
Statistics – Second – Summer Semester – 2021

Q1: Suppose that $X \sim \text{bin}(55, 0.2)$. Using the normal approximation to the binomial distribution, $P(10 < X \leq 12)$ is closest to:

- a. 0.28
- b. 0.26**
- c. 0.39
- d. 0.20
- e. 0.33

Q2: Let $X \sim \text{bin}(7, 0.52)$, then $P(X=2)$ is equal to:

- a. 0.289
- b. 0.184
- c. 0.27
- d. 0.145**
- e. 0.0689

Q3: Suppose that a screening test diagnoses 90% of sick people positive and 90% of healthy people negative. Assume that 12% of those screened are sick. If a screened person is chosen at random, then the probability of having a positive diagnosis is:

- a. 0.0612
- b. 0.196**
- c. 0.551
- d. 0.804
- e. 0.449

Q4: Suppose that 75% of science students, 45% of business students, and 45% of humanities students pass a mathematics course. If 25% of the students in the course are science students, 15% are business students and 60% are humanities students, then the probability that a randomly selected student who has passed the course is a science student is

- a. 0.54
- b. 0.456
- c. 0.417
- d. 0.125
- e. 0.583

Q5: A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 48)$ is closest to

- a. 0.79**
- b. 0.36

- c. 0.50
- d. 0.21
- e. 0.50

Q6: Let $X \sim \text{Bin}(6, 0.6)$, then $P(X > 4 | X > 3)$ is

- a. 0.399
- b. 0.663
- c. 0.221
- d. 0.429**
- e. 0.7

Q7: A random sample of size 12 is selected from Normal distribution with mean 12 and unknown variance. If the sample standard deviation S is 6, then the (90)th percentile of the sample mean is closest to:

- a. 12.90
- b. 14.40**
- c. 9.64
- d. 10.10
- e. 12.40

Q8: The sampling distribution of the sample mean is close to the normal distribution

- a. Regardless the distribution of the parent population or what the value of n
- b. If the standard deviation of the parent population is known
- c. Only if both n is large and the parent population has a normal distribution
- d. If n is large, regardless the distribution of the parent population**
- e. Only if the parent population is not skewed and does not have outliers

Q9: Let $X \sim \text{bin}(18, 0.7)$, then $P(5 \leq X < 10)$ is closest to:

- a. 0.14
- b. 0.0595**
- c. 0.278
- d. 0.141
- e. 0.0593

Q10: Suppose X is random variable with possible values -2, 4 and 2 and with respective probabilities 0.28, 0.48, and 0.24 then $E(5X - 2X^2)$ is:

- a. -10.32**
- b. 2.4288
- c. -4.3424
- d. 22.7424
- e. 15.9712

Q11: Suppose X is a random variable with possible values 3, -2 and -3 and with respective probabilities 0.15, 0.48, and 0.37 then the mean and standard deviation of X , respectively, are:

- a. -1.62 and 1.994
- b. -0.667 and 0.9533
- c. -0.667 and 2.21
- d. -1.62 and 2.21
- e. -1.62 and 0.9533

Q12: Suppose that the time in minutes it takes a student to complete an assignment is normally distributed with a mean 50 and variance 100 then the 85th percentile of the average time it takes a random sample of 25 students to complete the assignment is closest to

- a. 60
- b. 52
- c. 40
- d. 71
- e. 48

Q13: Suppose X is a random variable with possible values -2, 3 and 1 and with respective probabilities 0.22, 0.35, and 0.43 then the mean and standard deviation of X , respectively, are:

- a. 1.04 and 0.3733
- b. 1.04 and 1.876
- c. 1.04 and 1.838
- d. 0.667 and 1.876
- e. 0.667 and 0.3733

Q14: Let $X \sim \text{Bin}(5, 0.5)$, then $P(X > 3 | X > 2)$ is

- a. 0.188
- b. 0.727
- c. 0.375
- d. 0.381
- e. 0.615

Q15: Let $X \sim \text{Bin}(7, 0.5)$, then $P(X > 4 | X > 3)$ is

- a. 0.646
- b. 0.393
- c. 0.227
- d. 0.453
- e. 0.688

Q16: Suppose that the time it takes a student to complete an assignment is normally distributed with mean 60 and variance 100 then the 65th percentile of the average time it takes a random sample of 36 students to complete the assignment is closest to

- a. 61
- b. 59
- c. 66
- d. 64
- e. 56

Q17: A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- a. 0.73
- b. 0.58
- c. 0.57
- d. 0.27
- e. 0.42

Q18: Let $X \sim \text{Bin}(5, 0.5)$, then $P(X > 3 | X > 2)$ is

- a. 0.188
- b. 0.727
- c. 0.375
- d. 0.381
- e. 0.615

Q19: Suppose that the time in minutes it takes a student to complete an assignment is normally distributed with a mean 50 and variance 100 then the 85th percentile of the average time it takes a random sample of 16 students to complete the assignment is closest to

- a. 40
- b. 76
- c. 47
- d. 60
- e. 53

Q20: Suppose that a screening test diagnoses 97% of sick people positive and 95% of healthy people negative. Assume that 7% of those screened are sick. If a screened person is chosen at random, then the probability of having a positive diagnosis is:

- a. 0.0184
- b. 0.594
- c. 0.114
- d. 0.886
- e. 0.406

Q21: Let $X \sim \text{bin}(18, 0.6)$, then $P(5 \leq X < 10)$ is closest to:

- a. 0.431
- b. 0.257

- c. 0.435
- d. 0.262
- e. 0.62

Q22: Suppose that $X \sim \text{bin}(65, 0.2)$. Using the normal approximation to the binomial distribution, $P(12 < X \leq 14)$ is closest to:

- a. 0.24
- b. 0.18
- c. 0.26
- d. 0.30
- e. 0.36

Q23: The central limit theorem says that the sampling distribution of the sample mean is approximately normal

- a. Only if both the sample size is large and the values of the mean and the variance of the parent population are unknown
- b. Only if both the parent population is normal and the mean of the parent population is known
- c. Only if the mean and variance of the parent population are known
- d. If the sample size is large, regardless of the parent population
- e. Only if both the sample size is large and the parent population is normal

Q24: A box has a large number of items which have mean weight 44 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- a. 0.87
- b. 0.81
- c. 0.93
- d. 0.07
- e. 0.19

Q25: Let $X \sim \text{bin}(7, 0.57)$, then $P(X=2)$ is equal to:

- a. 0.1
- b. 0.325
- c. 0.234
- d. 0.201
- e. 0.0478

Q26: A random sample of size 23 is selected from Normal distribution with mean 16 and unknown variance. If the sample standard deviation S is 10, then the (95)th percentile of the sample mean is closest to:

- a. 16.80
- b. 13.20

- c. 19.60
- d. 17.40
- e. 12.40

Q27: Suppose X is a random variable with possible values $-2, -4$ and 2 and with respective probabilities $0.42, 0.48$, and 0.1 then $E(5X - 2X^2)$ is:

- a. -32.32
- b. 13.4144
- c. 0.3072
- d. -39.0144
- e. -25.9072

Q28: Suppose that 85% of science students, 45% of business students, and 35% of humanities students pass a mathematics course. If 35% of the students in the course are science students, 30% are business students and 35% are humanities students, then the probability that a randomly selected student who has passed the course is a science student is

- a. 0.523
- b. 0.229
- c. 0.477
- d. 0.535
- e. 0.294

Question 11

Incorrect

Mark 0.00 out of 2.50

Flag question

Suppose that $X \sim \text{bin}(55, 0.2)$. Using the normal approximation to the binomial distribution, $P(10 \leq X \leq 12)$ is closest to:

- ☒ a. 0.28
- ☐ b. 0.26
- ☐ c. 0.39
- ☐ d. 0.20
- ☐ e. 0.33

The correct answer is: 0.26

Question 12

Incorrect

Mark 0.00 out of 2.50

Flag question

Let $X \sim \text{bin}(7, 0.52)$, then $P(X=2)$ is equal to:

- ☒ a. 0.289
- ☐ b. 0.184
- ☐ c. 0.27
- ☐ d. 0.145
- ☐ e. 0.0689

The correct answer is: 0.145

Suppose that a screening test diagnoses 90% of sick people positive and 90% of healthy people negative. Assume that 12% of those screened are sick. If a screened person is chosen at random, then the probability of having a positive diagnosis is:

- ☒ a. 0.0612
- ☐ b. 0.196
- ☐ c. 0.551
- ☐ d. 0.804
- ☐ e. 0.449

The correct answer is: 0.196

Suppose that $X \sim \text{bin}(55, 0.2)$. Using the normal approximation to the binomial distribution, $P(10 \leq X \leq 12)$ is closest to:

Suppose that 75% of science students, 45% of business students, and 45% of humanities students pass a mathematics course. If 25% of the students in the course are science students, 15% are business students and 60% are humanities students, then the probability that a randomly selected student who has passed the course is a science student is

- ☐ a. 0.54
- ☐ b. 0.458
- ☐ c. 0.417
- ☒ d. 0.125
- ☐ e. 0.583

The correct answers are: 0.417, 0.125, 0.458, 0.54, 0.583

Suppose X is a random variable with possible values 3, -2 and -3 and with respective probabilities 0.25, 0.45 and 0.30. The mean and standard deviation of X , respectively, are:

Question 8

Correct

Mark 2.50 out of 2.50

Flag question

A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 48)$ is closest to

- ☒ a. 0.79
- ☐ b. 0.36
- ☐ c. 0.50
- ☐ d. 0.21
- ☐ e. 0.50

The correct answer is: 0.79

Question 9

Incorrect

Mark 0.00 out of 2.50

Flag question

Let $X \sim \text{Bin}(6, 0.6)$, then $P(X > 4 | X > 3)$ is

- ☒ a. 0.399
- ☐ b. 0.663
- ☐ c. 0.221
- ☐ d. 0.429
- ☐ e. 0.7

The correct answer is: 0.429

The correct answer is: 0.0595

A random sample of size 12 is selected from Normal distribution with mean 12 and unknown variance. If the sample standard deviation S is 6, then the (90.)th percentile of the sample mean is closest to:

- ☐ a. 12.90
- ☒ b. 14.40
- ☐ c. 9.64
- ☐ d. 10.10
- ☐ e. 12.40

The correct answer is: 14.40

A box has a large number of items which have mean weight 60 gm's and standard deviation 12 gm's. If the weight of a randomly selected item is denoted by X , then $P(X > 48)$ is closest to:

Question 5

Incorrect

Mark 0.00 out of 2.50

Flag question

The sampling distribution of the sample mean is close to the normal distribution

- ☐ a. regardless the distribution of the parent population or what the value of n
- ☒ b. if the standard deviation of the parent population is known
- ☐ c. only if both n is large and the parent population has a normal distribution
- ☐ d. if n is large, regardless the distribution of the parent population
- ☐ e. only if the parent population is not skewed and does not have outliers

The correct answer is: if n is large, regardless the distribution of the parent population

Question 6

Correct

Mark 2.50 out of 2.50

Flag question

Let $X \sim \text{bin}(18, 0.7)$, then $P(5 \leq X < 10)$ is closest to:

- ☐ a. 0.14
- ☒ b. 0.0595
- ☐ c. 0.278
- ☐ d. 0.141
- ☐ e. 0.0593

The correct answer is: 0.0595

Suppose X is a random variable with possible values $-2, 4$ and 2 and with respective probabilities $0.28, 0.48$, and 0.24 then $E(5X - 2X^2)$ is:

- ☐ a. -10.32
- ☐ b. 2.4288
- ☒ c. -4.3424
- ☐ d. 22.7424
- ☐ e. 15.9712

The correct answer is: -10.32

Suppose that 75% of science students, 45% of business students, and 45% of humanities students are science majors. If a student is selected at random from the combined student body, the probability that the student is a science major is:

Suppose X is a random variable with possible values $3, -2$ and -3 and with respective probabilities $0.15, 0.48$, and 0.37 then the mean and standard deviation of X , respectively, are:

- ☒ a. -1.62 and 1.994
- ☐ b. -0.667 and 0.9533
- ☐ c. -0.667 and 2.21
- ☐ d. -1.62 and 2.21
- ☐ e. -1.62 and 0.9533

The correct answer is: -1.62 and 1.994

The sampling distribution of the sample mean is close to the normal distribution

12.50 out of 30.00 (42%)

Suppose that the time in minutes it takes a student to complete an assignment is normally distributed with a mean 50 and variance 100 then the 85th percentile of the average time it takes a random sample of 25 students to complete the assignment is closest to

- ☒ a. 60.
- ☐ b. 52.
- ☐ c. 40.
- ☐ d. 71.
- ☐ e. 48.

✗

The correct answer is: 52.

Suppose X is a random variable with possible values -2, 4 and 2 and with respective probabilities 0.28, 0.48, and 0.24 then $E(5X - 2X^2)$ is:

Suppose X is a random variable with possible values -2, 3 and 1 and with respective probabilities 0.22, 0.35, and 0.43 then the mean and standard deviation of X , respectively, are:

- ☐ a. 1.04 and 0.3733
- ☐ b. 1.04 and 1.876
- ☐ c. 1.04 and 1.838
- ☐ d. 0.667 and 1.876
- ☐ e. 0.667 and 0.3733

⊗

Let $X \sim \text{Bin}(5, 0.5)$, then $P(X > 3 | X > 2)$ is

- ☐ a. 0.188
- ☐ b. 0.727
- ☐ c. 0.375
- ☐ d. 0.381
- ☐ e. 0.615

Let $X \sim \text{Bin}(7, 0.5)$, then $P(X > 4 | X > 3)$ is

- ☐ a. 0.646
- ☐ b. 0.393
- ☐ c. 0.227
- ☐ d. 0.453
- ☐ e. 0.688

Suppose that the time it takes a student to complete an assignment is normally distributed with mean 60 and variance 100 then the 65th percentile of the average time it takes a random sample of 36 students to complete the assignment is closest to

- ☐ a. 61.
- ☐ b. 59.
- ☐ c. 66.
- ☐ d. 64.
- ☐ e. 56.

A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- ☐ a. 0.73
- ☐ b. 0.58
- ☐ c. 0.57
- ☐ d. 0.27
- ☐ e. 0.42

Let $X \sim \text{Bin}(5, 0.5)$, then $P(X > 3 | X > 2)$ is

- ☐ a. 0.188
- ☐ b. 0.727
- ☐ c. 0.375
- ☐ d. 0.381
- ☐ e. 0.615

Suppose that the time in minutes it takes a student to complete an assignment is normally distributed with a mean 50 and variance 100 then the 85th percentile of the average time it takes a random sample of 16 students to complete the assignment is closest to

- ☐ a. 40.
- ☐ b. 76.
- ☐ c. 47.
- ☐ d. 60.
- ☐ e. 53.

Suppose that a screening test diagnoses 97% of sick people positive and 95% of healthy people negative. Assume that 7% of those screened are sick. If a screened person is chosen at random, then the probability of having a positive diagnosis is:

- ☐ a. 0.0184
- ☐ b. 0.594
- ☐ c. 0.114
- ☐ d. 0.886
- ☐ e. 0.406

Let $X \sim \text{bin}(18, 0.6)$, then $P(5 \leq X < 10)$ is closest to:

- ☐ a. 0.431
- ☐ b. 0.257
- ☐ c. 0.435
- ☐ d. 0.262
- ☐ e. 0.62

Suppose that $X \sim \text{bin}(65, 0.2)$. Using the normal approximation to the binomial distribution, $P(12 < X \leq 14)$ is closest to:

- ☐ a. 0.24
- ☐ b. 0.18
- ☐ c. 0.26
- ☐ d. 0.30
- ☐ e. 0.36

A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- ☐ a. 0.73
- ☐ b. 0.58
- ☐ c. 0.57
- ☐ d. 0.27
- ☐ e. 0.42

Let $X \sim \text{Bin}(7, 0.5)$, then $P(X > 4 | X > 3)$ is

- ☐ a. 0.646
- ☐ b. 0.393
- ☐ c. 0.227
- ☐ d. 0.453
- ☐ e. 0.688

The central limit theorem says that the sampling distribution of the sample mean is approximately normal

- ☐ a. only if both the sample size is large and the values of the mean and the variance of the parent population are unknown
- ☐ b. only if both the parent population is normal and the mean of the parent population is known
- ☐ c. only if the mean and variance of the parent population are known
- ☐ d. if the sample size is large, regardless of the parent population
- ☐ e. only if both the sample size is large and the parent population is normal

Suppose X is a random variable with possible values -2, 3 and 1 and with respective probabilities 0.22, 0.35, and 0.43 then the mean and standard deviation of X , respectively, are:

- ☐ a. 1.04 and 0.3733
- ☐ b. 1.04 and 1.876
- ☐ c. 1.04 and 1.838
- ☐ d. 0.667 and 1.876
- ☐ e. 0.667 and 0.3733

Let $X \sim \text{bin}(18, 0.6)$, then $P(5 \leq X < 10)$ is closest to:

- ☐ a. 0.262
- ☐ b. 0.62
- ☐ c. 0.431
- ☐ d. 0.435
- ☐ e. 0.257

The central limit theorem says that the sampling distribution of the sample mean is approximately normal

- ☐ a. if the sample size is large, regardless of the parent population
- ☐ b. only if both the sample size is large and the parent population is normal
- ☐ c. only if both the sample size is large and the values of the mean and the variance of the parent population are unknown
- ☐ d. only if the mean and variance of the parent population are known
- ☐ e. only if both the parent population is normal and the mean of the parent population is known

Suppose X is a random variable with possible values $-2, 3$ and 1 and with respective probabilities $0.22, 0.35$, and 0.43 then the mean and standard deviation of X , respectively, are:

- ☐ a. 1.04 and 1.876
- ☐ b. 1.04 and 1.838
- ☐ c. 1.04 and 0.3733
- ☐ d. 0.667 and 0.3733
- ☐ e. 0.667 and 1.876

A box has a large number of items which have mean weight 44 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- ☐ a. 0.87
- ☐ b. 0.81
- ☐ c. 0.93
- ☐ d. 0.07
- ☐ e. 0.19

Let $X \sim \text{bin}(7, 0.57)$, then $P(X=2)$ is equal to:

- ☐ a. 0.1
- ☐ b. 0.325
- ☐ c. 0.234
- ☐ d. 0.201
- ☐ e. 0.0478

A random sample of size 23 is selected from Normal distribution with mean 16 and unknown variance. If the sample standard deviation S is 10 , then the $(95.)$ th percentile of the sample mean is closest to:

- ☐ a. 16.80
- ☐ b. 13.20
- ☐ c. 19.60
- ☐ d. 17.40
- ☐ e. 12.40

A box has a large number of items which have mean weight 60 gm's and standard deviation 15 gm's. One item was picked at random. If its weight is denoted by X , then $P(X > 57)$ is closest to

- ☐ a. 0.27
- ☐ b. 0.42
- ☐ c. 0.58
- ☐ d. 0.57
- ☐ e. 0.73

Suppose that the time in minutes it takes a student to complete an assignment is normally distributed with a mean 50 and variance 100 then the 85th percentile of the average time it takes a random sample of 25 students to complete the assignment is closest to

- ☒ a. 48.
- ☐ b. 52.
- ☐ c. 40.
- ☐ d. 60.
- ☐ e. 71.

A random sample of size 23 is selected from Normal distribution with mean 16 and unknown variance. If the sample standard deviation S is 10, then the (95.)th percentile of the sample mean is closest to:

- ☐ a. 19.60
- ☐ b. 13.20
- ☐ c. 16.80
- ☐ d. 17.40
- ☐ e. 12.40

Suppose X is a random variable with possible values $-2, -4$ and 2 and with respective probabilities $0.42, 0.48$, and 0.1 then $E(5X - 2X^2)$ is:

- ☐ a. -32.32
- ☐ b. 13.4144
- ☐ c. 0.3072
- ☐ d. -39.0144
- ☐ e. -25.9072

Question 8

Not yet answered

Marked out of 2.50

Flag question

Suppose X is a random variable with possible values $-2, 4$ and 2 and with respective probabilities $0.28, 0.48$, and 0.24 then $E(5X - 2X^2)$ is:

- ☐ a. 22.7424
- ☐ b. -4.3424
- ☒ c. -10.32
- ☐ d. 2.4288
- ☐ e. 15.9712

Clear my choice

Suppose that 85% of science students, 45% of business students, and 35% of humanities students pass a mathematics course. If 35% of the students in the course are science students, 30% are business students and 35% are humanities students, then the probability that a randomly selected student who has passed the course is a science student is

- ☐ a. 0.523
- ☐ b. 0.229
- ☐ c. 0.477
- ☐ d. 0.535
- ☐ e. 0.294

Suppose that $X \sim \text{bin}(55, 0.2)$. Using the normal approximation to the binomial distribution, $P(10 < X \leq 12)$ is closest to:

- ☐ a. 0.28
- ☐ b. 0.33
- ☐ c. 0.39
- ☐ d. 0.20
- ☐ e. 0.26