



# How Fast Do They Melt in Your Mouth?

Name \_\_\_\_\_

A baker is trying to decide what chips to use in chocolate chip cookies that he plans to offer for sale. A salesman has told him that chocolate-flavored chips are “just like” real semisweet chocolate chips but cost much less. After thinking about it, the baker decides that what delights people most about chocolate chip cookies is the way the chocolate melts in their mouths. If the baker can be sure that there is no difference between real semisweet and chocolate-flavored chips in this respect, then he will use chocolate-flavored chips in his cookies.

Design an experiment to determine whether there is any difference in the average time that it takes for chocolate-flavored and real semisweet chocolate chips to melt in a person’s mouth. To help in the design process, consider the following.

1. What will the treatment be?
2. What will the response variable be?
3. How will the response variable be measured?
4. What will the experimental unit be?
5. Specify the experimental conditions to be used by considering factors that might have an impact on the time that it takes a chip to melt in a person’s mouth and what, if anything, should be done to control this variation.
6. What will the scope of inference be?

# How Fast Do They Melt in Your Mouth? (continued)

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7. Will it be possible to draw causal inference?

## Discussion and Extension

Work together with the other students in your class.

1. Describe how this study could be conducted as a two-group experiment.
2. Describe how this study could be conducted using a paired design.
3. Conduct the study. If you use both paired and two-group designs, make graphs and use summary statistics to compare the results for the two types of chips in each study.