The variance of $\alpha X+(1-\alpha)Y$ is:

$$\alpha^2 var(X)+(1-\alpha)^2 var(Y)$$

$$\alpha^2 \cdot var(x) + \alpha^2-2\alpha+1 \cdot var(y)$$

$$=\frac{\alpha^2}{12}+\frac{\alpha^2-2\alpha+1}{4}\ (3)$$

$$=\frac{4\alpha^2-6\alpha+3}{12}$$

Since the function $4\alpha^2-6\alpha+3$ is minimized at $\alpha=3/4$, the variance of $\alpha X+(1-\alpha)Y$ is minimized at $\alpha=3/4$. Therefore, we should put $3/4$ of \$100 on X and $1/4$ of \$100 on Y. (Given $E(X)=E(Y)=0.5$)