6.8 a-c.

Income x	proportion $p(x)$	$x p(x)$
\$ 10000	.40	
\$ 30000	.40	
\$ 50000	.20	
\$ 90000	1	

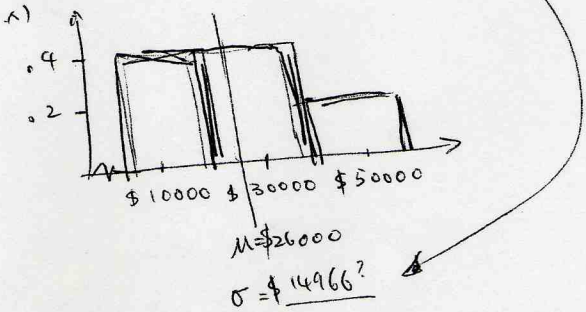
#7

a) $\mu = \Sigma x p(x) = 26000$

$\sigma = \sqrt{\Sigma (x-\mu)^2 p(x)}$

$= \$14966$?

c)



b). $n = 2$

$\bar{x} = \frac{1}{n}[x_1 + x_2] = \frac{1}{2}[x_1 + x_2]$

$p(x_1, x_2) = p(x_1)p(x_2)$ if indep.

$p(x_1, x_2) = Pr(X = x_1 \text{ and } X_2 = x_2)$

$p(x_1) = p(x_2) =$ population distribution, $p(x)$

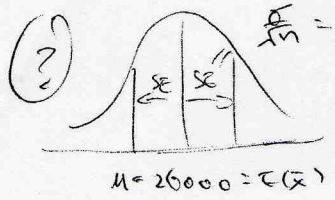
c) Expected value $= E(\bar{x}) = \frac{1}{2}[E(x_1) + E(x_2)] = \frac{1}{2}[\mu + \mu] = \frac{2\mu}{2} = \mu$.

$\text{var}(\bar{x}) = \frac{1}{2^2}[\text{var}(x_1) + \text{var}(x_2)]$

$= \frac{1}{4}[\text{var}(x_1) + \text{var}(x_2)]$

c) $E(\bar{x}) = \mu = 26000$

$SE = \frac{\sigma}{\sqrt{n}} = \frac{14966}{\sqrt{2}} = 10583.$



$\frac{\sigma}{\sqrt{n}} = 10583$