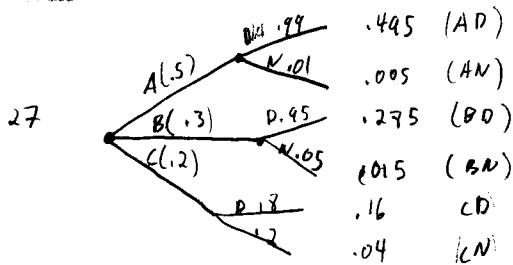


Key 3.5 - 3.6

$$24 \quad P(s_1 | I) = \frac{P(I|s_1)P(s_1)}{P(I|s_1)P(s_1) + P(I|s_2)P(s_2) + P(I|s_3)P(s_3)} = \frac{(0.1)(0.4)}{(0.1)(0.4) + (0.5)(0.3) + (0.1)(0.2)} = .1965$$

$$P(s_2 | I) = \frac{(0.5)(0.3)}{.21} = .714$$

$$P(s_3 | I) = \frac{(0.1)(0.2)}{.21} = .095$$



$$P(A|D) = \frac{.495}{.495 + .285 + .16} = .5266$$

$$P(C|D) = \frac{.16}{.44} = .17$$

28 prior $P(\text{guilty}) = .05$ $P(\text{inn}) = .02$

$$P(\text{deny} | \text{guilty}) = .8 \quad P(\text{deny} | \text{inn}) = 1$$

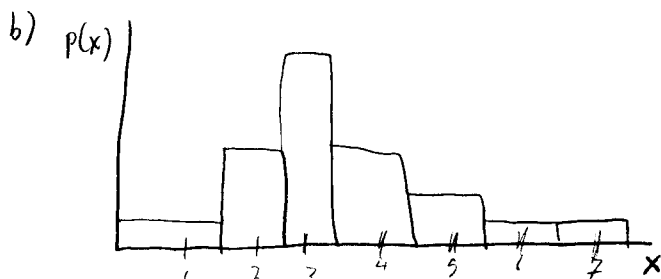
$$P(\text{guilty} | \text{deny}) = \frac{(0.8)(0.05)}{(0.8)(0.05) + (1)(0.02)} = \frac{.04}{.06} = .667$$

31 b does not b/c it has a negative prob a) is good
 c does not b/c its probs do not add up to 1

32 a) $\mu = (1)(.05) + 2(.2) + 3(.35) + 4(.2) + 5(.1) + 6(.05) + 7(.05) = 3.45$

$$\sigma^2 = (0.05)(1-3.45)^2 + (0.2)(2-3.45)^2 + (0.35)(3-3.45)^2 + \dots + (0.05)(7-3.45)^2 = 2.0475$$

$$\sigma = \sqrt{\sigma^2} = 1.4309$$



c) $3.45 \pm 2(1.4309) = \{.59 \text{ to } 6.31\}$

$$P[.59 \leq X \leq 6.31] = P[1 \leq X \leq 6] = 1 - P(7)$$

= .95

L = event that they agree to the limit N - disagree

35 possible combos LLL NLL LNL LLN NNL NLN LNN NNN

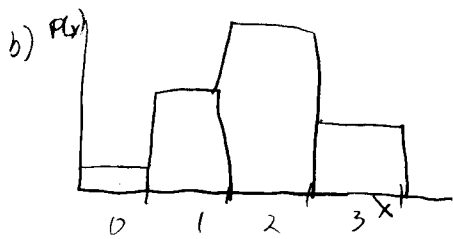
x can be 3 LLL, 2 - 1LL, 1LN, 1LN, 1, NLL, NNL, LNN, 0 - NNN

a) $x=0 \quad P(x) = (.39)^3 = .0593$

$x=1 \quad P(x) = 3(.39)^2(.61) = .2783$

$x=2 \quad P(x) = 3(.61)^2(.39) = .4354$

$x=3 \quad P(x) = (.61)^3 = .227$



c) $P[x \geq 2] = p(2) + p(3) = .4354 + .227 = .6624$

d) $\mu = 1.83 \quad \sigma^2 = .714 \quad \sigma = .845$

37 volume of 30 foot = $8 \times 10 \times 30 = 2400$
 volume of 40 foot = $8 \times 10 \times 40 = 3200$

$E(x) = .3(2400) + .7(3200) = 2960$

39 $E = 5$ or more calls selected

a) random used above $x = 0, 1, 2$

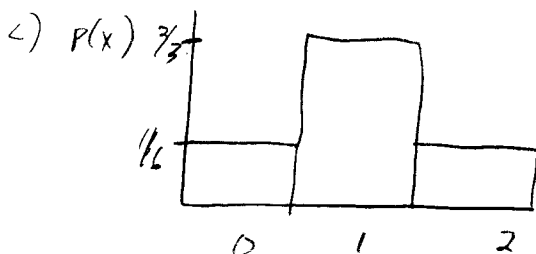
b) $P(x=0) = 7/12 = 1/6$

$P(x=1) = 8/12 = 2/3$

$P(x=2) = 7/12 = 1/6$

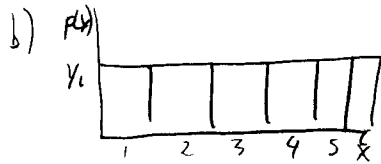
$1/6 + 2/3 + 1/6 = 1$

x	0	1	2
P(x)	1/6	2/3	1/6



$x = \# \text{ of dots}$

51 a) $P(x) = \frac{1}{6}$ for $x = 1, 2, 3, 4, 5, 6$



c) $\mu = \frac{1}{6} + \frac{2}{6} + \frac{3}{6} + \frac{4}{6} + \frac{5}{6} + \frac{6}{6} = 3.5$ $\sigma^2 = 2.92$ $\sigma = 1.71$

d) $3.5 \pm 2(1.71) = \{.08 \text{ to } 6.92\}$ so $P(\text{lie within 2 s.d.}) = 1$

e) close to 95% on empirical rule

it successful profit = $15.5 - 14.8 = .7$

54 $E(\text{gain}) = .98(.70) + .02(-14.8) = .39$ expected gain per flip = .39 sec

55 a) $P(\bar{R}) = 1 - P(R) = 1 - .34 = .66$

Sharer $b) P(T|\bar{R}) = \frac{P(T\bar{R})}{P(\bar{R})} = \frac{.34}{.66} = .5152$

answer machi $c) P(K) = .2$

d) $P(R|\bar{T}) = \frac{P(R\bar{T})}{P(\bar{T})} = \frac{.31}{1-.3} = .4429$

e) $P(R_{\text{Shar}} \bar{R}_{\text{Am}}) + P(\bar{R}_{\text{Shar}} R_{\text{Am}}) \stackrel{\text{independant}}{=} P(R_{\text{Shar}})P(\bar{R}_{\text{Am}}) + P(\bar{R}_{\text{Shar}})P(R_{\text{Am}}) = .34 \cdot .66 + .66 \cdot .34 = .4392$