Quality Tool: **Flowchart**

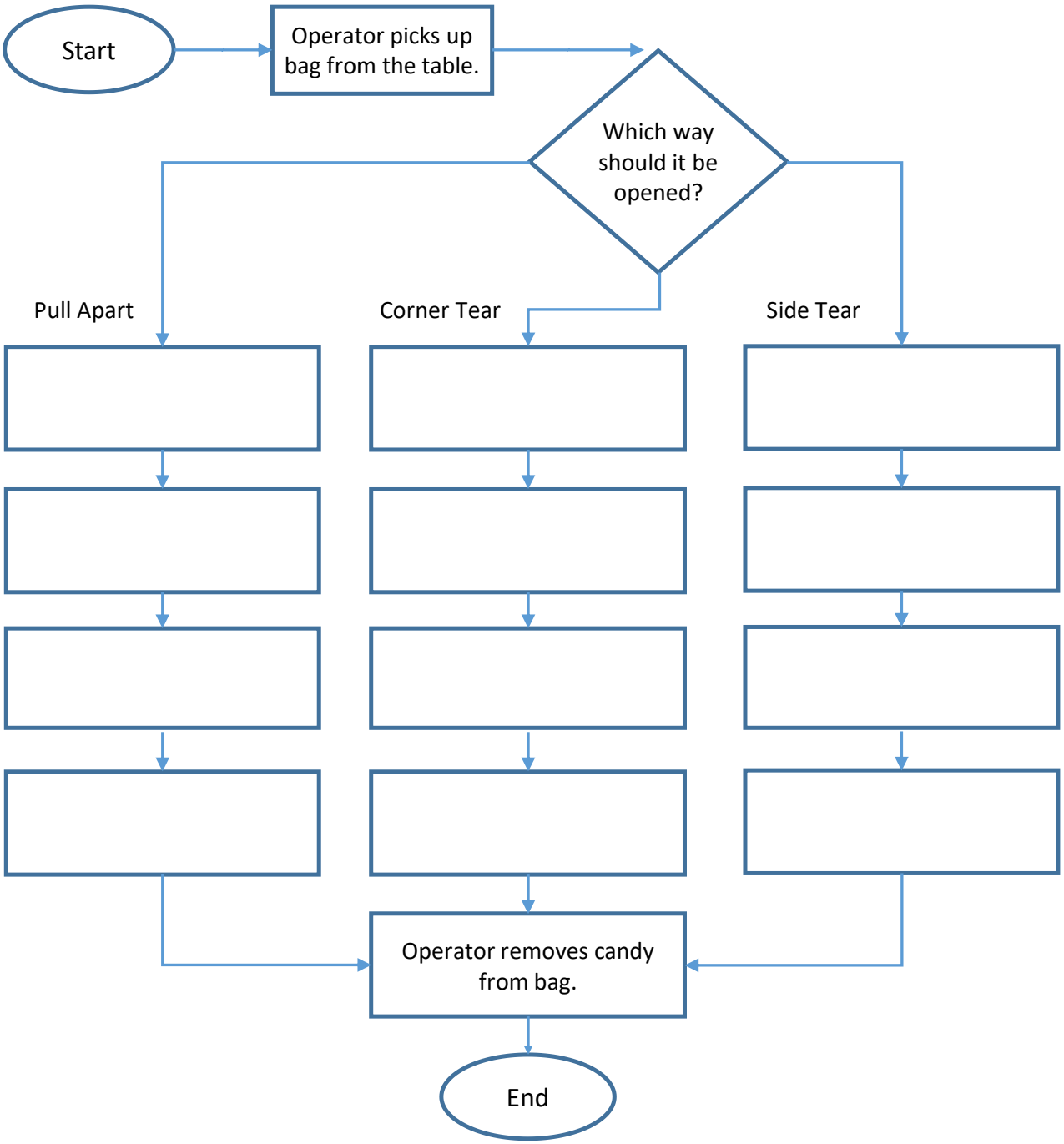
HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A flowchart identifies the actual flow and sequence of events in a process. They can be applied to any product or service and help to identify problem areas as well as documenting all the steps involved.

Description & Instructions:

Define the start and stop points of the process.
Determine the steps in the process.
Arrange the steps in the order they are carried out.
Use the correct symbols to identify decisions and steps.



Quality Tool: **Checksheet**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A checksheet allows a team to systematically record and compile data or observations as they happen so that patterns and trends can be clearly detected and shown.

Description & Instructions:

Agree on the definition of the events or conditions being observed. In this case, you are recording how often certain colors appear.

Count the occurrence of each color and record it in the chart.

The percentage of each color is calculated by the number of each color divided by the total.

Color	Occurrences	%
Brown		
Yellow		
Red		
Orange		
Blue		
Green		

Total	

Color	Occurrences									
	1	2	3	4	5	6	7	8	9	**Total**
Brown										0
Yellow										0
Red										0
Orange										0
Blue										0
Green										0
Total	0	0	0	0	0	0	0	0	0	

Quality Tool: **Checksheet for Histogram**

HONDA
The Power of Dreams

Date:

Inspector:

Instructions:

300 Samples of packages have been counted over the past few weeks. The data has been documented on this checksheet. Use this data to plot the histogram.

50	51	51	52	53	53	54	55	55	56
50	51	51	52	53	53	54	55	55	56
50	51	52	52	53	53	54	55	55	56
50	51	52	52	53	53	54	55	55	56
50	51	52	52	53	54	54	55	55	56
50	51	52	52	53	54	54	55	55	56
50	51	52	52	53	54	54	55	55	56
50	51	52	52	53	54	54	55	55	56
50	51	52	52	53	54	54	55	55	56
50	51	52	52	53	54	54	55	56	56
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	52	53	54	54	55	56	57
50	51	52	53	53	54	54	55	56	57
50	51	52	53	53	54	54	55	56	57
50	51	52	53	53	54	55	55	56	57
50	51	52	53	53	54	55	55	56	57
50	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57
51	51	52	53	53	54	55	55	56	57

Average: 53

Quality Tool: **Pareto Chart**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A pareto chart, also called a Pareto Diagram or Pareto Analysis, depicts data from the highest to the lowest in the form of bars (left to right) by displaying the relative importance of differences among groups of data - a prioritized bar chart.

Description & Instructions:

Collect data and place into the table for sorting. Calculate the percentage of the total by taking the result for each color and dividing it by the total number of candies in your sample.

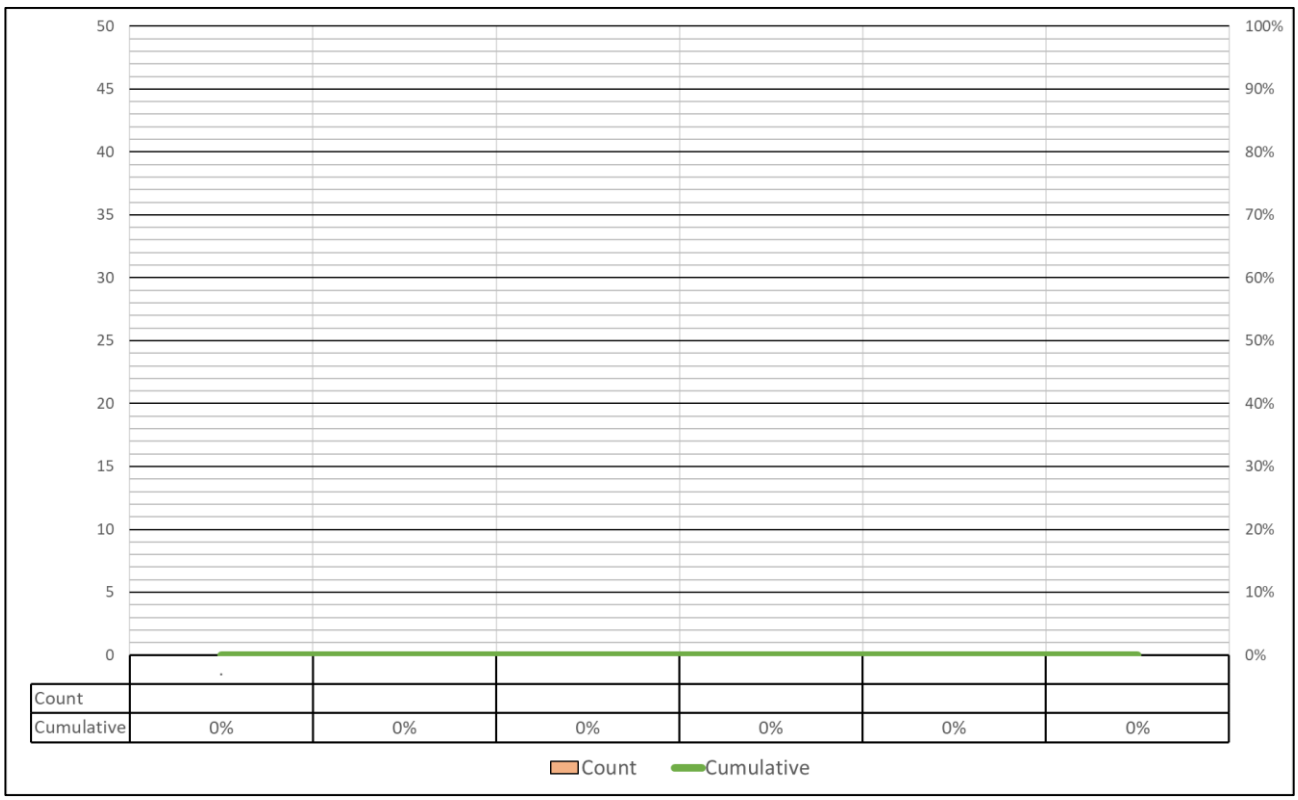
Enter the results for each color in the cells at the bottom of the graph starting with the highest values and moving towards the lowest.

Now, plot the data using the scale on the vertical bar as a guide. Draw the bars for each of the values. The pattern of the "vital few" versus the "trivial many" will begin to appear.

To calculate the cumulative percentage line, record the percentage of the tallest bar with a small dot on the upper right hand corner of the bar. Now add the percentage of the second bar to the first. Find this value on the right hand side of the scale and plot the result on the upper right hand corner of the second bar. Connect the two dots with a straight line. Continue this process until you reach 100%.

Data Sheet			
Color	**Count**	**% of Total**	**Cumulative**

Sum:	



Quality Tool: **Pareto Chart Example**

HONDA
The Power of Dreams

Date:	
Inspector:	

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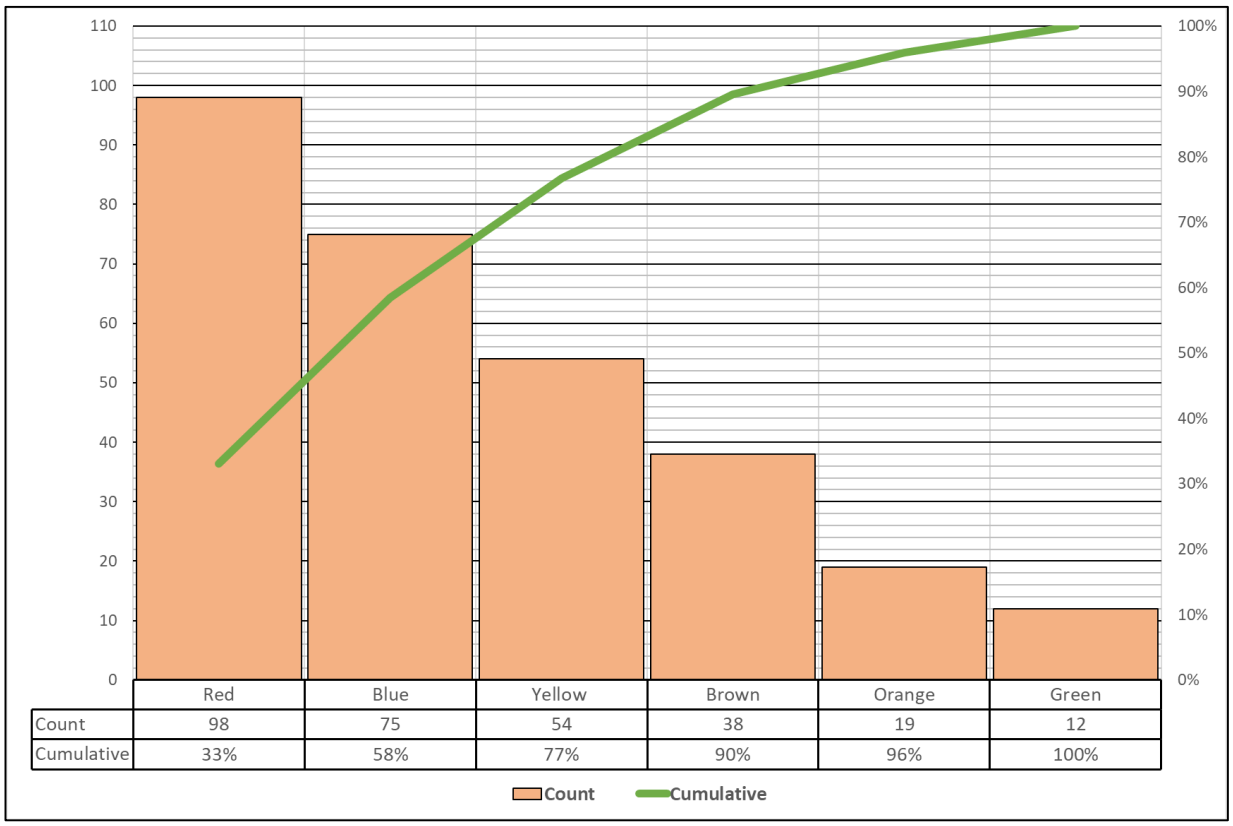
Data Sheet			
Color	**Count**	**% of Total**	**Cumulative**
Red	98	33%	33%
Blue	75	25%	58%
Yellow	54	18%	77%
Brown	38	13%	90%
Orange	19	6%	96%
Green	12	4%	100%

Sum:	**296**



Quality Tool: **Histogram**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: Histograms are simply bar graphs that show the number of observations in each class (bin) as the height of a bar. They are helpful for displaying this distribution of data relative to one another and are useful to use whether or not the data follows a normal distribution (bell curve).

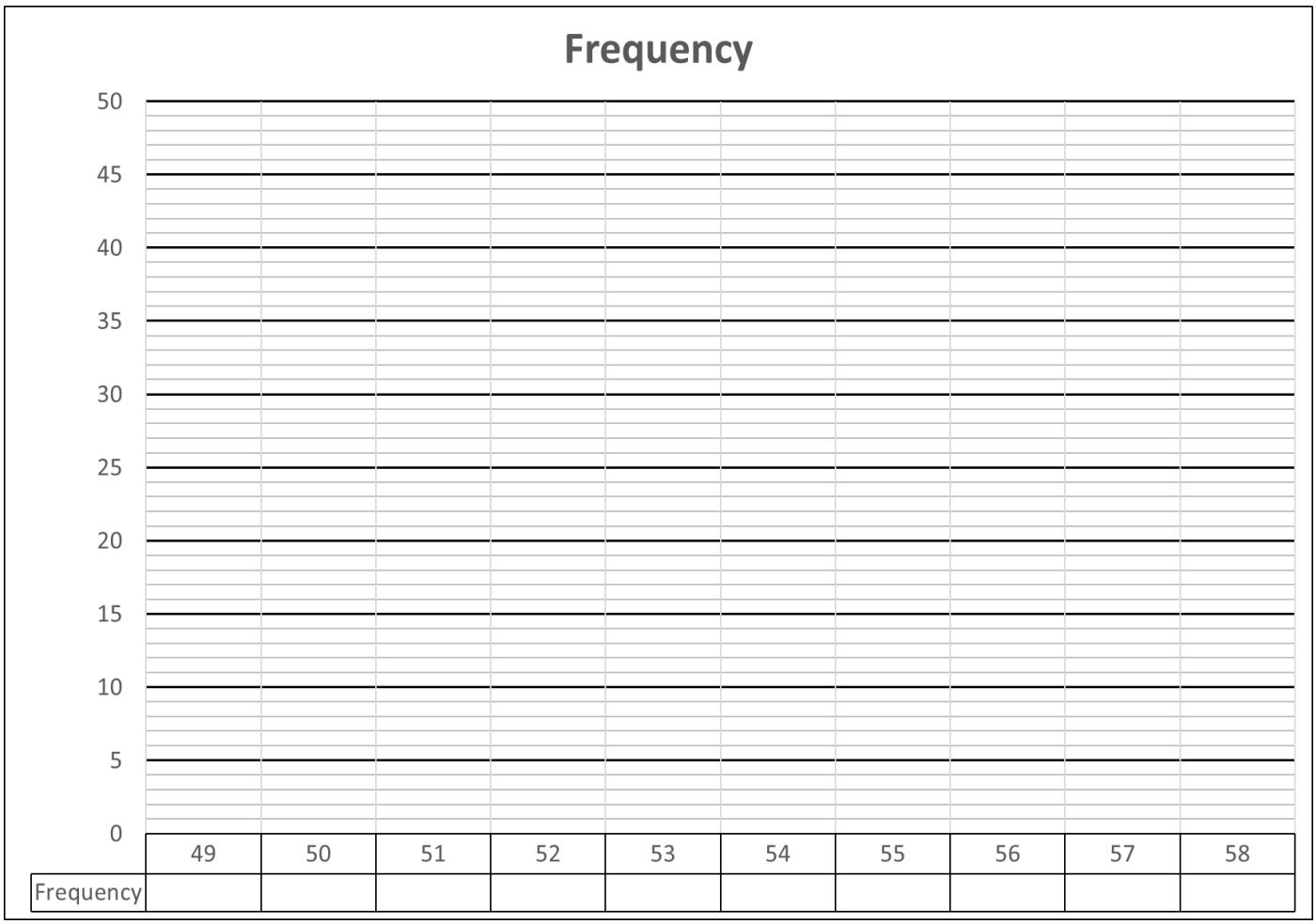
Description & Instructions:

A bin is the upper limit. The frequency refers to how often the range defined by the bin.
We want to understand the distribution of the 300 measurements compared to the average. Each bin represents the total number in each bag. The frequency represents how often this number occurred in our sample of 300 measurements.
Record the data in the table, then plot the data within the broken vertical lines to form bars. Draw a small dot in the center of each bar. Connect these dots with a smooth line to form a curve.
Plot the average of the sample using a line that extends from the horizontal axis to the top of the graph.

Data Table

Bin	Frequency	Bin	Frequency
49	0	54	47
50	24	55	48
51	38	56	31
52	47	57	20
53	45	58	0

Average: 53



Quality Tool: **Histogram Example**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: Histograms are simply bar graphs that show the number of observations in each class (bin) as the height of a bar. They are helpful for displaying this distribution of data relative to one another and are useful to use whether or not the data follows a normal distribution (bell curve).

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52	47	57	20
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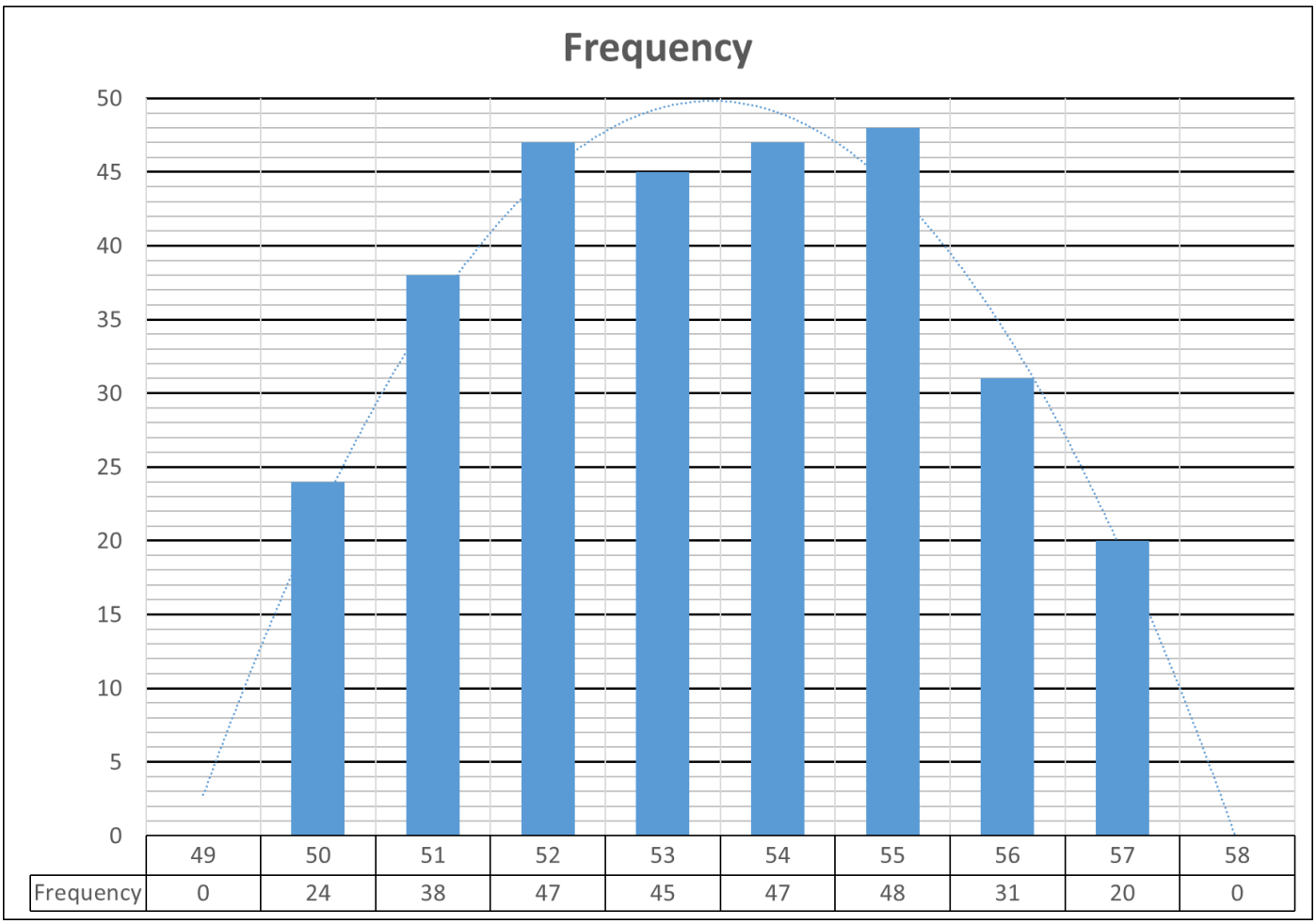


Quality Tool: **Cause & Effect Diagram**

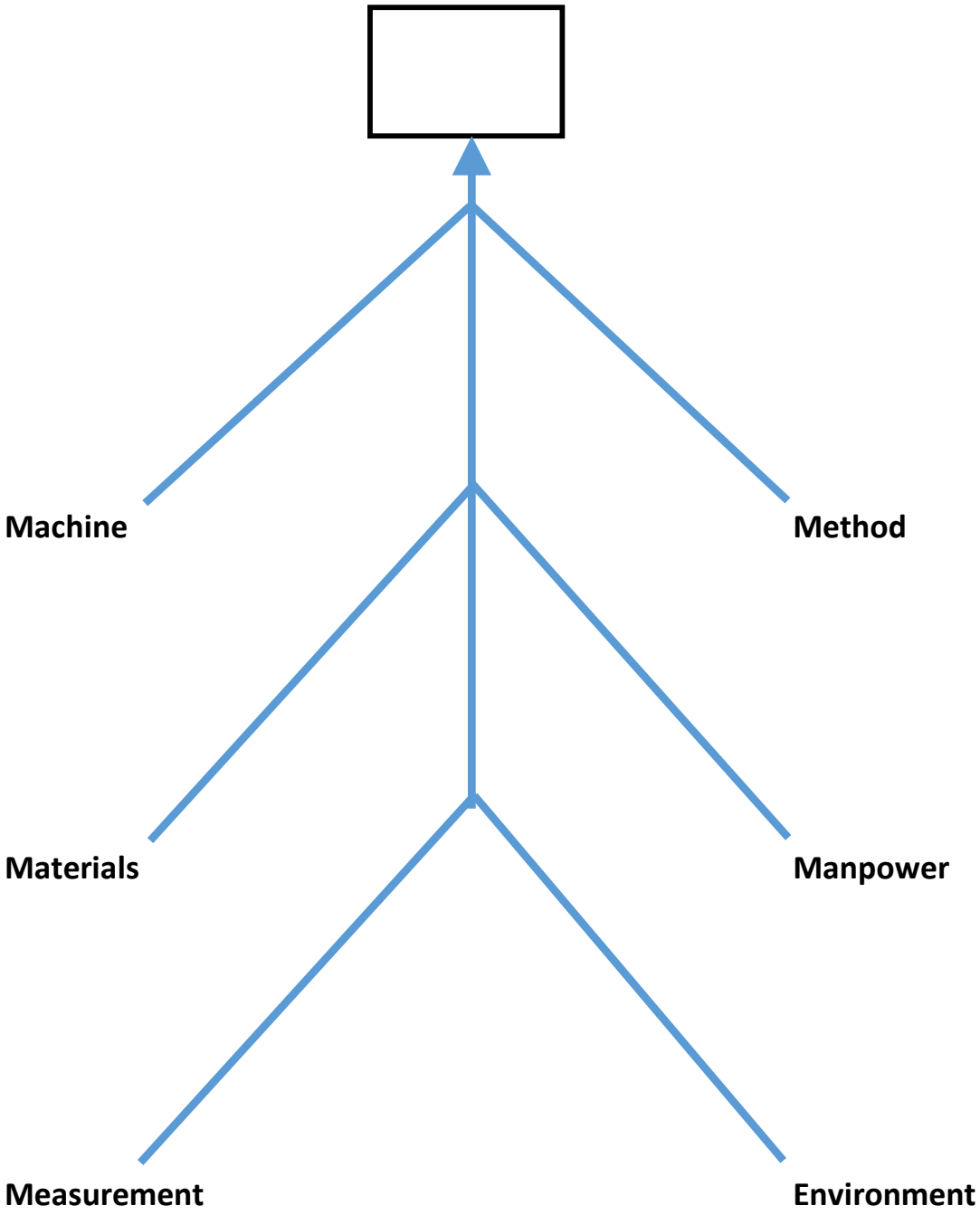
HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A Cause and Effect Diagram (fishbone) helps identify, explore, and graphically display in increasing detail, all of the possible causes related to a problem or condition to discover its root cause.

Description & Instructions:

Enter the problem statement in the box provided.
Brainstorm the major categories of the problem. Generic headings are provided.
Write the categories of causes as branches from the main arrow.



Quality Tool: **Scatter Diagram**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A scatter diagram is used to identify the possible relationships between the changes observed in two different sets of variables. It supplies the data to confirm whether or not two variables are related. It also provides a visual means to test the strength of a potential relationship.

Description & Instructions:

Collect the pairs of sample data. The data for a previous count has already been entered into the data table.

Use both scales to plot data on the chart. If values are repeated, circle that point as many times as required.

Review the results and determine if there is a relationship (correlation) between the two sets of data by determining if there is a pattern. Is there a positive or negative correlation? Is there a correlation to observe at all?

Data Table		
Team	Green	Sample
1	7	56
2	4	55
3	5	52
4	5	56
5	4	54

Data Table		
Team	Green	Sample
6	6	55
7	7	53
8	5	51
9	4	50
10	6	52

Quality Tool: **Scatter Diagram Example**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A scatter diagram is used to identify the possible relationships between the changes observed in two different sets of variables. It supplies the data to confirm whether or not two variables are related. It also provides a visual means to test the strength of a potential relationship.

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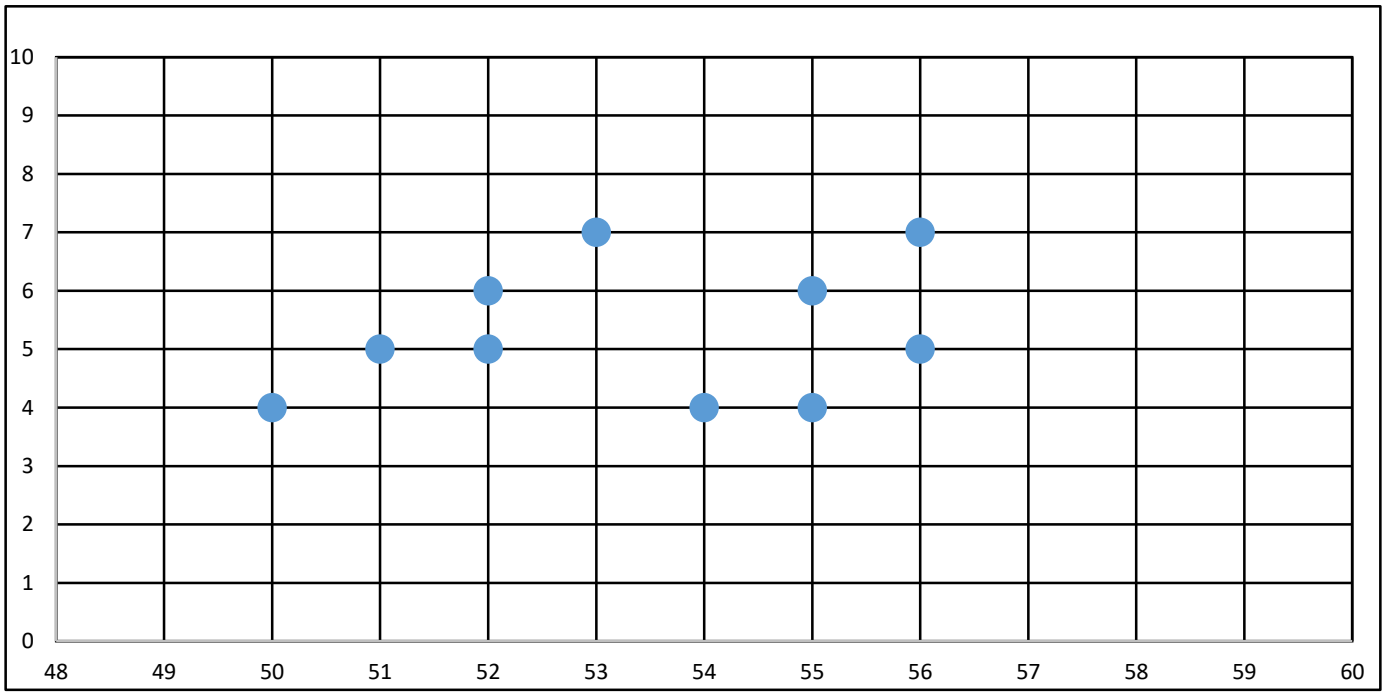


Data Table		
Team	Green	Sample
1	7	56
2	4	55
3	5	52
4	5	56
5	4	54

Data Table		
Team	Green	Sample
6	6	55
7	7	53
8	5	51
9	4	50
10	6	52

Quality Tool: **P Chart**

HONDA
The Power of Dreams

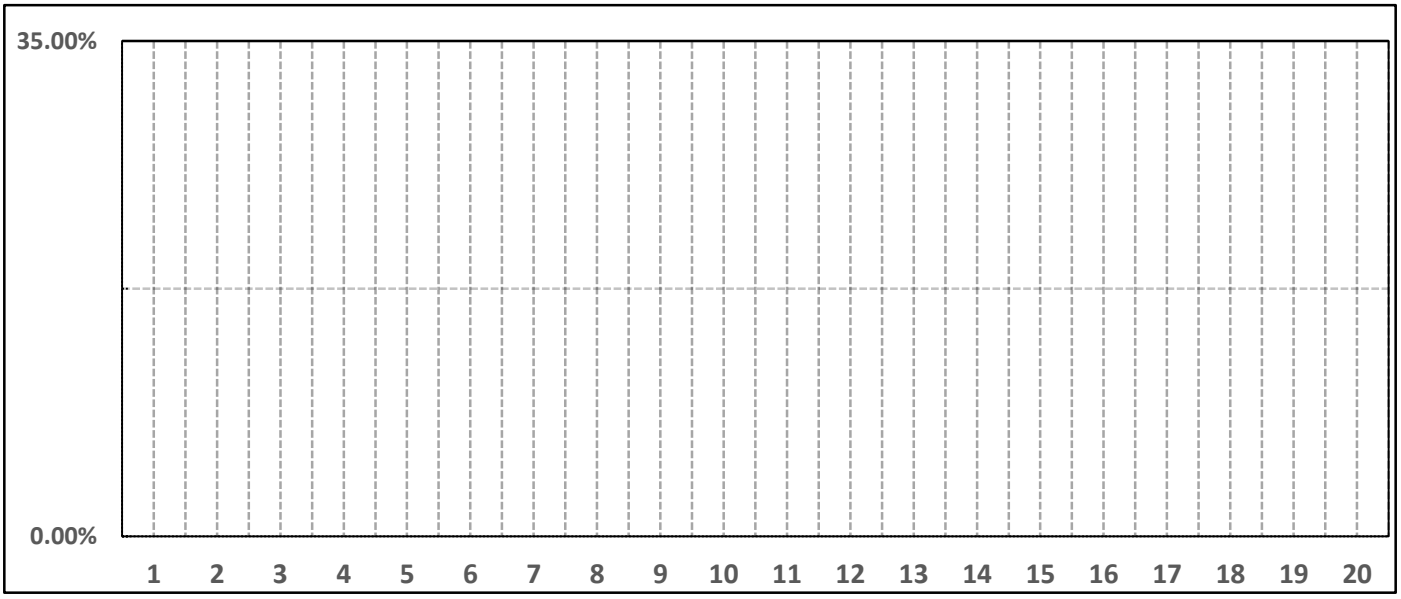
Date:	
Inspector:	

Purpose: A p chart is a type of control chart that allows you to observe the characteristics of a process in relation to established control limits. Control charts like this one focus attention on detecting and monitoring process variation over time and serves as an ongoing tool for the control of a process.

Description & Instructions:

The number from a previous study has already been entered in the Samples (n) row.
The number of green candies from a previous count has been entered in Number (np, C row).
Calculate Fraction values (Number divided by Sample and multiply the result by 100 to get a percentage. Enter the values in the boxes.
Calculate the overall average of the fraction row. (Add all values and divide by the total number of samples used.) Enter the value in the box to the left and plot this result on the graph as a straight line.
Plot each fraction result for each team in the center of the column on the graph and connect the dots to make a line.

UCL:	27	LCL:	0	Average:	9.31%



Sample Data	Package Number																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample (n)	56	55	52	56	54	55	53	51	50	52	55	54	53	56	52	51	54	53	54	57
Number (np, c)	7	4	5	5	4	6	7	5	4	6	5	3	5	6	4	5	4	4	5	6
Fraction (p,u)																				
Notes																				

Quality Tool: **P Chart**

HONDA
The Power of Dreams

Date:	
Inspector:	

Purpose: A p chart is a type of control chart that allows you to observe the characteristics of a process in relation to established control limits. Control charts like this one focus attention on detecting and monitoring process variation over time and serves as an ongoing tool for the control of a process.

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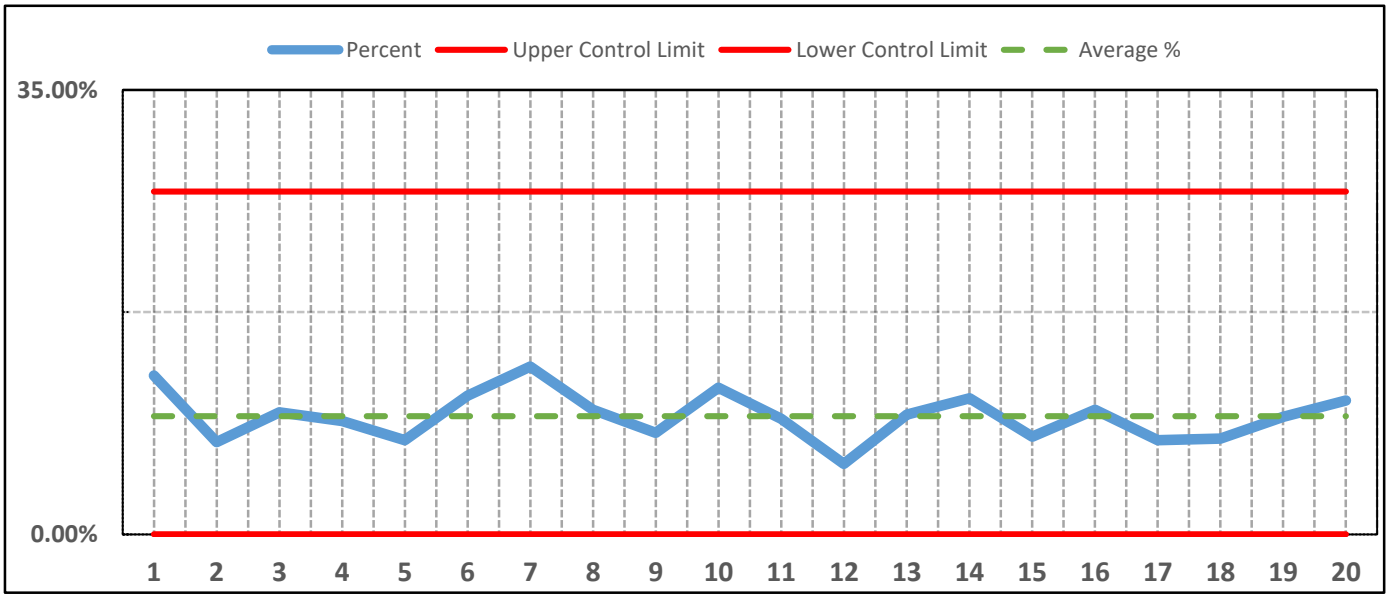
Plot each fraction result for each team in the center of the column on the graph and connect the dots to make a line.

UCL:	27	LCL:	0	Average:	9.31%



Sample Data	Package Number																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample (n)	56	55	52	56	54	55	53	51	50	52	55	54	53	56	52	51	54	53	54	57
Number (np, c)	7	4	5	5	4	6	7	5	4	6	5	3	5	6	4	5	4	4	5	6
Fraction (p,u)	12.5%	7.3%	9.6%	8.9%	7.4%	10.9%	13.2%	9.8%	8.0%	11.5%	9.1%	5.6%	9.4%	10.7%	7.7%	9.8%	7.4%	7.5%	9.3%	10.5%
Notes																				