Q2

i) 20 % of washing machines require service,

So, $P(W) = 0.2$

32 % of dryers require service so, $P(D) = 0.32$

Both are independent

$\Rightarrow P(W \cap D) = P(W) \cdot P(D)$

$= 0.2 \times 0.32$

$= 0.064$

So, Probability that both washer & dryer will need warrant service is $P(W \cap D)$

$= 0.064$

ii) Let x be the damage incurred in a certain type of accident during given year with following prob. distribution

x	0	1000	5000	10000
$P(x)$	0.8	0.1	0.08	0.02

Since company offers a $500 deductible policy, and expects $100 profit, we can define premium Function

$A = X + 100$, for $x = 0$

$A = X - 500 + 100 = X - 400$, for $x = 1000, 5000, 10000$

prob. distribution of A.

x	0	1000	5000	10000
a	100	600	4600	9600
$P(a)$	0.8	0.1	0.08	0.002

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The premium amount to be charged $= E(A)$

$= a\,P(a)$

$= 100 \times 0.8 + 600 \times 0.1 + 4600 \times 0.08 + 9600 \times 0.02$

$= \$\ 700$

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