Exercise 7

✓ return the clothes if (wrong sizes ∪ defects ∪ change mind)

return last month : $A = \frac{1}{2}$ , $B = \frac{3}{10}$ , $C = \frac{1}{5}$

i) $P(A \text{ return the cloth because change mind})$

$= \frac{3}{10}$

ii) $P(C \text{ return because wrong size})$

$= \frac{3}{8}$

iii) $P(B \text{ return because of defects})$

$= \frac{1}{2}$

Exercise 8

51% adults : males : 0.51

1 adult is randomly selected

a) P(female) = 1 − 0.51

= 0.49

b) 9.5% = 0.095 = $M \cap R$ (males from rural area)

1.7% = 0.017 = $\bar{M} \cap R$ (female from rural area)

i) $P(R|M) = \frac{P(R \cap M)}{P(M)}$

$= \frac{0.095}{0.51}$

= 0.1863

ii) $P(M|R) = \frac{P(M \cap R)}{P(R)}$

$= \frac{0.095}{0.112}$

= 0.8482

$P(R) = P(M \cap R) + P(\bar{M} \cap R)$

= 0.095 + 0.017

= 0.112

iii) Apple Country = 100,000 adults

$n(\bar{M} \cap \bar{R})$ = ?

$P(\bar{M}) = 0.49$

$P(\bar{M} \cap R) = 0.017$

$P(\bar{M}) = 0.49 + 0.017$

= 0.507

$P(\bar{R}) = 1 - 0.112$

= 0.888

$P(\bar{M} \cap \bar{R}) = 0.507 \times 0.888$

= 0.450216

$n(\bar{M} \cap \bar{R})$

$= 0.450216 \times 100,000$

= 45021.6

$\approx$ 45022

No:

Subject:

Date:

Exercise 9

45% = prison = P

40% = P(G|P)

55% = P(G|$\bar{P}$)

i) P($\bar{P}$) = 1 − 0.45

= 0.55

ii) P(P|G) = $\frac{P(G|P)P(P)}{P(G|P)P(P) + P(G|\bar{P})P(\bar{P})}$

= $\frac{0.4(0.45)}{0.4(0.45) + 0.55(0.35)}$

= 0.3731

iii) P($\bar{P}$|G) = $\frac{P(G|\bar{P})P(\bar{P})}{P(G|\bar{P})P(\bar{P}) + P(G|P)P(P)}$

= $\frac{0.55(0.55)}{0.55(0.55) + 0.4(0.45)}$

= 0.6269

iv) P(G) = P(G|P)P(P) + P(G|$\bar{P}$)P($\bar{P}$)

= 0.4(0.45) + 0.55(0.55)

= 0.4825