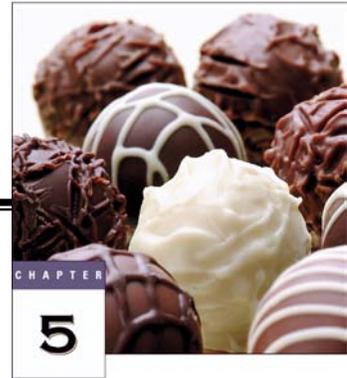


## Chapter 5: Producing Data



### Key Vocabulary:

- voluntary response sample
- confounded population
- sample design
- convenience sampling
- biased simple random sample
- table of random digits
- probability sample
- stratified random sample
- strata
- undercoverage
- nonresponse
- response bias
- sampling frame
- systematic random sample
- observational study
- experimental units
- subjects
- treatment
- factor
- level
- placebo effect
- control group
- randomization
- completely randomized experiment
- statistically significant
- replication
- hidden bias
- double-blind experiment
- block design
- matched pairs design

### Calculator Skills:



- STO
- $\leq$
- $\geq$
- and

### 5.1 Designing Samples (pp.329-352)

1. How does an *experiment* differ to an *observational study*?
2. What is the difference between *sampling* and *census*?
3. Why are *voluntary response samples* unreliable?
4. Why might *convenience sampling* be unreliable?

5. What is a *biased* study?
  
6. Define *simple random sample*.
  
7. What two properties of a *table of random digits* make it a good choice for creating a simple random sample?
  
8. State the four steps in choosing an *SRS*:
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9. How do you select a *stratified random sample*?
  
10. What is *cluster sampling*?
  
11. Give an example of *undercoverage* in a sample.
  
12. Give an example of *non-response bias* in a sample.
  
13. Give an example of *response bias* in a sample.
  
14. How can the wording of questions cause *bias* in a sample?

## 5.2 Designing Experiments (pp.353-377)

1. Explain the difference between *experimental units* and *subjects*.
2. Define *treatment*.
3. By studying examples 5.13 and 5.14, give an example of at least two *levels* of a *factor* in an experiment.
4. Describe the *placebo effect*.
5. What is the significance of using a *control group*?
6. Define *randomization*.
7. The basic principles of statistical design of experiments are:
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8. Define *statistically significant*.
9. Describe a *block design*.
10. When does *randomization* take place in a block design, and how does this differ to a completely randomized design?
11. What is the goal of a *matched pairs design*?

12. State the two most common ways in which *matched pairs* experiments are designed.

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13. What are the advantages of a *double-blind study*?