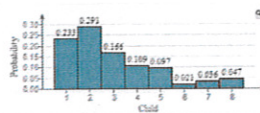


The probability histogram to the right represents the number of live births by a mother 42 to 45 years old who had a live birth in 2012.



(a) What is the probability that a randomly selected 42- to 45-year-old mother who had a live birth in 2012 has had her fourth live birth?

(Type an integer or a decimal.)

(b) What is the probability that a randomly selected 42- to 45-year-old mother who had a live birth in 2012 has had her fourth or fifth live birth?

(Type an integer or a decimal.)

(c) What is the probability that a randomly selected 42- to 45-year-old mother who had a live birth in 2012 has had her sixth or more live birth?

(Type an integer or a decimal.)

(d) If a 42- to 45-year-old mother who had a live birth in 2012 is randomly selected, how many live births would you expect the mother to have had?

(Round to one decimal place as needed.)

#1

This Test: 14 pts

An investment counselor calls with a hot stock tip. He believes that if the economy remains strong, the investment will result in a profit of \$50,000. If the economy grows at a moderate pace, the investment will result in a profit of \$20,000. However, if the economy goes into recession, the investment will result in a loss of \$50,000. You contact an economist who believes there is a 30% probability the economy will remain strong, a 60% probability the economy will grow at a moderate pace, and a 10% probability the economy will slip into recession. What is the expected profit from this investment?

The expected profit is \$. (Type an integer or a decimal.)

#2

Enter your answer in the answer box.



In the game of roulette, a player can place a \$8 bet on the number 2 and have a $\frac{1}{38}$ probability of winning. If the metal ball lands on 2, the player gets to keep the \$8 paid to play the game and the player is awarded \$280. Otherwise, the player is awarded nothing and the casino takes the player's \$8. What is the expected value of the game to the player? If you played the game 1000 times, how much would you expect to lose?

The expected value is \$.
(Round to the nearest cent as needed.)

The player would expect to lose about \$.
(Round to the nearest cent as needed.)

~~4~~ 3



In the game of roulette, a player can place a \$8 bet on the number 2 and have a $\frac{1}{38}$ probability of winning. If the metal ball lands on 2, the player gets to keep the \$8 paid to play the game and the player is awarded \$380. Otherwise, the player is awarded nothing and the casino takes the player's \$8. What is the expected value of the game to the player? If you played the game 1000 times, how much would you expect to lose?

The expected value is \$.
(Round to the nearest cent as needed.)

The player would expect to lose about \$.
(Round to the nearest cent as needed.)

#4

Use $n = 9$, and $p = 0.35$ to complete parts (a) through (c) below.

- (a) Find the probabilities and construct a binomial probability distribution with the given parameters.
 (b) Compute the mean and standard deviation of the random variable.
 (c) Draw the probability histogram, comment on its shape, and label the mean on the histogram.

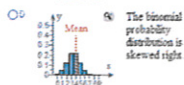
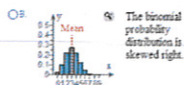
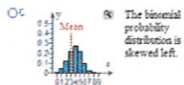
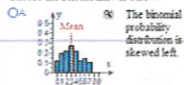
(b) Compute the mean and standard deviation of the random variable.

$\mu_x =$ (Round to two decimal places as needed.)

$\sigma_x =$ (Round to one decimal place as needed.)

(c) Draw the probability histogram, comment on its shape, and label the mean on the histogram.

Choose the correct answer below.



3
4
5
6
7
8
9

#5

According to a survey, 65% of murders committed last year were cleared by arrest or exceptional means. Fifty murders committed last year are randomly selected, and the number cleared by arrest or exceptional means is recorded. When technology is used, use the Tech Help button for further assistance.

- (a) Find the probability that exactly 39 of the murders were cleared.
- (b) Find the probability that between 36 and 38 of the murders, inclusive, were cleared.
- (c) Would it be unusual if fewer than 20 of the murders were cleared? Why or why not?

(a) The probability that exactly 39 of the murders were cleared is .
(Round to four decimal places as needed.)

(b) The probability that between 36 and 38 of the murders, inclusive, were cleared is .
(Round to four decimal places as needed.)

(c) Would it be unusual if fewer than 20 of the murders were cleared? Why or why not?

- ☐ A. Yes, it would be unusual because 20 is less than $\mu - 2\sigma$.
- ☐ B. Yes, it would be unusual because 20 is between $\mu - 2\sigma$ and $\mu + 2\sigma$.
- ☐ C. No, it would not be unusual because 20 is less than $\mu - 2\sigma$.
- ☐ D. No, it would not be unusual because 20 is between $\mu - 2\sigma$ and $\mu + 2\sigma$.

#6

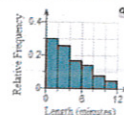
State the criteria for a binomial probability experiment.

Choose the correct answer below. Select all that apply.

- ☐ A. Each trial has two possible mutually exclusive outcomes: success and failure.
- ☐ B. The trials are independent.
- ☐ C. The probability of success, p , remains constant for each trial of the experiment.
- ☐ D. The experiment consists of a fixed number, n , of trials.

#7

The relative frequency histogram represents the length of phone calls on George's cell phone during the month of September. Determine whether or not the histogram indicates that a normal distribution could be used as a model for the variable.



Can a normal distribution be used as a model for the variable?

- ☐ A. No, because the histogram does not have the shape of a normal curve.
- ☐ B. No, because the histogram has the shape of a normal curve.
- ☐ C. Yes, because the histogram does not have the shape of a normal curve.
- ☐ D. Yes, because the histogram has the shape of a normal curve.
- ☐ E. Yes, because the histogram is not symmetric about its mean.

#8

One graph in the figure represents a normal distribution with mean $\mu = 11$ and standard deviation $\sigma = 1$. The other graph represents a normal distribution with mean $\mu = 16$ and standard deviation $\sigma = 1$. Determine which graph is which and explain how you know.



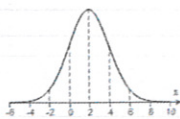
Choose the correct answer below.

- ☐ A. Graph A has a mean of $\mu = 11$ and graph B has a mean of $\mu = 16$ because a larger mean shifts the graph to the right.
- ☐ B. Graph A has a mean of $\mu = 16$ and graph B has a mean of $\mu = 11$ because a larger mean shifts the graph to the right.
- ☐ C. Graph A has a mean of $\mu = 11$ and graph B has a mean of $\mu = 16$ because a larger mean shifts the graph to the left.
- ☐ D. Graph A has a mean of $\mu = 16$ and graph B has a mean of $\mu = 11$ because a larger mean shifts the graph to the left.

#9



The graph of a normal curve is given. Use the graph to identify the value of μ and σ .



The value of μ is .

The value of σ is .

#10

The lengths of human pregnancies are normally distributed with $\mu = 266$ days and $\sigma = 16$ days. Complete parts (a) and (b) below.

(a) The following figure represents the normal curve with $\mu = 266$ days and $\sigma = 16$ days. The area to the right of $X = 300$ is 0.0168. Provide an interpretation of this area. Choose the correct answer below.

- ☐ A. The proportion of human pregnancies that last more than 266 days is 0.4832.
- ☐ B. The proportion of human pregnancies that last more than 300 days is 0.9832.
- ☐ C. The proportion of human pregnancies that last more than 300 days is 0.0168.
- ☐ D. The proportion of human pregnancies that last less than 300 days is 0.0168.

Provide a second interpretation of the area. Choose the correct answer below.

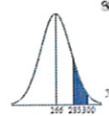
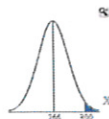
- ☐ A. The probability that a randomly selected human pregnancy lasts more than 300 days is 0.9832.
- ☐ B. The probability that a randomly selected human pregnancy lasts more than 300 days is 0.4832.
- ☐ C. The probability that a randomly selected human pregnancy lasts more than 300 days is 0.0168.
- ☐ D. The probability that a randomly selected human pregnancy lasts less than 300 days is 0.0168.

(b) The following figure represents the normal curve with $\mu = 266$ days and $\sigma = 16$ days. The area between $x = 285$ and $x = 300$ is 0.1007. Provide an interpretation of this area. Choose the correct answer below.

- ☐ A. The proportion of human pregnancies that last for 300 days is 0.9832.
- ☐ B. The proportion of human pregnancies that last more than 300 days is 0.8993.
- ☐ C. The proportion of human pregnancies that last between 285 and 300 days is 0.1007.
- ☐ D. The proportion of human pregnancies that last between 285 and 300 days is 0.8993.

Provide a second interpretation of the area. Choose the correct answer below.

- ☐ A. The probability that a randomly selected human pregnancy lasts for 300 days is 0.9832.
- ☐ B. The probability that a randomly selected human pregnancy lasts between 285 and 300 days is 0.8993.
- ☐ C. The probability that a randomly selected human pregnancy lasts between 285 and 300 days is 0.1007.
- ☐ D. The probability that a randomly selected human pregnancy lasts more than 300 days is 0.8993.



#77

Assume the random variable X is normally distributed with mean $\mu = 50$ and standard deviation $\sigma = 7$. Compute the probability. Be sure to draw a normal curve with the area corresponding to the probability shaded.

$$P(X > 42)$$

 Click the icon to view a table of areas under the normal curve.

Which of the following normal curves corresponds to $P(X > 42)$?

☐ A



☐ B



☐ C

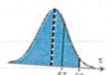


$P(X > 42) =$
(Round to four decimal places as needed.)

#12

Assume that the random variable X is normally distributed, with mean $\mu = 50$ and standard deviation $\sigma = 10$. Compute the probability $P(57 < X \leq 69)$. Be sure to draw a normal curve with the area corresponding to the probability shaded. Choose the correct graph below.

☐ A.



☐ B.



☐ C.



$P(57 < X \leq 69) = \square$ (Round to four decimal places as needed.)

#13

Assume the random variable X is normally distributed with mean $\mu = 50$ and standard deviation $\sigma = 7$. Find the 97th percentile.

The 97th percentile is
(Round to two decimal places as needed.)

#14