Section 2.1

A

2.

a. $A = \{(L,L,L), (R,R,R), (S,S,S)\}$

b. $B = \{(L,S,R), (L,R,S), (R,L,S), (R,S,L),$
$(S,R,L), (S,L,R)\}$

c. $C = \{\cancel{(R,R,R)}, (R,R,S), (R,R,L), (R,S,R), (R,L,R),$
$(S,R,R), (L,R,R)\}$

d. $D = \{(R,R,S), (R,R,L), (L,L,S), (L,L,R),$
$(S,S,R), (S,S,L)$
$(R,S,R), (R,L,R), (L,S,L), (L,R,L),$
$(S,R,S), (S,L,S)$
$(S,R,R), (L,R,R), (S,L,L), (R,L,L)$
$(R,S,S), (L,S,S)\}$

e. $D' = \{(R,R,R), (L,L,L), (S,S,S), (L,S,R), (L,R,S), (R,L,S)$
$(R,S,L), (S,R,L), (S,L,R)\}$

$C \cup D = D$. $C \cap D = C$.

4.

a. $\cancel{A}S = \{(F,F,F,F), (F,F,F,V), (F,F,V,F), (F,F,V,V), (F,V,F,F)$
$(F,V,F,V), (F,V,V,F), (F,V,V,V), (V,F,F,F), (V,F,F,V)$
$(V,F,V,F), (V,F,V,V), (V,V,F,F), (V,V,F,V)$ $(V,V,V,F),$
$(V,V,V,V)\}$.

b. Given that the event that exactly three of the selected mortgages are fixed rate is B.

$B = \{(F,F,F,V), (F,F,V,F), (F,V,F,F), (V,F,F,F)\}$

c. Given that the event that all four mortgages are of the same type is event C.

$C = \{(F,F,F,F), (V,V,V,V)\}$

d. Given that the event at most one of four is a variable-rate is D.

$D = \{(F,F,F,F), (F,F,F,V), (F,F,V,F), (F,V,F,F), (V,F,F,F)\}$

e. $C \cup D = \{(F,F,F,F), (F,F,F,V), (F,F,V,F), (F,V,F,F), (V,F,F,F), (V,V,V,V)\}$

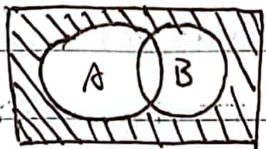
$C \cap D = \{(F,F,F,F)\}$.

f. $B \cup C = \{(F,F,F,F), (F,F,F,V), (F,F,V,F), (F,V,F,F), (V,F,F,F), (V,V,V,V)\}$

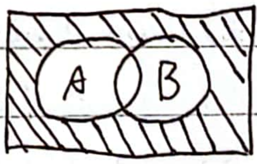
$B \cap C = \emptyset$

9.

a.

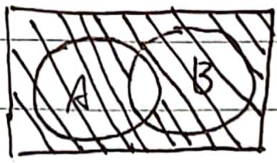


$(A \cup B)'$

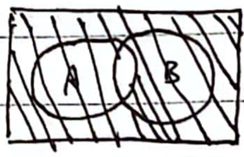


$A' \cup B'$

b.



$(A \cap B)'$



$A' \cup B'$

Section 2.2.

12. a. $P(A\cup B) = P(A) + P(B) - P(A\cap B) = 0.65$

b. Let C be the event that the selected individual has neither of the card.

$C = P((A\cup B)') = 0.35$

c. Giving that the event D is the selected student has visa but not MasterCard

$P(D) = P(A\cup B) - P(B) = 0.25$

$= P(A) - P(A\cap B) = 0.25$

18. Let the A be the event that at least two bulbs must be selected to obtain one that is rated 75W.

$P(A) = \cancel{\frac{C(4,1)\cdot C(4,1) + C(4,2)}{C(15,2)}} = \cancel{\frac{4}{21}}\ 1 - \frac{4}{15} = \frac{11}{15}$

27. a. Let the A be the event that both Anderson and Box will be selected.

the outcomes = {(And, Box), (And, Cox), (And, Cra), (And, Fish),
(Box, Cox), (Box, Cra) (Box, Fish) (Cox, Cra), (Cox, Fish)
(Cra, Fish)}

$P(A) = \frac{1}{N(\text{outcomes})} = 10$

b. Let B be the event that at least one of two member whose name begin with "C".

$P(B) = \frac{C(2,1)\cdot C(3,1) + C(2,2)}{N(\text{outcomes})} = \frac{7}{10}$

c. the total years of teaching experience respectively are

{9, 10, 13, 17, 13, 16, 20, 17, 21, 24}

The probability that two has total 15's teaching experience is $P = \frac{6}{10} = \frac{3}{5}$

Section 2.3.

30. a. There are $P(8,3) = \frac{8!}{5!} = 336$ ways.

b. There are $C(30,6) = \frac{30!}{24!\cdot 6!} = 593775$ ways.

~~c. There are $C(8,2)\cdot C(10,2)\cdot C(12,2) = \frac{8!}{6!2!}\times\frac{10!}{8!2!}\times\frac{12!}{10!2!} = 83160$ ways.~~

~~d. For zinfandel, there are $C(8,2)\cdot C(22,4) = \frac{8!}{6!2!}\times\frac{22!}{18!4!} = 204820$ ways.~~

~~For merlot There are $C(10,2)\cdot C(20,4) = \frac{10!}{8!2!}\times\frac{20!}{16!4!} = 218025$ ways~~

~~For cabernet. there are $C(12,2)\cdot C(18,4) = \frac{12!}{10!2!}\times\frac{18!}{14!4!} = 201960$ ways.~~

c. There are $C(8,2)\cdot C(10,2)\cdot C(12,2) = \frac{8!}{6!2!}\times\frac{10!}{8!\times 2!}\times\frac{12!}{10!2!} = 83160$ ways

d. The probability is $83160/C(30,6) \approx 0.14$

e. There are $C(8,6) + C(10,6) + C(12,6) = \frac{8!}{6!2!} + \frac{10!}{6!4!} + \frac{12!}{6!6!} = 1162$ ways.

The probability: $\frac{1162}{C(30,6)} = 2\times 10^{-3}$

38. a. Giving that A is the event that exactly two bulbs are rated 25 W

$$P(A) = \frac{C(6,2)\cdot C(9,1)}{C(15,3)} = \frac{27}{91}$$

455

b. Giving that B is the event that three of selected bulb are with same rate.

$$P(B) = \frac{C(6,3)+C(4,3)+C(5,3)}{C(15,3)} = \frac{34}{455}$$

c. Giving that C is the event that each type is selected.

$$P(C) = \frac{C(6,1)\cdot C(4,1)\cdot C(5,3)}{C(15,3)} = \frac{24}{91}$$

d. giving that D is the event that necessary to examine at least 6 bulbs.

$$P(D) = 1 - \frac{C(9,4)C(6,1)}{C(15,5)} - \frac{C(9,3)C(6,1)}{C(15,4)} - \frac{C(9,2)C(6,1)}{C(15,3)} - \frac{C(9,1)C(6,1)}{C(15,2)} - \frac{C(6,1)}{C(15,1)} = 0.042$$

Date.

40. a. For each character there are $P(3,3) = 6$ ways.

There are $P(12,12) = 12!$ ways if theyare distinguish.

There are $\frac{P(12,12)}{P(3,3)^4} =$ [redacted] 369600 ways.

b. Giving that the ~~[redacted]~~ event each type of element are close to is B

$P(B) = \frac{P(4,4)}{369600} = 6.49 \times 10^{-5}$