Learning Objectives:

**Experiments:**
1. Given a study, determine whether it is an observational study or an experiment.
2. Given a study, identify subjects and treatments.
3. Given a study objective, describe an appropriate comparative experiment.
4. Given a study, determine whether a comparative experiment was used.
5. Given a study objective, explain the advantage of a comparative experiment over a non-comparative experiment.
6. Given a study, identify whether a placebo and/or control group were used.
7. Given a study objective, describe what a placebo and/or control group would consist of.
8. Given a study, determine whether a completely randomized design was used.
9. Given a study objective, describe how to implement a completely randomized design.
10. Given a study, explain why randomization should be used.
11. Given a set of subjects and treatments, randomly assign subjects to treatments in a completely randomized design.
12. Given a study objective, explain how randomization, replication and control could be applied in a comparative experiment.
13. Given a study objective, describe the advantages of using randomization, replication and control.
14. Given a study, determine whether the experiment was double-blind.
15. Given a study objective, describe how the experiment could be made double-blind.
16. Given a study objective, explain the advantage of using a double-blind experiment.
17. Given a study objective, decide whether the experiment should be double-blinded.
18. Given a study objective, describe if and how a matched pairs experiment could be used.
19. Given a study, determine whether a matched pairs experiment was used.
20. Given a study objective, explain the advantage of using a matched pairs design.
21. Given a study, determine whether a blocking design was used and describe the blocks.
22. For a set of subjects divided into blocks and a set of treatments, randomize subjects in a blocking design.
23. Given a study objective, explain the advantage of using a blocking design.
24. Given a study objective, decide whether a blocking design should be used.
25. Given a study objective, describe an appropriate comparative experiment appropriately using the principles of randomization, replication, control, blocking, double-blind, placebo, and control group.

**Relevant Reading:** Chapter 4 pgs 117-132, 137-140

**Suggested practice problems:**

4.3, 4.7, 4.20, 4.25, 4.29, 4.30, 4.32, 4.78, 4.80a