

## Choosing the Null and Alternative Hypothesis and the Claim

1. A snack food company produces a 454-g bag of pretzels. Although the actual net weights deviate slightly from the 454 g and vary from one bag to another, the company insists that the mean net weight be kept at 454 g. If the mean net weight is less than 454 g, the company will be short-changing its customers; and if the mean exceeds 454 g, then the company will be unnecessarily overfilling the bags. As part of its program, the quality-assurance department periodically performs a hypothesis test to decide whether the packaging machine is working properly, that is, to decide whether the mean net weight of all bags packaged is 454 g.

- Determine the null hypothesis for the hypothesis test.
- Determine the alternative hypothesis.
- Decide which hypothesis is the claim.
- Classify the hypothesis test as two-tailed, left-tailed, or right-tailed.



2. The R. R. Bowker Company of New York collects information on the retail prices of books. In 2006, the mean retail price of history books was \$41.29. Suppose we want to perform a hypothesis test to decide whether this year's mean retail price of history books has increased over the 2006 mean.

- Determine the null hypothesis for the hypothesis test.
- Determine the alternative hypothesis.
- Decide which hypothesis is the claim.
- Classify the hypothesis test as two-tailed, left-tailed, or right-tailed.



3. Calcium is the most abundant mineral in the body and also one of the most important. It works with phosphorus to build and maintain bones and teeth. According to the Food and Nutrition Board of the National Academy of Sciences, the recommended daily allowance (RDA) of calcium for adults is 800 mg. Suppose we want to perform a hypothesis test to decide whether the average person with an income below the poverty level gets less than the RDA of 800 mg.

- Determine the null hypothesis for the hypothesis test.
- Determine the alternative hypothesis.
- Decide which hypothesis is the claim.
- Classify the hypothesis test as two-tailed, left-tailed, or right-tailed.

