

AP Stats CH5 A 1, 3, 7, 9, 11

1) a) False pos: you: truth machine: lie

Given lots of people telling truth about 8% will be interpreted as lying by the machine

b) ATQ - say false + or false - and justify

3) Given large number of carrier parents, about 25% of the
a) time the child will have C.F.

b) No guarantee. Sample size 4 too small. we would get closer to a guarantee of 1 in 4 as the sample size gets very large

7) Short Run: lots of variation, did poorly
Long Run: approaches true probability, less variation

9) No (ATQ) not for a small sample. Over time with a large number of at bats the ave. ~~near~~ near 35%

11) a) There are 10,000 combos, each is equally likely

b) Most would choose 2873 - seems less random

You should choose 9999 to split with fewer people.

- (15) a) 38-40 puts 3 #'s green
 b) Do not skip numbers, checking for L/R tend not selecting individuals

- (17) a) OK
 b) Coin is 50/50 we need 60%

(19) What is the prob. that in a random selection of 10 passengers

a) None from first class are chosen

b) 01-12 1st class
 13-76 Coach
 77-99600 Ignore

Find 10 unique (w/o repeat) ^{numbers in} ~~table~~ table then count how many are 1st class.

c) 71 48 70 29 07 63 61 68 34 52 1 first class

d) 15% of the samples had no 1st class so it is reasonable that the sample in question occurred randomly.

(23) in simulation 43/200 (21.5%) had a result of 55% recycle or more.

a) so 55% in the class example is not rare

b) in sim. 1/200 (.5%) had a result of 63% or more
 this is very rare and makes us think the true percent is over 50%

(25) Plan: label 01-07 cubehind, all else is res. sight.
 Random process to select 2 digit numbers until 01 to 07 appears.

Count men in sample.

Do: seed dot, dot
~~then~~ based on simulation, we need to ask/draw 17 men.
 Conclude: ^a

X

27) 01-07 color blind
08-99+ regular

Draw 4 2 digit #'s who report
count how many between 01+07

31) C

32) a

43) a) OK

b) doesn't add to 1

c) OK but the deck is not standard

45) a) .04 so it adds to 1

b) .96 $1 - .04$ or add the others

c) $.46 + .2 = .66$

47)

< HS .13	} .72	a) $1 - .72$
HS .29		b) $1 - .13 = .87$
Backs. .3		
other .28		

29) 01-08 Men
09-20 Women

Pick 10 people at random
 Count men in each group.
 Offer 10 to other group

DO: Repeat this 50 times

Conclude: Sample ... 9/50 had 1 group w/ 6-8 men.
Not rare

33) D

34) C

35) C

36) E

49) a) indiv: students variables: gender, breakfast

b) $P(\text{fem}) = \frac{275}{595} = \frac{275}{595}$

$P(\text{fem} \& \text{Reg.}) = \frac{110}{595}$

c) $P(\text{Reg.}) = \frac{300}{595}$

$P(\text{fem OR Reg.}) = \frac{275}{595} + \frac{300}{595} - \frac{110}{595} = \frac{465}{595}$

51) a)

	B	Not B	total
Ev.	10	10	20
Not Ev.	8	10	18
total	18	20	38

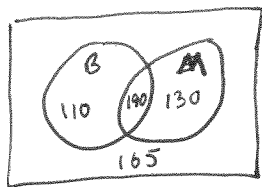
b) $P(B) = \frac{18}{38}$

$P(E) = \frac{20}{38}$

d) $P(B \text{ OR } E) = \frac{18}{38} + \frac{20}{38} - \frac{10}{38} = \frac{28}{38}$

c) $P(B \& E) = \frac{10}{38}$

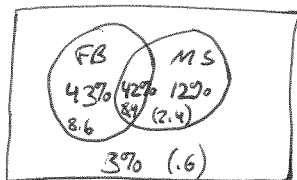
53) a)



b) $P(B \cup M) = \frac{110 + 190 + 130}{595} = \frac{430}{595}$

c) $P(R^c \cap F^c) = \frac{165}{595}$
 (And)
 Complement

55) b)



a)

	FB	-FB	total
MS	8.4m	2.4m	10.8m
-MS	8.6m	.6m	9.2m
total	17m	3m	20m

c) $P(FB \cup MS)$

d) $\frac{19,400,000}{20,000,000}$

AP Stats CH 5 E 57-60, 63, 65, 67, 69, 73, 77, 79

57 C

58 D

59 C

60 C

63 a) $P(\text{Alm. Cert} | \text{Male}) = \frac{597}{2459} = .243$

b) $P(F | \text{ScBPN}) = \frac{426}{712} = .598$

65 a) $P(\text{good} | F) = \frac{663}{2367} = .2801$

b) $P(\text{good chance}) = \frac{1421}{4826} = .2944$

c) $P(F) = \frac{2367}{4826} = .4904$ ~~$P(F)$~~ $P(F) \cdot P(\text{good}) = \frac{1421}{4826} \cdot \frac{2367}{4826} = .1444$

Not indep. $P(A) \cdot P(B) \neq P(A|B)$

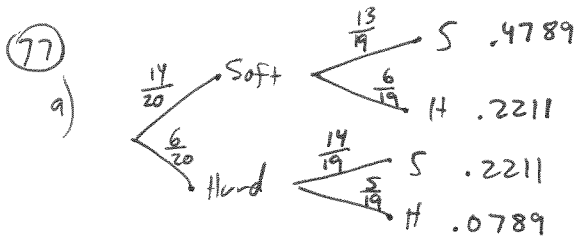
* And $P(\text{good} | F) \neq P(\text{good})$ * Use this rule

67 a) $P(D | F) = \frac{13}{17} = .7647$

b) $P(F | D) = \frac{13}{60} = .2167$

69 $P(D) = \frac{60}{100} = .6$ Not equal to $P(D | F)$ so Not indep.

73 smallest $P(B)$, largest $P(B|T)$, $P(T)$, $P(T|B)$

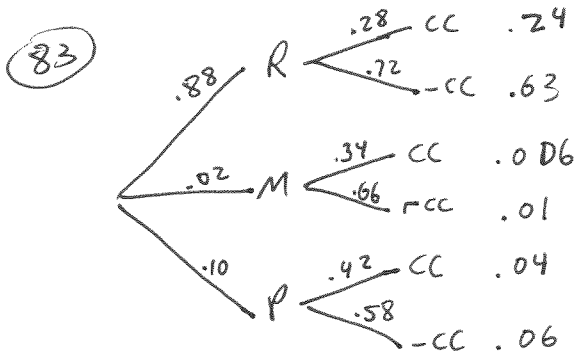


b) One Soft, One Not
 $SH + HS$
 $.2211 + .2211$
 $.4422$

79 $.29(.67) = .1943$

$P(A) \cdot P(B|A)$

↑
 Prob ~~Don't~~ Care Given that they are a downloader.

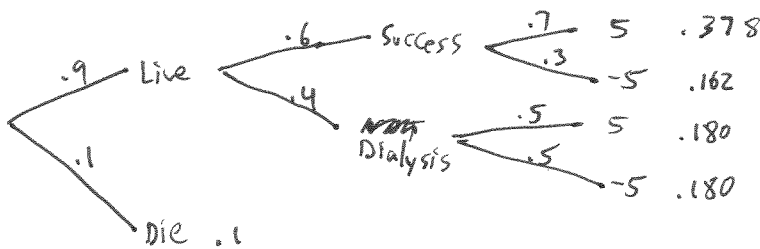


$CC .24 + .006 + .04 = .29$

85

$P(P | CC) = \frac{P(P \cap CC)}{P(CC)} = \frac{.04}{.29} = .14$

87



b) Survive 5
 $.378 + .180 = .558$

91

$1 - .072 = .928$

Prob none have 0- = $(.928)^{10} = .4737$

At least 1 have 0- = $1 - .4737 = .5263$

93

Cannot just multiply - not indep.
 each is dep. on the earlier show

95

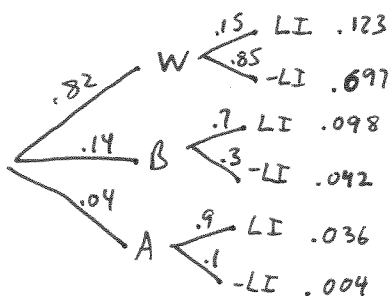
$P(FB) = .85$

$P(MS) = .54$

$P(FB \cap MS) = .42$

$P(MS | FB) = \frac{.42}{.85} = .4941$

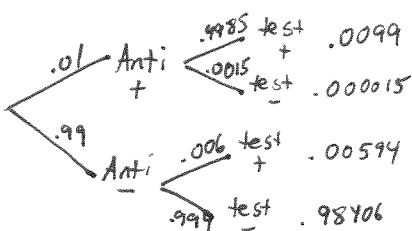
97



a) $.123 + .098 + .036 = .257$

b) $P(A | LI) = \frac{P(A \cap LI)}{P(LI)} = \frac{.036}{.257} = .1401$

99



b) $P(\text{test+}) = .0099 + .00594 = .0159$

c) $P(\text{Anti+} | \text{test+}) = \frac{.0099}{.0159} = .62$

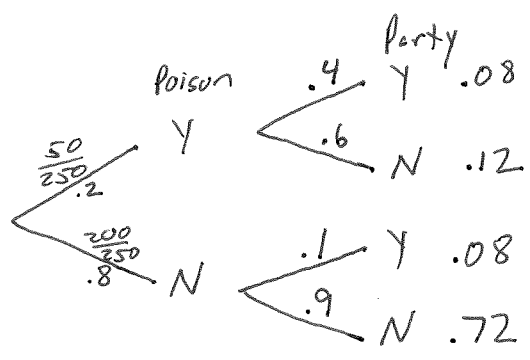
104

Indep: $P(A \cap B) = P(A) \cdot P(B)$

$P(A) = .9$ $P(B) = .8$ $P(-A \cap -B) = (.1)(.2) = .02$
 $P(-A) = .1$ $P(-B) = .2$

C

105



$.4 = P(\text{Party Y} | \text{Poison Y})$
 $P(A|F)$

E

106

$P(\text{one | odd}) = \frac{P(\text{one} \cap \text{odd})}{P(\text{odd})} = \frac{.3}{.3 + .1 + .1} = \frac{.3}{.5} = .6$

D