**Drill 3.2.6**

1.)

P(a) = prob alt made ELT = 80%

P(b) = prob bryant = 15%

P(c) = prob chartair made = 5%

P(D|A) = 4%

P(D|B) = 6%

P(D|C) = 9%

1. 80%
2. P(A|D) = P(D|A) \* P(A) / [P(D|A)\*P(A) + P(D|B)\*P(B) + P(D|C)\*P(C)] = 0.032/[0.032 + 0.009 + 0.0045]

2.)

P(D|TP)=?

P(D) = .0001

P(ND) = .9999

P(TP|D) = 1 - (TN|D) = 1

P(TP|ND) = .01

P(D|TP) = D\*TP|D / [ (D)\*(TP|D) + ND\*(TP|ND)] = .0001\*1/(.0001\*1+.9999\*.01)=0.0099=1%

= (0.005\*1)/(0.005 \* 1 + 0.995 \* 0.01) = 0.3344

4.)

P(W|R) = .9

P(W|B) = .8

Losing bad machine = .9\*.5/(.9\*.5+.8\*.5)=0.5294

Losing good machine = .8\*.5/(.9\*.5+.8\*.5)=0.4706

.2\*.5/(.2\*.5+.1\*.5)=0.6667

P(D) = .01

P(ND) = .99

P(TP|D) = .9

PTN|D) = .1

P(TP|ND) = .096

P(TN|ND) = .904

P(D|TP) = P(TP|D)\*P(D)/(P(TP|D)+P(TP|ND)) = .9\*.01/(.9\*.01+.096\*.99)=0.0865

5.

P(D) = .01

P(ND) = .99

P(TP|D) = .9

P(TN|D) = .1

P(TP|ND) = .08

P(TN|ND) = .92

P(D|TP) = P(TP|D)\*P(D)/( P(TP|D)\*P(D) + P(TP|ND)\*P(ND)) = .01\*.9/(.9\*.01+.99\*.08)=0.102