

Show all complete and correct work to receive full credit. A correct answer with little or no work will receive 2 pts.

1. When asked to “describe” either of the sampling distributions, what two parameters must be stated?
2. With regard to the distribution of sample proportions, $\mu_{\hat{p}} = \underline{\hspace{2cm}}$ and $\sigma_{\hat{p}} = \underline{\hspace{2cm}}$?
3. What two conditions must be met for the shape of the sampling distribution of \hat{p} to be approximately normal? (stated in word form or formula form)
4. With regard to the distribution of the sample mean, the Central Limit Theorem states that the distribution of sample means will have $\mu_{\bar{x}} = \underline{\hspace{2cm}}$ and $\sigma_{\bar{x}} = \underline{\hspace{2cm}}$.
5. With regard to the distribution of the sample mean, if the distribution of the population is not normal then the distribution of the sample mean is approximately normal provided the sample size (n) is greater than or equal to .
6. **According to the National Center for Health Statisticw (2004), 22.4% of adults are smokers. A random sample of 300 adults is obtained.**
 - (a) Describe the sampling distribution of \hat{p} , the proportion of adults smoke.
 - (b) What is the probability that in a random sample of 300 adults, at least 50 of them are smokers?

(c) What is the probability that in a random sample of 300 adults, between 23% and 26% are smokers

7. Based on tests of the Hyundai Tucson, engineers have found that the miles per gallon in highway driving are normally distributed, with a mean of 30 miles per gallon and a standard deviation of 3.5 miles per gallon.

(a) What is the probability that a randomly selected Tucson gets more than 32 miles per gallon?

(b) Ten Tucsons are randomly selected and the miles per gallon for each is recorded. What is the probability that the average miles per gallon exceeds 33 miles per gallon?

(c) If 15 Tucsons are randomly selected and the miles per gallon for each is recorded. What is the probability that the mean miles per gallon exceeds 33 miles per gallon?