Name A Key

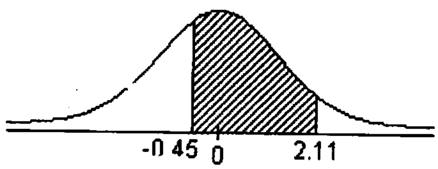
Date___/___/___

Illowsky – Chapt. 6 & 7
Larson – Chapt. 5

Please show all work to receive credit. Round all answers to 3 decimal places, unless otherwise indicated.

ide an appropriate response.

1) Find the area of the indicated region under the standard normal curve.



$$\begin{array}{r} .9826 \\ -.3264 \\ \hline .6562 \end{array} \qquad \boxed{.656}$$

2) Find the area under the standard normal curve to the right of z = -1.25.

$$P(Z > -1.25) = 1 - .1056 = \boxed{.894}$$

3) Assume that the random variable X is normally distributed, with mean μ = 80 and standard deviation σ = 15. Compute the probability P(X > 92).

$$z = \frac{92-80}{15} = .8 \Rightarrow P(X > 92) = P(Z > .8) = 1 - .7881 = \boxed{.2119}$$

Provide an appropriate response. Use the Standard Normal Table to find the probability.

4) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. An individual's IQ score is found to be 120. Find the z-score corresponding to this value.

$\mu = 100$

$\sigma = 15$

$x = 120$

$$\Rightarrow z = \frac{120-100}{15} = \boxed{1.333}$$

5) Assume that the heights of American men are normally distributed with a mean of 69.0 inches and a standard deviation of 2.8 inches. The U.S. Marine Corps requires that men have heights between 64 and 78 inches. Find the percent of men meeting these height requirements.

$\mu = 69$

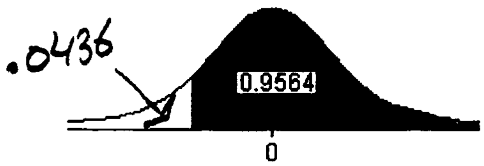
$\sigma = 2.8$

$$P(64 < x < 78) = P(-1.79 < z < 3.21) = \begin{array}{r} .9993 \\ -.0367 \\ \hline \end{array}$$

$$\boxed{.963}$$

Provide an appropriate response.

6) Find the z-score that corresponds to the given area under the standard normal curve.



$\Rightarrow \boxed{z = -1.71}$

7) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the x-score that corresponds to a z-score of -1.645. $\mu = 100,\ \sigma = 15,\ z = -1.645$

$-1.645 = \dfrac{x - 100}{15} \Rightarrow x = \boxed{75.325}$

8) The lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. If 64 women are randomly selected, find the probability that they have a mean pregnancy between 266 days and 268 days. $\mu = 268,\ \sigma = 15,\ n = 64$

$P(266 < \bar{x} < 266) = P(-1.067 < z < 0) = .5 - .1423 = \boxed{.3577}$

9) Assume that blood pressure readings are normally distributed with a mean of 120 and a standard deviation of 8. If 100 people are randomly selected, find the probability that their mean blood pressure will be greater than 122. $\mu = 120,\ \sigma = 8,\ n = 100$

$\dfrac{\bar{x} - \mu}{\sigma/\sqrt{n}} = \dfrac{122 - 120}{8/\sqrt{100}} = 2.5$

$P(\bar{x} > 122) = P(z > 2.5)$

$= 1 - .9938 = \boxed{.0062}$

Use the Central Limit Theorem to find the mean and standard error of the mean of the indicated sampling distribution.

10) The monthly rents for studio apartments in a certain city have a mean of \$920 and a standard deviation of \$190. Random samples of size 30 are drawn from the population and the mean of each sample is determined.

$\mu_{\bar{x}} = \mu = \boxed{\$920}$

$\sigma_{\bar{x}} = \dfrac{\sigma}{\sqrt{n}} = \dfrac{190}{\sqrt{30}} = \boxed{\$34.689}$