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Statistics MCQs – Hypothesis Testing for Two Populations Part 2

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21. The owner of Bun & Run Hamburgers wishes to compare the sales per day at two different locations. The mean number of hamburgers sold for 10 randomly selected days at Northside was 83.55 with a population standard deviation of 10.50. For a randomly selected 12 days at Southside, the mean number of hamburgers sold was 73.80 with a population standard deviation of 10.20. We wish to test whether there is a difference in the mean number of hamburgers sold at the two locations using a 5 % significance level. What is the value of the test statistic in this case?

a. 1.84

b. 0.24

c. 2.65

d. 1.71

e. 2.20

Answer: E

22. The owner of Bun & Run Hamburgers wishes to compare the sales per day at two different locations. The mean number of hamburgers sold for 10 randomly selected days at Northside was 83.55 with a population standard deviation of 12.45. For a randomly selected 12 days at Southside, the mean number of hamburgers sold was 73.80 with a population standard deviation of 14.25. We wish to test whether there is a difference in the mean number of hamburgers sold at the two locations using a 5 % significance level. What is the correct conclusion for this hypothesis test?

a. Our test statistic lies in the rejection region thus we cannot reject the null hypothesis and conclude that there is no difference in sales between the two locations

b. Our test statistic does not lie in the rejection region and thus we reject the null hypothesis and conclude that there is a difference in sales between the two locations

c. Our test statistic lies in the rejection region and thus we reject the null hypothesis and conclude that there is a difference in sales between the two locations

d. Our test statistic does not lie in the rejection region and this we cannot reject the null hypothesis and conclude that there is no difference in sales between the two locations

e. None of the above

Answer: D

23. The owner of Bun & Run Hamburgers wishes to compare the sales per day at two different locations. The mean number of hamburgers sold for 10 randomly selected days at Northside was 83.55 with a population standard deviation of 10.50. For a randomly selected 12 days at Southside, the mean number of hamburgers sold was 73.80 with a population standard deviation of 10.20. We wish to test whether there is a difference in the mean number of hamburgers sold at the two locations using a 5 % significance level. What is the correct conclusion for this hypothesis test?

a. Our test statistic lies in the rejection region thus we cannot reject the null hypothesis and conclude that there is no difference in sales between the two locations

b. Our test statistic does not lie in the rejection region and thus we reject the null hypothesis and conclude that there is a difference in sales between the two locations

c. Our test statistic lies in the rejection region and thus we reject the null hypothesis and conclude that there is a difference in sales between the two locations

d. Our test statistic does not lie in the rejection region and this we cannot reject the null hypothesis and conclude that there is no difference in sales between the two locations

e. None of the above

Answer: C

24. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the value of the test statistic in this case?

a. -1.51

b. -2.16

c. -0.86

d. -1.40

e. -1.68

Answer: A

25. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R45 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the value of the test statistic in this case?

a. -1.51

b. -2.16

c. -0.86

d. -1.40

e. -1.68

Answer: B

26. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R52 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the value of the test statistic in this case?

a. -1.51

b. -2.16

c. -0.86

d. -1.40

e. -1.68

Answer: C

27. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R14 000 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the value of the test statistic in this case?

a. -1.51

b. -2.16

c. -0.86

d. -1.40

e. -1.68

Answer: D

28. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R11 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the value of the test statistic in this case?

a. -1.51

b. -2.16

c. -0.86

d. -1.40

e. -1.68

Answer: E

29. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the p-value of the test in this case?

a. 0.0655

b. 0.0154

c. 0.1949

d. 0.0808

e. 0.0465

Answer: A

30. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose

average starting salary is R45 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the p-value of the test in this case?

a. 0.0655

b. 0.0154

c. 0.1949

d. 0.0808

e. 0.0465

Answer: B

31. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R52 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the p-value of the test in this case?

a. 0.0655

b. 0.0154

c. 0.1949

d. 0.0808

e. 0.0465

Answer: C

32. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R14 000 and R13 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the p-value of the test in this case?

a. 0.0655

b. 0.0154

c. 0.1949

d. 0.0808

e. 0.0465

Answer: D

33. A researcher randomly sampled 30 graduates of an MBA program and recorded data concerning their starting salaries. The sample comprised of 18 women whose average starting salary is R48 000, and 12 men whose average starting salary is R55 000. It is known that the population standard deviations of starting salaries for women and men are R11 500 and R11 000 respectively. The researcher was attempting to show that female MBA graduates have significantly lower average starting salaries than male MBA graduates. What is the p-value of the test in this case?

a. 0.0655

b. 0.0154

c. 0.1949

d. 0.0808

e. 0.0465

Answer: E

34. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 57.3 % and for males the sample mean mark is 55.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the test statistic value of the hypothesis test in this case be?

a. 1.04

b. 1.58

c. 0.49

d. -1.15

e. -1.69

Answer: A

35. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 58.3 % and for males the sample mean mark is 55.4

% . If we wish to test whether females have, on average, higher exam marks than males, what would the test statistic value of the hypothesis test in this case be?

a. 1.04

b. 1.58

c. 0.49

d. -1.15

e. -1.69

Answer: B

36. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 57.3 % and for males the sample mean mark is 56.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the test statistic value of the hypothesis test in this case be?

a. 1.04

b. 1.58

c. 0.49

d. -1.15

e. -1.69

Answer: C

37. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 57.3 % and for males the sample mean mark is 59.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the test statistic value of the hypothesis test in this case be?

a. 1.04

b. 1.58

c. 0.49

d. -1.15

e. -1.69

Answer: D

38. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 52.3 % and for males the sample mean mark is 55.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the test statistic value of the hypothesis test in this case be?

a. 1.04

b. 1.58

c. 0.49

d. -1.15

e. -1.69

Answer: E

39. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 57.3 % and for males the sample mean mark is 55.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the p-value of the hypothesis test in this case be?

a. 0.15

b. 0.06

c. 0.31

d. 0.87

e. 0.95

Answer: A

40. It is known that the population variances of final exam marks for first year statistics students at a particular South African university are 45.3 for female students and 52.1 for male students. Samples of 27 female and 31 male first year statistics students from the university are selected and the sample mean exam marks are calculated. For females, the sample mean mark is 58.3 % and for males the sample mean mark is 55.4 % . If we wish to test whether females have, on average, higher exam marks than males, what would the p-value of the hypothesis test in this case be?

a. 0.15

b. 0.06

c. 0.31

d. 0.87

e. 0.95

Answer: B

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