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| Name: | Period: | Date: |
| Date Started: | Due Date: | |
| Group Members: | | |
| Advanced Design Applications  Learning Cycle 2: Manufacturing Unit 4  File 1.1 Production Quality Control Activity | | |

**Production Quality Control Activity**

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| **Background** | Every Manufacturer has a systematic way of checking the production line to make sure that the product is being produced within the desired specifications. Different quality control methods are often used. Some methods include checking every product by hand or checking a random selection for quality. The primary goal no matter what technique is used, is to ensure the quality of the finished product.  Gauges are often used to test the quality of a product. The specific gauge best suited for an application will depend on a variety of factors, including product size, production volume, and gauging conditions. Some production lines use “go/no go” devices to check the quality of the products being manufactured. A “go/no go” gauge is a device that determines whether a product meets the specifications of an acceptable product for the market. If it does, the product is a “go.” If the product fails to meet the specifications as measured by the gauge, it is a “no go.” |
| **What to Do** | * You will work as part of a team of three to four people during this activity. * Conduct research on the internet for examples of “go/no go” gauges (possible search terms: “gauges,” “go no go gauges” and “quality control.” * Each team will obtain a “master” paper clip and a bag of paper clips from your instructor. * The team is required to create a “go/no go” quality control device. * Measure the length and diameter of the “master” paper clip as designated by your teacher. Create a “go/no go” gauge that will ensure that each of your paper clips is within +/- 1mm of the specifications established from the “master” paper clip. The gauge needs to be able to account for the paper clips that are 1 mm longer or wider and 1 mm shorter or thinner than the master. If the product is within the tolerance (+/- 1mm) it may pass the accepted product quality and “go” on. If it fails, it is a “no go” and must be rejected. * Use the gauge that your team created to test each of the paper clips. Separate the clips that pass the quality test from those that are not within the required specifications. Count how many clips were a “go” and how many were a “no go.” Create a table on a separate page, or in your journal, that identifies the types of flaws found in the rejected clips as well as the raw number of good and rejected clips. |
| **Conclusion** | Answer the following questions:   1. What percentage of the clips was able to “go?” Show your work. 2. Let’s assume that each team in your class had a “master” paper clip with the exact same dimensions. Compile the data as a class and calculate the percentage of paper clips that fell outside the tolerance and provide your answer. Show your work. 3. Explain a plausible reason for the variations found in the paper clips.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Why do variations occur in production?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. How important is quality for this type of product versus a product such as a heart monitor or an airplane engine?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. How critical is it to sales that manufacturers meet certain criteria such as size, appearance, and quantity?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |