CORN CALCULATIONS

Overview
Corn is a crop widely grown in Kansas. Ears of corn can be used to teach data calculation such as finding minimum, maximum, mode, median, mean and range.

Suggested Grade Level:
5th-6th

Time:
50 minutes

Subjects:
Math

Objective
1. Students will examine ears of corn and gather data to calculate the minimum, maximum, mode, median, mean and range.

Background Information
Corn is America's number one field crop. Corn leads all other crops in value and volume of production. Kansas is ranked #7 in the nation for corn production in 2018.

An ear of corn averages 800 kernels in 16 rows and a pound of corn consists of approximately 1,300 kernels. Every 100 bushels of corn produces approximately 7,280,000 kernels. Each year, a single U.S. farmer provides food and fiber for 154 people.

Your bacon and egg breakfast, glass of milk, or hamburger at supper were all produced with U.S. field corn. Corn syrup is used as a sweetener in many food items such as cereals, peanut butter, snack foods and soft drinks. Corn can also be used to produce fuel alcohol, thereby using a renewable resource to produce fuel. Fuel alcohol makes gasoline burn cleaner, reducing air pollution and doesn't pollute the water. Corn is also a main ingredient in animal feed.

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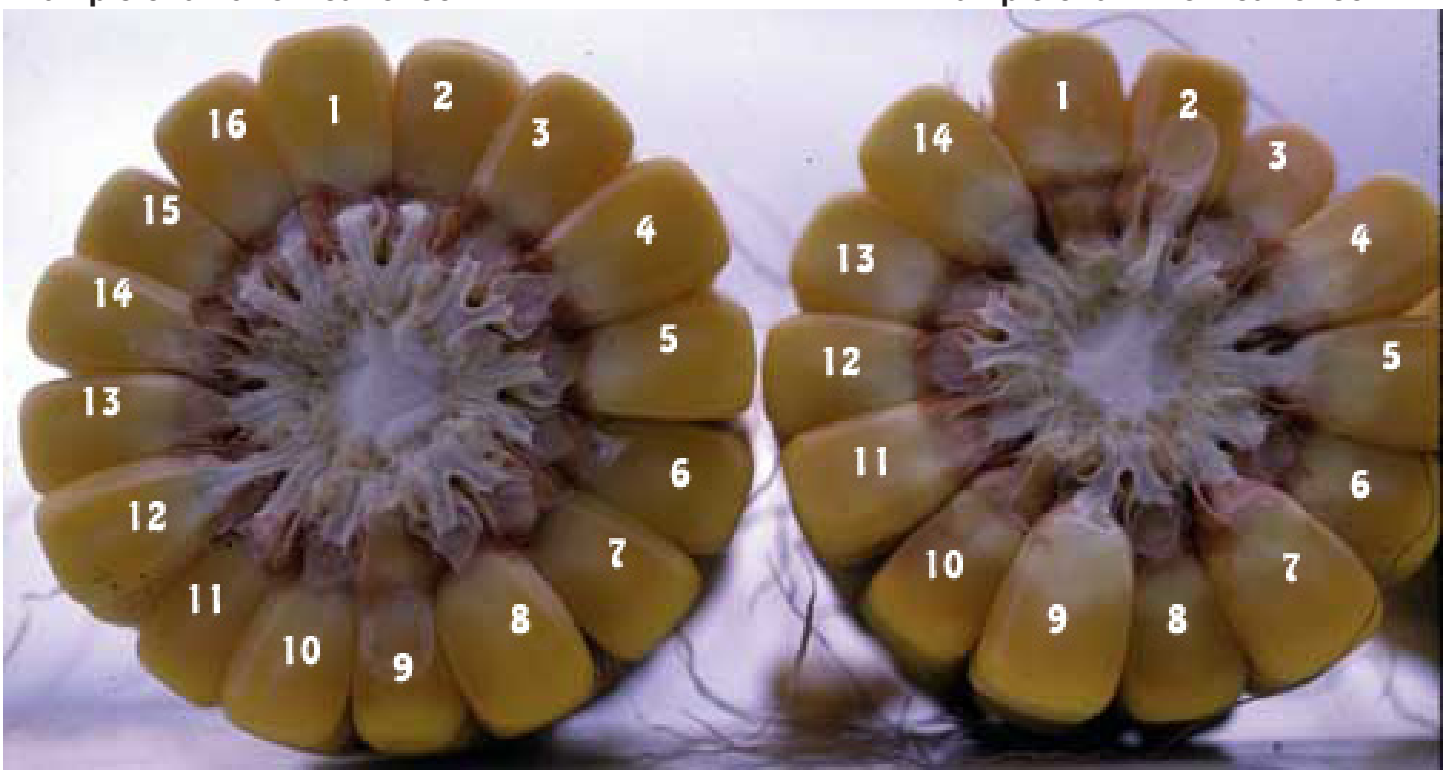
How to calculate the number of kernels on an ear of corn:
Corn ears can come in all sizes depending on many factors throughout growth. Water, sunlight, soil nutrients and other things all play a part in the number of kernels there are on an ear of corn.

Select one ear of corn. Pick 3 rows that represent the total ear of corn. Count kernels in each row and divide by three to get the average number of kernels per row. Look at the base of the ear and determine number of rows on the ear. Multiply number of rows on the ear by average number of kernels per row to calculate the total number of kernels for each ear. Repeat this process until you have data for each 5 ears. If row number changes from top to bottom due to stress, estimate an average row number for the ear. Don't count the extreme top to bottom kernels, but rather begin and end where you perceive there are complete "rings" of kernels around the cob. Do not count the aborted kernels or blank spaces. If kernels are uneven among the rows of an ear, estimate an average value for kernel number per row. Calculate the mean, median, mode, minimum, maximum and the range for your set of 5 ears.
Calculate the average number of kernels per ear by summing the values for all the sampled ears and dividing by the number of ears.
EXAMPLE: For five sample ears with 480, 500, 450, 600 and 525 kernels per ear, the average number of kernels per ear would be (480+500+450+600+525) divided by 5. Which equals 511.

Example of a 16-row ear of corn. **Example of a 14-row ear of corn.**



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Materials

- Various ears of corn
- Paper
- Copies of Student Worksheet

Preparation

Gather several ears of mature or dry corn in the fall from a local farmer or from your local farm supply store. Shuck the ears and store them in a cool dry place until the lesson is ready to be taught. Approximately one week prior to teaching the lesson, teach the students how to find maximum, minimum, mode, median, mean and range.

Procedures

1. Divide the class into groups of five. Give each group five ears of corn.
2. Each group of students will count and calculate the number of kernels of their ears of corn.
3. Students will take all five numbers from each ear of corn and use them to find the maximum, minimum, mode, median, mean and range.
4. The teacher will then record the data calculations from all the groups and lead a discussion on the results.
5. This process can be repeated as a whole class using the number of corn kernels from each ear of corn calculated by each of the groups. This will provide much more data and challenge the students more.

Conclusion Questions

1. How do the numbers differ from group to group? How are they alike?

2. Which group had the maximum number of kernels? Which group had the minimum?

3. Did any of the groups have a mode to record?

4. How does your average compare with the industry average of 800 kernels in 16 rows?

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Corn Calculation - Math Terms

Maximum: The greatest number

Minimum: The smallest number

Mode: The number that occurs most often

Median: The number in the middle when the data is arranged in order from least to greatest

Mean: The average of all the numbers

Range: The difference between the greatest and the smallest number

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Student Worksheet

Name:_____

1. How do the numbers differ from group to group?

2. How are the numbers alike?

3. Which group had the maximum number of kernels?

4. Which group had the minimum number of kernels?

5. Did any of the groups have a mode to record?

6. What else did you notice?

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Student Worksheet

Name:_____

	Kernels
Ear 1	
Ear 2	
Ear 3	
Ear 4	
Ear 5	

Mean	
Median	
Mode	
Minimum	
Maximum	
Range	