

1. The U.S. Department of Transportation reported that in 2009, Southwest led all domestic airlines in on-time arrivals for domestic flights, with a rate of 0.825. Assuming independent flights, what is the probability that in the next six flights at least four flights will be on time?

- (a) 0.9294 _____(correct)
(b) 0.7166
(c) 0.6141
(d) 0.5281
(e) 0.0706

2. A toll-free phone number is available from 9 A.M. to 9 P.M. for your customers to register complaints about a product purchased from your company. History indicates that an average of 0.8 calls is received per minute. Calculate the probability that two or more phone calls will be received in 30 seconds.

- (a) 0.0616 _____(correct)
(b) 0.9384
(c) 0.6703
(d) 0.2681
(e) 0.3297

3. From an inventory of 30 cars being shipped to a local automobile dealer, 6 are SUVs. What is the probability that if 4 cars arrive at a particular dealership, none are SUVs?

- (a) 0.3877 _____(correct)
(b) 0.7276
(c) 0.1882
(d) 0.8118
(e) 0.4524

4. The following table contains the probability distribution for the number of traffic accidents daily in a small city:

| Number of accidents Daily (X) | $P(X = x_i)$ |
|-----------------------------------|--------------|
| 0 | 0.10 |
| 1 | 0.20 |
| 2 | 0.45 |
| 3 | 0.15 |
| 4 | 0.05 |
| 5 | 0.05 |

Calculate the standard deviation.

- (a) 1.1832 _____(correct)
(b) 5.4
(c) 2
(d) 2.23
(e) 1.45

5. The quality control manager of Marilyn's Cookies is inspecting a batch of chocolate-chip cookies that has just been baked. If the production process is in control, the mean number of chip parts per cookie is 6.0. What is the probability that in any particular cookie being inspected, either four or five chip parts will be found?

- (a) 0.2945 _____(correct)
(b) 0.1339
(c) 0.1606
(d) 0.7055
(e) 0.8661

6. Errors in a billing process often lead to customer dissatisfaction and ultimately hurt bottom-line profits. An article discussed a company where 40% of the bills prepared contained errors. If 10 bills are processed, the mean and the standard deviation of the probability distribution, respectively, are:

- (a) 4 and 1.5492 _____(correct)
(b) 6 and 1.5492
(c) 4 and 2.4
(d) 6 and 2.4
(e) 4 and 2.7132

7. Given a standardized normal distribution, what is the value of Z if only 15.87% of all possible Z values are larger?

- (a) 1 _____(correct)
- (b) -1
- (c) 2
- (d) -2.13
- (e) 0.84

8. Consumers spend an average of \$21 per week in cash without being aware of where it goes. Assume that the amount of cash spent without being aware of where it goes is normally distributed and that the standard deviation is \$5. What is the probability that a randomly selected person will spend between \$10 and \$20?

- (a) 0.4068 _____(correct)
- (b) 0.0139
- (c) 0.5932
- (d) 0.9861
- (e) 0.2163

9. The time between arrivals of customers at a bank during the noon-to-1 P.M. hour has a uniform distribution between 0 to 120 seconds. What are the mean and standard deviation of the time between arrivals?
- (a) The mean is 60 seconds and the standard deviation is 34.64 seconds —(correct)
 - (b) The mean is 30 seconds and the standard deviation is 1200 seconds
 - (c) The mean is 60 seconds and the standard deviation is 1200 seconds
 - (d) The mean is 15 seconds and the standard deviation is 34.64 seconds
 - (e) The mean is 30 seconds and the standard deviation is 34.64 seconds
10. A study of the time spent shopping in a supermarket for a market basket of 20 specific items showed an approximately uniform distribution between 20 minutes and 40 minutes. If the probability that the shopping time will be more than k minutes is 0.75, what is the value of k ?
- (a) 25 minutes _____(correct)
 - (b) 35 minutes
 - (c) 40 minutes
 - (d) 15 minutes
 - (e) 10 minutes

11. Telephone calls arrive at the information desk of a large computer software company at a rate of **15 per hour**. What is the probability that the next call will arrive within **3 minutes**?

- (a) 0.5276 _____(correct)
(b) 0.4724
(c) 1
(d) 0
(e) 0.9967

12. Suppose that the mean download time for a commercial tax preparation site is 2.0 seconds. Suppose that the download time is normally distributed, with a standard deviation of 0.5 second. 99% of the download times are lower than how many seconds?

- (a) 3.165 _____(correct)
(b) 0.7
(c) 2.495
(d) 1.505
(e) 0.835

13. Last month your company sold 10,000 new watches. Past experience indicates that the probability that a new watch will need repair during its warranty period is 0.002. Approximate the probability that no more than 5 watches will need warranty work.

- (a) 0.0006 _____(correct)
(b) 0.1251
(c) 0.6519
(d) 0.9749
(e) 0.3481

14. Given a normal distribution with mean = 50 and standard deviation = 5 and if you select a sample of size $n = 100$, there is a 35% chance that the sample mean is above what value?

- (a) 50.195 _____(correct)
(b) 51.950
(c) 49.095
(d) 40.950
(e) 53.195

15. The U.S. Census Bureau announced that the median sales price of new houses sold in 2009 was \$215,600, and the mean sales price was \$270,100. Assume that the standard deviation of the prices is \$90,000. If you select a random sample of $n = 100$, what is the probability that the sample mean will be less than \$300,000?

- (a) 0.9996 _____(correct)
- (b) 0.6179
- (c) 0.3320
- (d) 0.3821
- (e) 0.6680

16. In a recent survey of full-time female workers ages 22 to 35 years, 46% said that they would rather give up some of their salary for more personal time. Suppose you select a sample of 100 full-time female workers 22 to 35 years old. What is the probability that in the sample, more than 40% would rather give up some of their salary for more personal time?

- (a) 0.8849 _____(correct)
- (b) 0.3156
- (c) 0.0025
- (d) 0.6421
- (e) 0.8063

17. The amount of time a bank teller spends with each customer has a population mean $\mu = 3.10$ minutes and standard deviation $\sigma = 0.40$ minute. If you select a random sample of 16 customers, there is an 85% chance that the sample mean is less than how many times?

- (a) 3.20 _____(correct)
(b) 0.99
(c) 0.29
(d) 0.14
(e) 4.32

18. The following data represent the responses (Y for yes and N for no) from a sample of 40 college students to the question "Do you currently own shares in any stocks?"

N N Y N N Y N Y N Y N N Y N Y Y N N N Y
N Y N N N N Y N N Y Y N N N Y N N Y N N

If the population proportion is 0.30, determine the standard error of the proportion.

- (a) 0.0724 _____(correct)
(b) 0.0247
(c) 0.9276
(d) 0.4583
(e) 0.005

19. The dean of a business school wishes to form an executive committee of 5 from among the 40 tenured faculty members at the school. The selection is to be random and at the school there are 8 tenured faculty members in accounting. What is the probability that the committee will contain none of them?

- (a) 0.3060 _____(correct)
(b) 0.1368
(c) 0.5412
(d) 0.1819
(e) 0.9632

20. Telephone calls arrive at the information desk of a large computer software company at a rate of 0.25 per minute. If the probability that the next call will arrive within t minutes is 0.9765, what is the value of t ?

- (a) 15 minutes _____(correct)
(b) 20 minutes
(c) 10 minutes
(d) 18 minutes
(e) 12 minutes