0/13 Questions Answered

Final, Part 2

Q1 True or False

6 Points

The 2010 General Social Survey asked the question: "After an average workday, about how many hours do you have to relax or pursue activities that you enjoy?" to a random sample of 1155 Americans. A 95\% confidence interval for the mean number of hours spent relaxing or pursuing activities they enjoy was 1.38 to 1.92 hours.

Q1.1

1 Point

TRUE or FALSE: We are 95% confident that Americans spent on average 1.38 to 1.92 hours relaxing or pursuing activities they enjoy after an average workday.

- ○ TRUE
- ○ FALSE

Save Answer

Q1.2

1 Point

TRUE or FALSE: If a 99% confidence interval is constructed, it would be wider than this 95\% confidence interval.

- ○ TRUE
- ○ FALSE

Save Answer

Q1.3

1 Point

TRUE or FALSE: 95% of the Americans spent 1.38 to 1.92 hours relaxing or pursuing activities they enjoy after an average workday.

- TRUE
- FALSE

Save Answer

Q1.4

1 Point

TRUE or FALSE: In repeated samples of the same size, 95% of the samples would have a sample mean that falls between 1.38 to 1.92 hours.

- TRUE
- FALSE

Save Answer

Q1.5

1 Point

TRUE or FALSE: In order to reduce the margin of error of the 95% confidence interval to half of what it is now, we would need to get a sample 4 times as large in size.

- TRUE
- FALSE

Save Answer

Q1.6

1 Point

TRUE or FALSE: If one were to test whether Americans spent 1.5 hours on average relaxing or pursuing activities they enjoy after work, the two-sided P-value would be greater than 5%.

- TRUE
- FALSE

Save Answer

Q2

2 Points

In order to investigate a claim that the average time required for the county fire department to respond to a reported fire μ is greater than 5 minutes, county staff determined the response times for 40 randomly selected fire reports. The data was used to test H_0: $\mu = 5$ versus H_a: $\mu > 5$ and the computed P-value was 0.22. If a 0.05 level of significance is used, what conclusions can be drawn?

- There is strong evidence that the mean response time is 5 minutes (or less).
- There is strong evidence that the mean response time is greater than 5 minutes.
- There is no strong evidence that the mean response time is greater than 5 minutes.
- There is no strong evidence that the mean response time is 5 minutes (or less).

Save Answer

Q3

2 Points

New York is known as "the city that never sleeps." Twenty-five ($n = 25$) New Yorkers were randomly sampled and asked how much sleep they get per night and the sample mean was 7.3 hours. To test if New Yorkers sleep less than 8 hours a night on average (H_0: $\mu = 8$ v.s. H_a: $\mu < 8$, where μ is the mean number of hours New Yorkers sleep a night), the P-value is

- the probability of getting a random sample of 25 New Yorkers that on average slept 7.3 hours a night, when New Yorkers actually slept less than 8 hours per night on average.
- the probability of getting a random sample of 25 New Yorkers that on average slept 7.3 hours or less a night, when New Yorkers actually slept 8 hours per night on average.
- the probability that New Yorkers on average slept 8 hours per night, given that the 25 randomly sampled New Yorkers on average slept 7.3 hours a night
- the probability that New Yorkers on average slept less than 8 hours per night, given that the 25 randomly sampled New Yorkers on average slept 7.3 hours a night.

Save Answer

Q4

2 Points

The United States has about 330 million residents. Suppose that you want to estimate the proportion of Americans who have a tattoo with a margin-of-error of 3.0 percentage points (3%) with 95% confidence. About how many people would you need to randomly sample? Select the best answer from the following choices.

- 100
- 1,000
- 10,000
- 100,000
- 1,000,000
- 10,000,000

Save Answer

Q5

2 Points

Consider a hypothesis test about two proportions, $H_0: p_1 = p_2$ versus $H_a: p_1 \neq p_2$. If the alternative hypothesis H_a is true and everything else are unchanged, increasing the size of the two samples would tend to [ ] the absolute value of the test statistic and [ ] the P-value. The two blanks should be

- increase; increase
- increase; decrease
- decrease; increase
- decrease; decrease

Save Answer

Q6

2 Points

Consider the data set below. Which pair of (x, y) values should be removed to make the correlation between x and y for the remaining four pairs equals -1?

x	y
1	17
3	11
5	10
6	2
9	−7

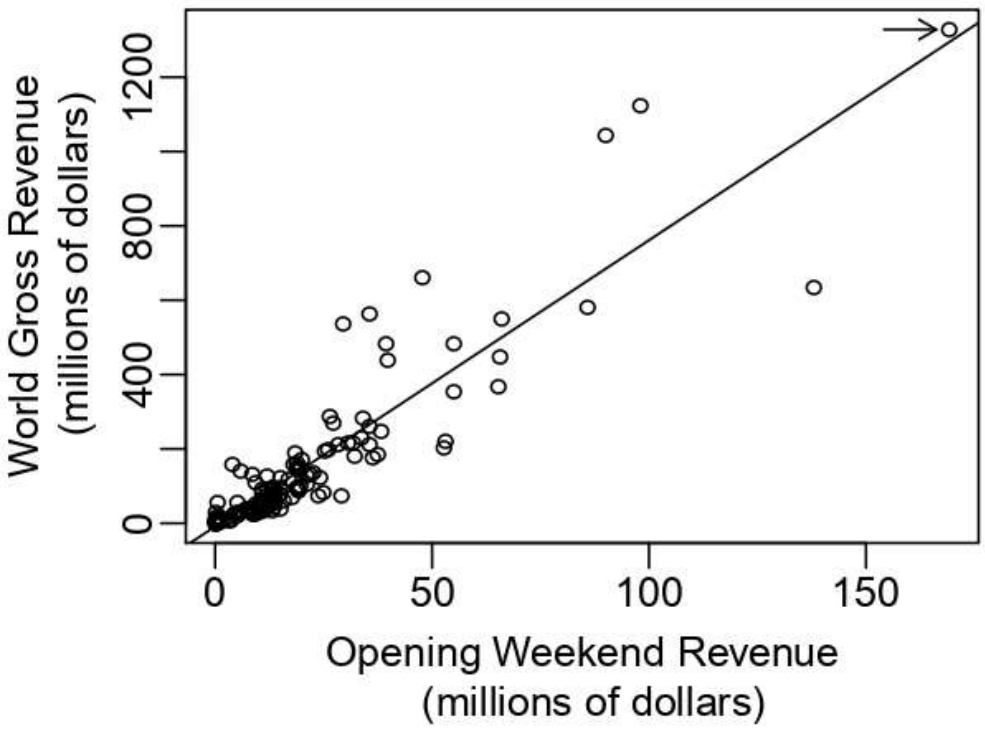
- $(1, 17)$
- $(3, 11)$
- $(5, 10)$
- $(6, 2)$
- $(9, -7)$

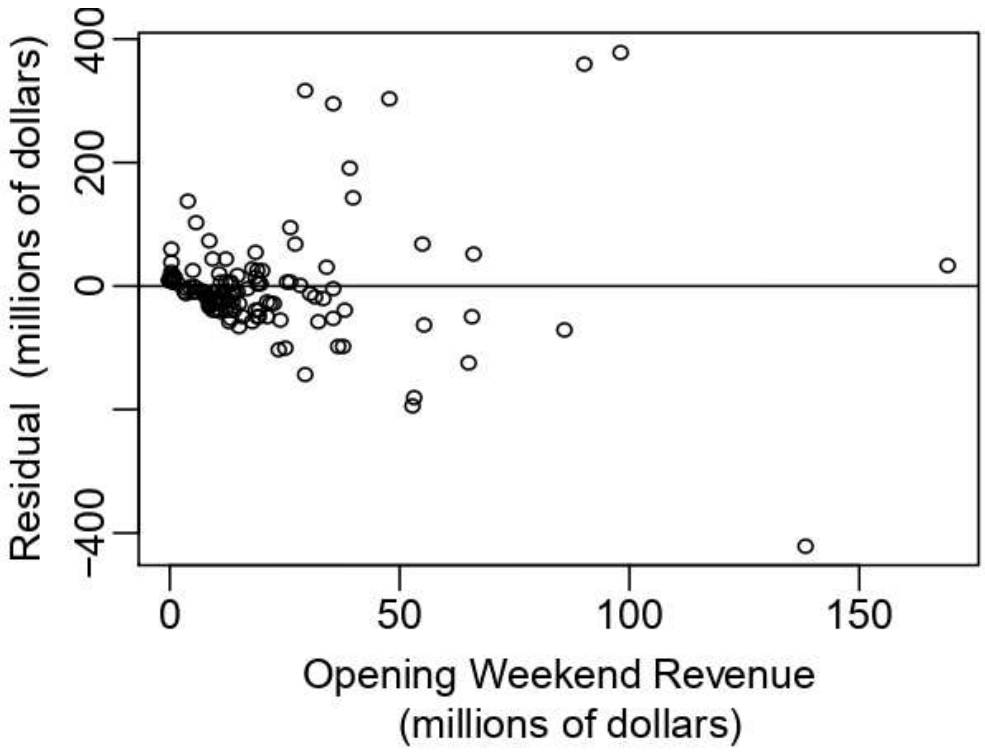
Save Answer

Q7

2 Points

Opening weekend box office revenue is an important source of income to the movie industry and a crucial preliminary indicator of the long-run profitability of a motion picture. Here are a scatter plot and the residual plot for predicting the World Gross Revenue from the Opening-Weekend Revenues for 136 Hollywood movies in 2011 using simple linear regression.





From the two plots above, which assumption of a simple linear model is most clearly violated?

- linearity
- constant variability
- normal residuals
- independence

Save Answer

Q8

2 Points

Continue the previous problem. Which statement is TRUE for the two plots above?

- The average of the residuals is exactly 0.
- The residuals are positively correlated with the Opening Weekend Revenue because the magnitude of residuals tends to increase as the Opening Weekend Revenue increases.
- The point with an arrow pointed to on the top right corner of the scatter plot is a low leverage point.
- The point with an arrow pointed to on the top right corner of the scatter plot is a point with the greatest residual in magnitude.

Save Answer

Save All Answers

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