

Answers to Sample Mean and Sample Proportion Worksheets

Sample Proportion Answers

1) $\text{normalcdf}(-1e99, 0.03, 0.07, 0.01804)$

The probability we observe only 6/200 patients contacting hepatitis when 7% of the population is known to do so is 0.0133. Consequently it is not very likely we'd observe this, so the treatment is effective.

2) $\text{normalcdf}(0.25, 0.35, 0.3, 0.023)$

The probability that the sample proportion will be within 5% of the true population proportion is 0.9709. The probability will be larger if we selected an SRS of size 500.

3) $\text{normalcdf}(0.6, 1e99, 0.5, 0.0333333)$

The probability that an SRS of 225 college graduates would give a sample proportion greater than 0.6 is 0.00135.

4) $\text{normalcdf}(0.5, 1e99, 0.48, 0.0223)$

The probability that the sample proportion will be greater than 0.5, causing the polling organization to incorrectly predict the results of the upcoming election is 0.1854.

5) $\text{normalcdf}(0.13, 0.17, 0.15, 0.009099)$

The probability the poll gave a result within 2% of the actual population proportion is 0.9721.

6) $\text{normalcdf}(-1e99, 0.45, 0.47, 0.01559)$

The middle 95% of the sample results fall between 0.4388 and 0.5012. The probability the poll gets a sample in which fewer than 45% say they do not get enough time for themselves is 0.0998.

7) $\text{normalcdf}(0.73, 1e99, 0.68, 0.0381)$

No, since the probability of producing the statistic when the parameter is true is 0.095.

Sample Mean Answers

1) $\text{normalcdf}(1.7, 1e99, 1.5, 0.18)$

The probability that the average song duration of the sample will be greater than 1.7 minutes is 0.1333.

2) $\text{normalcdf}(11.96, 12.07, 12, 0.04)$

The probability the average volume will be between 11.96 and 12.07 ounces is 0.8186.

3) $\text{normalcdf}(18.4, 1e99, 18, 0.1666666)$

Assuming the manufacturer's claim of 18 grams is true, the probability of producing our results is 0.0082. Consequently it seems like the claim is incorrect.

4) $\text{normalcdf}(0.75, 1e99, 0.5, 0.041)$

The mean of the sampling distribution is 0.5 minutes and the standard deviation is 0.041 minutes. No, it doesn't matter that the underlying population is not normal because the sample size is more than 30. The probability a sample of 50 people will wait longer than 45 seconds for an elevator is virtually 0 (4.72×10^{-10}).

5) $1 - \text{normalcdf}(0.49, 0.51, 0.5, 0.003333333)$

The probability the process will be shut down on any given day is 0.0027.

6) $\text{normalcdf}(64, 67, 65, 1)$

The probability the average distance for all 25 will be between 64 and 67 millimeters is 0.8186.

7) a) mean + 2(standard deviations),

mean - 2(standard deviations); 63, 67

b) + or - 3 millimeters