

Homework: Due Monday, October 30, 2017 (to be collected at the beginning of lecture)

Name:

ID Number:

Question 1: Note'booklet, page 55, question 4

a) $P(\text{not music}) = \frac{110}{230}$
 $P(\text{music}) = \frac{120}{230}$
 $P(\text{not music}) = 1 - \frac{120}{230} = \frac{110}{230}$

Year	Biology	chem	Music	total
male	20	25	45	90
Female	30	35	75	140
total	50	60	120	230

b) $\frac{105}{230}$
c) $\frac{90 + 50 - 20}{230} = \frac{120}{230}$
d) $\frac{75}{90}$
e) $\frac{30}{50}$

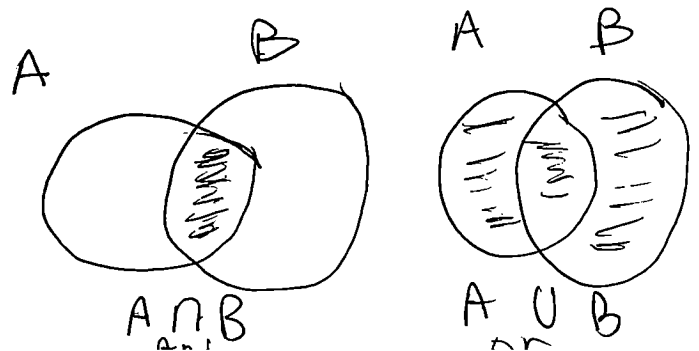
Question 2: Note'booklet, page 126, question 3

a) $\frac{150}{580}$
b) $\frac{370}{580}$
c) $\frac{20}{580}$

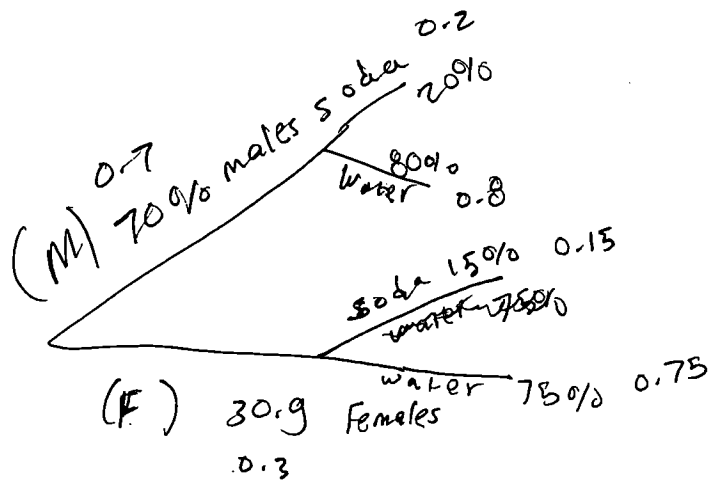
	small	Med	Big	total
city	80	60	10	150
town	70	100	80	250
village	20	40	120	180
total	170	200	210	580

c') $\frac{80 + 70 + 20 + 40 + 120}{580} = \frac{330}{580}$

d) $\frac{70}{250}$
e) $\frac{60}{200}$



Question 3: Note'booklet, page 134, question 5

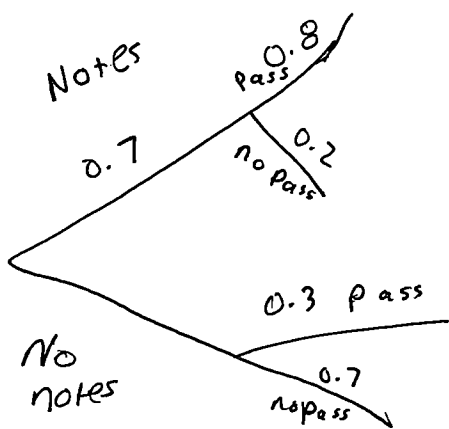


$$\begin{aligned}
 a) P(S) &= (0.7 \times 0.2) + (0.3 \times 0.15) \\
 &= 0.14 + 0.045 \\
 &= 0.185
 \end{aligned}$$

$$b) P(M/W) = \frac{P(\text{male} \cap \text{water})}{P(\text{water})} = \frac{0.7 \times 0.8}{0.85} = 0.687$$

$$\begin{aligned}
 P(\text{water}) &= (0.7 \times 0.8) + (0.3 \times 0.75) = 0.56 + 0.225 \\
 &= 0.785
 \end{aligned}$$

Question 4: Note'booklet, page 128, question 1



$$\begin{aligned}
 P(\text{Notes} \cap \text{Pass}) &= 0.7 \times 0.8 \\
 &= 0.56
 \end{aligned}$$

$$\begin{aligned}
 P(\text{No Notes} \cap \text{Pass}) &= 0.3 \times 0.3 \\
 &= 0.09
 \end{aligned}$$

$$\begin{aligned}
 P(\text{Notes} / \text{Pass}) &= \frac{P(\text{Notes} \cap \text{Pass})}{P(\text{Pass})} \\
 &= \frac{0.56}{0.65} \\
 &= 0.861
 \end{aligned}$$

$$P(\text{Pass}) = 0.56 + 0.09 = 0.65$$

Question 5: Note'booklet, page 82, question 5

a) $P(A \cap B) =$

$$0.4 \times 0.69 = \frac{P(A \cap B)}{0.4} \quad 0.4$$

$$P(A \cap B) = 0.276$$

b) $P(A) =$

$$0.69 = P(A) + 0.4 - 0.276 = 0.69 - 0.4 + 0.276 = 0.566$$

c) $0.566 \times 0.4 = 0.2264$

$$0.2264 \neq 0.276$$

not independent

Question 6: Note'booklet, page 95, question 4

a) $P(A) \times P(B) = P(A) \times 0.3$

$$P(A \cap B) = 0.18 \quad P(A) = 0.4 \times 0.3 = 0.12$$

$0.18 \neq 0.12$
not independent

b) $P(A \cup B) = 0.4 + 0.45 - 0.18 = 0.67$

Question 7: Note'booklet, page 56, question 1 (Hint: First find $P(A \cap B)$)

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$0.6 \times 0.2 = \frac{P(A \cap B)}{0.6} \quad \neq 0.6$$

$$P(A \cap B) = 0.12$$

$$0.7 = P(A) + 0.6 - 0.12$$

$$0.7 - 0.6 + 0.12 = P(A)$$

$$P(A) = 0.22$$