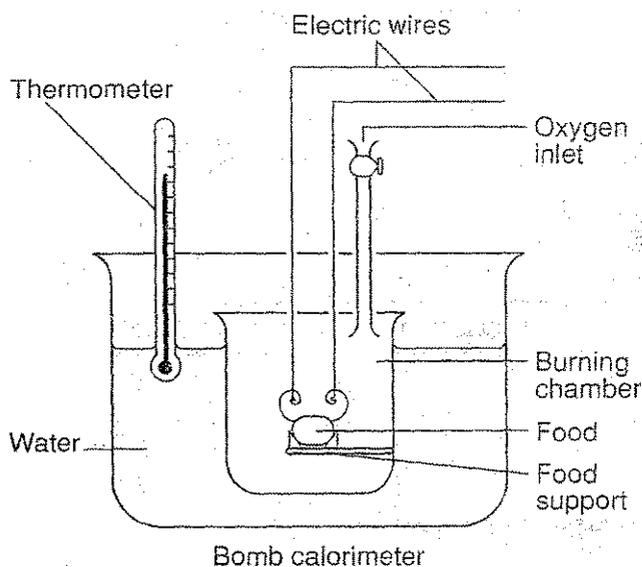


This research summary passage and questions might appear on an actual ACT. This section shows you how to use the four-step approach to answer each question.

PASSAGE I

First Experiment

The amount of energy stored in a food is measured in calories. A calorie is the amount of heat it takes to raise one gram of water 1°C. The number of calories present in food can be measured in the bomb calorimeter pictured below.



The calories in a 0.5-kilogram (0.5-kg) sample of a particular dog food were measured when mixed with different amounts of the same dog food supplement. The number of calories for different mixtures of dog food and dog food supplement are given in the table below.

Table 1

Amount of supplement in grams (g) added to 0.5 kg of dog food	Calories
0	281
20	303
40	323
60	343
80	362
100	382
120	404

Second Experiment

Next, the experimenters tested the food supplement to determine if it would affect growth. Fifty essentially identical dogs participated in the experiment. Ten of the dogs were fed 1 kg of food per day consisting of 100% dog food. Ten other dogs were fed 1 kg of food per day consisting of 95% dog food and 5% food supplement. Groups of ten dogs received 90%/10%, 85%/15%, and 80%/20% mixtures. The average weight gain of dogs in each group after two months is shown in Table 2.

Table 2

Percent of dog food/ Percent of supplement	Average weight gain in kg
100/0	2.8
95/5	3.7
90/10	4.8
85/15	4.7
80/20	4.6

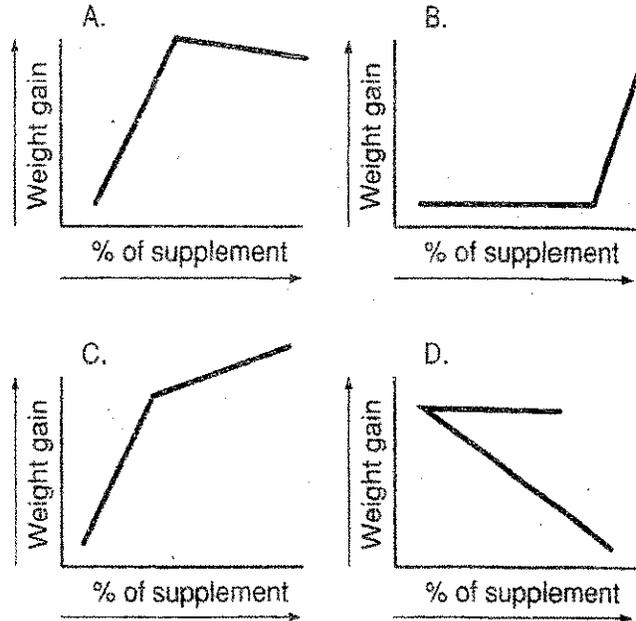
- When comparing calories to the amount of dog food supplement in the first experiment, it would be reasonable to observe that:
 - as the number of calories increased, the amount of food supplement decreased.
 - when the total amount of dog food and supplement weighed more than 1 kilogram, the number of calories went over 400.
 - as the percent of supplement approaches 0, the number of calories is lowest.
 - as the amount of food supplement increases, the amount of food decreases.
- What is there about the report of the results for the second experiment that might make the results difficult to interpret?
 - Average weight gains are reported.
 - Weight gain is shown in kilograms and tenths of a kilogram instead of grams.
 - The results do not show weight gain for 70% dog food and 30% supplement.
 - The results are shown in a table instead of on a line graph.

Name _____ Class _____ Date _____ Seat _____

3. According to the results of the first experiment, the number of calories in the dog food/supplement mix increases about:
- A. 10 calories per each 20-gram increase in supplement.
 - B. 20 calories per each 10-gram increase in supplement.
 - C. 5 calories per each 10-gram increase in supplement.
 - D. 1 calorie per each 1-gram increase in supplement.

4. Based on the results of the second experiment, which of the following average weight gains might have been expected if one of the groups of ten dogs had received a dog food/supplement mix of 97.5%/2.5%?
- F. 0.9 kg
 - G. 3.25 kg
 - H. 3.6 kg
 - J. 6.5 kg

5. Which of the following graphs best represents the results of the second experiment?



Use the Four Steps to answer the questions.

Step 1. Skim and identify the passage. Answer the research design questions.

6. This passage is a _____ with two experiments. The first experiment is about the change _____. The second experiment is about the effect of _____ on _____. The results are shown in tables.

7. What is the research design? _____

8. What are the variables?

a. In the first experiment, the independent variable _____ and the dependent variable _____.

b. In the second experiment, the independent variable is the _____ and the dependent variable is _____.

9. What are the controls?

In the first experiment, _____ are the same.

In the second experiment, the _____ for _____. The _____ in the experiment are all "essentially identical."

10. What are the results?

The results for the first experiment _____

The results for the second experiment show that _____