

# Counting Chocolate Chips

## Utah Secondary Mathematics Core Curriculum Standards

Displaying data, comparing two similar sets of data on the same graph, collecting and interpreting data, computing range

## GAISE Guidelines for Assessment and Instruction in Statistics Education

Level B Understanding – formulate questions, collect data, analyze data, and interpret the results

Teacher generated question – Is the number of chocolate chips in reduced-fat chocolate chip cookies the same or different from the number of chocolate chips in regular chocolate chip cookies?

Student generated questions – How many chocolate chips are in reduced-fat chocolate chip cookies?  
How many chocolate chips are in regular chocolate chip cookies?

### Learning Outcomes

- Students become interested in statistics
- Students understand how to collect and interpret statistical information
- Students create and conduct a statistical investigation

### Specific Skills

- Students collect and record data
- Students chart results
- Students compute means, medians and range
- Students analyze results

### Materials Needed

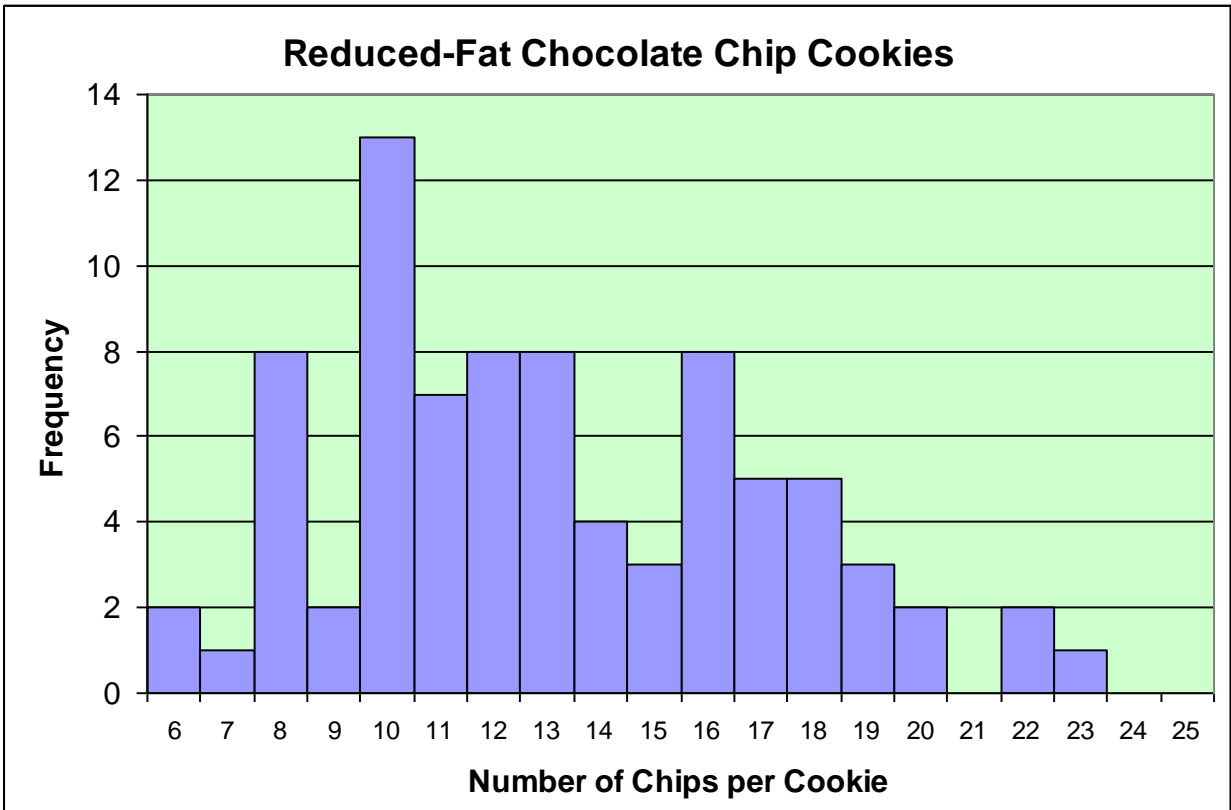
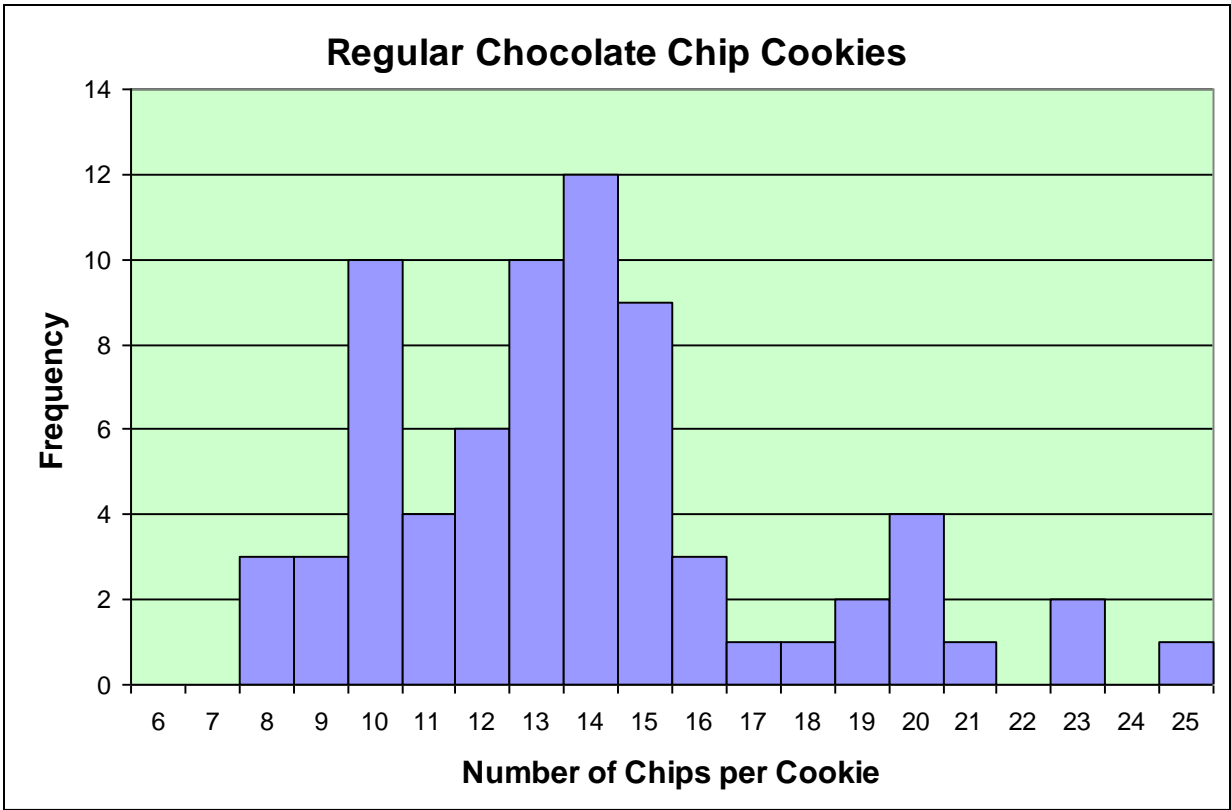
- Reduced-fat chocolate chip cookies
- Regular chocolate chip cookies

### Directions

Maybe reduced-fat chocolate chip cookies have less fat because of having fewer chocolate chips. Guide students in deciding how to investigate whether reduced-fat chocolate chip cookies have fewer chocolate chips than regular chocolate chip cookies. Consider issues such as how much of a chip has to be visible to count as a “chip”, and should the chips be counted on the top or the bottom of the cookie. Give each student two cookies of each type and have them count the chips. Record and display the data. Tabulate the frequency of chips per cookie for each type of cookie. Make histograms of the frequencies. Calculate means, medians and ranges. Compare. Discuss the results. What other factors might explain “less fat” other than the number of chips? How could these factors be studied?

## Chocolate Chip Count Data Collection

<i>Number of Chips</i>	<i>Regular</i>	<i>Reduced-Fat</i>
6	0	2
7	0	1
8	3	8
9	3	2
10	10	13
11	4	7
12	6	8
13	10	8
14	12	4
15	9	3
16	3	8
17	1	5
18	1	5
19	2	3
20	4	2
21	1	0
22	0	2
23	2	1
24	0	0
25	1	0



Prompt the students to generate and answer data analysis questions.

*What is the highest number of chocolate chips in a cookie?*

*What is the lowest number of chocolate chips in a cookie?*

*Which type of cookie had the most chocolate chips?*

*What is the range of the data for reduced-fat chocolate chip cookies?*

*What is the range of the data for regular chocolate chip cookies?*

*What are the mean, median and mode for each type of cookie? What do these results tell us?*

*If the typical number of chocolate chips is similar for both regular and reduced-fat cookies, what else could account for the difference in fat?*