

Identify the given random variable as being discrete or continuous.

- 1) The number of oil spills occurring off the Alaskan coast

- 2) The pH level in a shampoo

Find the mean of the given probability distribution.

3)

x	P(x)
0	0.26
1	0.11
2	0.16
3	0.05
4	0.42

Provide an appropriate response. Round to the nearest hundredth.

- 4) Find the standard deviation for the given probability distribution.

x	P(x)
0	0.37
1	0.13
2	0.06
3	0.15
4	0.29

Answer the question.

- 5) Focus groups of 15 people are randomly selected to discuss products of the Yummy Company. It is determined that the mean number (per group) who recognize the Yummy brand name is 12.5, and the standard deviation is 0.58. Would it be unusual to randomly select 15 people and find that fewer than 9 recognize the Yummy brand name?

Assume that a researcher randomly selects 14 newborn babies and counts the number of girls selected, x . The probabilities corresponding to the 14 possible values of x are summarized in the given table. Answer the question using the table.

Probabilities of Girls

x(girls)	P(x)	x(girls)	P(x)	x(girls)	P(x)
0	0.000	5	0.122	10	0.061
1	0.001	6	0.183	11	0.022
2	0.006	7	0.209	12	0.006
3	0.022	8	0.183	13	0.001
4	0.061	9	0.122	14	0.000

- 6) Find the probability of selecting exactly 8 girls.

- 7) Find the probability of selecting 9 or more girls.

Provide an appropriate response.

- 8) A contractor is considering a sale that promises a profit of \$26,000 with a probability of 0.7 or a loss (due to bad weather, strikes, and such) of \$8000 with a probability of 0.3. What is the expected profit?

Determine whether the given procedure results in a binomial distribution. If not, state the reason why.

- 9) Rolling a single die 26 times, keeping track of the numbers that are rolled.

Assume that a procedure yields a binomial distribution with a trial repeated n times. Use the binomial probability formula to find the probability of x successes given the probability p of success on a single trial. Round to three decimal places.

10) $n = 4$, $x = 3$, $p = \frac{1}{6}$

Find the indicated probability. Round to three decimal places.

- 11) A test consists of 10 true/false questions. To pass the test a student must answer at least 6 questions correctly. If a student guesses on each question, what is the probability that the student will pass the test?

Find the indicated probability.

- 12) The brand name of a certain chain of coffee shops has a 46% recognition rate in the town of Coffleton. An executive from the company wants to verify the recognition rate as the company is interested in opening a coffee shop in the town. He selects a random sample of 8 Coffleton residents. Find the probability that exactly 4 of the 8 Coffleton residents recognize the brand name.

Find the mean, μ , for the binomial distribution which has the stated values of n and p . Round answer to the nearest tenth.

13) $n = 38$; $p = 0.2$

Find the standard deviation, σ , for the binomial distribution which has the stated values of n and p . Round your answer to the nearest hundredth.

14) $n = 29$; $p = 0.2$

Use the given values of n and p to find the minimum usual value $\mu - 2\sigma$ and the maximum usual value $\mu + 2\sigma$. Round your answer to the nearest hundredth unless otherwise noted.

15) $n = 93$, $p = 0.24$

Solve the problem.

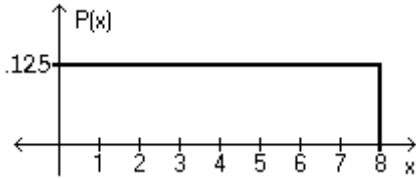
- 16) On a multiple choice test with 17 questions, each question has four possible answers, one of which is correct. For students who guess at all answers, find the mean for the number of correct answers.

- 17) According to a college survey, 22% of all students work full time. Find the standard deviation for the number of students who work full time in samples of size 16.

Determine if the outcome is unusual. Consider as unusual any result that differs from the mean by more than 2 standard deviations. That is, unusual values are either less than $\mu - 2\sigma$ or greater than $\mu + 2\sigma$.

- 18) A survey for brand recognition is done and it is determined that 68% of consumers have heard of Dull Computer Company. A survey of 800 randomly selected consumers is to be conducted. For such groups of 800, would it be unusual to get 634 consumers who recognize the Dull Computer Company name?

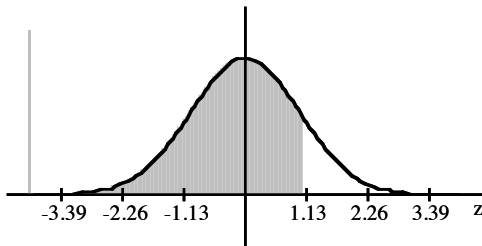
Using the following uniform density curve, answer the question.



19) What is the probability that the random variable has a value greater than 5?

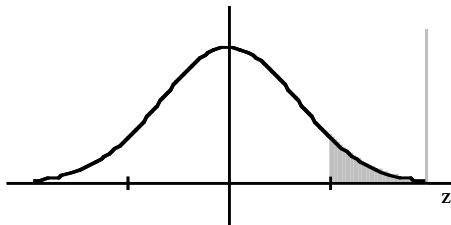
Find the area of the shaded region. The graph depicts the standard normal distribution with mean 0 and standard deviation 1.

20)



Find the indicated z score. The graph depicts the standard normal distribution with mean 0 and standard deviation 1.

21) Shaded area is 0.0694.

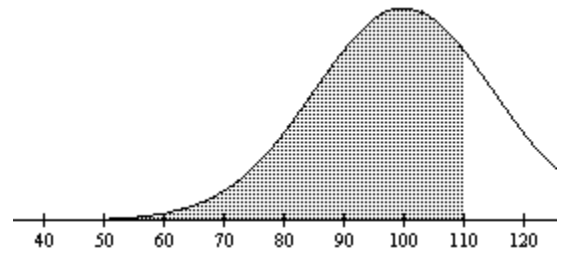


If z is a standard normal variable, find the probability.

22) The probability that z lies between 0 and 3.01

Provide an appropriate response.

23) Find the area of the shaded region. The graph depicts IQ scores of adults, and those scores are normally distributed with a mean of 100 and a standard deviation of 15 (as on the Wechsler test).



24) Assume that adults have IQ scores that are normally distributed with a mean of 100 and a standard deviation of 15 (as on the Wechsler test). Find the probability that a randomly selected adult has an IQ between 90 and 120 (somewhere in the range of normal to bright normal).

Solve the problem. Round to the nearest tenth unless indicated otherwise.

25) Scores on a test are normally distributed with a mean of 63.2 and a standard deviation of 11.7. Find P_{81} , which separates the bottom 81% from the top 19%.

Assume that X has a normal distribution, and find the indicated probability.

26) The mean is $\mu = 60.0$ and the standard deviation is $\sigma = 4.0$. Find the probability that X is less than 53.0.

Find the indicated probability.

27) The diameters of bolts produced by a certain machine are normally distributed with a mean of 0.30 inches and a standard deviation of 0.01 inches. What percentage of bolts will have a diameter greater than 0.32 inches?

31) A study of the amount of time it takes a mechanic to rebuild the transmission for a 2005 Chevrolet Cavalier shows that the mean is 8.4 hours and the standard deviation is 1.8 hours. If 40 mechanics are randomly selected, find the probability that their mean rebuild time exceeds 8.7 hours.

Solve the problem.

28) The amount of snowfall falling in a certain mountain range is normally distributed with a mean of 70 inches, and a standard deviation of 10 inches. What is the probability that the mean annual snowfall during 25 randomly picked years will exceed 72.8 inches?

29) The annual precipitation amounts in a certain mountain range are normally distributed with a mean of 109 inches, and a standard deviation of 10 inches. What is the probability that the mean annual precipitation during 25 randomly picked years will be less than 111.8 inches?

30) The weights of the fish in a certain lake are normally distributed with a mean of 20 lb and a standard deviation of 9. If 9 fish are randomly selected, what is the probability that the mean weight will be between 17.6 and 23.6 lb?

Answer Key

Testname: CHAPTER5,6REVIEW

- 1) Discrete
- 2) Continuous
- 3) $\mu = 2.26$
- 4) $\sigma = 1.70$
- 5) Yes
- 6) 0.183
- 7) 0.212
- 8) \$15,800
- 9) Not binomial: there are more than two outcomes for each trial.
- 10) 0.015
- 11) 0.377
- 12) 0.267
- 13) $\mu = 7.6$
- 14) $\sigma = 2.15$
- 15) Minimum: 14.08; maximum: 30.56
- 16) 4.3
- 17) 1.7
- 18) Yes
- 19) 0.375
- 20) 0.8708
- 21) 1.48
- 22) 0.4987
- 23) 0.7486
- 24) 0.6568
- 25) 73.5
- 26) 0.0401
- 27) 2.28%
- 28) 0.0808
- 29) 0.9192
- 30) 0.6730
- 31) 0.1469