29 $X \sim$ # of defects on a certain appliance

a. $E[X] = \sum x p(x) = 0(.08) + 1(.15) + 2(.45) + 3(.27) + 4(.05)$

$= \underline{2.06}_{ANS}$

b. $V[X] = \sum (x-\mu)^2 p(x) = \underline{0.9364}_{ANS}$

c. $\sigma_X = \sqrt{0.9364} = \underline{0.967678}_{ANS}$

30 $X \sim$ # of citations a driver received in 3 years

a. $E[X] = \sum x p(x) = \underline{0.6}_{ANS}$

b. $E[100Y^2] = 100\,E[Y^2] = 100 \sum x^2 p(x) = \underline{\$110}_{ANS}$

32 $X \sim$ amount of storage space (ft^3) in a freezer sold

a. $E[X] = 16.38\ ft^3$ $\quad V[X] = 3.9936$

$E[X^2] = 272.298$

b. $P = 25X - 8.5$ $\quad E[P] = E[25X - 8.5] = 25E[X] - 8.5 = \underline{\$401}_{ANS}$

c. $V[P] = V[25X - 8.5] = 25^2 V[X] = 625(3.9936) = \underline{2496}_{ANS}$

d. $H = X - 0.01X^2$ $\quad E[H] = E[X - 0.01X^2] = E[X] - .01E[X^2] = \underline{13.657\ ft^3}_{ANS}$

33 $X \sim$ needs service? 1 yes, 0 no

$p(S) = p$

a. $E[X^2] = 0^2(1-p) + 1^2(p)$

$= \underline{p}_{ANS}$

X	$p(x)$
0 (U)	$1-p$
1 (A)	p

$E[X] = \sum x p(x) = 0(1-p) + 1(p) = p$

b. $V[X] = \sum (x - E[X])^2 p(x) \rightarrow = (0-p)^2(1-p) + (1-p)^2 p$

let $p(S) = p$ $\quad p(U) = 1-p$

$= p^2(1-p) + p(1-p)(1-p)$

$= p(1-p)(p + (1-p))$

$= p(1-p)(1) = \underline{p(1-p)}_{ANS}$

c. $E[X^{99}] = \underline{p}_{ANS}$