(15) Total $= 168912 + 34068 + 1020$

$= 204000$

Outcome	Probability
Public	$\frac{168912}{204000}$
Private	$\frac{34068}{204000}$
Home school	$\frac{1020}{204000}$

(19)

a) $Pr(E) = Pr(s_1) + Pr(s_2)$

$= 0.1 + 0.6$

$= 0.7$

$Pr(F) = Pr(s_2) + Pr(s_4)$

$= 0.6 + 0.1$

$= 0.7$

b) $Pr(E') = 1 - Pr(E)$

$= 1 - 0.7$

$= 0.3$

c) $E \cap F = \{s_2\}$

$Pr(E \cap F) = Pr(s_2)$

$= 0.6$

d) $E \cup F = \{s_1, s_2, s_4\}$

$Pr(E \cup F) = Pr(s_1) + Pr(s_2) + Pr(s_4)$

$= 0.1 + 0.6 + 0.1$

$= 0.8$

(25) Let A : Horse A wins

" B : " B "

" C : " C "

$$Pr(A) + Pr(B) + Pr(C) = 1$$

$$\frac{1}{3} + \frac{1}{2} + Pr(C) = 1$$

Multiply by 6 : $2 + 3 + 6\,Pr(C) = 6$

$$6\,Pr(C) = 1$$

$$Pr(C) = \frac{1}{6}$$

(27) Let L: liberal views

" M: middle-of-the-road views

" C: conservative views

Let $Pr(C) = x$

Then $Pr(M) = 2x$

Given $Pr(L) = 0.28$

$Pr(L) + Pr(M) + Pr(C) = 1$

$0.28 + 2x + x = 1$

$3x = 0.72$

$x = 0.24$

$Pr(C) = 0.24$

We weren't asked for the probability distribution but it would be:

Outcome	Probability	
L	0.28	
M	0.48	$\leftarrow 2x$
C	0.24	$\leftarrow x$

31

E and F are mutually exclusive means E and F can't happen at the same time, so $Pr(E \cap F) = 0$
(See Section 4.1 for more details)

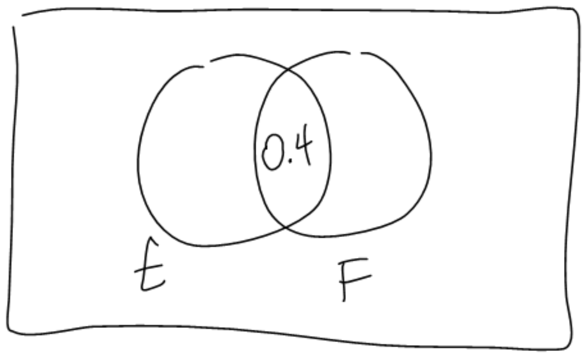
Inclusion - Exclusion Principle

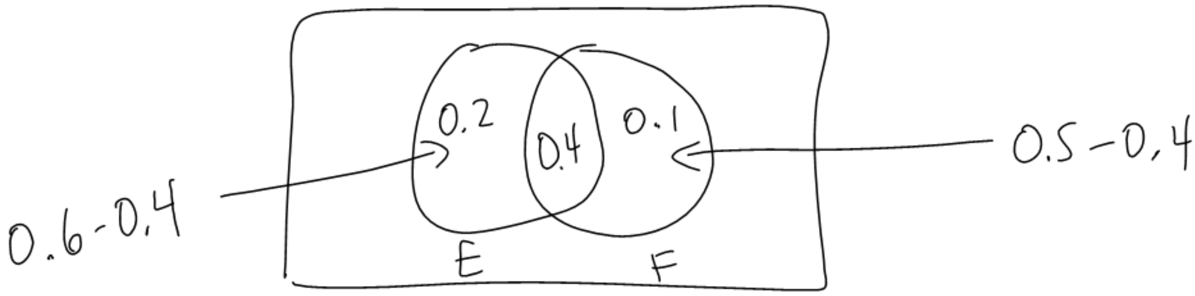
$$Pr(E \cup F) = Pr(E) + Pr(F) - Pr(E \cap F)$$

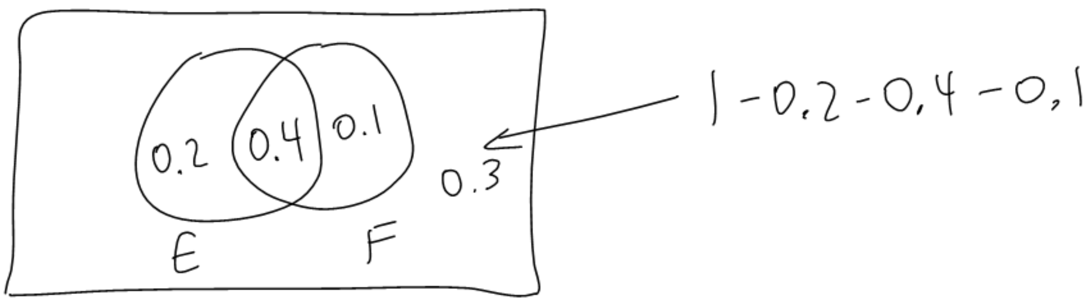
$$Pr(E \cup F) = 0.4 + 0.5 - 0$$

$$Pr(E \cup F) = 0.9$$

(33)



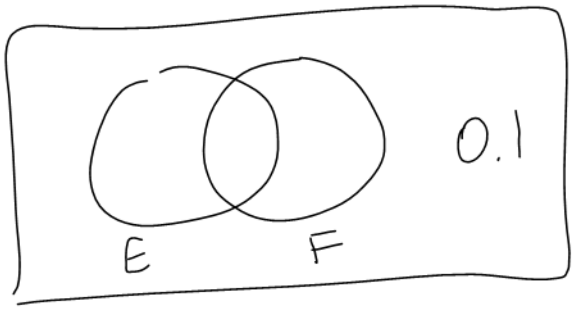




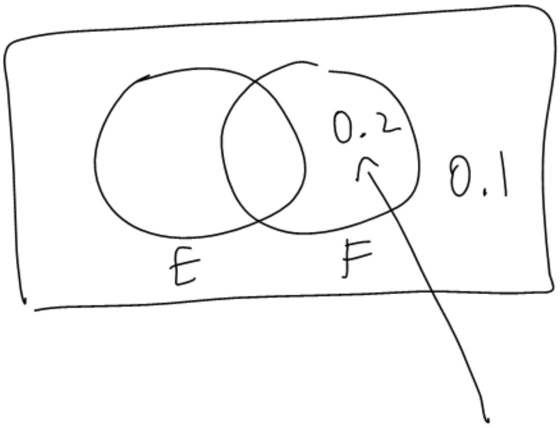
a) $$\Pr(E \cup F) = 0.2 + 0.4 + 0.1$$
$$= 0.7$$

b) $$\Pr(\underbrace{E \cap F'}_{\text{in } E \text{ and not in } F}) = 0.2$$

35

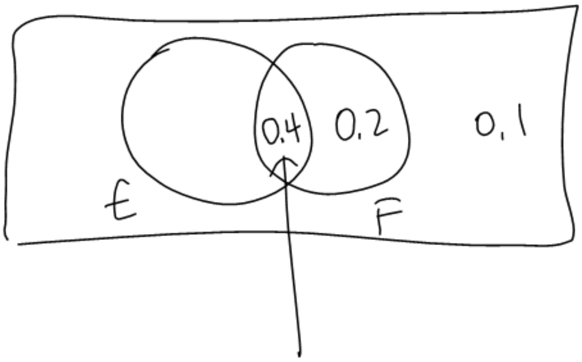


Given $Pr(\underbrace{E' \cap F'}_{\text{not in E and not in F}}) = 0.1$



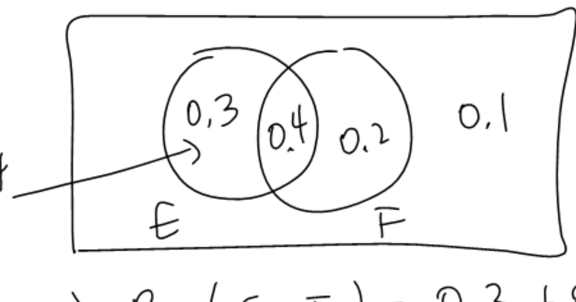
$Pr(E) = 0.7$
$Pr(E') = 1 - Pr(E)$
$Pr(E') = 0.3$

0,3−0,1



0.6−0,2

0.7−0.4



a) $Pr(E \cup F) = 0.3 + 0.4 + 0.2 = 0.9$
b) $Pr(E \cap F) = 0.4$

39 $\quad 10 : 1$

$$Pr(\text{event}) = \frac{10}{10+1}$$

$$Pr(\text{event}) = \frac{10}{11}$$

41 $\quad Pr(\text{event}) = 0.2$

The odds are

$Pr(\text{event}) : 1 - Pr(\text{event})$

$0.2 : 0.8$

$(\times 10) \quad 2 : 8$

$(\div 2) \quad 1 : 4$

(43) $\Pr(\text{event}) = 0.3125$

The odds are

$\Pr(\text{event}) : 1 - \Pr(\text{event})$

$0.3125 : 0.6875$

$(\times 10000)$ $3125 : 6875$

It's fine to leave it like this, or divide by 625 to get

$5 : 11$

(45) $2 : 9$

$$\Pr(\text{event}) = \frac{2}{2+9}$$

$$\Pr(\text{event}) = \frac{2}{11}$$