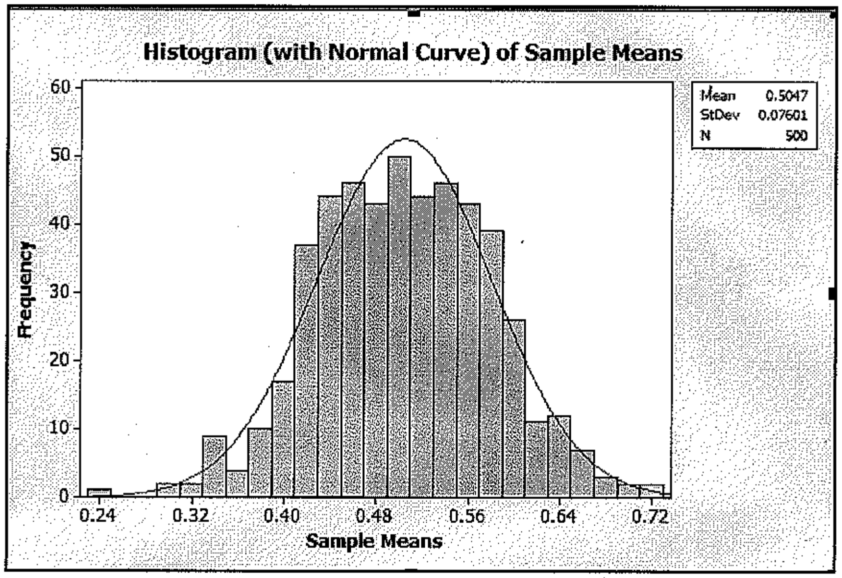
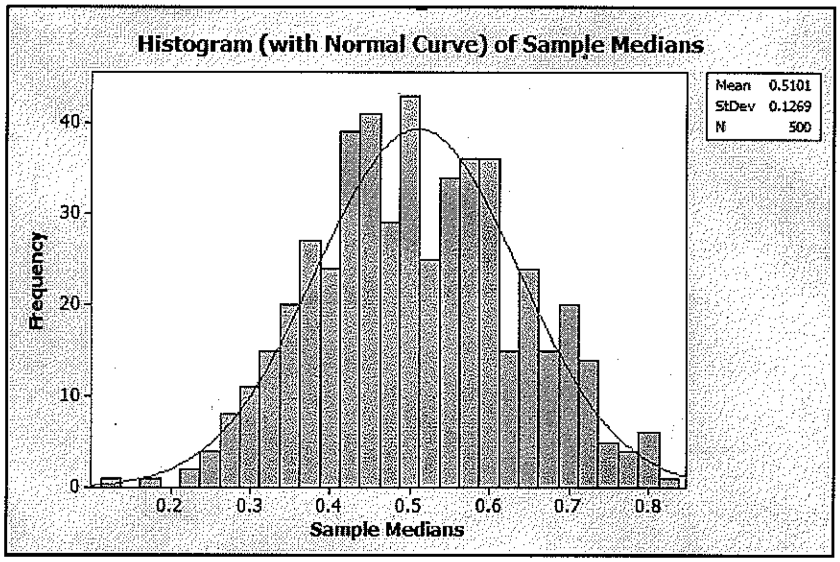
4.138

a.



b.



The values of $\bar{x}$ cluster around μ more than the values of the median.

4.148

a. The mean of the sampling distribution of $\bar{x}$, $\mu_{\bar{x}}$, is equal to the mean of the sampled population μ = 20, and the standard deviation of the sampling distribution, $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{16}{8} = 2$.

b. The sampling distribution of $\bar{x}$ is symmetric and mound shaped. The larges the sample size the closer the distribution is to being normal.

c. The z-score corresponding to $\bar{x}$ = 16 is $z = \frac{16-20}{2} = -2$

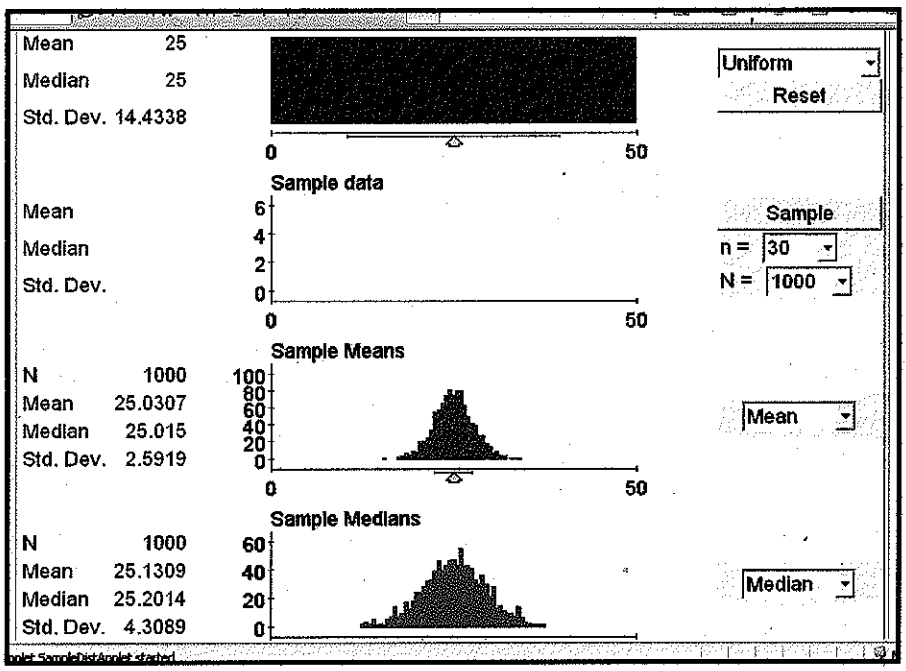
d. The z-score corresponding to $\bar{x}$ = 23 is $z = \frac{23-20}{2} = 1.5$

e. $P(\bar{x} < 16) = 0.02275$

f. $P(\bar{x} > 23) = 0.06681$

g. $P(16 < \bar{x} < 23) = 0.91044$

Applet Exercise 4.8



a. $\mu_{\bar{x}} = 25.0307$, $M_{\bar{x}} = 25.2014$, $\sigma_{\bar{x}} = 2.5919$

b. The mean of the sample means is approximately the same as the mean of the original distribution.

c. $14.4338/\sqrt{30} \approx 2.6352$, and that value is fairly close to the standard deviation of the sample means.

d. The distribution of the sample means is symmetric and mound shaped; so the distribution may be approximately normal.

e. The results above verify the results given in the Central Limit Theorem.