Name	Period:	Date
------	---------	------

Chapter 11 Review Worksheet

1. A normal distribution has mean μ and standard deviation σ . Find the indicated probability for a randomly selected *x*-value from the distribution. For each part, draw a normal curve, label the axis and shade the appropriate region(s).

a. $P(x \ge \mu - 2\sigma)$

b. $P(\mu - \sigma \le x \le \mu + 3\sigma)$

- 2. A normal distribution has a mean of 122 and a standard deviation of 6. Find the probability that a randomly selected *x*-value from the distribution is in the given interval. For each part, draw a normal curve, label the axis and shade the appropriate region(s).
 - a. between 110 and 128

b. at most 122

- **c.** at least 104
- d. greater than 134

3. The 40-yard dash times for all football players in the United States are normally distributed with a mean of 5.3 seconds and a standard deviation of 0.3 second. Are these numerical values parameters or statistics?

- **4.** A pitcher throws 40 fastballs a game. A baseball analyst records the speeds of 10 fastballs and finds the mean speed is 92.4 miles/hour. Is the mean speed a parameter or a statistic? **Explain.**
- 5. To estimate the average number of miles driven by U.S. motorists each year, a researcher conducts a survey of 1000 drivers, records the number of miles they drive in a year, and then determines the average. Identify the population and the sample.
- **6.** An amusement park wants to know whether more teenagers or adults ride a particular roller coaster. Is this research topic best investigated through an experiment or an observational study?
- **7.** Match each description (**a**-**e**) with the correct sampling method (**A**-**E**). A researcher is doing a study at Cal High and wants to choose a sample of 400 students to survey. The researcher:
 - _____ a. Selects every 7th student in the school directory.
 - b. Emails a survey to all students asking them to fill out an online survey and takes the first 400 who respond.
 - c. Randomly selects 100 students from each grade.
 - d. Stands outside the main building doors when lunch period starts and selects the first 400 students who come out.
 - e. Divides the student population into groups of 100 students and randomly selects four groups to survey.
 - A. Cluster B. Convenience C. Self-selected D. Stratified E. Systematic
- 8. In a recent survey of 2200 randomly selected U.S. teenagers, 92% said they had a cell phone.
 - **a.** Identify the population and the sample.
 - **b.** Find the margin of error for the survey.
 - **c.** Give an interval that is likely to contain the exact percent of all U.S. teenagers who have a cell phone.

- 9. A Memorial Day 5K race is run for charity each year. The mean time that it takes the runners to complete the course is 38 minutes with a standard deviation of 6 minutes. The race has 720 people registered to run this year. Use the standard normal table below to answer the following questions.
 - **a.** Calculate the percent of runners predicted to finish the race in 42 minutes or less.
 - **b.** Calculate the percent of runners predicted to take longer than 55 minutes to finish the race.
 - c. Calculate the approximate number of runners predicted to finish in less than 29 minutes.

Standard Normal Table											
z	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
-3	.0013	.0010	.0007	.0005	.0003	.0002	.0002	.0001	.0001	+0000+	
-2	.0228	.0179	.0139	.0107	.0082	.0062	.0047	.0035	.0026	.0019	
-1	.1587	.1357	.1151	.0968	.0808	.0668	.0548	.0446	.0359	.0287	
-0	.5000	.4602	.4207	.3821	.3446	.3085	.2743	.2420	.2119	.1841	
0	.5000	.5398	.5793	.6179	.6554	.6915	.7257	.7580	.7881	.8159	
1	.8413	.8643	.8849	.9032	.9192	.9332	.9452	.9554	.9641	.9713	
2	.9772	.9821	.9861	.9893	.9918	.9938	.9953	.9965	.9974	.9981	
3	.9987	.9990	.9993	.9995	.9997	.9998	.9998	.99999	.99999	1.0000-	