

## No. Chapter 8 pp 251-252

Revised values but problems taken from the book.

17 If all possible samples of size 16 are drawn from a normal pop, what is prob the mean will fall in the interval from:  $\mu - 2.1 \sigma$  to  $\mu - 0.3 \sigma$ , given:

$$\mu = 20 \quad \sigma = 4.5$$

19 A certain type of thread is mfg with strength of 78.3 kg and std dev of 5.6 kg.

$$\mu = 78.3 \quad \sigma = 5.6$$

How is the **standard deviation** of the sample mean changed when the sample size is:

a) 55 or 144

for n= 55

for n= 144

b) 712 or 66

for n= 712

for n= 66

21 Soft drink averages 125 ml with std dev of 30 ml.

A sample of 25 were checked. If the mean of the sample is within 2.5 standard deviations, it is judged to be okay.

If the sample mean,  $\bar{X} = \underline{135}$  ml, does the machine need adjustment?

23 X has the following prob distribution

x	4	5	6	7	$\mu$	$\sigma^2$
P(X=x)	0.2	0.5	0.2	0.1		

- a) Find:  $\mu =$   
 $\sigma^2 =$
- b) Find the mean,  $\mu_x$ , and the variance  $\sigma_x$  of the mean  $\bar{X}$  for random samples of 36 cherry puffs.
- c) Find the probability that the average number of cherries in 29 puffs will be  $<$  5.5 assuming that the distribution is roughly normal.

24 Machine makes resistors with mean resistance of 40 ohms and a standard deviation of 2 ohms. What is the probability that a random sample of 36 resistors will have a combined resistance of more than 1458? [Hint: compute average]

25 Average life of bread machine follows a normal distribution with:

$$\mu = 5 \qquad \sigma = 1.2$$

- a) Find the probability that average of 5 machines falls between:  
6.4 and 7.2 yrs.
- b) The value to the right of which 15% of the means computed from random samples of size 9 would fall.

26 The amount of time that a drive-through bank teller spends on a customer is a random variable with a population mean of 3.2 minutes and a known standard deviation of 1.6 minutes. If a random sample of 64 customers is observed, find the probability that their mean time at the teller's window is

- a) at most 2.7 minutes
- b) more than 3.5 minutes
- c) at least 3.2 minutes but less than 3.4 minutes?

29 Given the data on the two breeds of dogs shown below, find the probability that the terriers produce more urine than poodles by at most 44 ml.

<u>Terriers</u>	<u>Poodles</u>
$\mu = 72$	$\mu = 32$
$\sigma = 8$	$\sigma = 12$
$n = 55$	$n = 66$

Find  $P(u_T - u_P < 44.2)$ :  $Z =$  \_\_\_\_\_

30 The mean score for freshman on an aptitude test at a certain college is 540 with a standard deviation of 50. What is the probability that two groups of students selected at random, consisting of 32 and 50 students, respectively, will differ in their mean scores by:  
(Assume mean scores are continuous)

a) more than 20 points?

b) an amount between 5 and 10 points?

