# **Normal Distribution Practice**

Test Content

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**Complete** the quiz to test your knowledge of this week’s materials.

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You are asked to conduct a study of shelters for women who have experienced domestic violence in order to determine the necessary capacity in your city to provide housing for most of these women. After recording data for a whole year, you find that the mean number of women in shelters each night is 250, with a standard deviation of 75. Fortunately, the distribution of the number of women in shelters each night is normal, so you can answer the following questions posed by the city council.

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Question 1

**2 Points**

If the city’s shelters have a capacity of 350, will that be enough places for abused women on 95% of all nights?

* 1. **Yes**
  2. **No**

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Question 2

**2 Points**

What number of shelter openings will be needed?

* 1. **250**
  2. **370**
  3. **75**
  4. **374**

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Question 3

**2 Points**

The current capacity is only 220 openings because some of the shelters have been closed. What is the percentage of nights that the number of abused women seeking shelter will exceed current capacity?

* 1. **62.21%**
  2. **65.54%**
  3. **34.46%**
  4. **40%**

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A criminologist developed a test to measure recidivism, where low scores indicated a lower probability of repeating the undesirable behavior. The test is normed so that it has a mean of 140 and a standard deviation of 40.

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Question 4

**2 Points**

What is the percentile rank of a score of 172?

* 1. **78.81st percentile**
  2. **80th percentile**
  3. **40th percentile**
  4. **28.81th percentile**

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Question 5

**2 Points**

What is the z-score for a test score of 200?

* 1. **-1.50**
  2. **0.5**
  3. **1**
  4. **1.50**

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Question 6

**2 Points**

What percentage of scores falls between 100 and 160?

* 1. **28.81%**
  2. **53.28%**
  3. **19.15%**
  4. **34.13%**

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Question 7

**2 Points**

What proportion of respondents should score above 190?

* 1. **0.5**
  2. **1**
  3. **1.50**
  4. **1.25**

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Question 8

**1.5 Points**

Suppose an individual is in the 67th percentile in this test. What is his or her corresponding recidivism score?

* 1. **155.9**
  2. **140**
  3. **157.6**
  4. **112.9**

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According to National Collegiate Athletic Association (NCAA) data, the means and standard deviations of eligibility and retention rates (based on a 1,000-point scale) for the 2013–2014 academic year are presented, along with the fictional scores for two basketball teams, A and B. Assume that rates are normally distributed.

[Normal Distribution Practice data](http://myresource.phoenix.edu/secure/resource/RES710v4/RES710_v4_wk5.docx)

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Question 9

**1.5 Points**

On which criterion (eligibility or retention) did Team A do better than Team B? Calculate appropriate statistics to answer this question.

* 1. **Team A has better retention and eligibility than Team B.**
  2. **Team B has better retention and eligibility than Team A.**
  3. **Team B has better retention but Team A has better eligibility.**
  4. **Team A has better retention but Team B has better eligibility.**

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Question 10

**1.5 Points**

What proportion of the teams have retention rates below Team B?

* 1. **43.25**
  2. **4.325**
  3. **0.4325**
  4. **0.04325**

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Question 11

**1.5 Points**

What is the percentile rank of Team A’s eligibility rate?

* 1. **43.25th percentile**
  2. **36.54th percentile**
  3. **35.94th percentile**
  4. **17th percentile**

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# 2. **Power Analysis**

Assignment Content

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Using [G\*Power](https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html) and the information provided, **answer** the following:

**Problem 1:**

To what extent does age, race, and gender predict the annual salary of bank presidents?

Conduct an *a-priori* analysis, a medium effect size, and alpha of .05 and a power of .80. What is the sample size you need to prevent a type II error? What is a type error, and how does an adequate sample prevent it? Show your work by providing your G\*Power output.

**Problem 2:**

What is the difference in growth rate between publicly traded enterprises and privately held firms?

Using a post hoc analysis with a sample size of 100, a medium effect size, and an alpha of .01, what is the power of your study? Explain what the power value means. Show your work by providing your G\*Power output.

**Problem 3:**

What is the difference in self-efficacy, burnout, and workload among hospital, university, and manufacturing administrators?

Conduct an *a-priori* analysis using a large effect size, an alpha of .05, and a power of .95. What is the total number of participants needed in your sample? How many participants do you need in each group? Why is it important to have an equal number of participants in each group? Show your work by providing your G\*Power output.

**Write** your answers in a single document.

**Submit** your assignment.

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# 3. **Sampling Application**

Assignment Content

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**Write** a 700- to 1,050-word scholarly paper that explains the following:

* + The difference in population and sample
  + Types of sampling techniques
  + Using your proposed dissertation, the type of sampling that would be most appropriate
  + How will you access this sample

**Format** your paper according to APA guidelines. Be sure to citeany references used.

**Submit** your assignment.

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