

Manufacturing Quality Control Challenge 7DMM

NAME: _____ DATE: _____

STUDENT #: _____ TEACHER: _____

Testing for Quality Sheet

Number of hex nuts in your sample: _____

Test each hex nut. Place a “√” for each test in which the hex nut meets the quality requirements, and an “X” for each test it does not meet the requirements.

Nut #	Size	Height	Thread Match		Nut #	Size	Height	Thread Match
1					11			
2					12			
3					13			
4					14			
5					15			
6					16			
7					17			
8					18			
9					19			
10					20			

Circle any hex nut that has an “X” for any of the three tests, as it does not meet the quality requirements.

Record the number of hex nuts in each of your classmates’ scoops.

Perform a statistical analysis of the class collection of scoops of hex nuts to calculate the mean, median, and mode.

Mean	Median	Mode

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Error Rate Information Sheet

Record the number of hex nuts you tested, and the number that did not meet the quality requirements.

Total number of hex nuts tested	Number that <i>did not</i> meet quality requirements

Calculate the percent of the hex nuts in your sample that did not meet quality requirements. This is the error rate.

Your Sample's Error Rate:

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As your team shares the data from their individual samples, record the data below.

Team Member	Number of Nuts Tested	Number of Errors	Individual's % Error Rate
Totals for the Quality Control Team			
Total Numbers for All Team Members			

Quality Control Team Error Rate: _____

1. How does this team rate compare to your original error rate?

As your class shares the data from their team samples, record the data below.

Team Number	Number of Nuts Tested	Number of Errors	Team's % Error Rate
Totals for the Entire Class			
Total Numbers for the Entire Class			

Class Percent Error Rate: _____

2. How does this class rate compare to your team's error rate?

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Production Line #1 Error Rate Sheet

The random samples below each consist of 500 hex nuts. Calculate the error rate for each sample.

Production Line 1	Sample 1	Sample 2	Sample 3	Sample 4
Time Sample is Taken	9:00 am	1:00 pm	6:00 pm	10:00 pm
Number of Errors Found	75	4	3	3
Error Rate %				
Number of Faulty Hex Nuts in a box of 100 Hex Nuts				

1. If you bought a box of 100 hex nuts, how many mistakes do you think would be acceptable?

2. What might be causing different results at different times of the day?

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Production Line Comparison Sheet

Reminder: Sample size for each sample is 500 hex nuts.

Production Line 1	Sample 1	Sample 2	Sample 3	Sample 4
Time Taken	9:00 am	1:00 pm	6:00 pm	10:00 pm
Number of Errors Found	75	4	3	3
Error Rate %				

Production Line 2	Sample 1	Sample 2	Sample 3	Sample 4
Time Taken	9:00 am	1:00 pm	6:00 pm	10:00 pm
Number of Errors Found	0	1	15	15
Error Rate %				

Production Line 3	Sample 1	Sample 2	Sample 3	Sample 4
Time Taken	9:00 am	1:00 pm	6:00 pm	10:00 pm
Number of Errors Found	1	1	1	1
Error Rate %				

Production Line 4	Sample 1	Sample 2	Sample 3	Sample 4
Time Taken	9:00 am	1:00 pm	6:00 pm	10:00 pm
Number of Errors Found	15	15	45	45
Error Rate %				

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SNB Decision Matrix Sheet

Part 1					Part 2
Fill in the Error Rate (ER) ER < 1% - green ER > 1% - red	9:00 AM Sample	1:00 PM Sample	6:00 PM Sample	10:00 PM Sample	Recommended Option
Production Line #1					
Production Line #2					
Production Line #3					
Production Line #4					

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Production Line Recommendation Sheet

Write your recommendation and justification for your decision. Use proper sentence structure. Be sure to reference the data and process that supports your decision.

Recommendation for Production Line #1

Recommendation for Production Line #2

Recommendation for Production Line #3

Recommendation for Production Line #4
