

## Math 221: Basic Statistics Assignment #4A

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.1 pounds per square inch?
    - (ii) at least 3.1 pounds per square inch?
    - (iii) between 3.1 and 4.9 pounds per square inch?
    - (iv) less than 3.27 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 85% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
4.55	3.08	5.37	6.91	6.80	7.60	1.72	4.65	6.64	3.37
3.96	2.46	2.23	3.53	3.84	1.82	4.15	4.39	5.20	4.45
4.51	4.44	7.01	4.87	4.72	4.23	7.96	6.30	8.56	4.02
7.49	2.58	5.81	6.35	7.88	4.87	4.21	6.01	4.43	6.14
2.83	3.73	2.72	4.46	4.95	5.04	4.52	8.29	2.39	3.90

## Math 221: Basic Statistics Assignment #4B

**Title:** Computing Probabilities For Normally Distributed Phenomena

### Objectives:

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

### Directions

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- What proportion of the bags produced have a breaking strength of
    - less than 5.15 pounds per square inch?
    - at least 3.15 pounds per square inch?
    - between 3.15 and 4.85 pounds per square inch?
    - less than 3.32 pounds per square inch?
  - Between what two values placed symmetrically around the mean will 87% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- Determine the average and standard deviation (STDEV) of the sample.
  - Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
5.61	4.03	6.08	5.79	6.61	0.85	5.70	7.20	2.42	5.07
7.03	7.53	5.36	5.22	7.78	4.94	4.01	6.36	4.99	6.56
5.65	7.18	4.82	3.56	2.69	1.15	5.15	5.45	4.97	5.30
5.39	7.21	5.13	3.32	2.92	5.29	6.43	2.74	4.09	5.79
4.67	4.48	4.75	4.34	3.80	5.97	5.09	6.90	5.39	5.09

## Math 221: Basic Statistics Assignment #4C

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.2 pounds per square inch?
    - (ii) at least 3.2 pounds per square inch?
    - (iii) between 3.2 and 4.8 pounds per square inch?
    - (iv) less than 3.37 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 89% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
5.34	5.32	4.99	3.16	5.35	5.22	6.13	3.90	5.92	5.33
5.17	6.30	7.70	3.04	3.15	5.84	6.79	3.68	1.78	3.65
5.30	5.64	3.52	3.71	5.69	5.18	4.19	5.15	3.59	3.66
6.57	7.44	3.99	4.74	5.17	7.77	5.89	7.48	5.27	7.34
4.03	3.55	6.79	6.38	2.41	6.91	4.70	3.30	2.18	3.76

## Math 221: Basic Statistics Assignment #4D

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.25 pounds per square inch?
    - (ii) at least 3.25 pounds per square inch?
    - (iii) between 3.25 and 4.75 pounds per square inch?
    - (iv) less than 3.42 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 91% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
5.71	6.38	4.90	4.92	5.32	4.47	6.39	4.26	8.52	6.12
5.92	3.53	6.31	7.17	3.90	4.55	2.99	7.03	6.57	5.28
1.71	5.76	5.79	6.82	3.56	6.81	4.16	3.90	2.41	7.06
3.55	7.32	3.25	4.39	3.04	7.38	5.04	5.50	6.46	7.92
4.91	3.46	4.15	6.27	6.31	5.77	2.77	2.91	4.78	4.06

## Math 221: Basic Statistics Assignment #4E

**Title:** Computing Probabilities For Normally Distributed Phenomena

### Objectives:

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

### Directions

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.3 pounds per square inch?
    - (ii) at least 3.3 pounds per square inch?
    - (iii) between 3.3 and 4.7 pounds per square inch?
    - (iv) less than 3.47 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 93% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
4.06	6.32	3.74	4.83	4.65	7.28	3.02	3.60	4.75	3.41
2.85	1.76	5.87	4.49	5.62	1.93	6.75	2.08	4.22	3.54
4.85	5.20	7.60	4.24	3.81	3.88	5.88	6.93	2.85	6.45
7.38	4.00	5.12	3.76	6.04	5.36	5.07	3.46	4.55	6.09
4.99	6.50	3.48	6.14	6.86	3.25	5.59	2.33	5.12	6.51

## Math 221: Basic Statistics Assignment #4F

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.35 pounds per square inch?
    - (ii) at least 3.35 pounds per square inch?
    - (iii) between 3.35 and 4.65 pounds per square inch?
    - (iv) less than 3.52 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 95% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
6.55	5.16	3.86	5.87	5.70	6.09	3.58	5.89	7.42	5.35
4.42	5.37	7.73	1.40	5.03	4.82	6.48	6.85	7.45	2.27
6.21	5.55	6.11	5.73	4.80	7.49	5.68	4.95	4.97	4.92
2.48	5.66	5.29	5.98	4.75	6.24	6.98	7.85	3.03	5.93
4.68	3.89	6.11	8.50	7.02	5.27	4.29	4.64	3.35	5.11

## Math 221: Basic Statistics Assignment #4G

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.4 pounds per square inch?
    - (ii) at least 3.4 pounds per square inch?
    - (iii) between 3.4 and 4.6 pounds per square inch?
    - (iv) less than 3.57 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 92% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
4.61	5.96	3.09	5.78	6.46	3.70	5.56	5.80	6.46	4.66
5.35	4.37	5.77	7.37	4.76	3.46	3.62	6.09	7.39	4.05
3.75	6.53	5.33	5.67	8.90	4.13	3.82	6.82	4.54	2.88
6.68	3.07	4.40	2.84	3.35	5.91	5.18	2.38	8.06	5.36
7.14	4.96	4.64	5.04	2.22	3.97	7.07	5.25	4.34	4.09

## Math 221: Basic Statistics Assignment #4H

**Title:** Computing Probabilities For Normally Distributed Phenomena

### Objectives:

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

### Directions

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.45 pounds per square inch?
    - (ii) at least 3.45 pounds per square inch?
    - (iii) between 3.45 and 4.55 pounds per square inch?
    - (iv) less than 3.62 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 90% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
3.28	6.87	8.71	6.37	4.85	3.71	4.87	4.62	4.41	6.31
4.57	5.52	6.20	5.36	2.56	5.04	5.98	4.76	2.53	2.60
3.78	5.39	4.08	8.09	4.67	6.30	6.86	4.31	2.23	3.65
5.15	5.41	6.34	1.89	3.98	5.23	5.21	4.89	4.64	7.20
6.26	3.00	4.29	4.61	3.60	4.70	5.22	3.56	6.26	4.74

## Math 221: Basic Statistics Assignment #4I

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.5 pounds per square inch?
    - (ii) at least 3.5 pounds per square inch?
    - (iii) between 3.5 and 4.5 pounds per square inch?
    - (iv) less than 3.67 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 88% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
4.21	6.27	5.77	4.09	6.96	2.36	5.83	4.83	5.06	4.02
4.18	6.27	6.20	5.68	6.04	7.45	5.46	5.88	7.78	4.50
6.56	5.22	6.71	4.78	3.83	6.61	4.13	5.80	5.82	4.53
4.34	2.95	7.99	4.15	5.13	4.65	9.25	6.88	6.32	7.00
5.28	5.81	4.63	3.17	6.90	4.57	3.04	6.15	6.18	5.64

## Math 221: Basic Statistics Assignment #4J

**Title:** Computing Probabilities For Normally Distributed Phenomena

**Objectives:**

- To calculate probabilities for a normally distributed **population** using Excel functions and formulas
- To begin the process of analyzing a normally distributed **sample**.

**Directions**

- Examine the instructions on pp. ??? to help you complete the calculations for this lab.
  - Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.
  - The Excel functions that you might use to complete this lab include NORMDIST, NORMINV, and COUNTIF.
- (1) Plastic bags used for packaging produce are manufactured so that the breaking strength of the bag is normally distributed with a mean of 5 pounds per square inch and a standard deviation of 1.5 pounds per square inch.
- (a) What proportion of the bags produced have a breaking strength of
    - (i) less than 5.55 pounds per square inch?
    - (ii) at least 3.55 pounds per square inch?
    - (iii) between 3.55 and 4.45 pounds per square inch?
    - (iv) less than 3.72 pounds per square inch?
  - (b) Between what two values placed symmetrically around the mean will 86% of the breaking strengths fall?
- (2) An inspector looks at a sample 50 plastic bags and measures their breaking strengths. The data is provided below.
- (a) Determine the average and standard deviation (STDEV) of the sample.
  - (b) Use COUNTIF to answer the previous questions for the given sample. In other words, determine the percentage of the given data that lies in the various intervals.
  - (c) How do the results compare with those from the previous problem? It is not sufficient to simply indicate that the values are different!

Plastic Bag Strengths									
1.13	7.17	3.08	4.02	6.14	5.70	6.31	5.89	2.94	3.33
6.04	5.48	3.59	4.64	5.20	5.84	5.21	3.63	7.83	5.73
5.11	6.24	6.29	4.05	3.62	6.67	3.20	2.66	6.07	5.96
8.31	7.17	6.96	5.17	5.00	5.68	4.96	3.42	2.34	6.24
5.67	5.93	5.32	3.46	6.86	4.53	3.74	3.77	4.36	4.32