Name_____ Date _____

10.4 Practice A

In Exercises 1 and 2, determine whether the study is a randomized comparative experiment. If it is, describe the treatment, the treatment group, and the control group. If it is not, explain why not and discuss whether the conclusions drawn from the study are valid.

1. To test the effect of using a computer for testing, 300 students are randomly divided into two groups. One group is tested using paper and pencil, and one group is tested using the computer. After analyzing the test results, it was found that the average test scores in both groups were not significantly different.

2. At a health fair, people can choose to enroll in a six-month healthy eating plan. Sixty people who chose the "eat six vegetables a day" plan were monitored for 6 months, as were 60 people who chose the “drink 12 glasses of water a day” plan. At the end of the 6 months, people who chose the "drink 12 glasses of water a day" plan had 20% lower cholesterol than people in the other group.

In Exercises 3 and 4, explain whether the research topic is best investigated through an experiment or an observational study. Then describe the design of the experiment or observational study.

3. A cycling team wants to know whether incorporating yoga into the workout routine improves racing times.

4. A researcher wants to compare the effects of a new experimental cancer drug with a cancer drug that has been used for at least 10 years.

5. A researcher wants to test whether stretching after exercising decreases the number of injuries due to muscle damage. Identify a potential problem, if any, with each experimental design. Then describe how you can improve it.

   a. The researcher selects 400 people who exercise on a regular basis. The people are divided into two groups based on age. Within each age group, the people are randomly assigned to stretch after exercising or to not stretch. The people’s occurrence of injuries due to muscle damage is monitored. The stretching after exercise significantly decreases the number of injuries due to muscle damage.

   b. The researcher randomly selects 150 people who exercise on a regular basis. Half the people stretch after exercising, and the number of their injuries due to muscle damage is monitored. The other half do not stretch after exercising, and the number of their injuries due to muscle damage is monitored. The number of injuries due to muscle damage significantly decreases for those who stretch after exercising.