

## Statistics MCQs – Hypothesis testing for one population Part 3

41. A social scientist claims that the average adult watches less than 26 hours of television per week. He collects data on 25 individuals' television viewing habits and finds that their mean number of hours watching television was 22.4 hours. Assume the population standard deviation is known to be eight hours, and the significance level adopted is 1%. What is the value of the test statistic in this case?

- a.  $z = -2.25$
- b.  $t = -2.25$
- c.  $z = 2.25$
- d.  $t = 2.25$
- e.  $z = 1.25$

Answer: A

42. A one sample, two-tailed test of hypothesis about the population mean of a certain population is conducted, with the population standard deviation being known. The value of the test statistic is -1.82. Which of the following conclusions about this test would be correct?

- a. the null hypothesis can be rejected at the 1% level of significance
- b. the null hypothesis can be rejected at the 5% level of significance
- c. the null hypothesis can be rejected at the 10% level of significance
- d. both a and b are correct
- e. both b and c are correct

Answer: C

43. A one sample, two-tailed test of hypothesis about the population mean of a certain population is conducted, with the population standard deviation being known. The value of the test statistic is 2.12. Which of the following conclusions about this test would be correct?

- a. the null hypothesis can be rejected at the 1% level of significance
- b. the null hypothesis can be rejected at the 5% level of significance
- c. the null hypothesis can be rejected at the 10% level of significance
- d. both a and b are correct

e. both b and c are correct

Answer: E

44. A one sample, two-tailed test of hypothesis about the population mean of a certain population is conducted, with the population standard deviation being known. The value of the test statistic is -2.89. Which of the following conclusions about this test would be correct?

- a. the null hypothesis can be rejected at the 1% level of significance
- b. the null hypothesis can be rejected at the 5% level of significance
- c. the null hypothesis can be rejected at the 10% level of significance
- d. both a and b are correct
- e. both b and c are correct

Answer: A

45. A one sample, two-tailed test of hypothesis about the population mean of a certain population is conducted, with the population standard deviation being known. The value of the test statistic is 0.89. Which of the following conclusions about this test would be correct?

- a. the null hypothesis can be rejected at the 1% level of significance
- b. the null hypothesis can be rejected at the 5% level of significance
- c. the null hypothesis can be rejected at the 10% level of significance
- d. both a and b are correct
- e. none of the above conclusions are correct

Answer: E

46. A one sample, two-tailed test of hypothesis about the population mean of a certain population is conducted, with the population standard deviation being known. The value of the test statistic is -2.01. Which of the following conclusions about this test would be correct?

- a. the null hypothesis can be rejected at the 1% level of significance
- b. the null hypothesis can be rejected at the 2% level of significance
- c. the null hypothesis can be rejected at the 5% level of significance
- d. both a and b are correct
- e. none of the above conclusions are correct

Answer: C

47. A hypothesis test is to be conducted to test whether a certain population mean is equal to or greater than 24.4. It is known that the population standard deviation is 7.6. A sample of size 60 is selected from the population and the sample mean is calculated as being 25.52. Assuming that the population follows a normal distribution, what is the p-value of this test?

- a. 0.127
- b. 0.452
- c. 0.015
- d. 0.816
- e. 0.973

Answer: A

48. A hypothesis test is to be conducted to test whether a certain population mean is equal to or greater than 24.4. It is known that the population standard deviation is 7.6. A sample of size 60 is selected from the population and the sample mean is calculated as being 24.52. Assuming that the population follows a normal distribution, what is the p-value of this test?

- a. 0.127
- b. 0.452
- c. 0.015
- d. 0.816
- e. 0.973

Answer: B

49. A hypothesis test is to be conducted to test whether a certain population mean is equal to or greater than 24.4. It is known that the population standard deviation is 7.6. A sample of size 60 is selected from the population and the sample mean is calculated as being 26.52. Assuming that the population follows a normal distribution, what is the p-value of this test?

- a. 0.127
- b. 0.452
- c. 0.015
- d. 0.816
- e. 0.973

Answer: C

50. A hypothesis test is to be conducted to test whether a certain population mean is equal to or greater than 24.4. It is known that the population standard deviation is 7.6. A sample of size 60 is selected from the population and the sample mean is calculated as being 23.52. Assuming that the population follows a normal distribution, what is the p-value of this test?

- a. 0.127
- b. 0.452
- c. 0.015
- d. 0.816
- e. 0.973

Answer: D

51. A hypothesis test is to be conducted to test whether a certain population mean is equal to or greater than 24.4. It is known that the population standard deviation is 7.6. A sample of size 60 is selected from the population and the sample mean is calculated as being 22.52. Assuming that the population follows a normal distribution, what is the p-value of this test?

- a. 0.127
- b. 0.452
- c. 0.015
- d. 0.816
- e. 0.973

Answer: E

57. A hypothesis test is conducted to test whether the mean age of clients at a certain health spa is equal to 25 or not. It is known that the population standard deviation of clients at the spa is 10. 36 clients are randomly selected, and their ages recorded, with the sample mean age being 22.8. What is your decision, at the 5% level of significance, regarding the null hypothesis that the mean age is equal to 25?

- a. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25
- b. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is not equal to 25
- c. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is more than 25
- d. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is 25

e. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

Answer: D

58. A hypothesis test is conducted to test whether the mean age of clients at a certain health spa is equal to 25 or not. It is known that the population standard deviation of clients at the spa is 10. 36 clients are randomly selected, and their ages recorded, with the sample mean age being 20.8. What is your decision, at the 5% level of significance, regarding the null hypothesis that the mean age is equal to 25?

a. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

b. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is not equal to 25

c. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is more than 25

d. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is 25

e. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

Answer: B

59. A hypothesis test is conducted to test whether the mean age of clients at a certain health spa is equal to 25 or not. It is known that the population standard deviation of clients at the spa is 10. 36 clients are randomly selected, and their ages recorded, with the sample mean age being 23.8. What is your decision, at the 5% level of significance, regarding the null hypothesis that the mean age is equal to 25?

a. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

b. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is not equal to 25

c. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is more than 25

d. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is 25

e. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

Answer: D

60. A hypothesis test is conducted to test whether the mean age of clients at a certain health spa is equal to 25 or not. It is known that the population standard deviation of clients at the spa is 10. 36 clients are randomly selected, and their ages recorded, with the sample mean age being 27.8. What is your decision, at the 5% level of significance, regarding the null hypothesis that the mean age is equal to 25?

- a. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25
- b. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is not equal to 25
- c. reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is more than 25
- d. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is 25
- e. do not reject the null hypothesis at the 5% level of significance and conclude that the mean age of clients at the spa is less than 25

Answer: D