A study in The Journal of the American Medical Association describes the effects of

diets on weight control. In the study, 311 women were randomly divided into four

groups. The first group followed the Atkins diet, which is based on very low

carbohydrate intake. The second group followed the LEARN (lifestyle, exercise,

attitudes, relationships, nutrition) diet, which is based on low fat and high

carbohydrate intake. The third group followed the Ornish diet, which is based on very

high carbohydrate intake. The fourth group followed the Zone diet, which is based on

low carbohydrate intake. Each group received weekly instruction for two months, and

there was a follow-up one year from the beginning of the study. The mean weight

losses of each group after one year on the diet are shown in the table below.



*In Exercises 2–5, perform a two-sample z-test to determine whether the mean weight*

*losses of the two indicated groups are different. For each exercise, write your*

*conclusion as a sentence. Use a level of significance of 0.05. You must show or explain*

*how you arrived at your conclusions. Simply rejecting or failing to reject the null*

*hypothesis is not sufficient.*

**2.** Test the weight losses of people in the Atkins group against those in the

LEARN group.

**3.** Test the weight losses of people in the Ornish group against those in the

Zone group.

**4.** Test the weight losses of people in the LEARN group against those in the

Zone group.

**5.** Test the weight losses of people in the Atkins group against those in the

Ornish group.

**6.** Suppose that in another study, 42 people used an herbal supplement and

a high-fiber, low-calorie diet to lose weight. The mean weight loss of this

group was 7.05 pounds and the standard deviation was 7.28 pounds.

(a) Test the mean weight loss of this group with the Atkins group described

previously. Use 0.01.

(b) Test the mean weight loss of this group with the Zone group described

previously. Use 0.01.

**7.** In which comparisons in Exercises 2–6 did you find a difference in weight

losses? Write a summary of your findings.