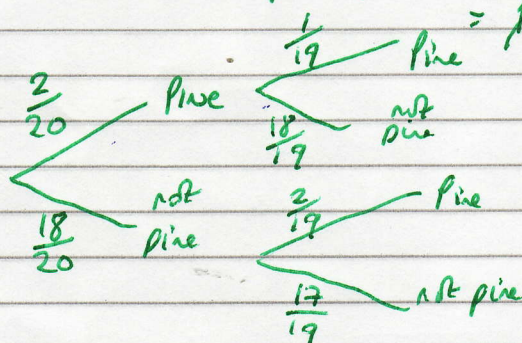
(2) (a)  $P(\text{both banana}) = \frac{7}{20} \times \frac{6}{19} = \frac{42}{380}$

(b)  $P(\text{both lemon}) = \frac{5}{20} \times \frac{4}{19} = \frac{20}{380}$

$$P(\text{both pineapple}) = \frac{2}{20} \times \frac{1}{19} = \frac{2}{380}$$

$$P(\text{both lemon OR both pineapple}) = \frac{20}{380} + \frac{2}{380} = \frac{22}{380}$$

(c)  $P(\text{exactly one pineapple}) = 1 - P(\text{neither pineapple})$



$$\begin{aligned} P(\text{exact one Pine}) &= \left( \frac{2}{20} \times \frac{18}{19} \right) + \left( \frac{18}{20} \times \frac{2}{19} \right) \\ &= \frac{36}{380} + \frac{36}{380} \\ &= \frac{72}{380} \end{aligned}$$

(d)  $P(\text{at least one lemon}) = 1 - P(\text{no lemon})$

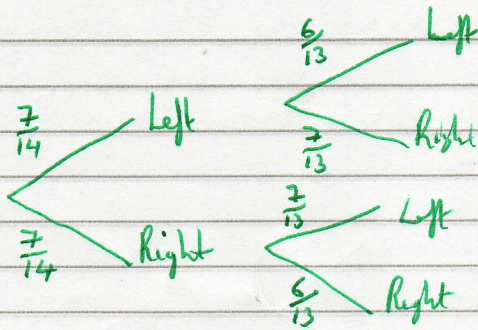
$$= 1 - \left( \frac{15}{20} \times \frac{14}{19} \right)$$

$$= \frac{380}{380} - \frac{210}{380}$$

$$= \frac{170}{380}$$



(3) (a)



$$P(\text{one left, one right}) = P(LR) \text{ OR } P(RL)$$

$$= \left(\frac{7}{14} \times \frac{7}{13}\right) + \left(\frac{7}{14} \times \frac{7}{13}\right)$$

$$= \frac{49}{182} + \frac{49}{182}$$

$$= \frac{98}{182}$$

$$(b) P(\text{both Green}) = \frac{2}{14} \times \frac{1}{13} = \frac{2}{182}$$

Same for both red, orange etc

$$\text{So } P(\text{matching pair}) = \frac{2}{182} \times 7 = \frac{14}{182}$$

$$(4) (a) P(\text{both same colour}) = P(RR) \text{ OR } P(BB)$$

$$= \left(\frac{5}{10} \times \frac{4}{9}\right) + \left(\frac{4}{10} \times \frac{3}{9}\right)$$

$$= \frac{20}{90} + \frac{12}{90}$$

$$= \frac{32}{90}$$

$$(b) P(\text{at least one blue}) = 1 - P(\text{no blue drawn})$$

$$= 1 - \left(\frac{6}{10} \times \frac{5}{9}\right)$$

$$= \frac{90}{90} - \frac{30}{90} = \frac{60}{90}$$

$$(5) (a) P(\text{both black}) = \frac{40}{100} \times \frac{39}{99} = \frac{1560}{9900}$$

$$(b) P(\text{at least one black}) = 1 - P(\text{no black})$$

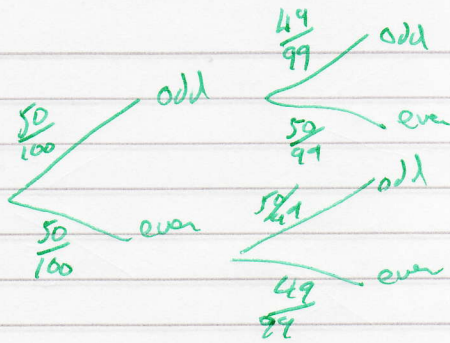
$$= \frac{9900}{9900} - \left(\frac{60}{100} \times \frac{59}{99}\right)$$

$$= \frac{9900}{9900} - \frac{3540}{9900}$$

$$= \frac{6360}{9900}$$



(6) (a)



$$P(\text{one odd, one even}) = P(OE) \text{ or } P(EO)$$

$$= \left( \frac{50}{100} \times \frac{50}{99} \right) + \left( \frac{50}{100} \times \frac{50}{99} \right)$$

$$= \frac{2500}{9900} + \frac{2500}{9900}$$

$$= \frac{5000}{9900}$$

(b)  $P(\text{at least one odd}) = 1 - P(\text{neither odd})$

$$= \frac{9900}{9900} - \left( \frac{50}{100} \times \frac{49}{99} \right)$$

$$= \frac{9900}{9900} - \frac{2450}{9900}$$

$$= \frac{7450}{9900}$$