

## **Question 1**

A dietician follows a sample of individuals and calculates the number of pounds that each person changes over a diet program. For example, DIFFERENCE for person A = -8 (lost 8 lb.) and DIFFERENCE for person C = 1 (gained 1 lb.). He loses the actual before & after weights but still has the difference values. What is the hypothesis test that he should perform to determine if the program helped people lose weight?

- a. z-test for :  $\mu(\text{After}) < \mu(\text{Before})$
- b. t-test for :  $\mu(\text{After}) < \mu(\text{Before})$
- c. z-test for :  $\mu(\text{difference}) < 0$
- d. t-test for :  $\mu(\text{difference}) < 0$
- e. t-test for :  $\mu(\text{difference}) \neq 0$

## **Question 2**

You want to determine if hydrating with water versus gatorade affects marathon times.

You track 20 runners across two marathons. Each runner drinks water in one marathon and gatorade in the other.

What test do you perform?

- a. z-test for :  $\mu(\text{difference}) < 0$
- b. z-test for :  $\mu(\text{difference}) \neq 0$
- c. t-test for :  $\mu(\text{difference}) < 0$
- d. t-test for :  $\mu(\text{difference}) > 0$
- e. t-test for :  $\mu(\text{difference}) \neq 0$

### **Question 3**

You want to determine if hydrating with water versus gatorade affects marathon times.

You track 20 runners across two marathons. Each runner drinks water in one marathon and gatorade in the other.

In your 1-sample t-test for a difference in gatorade versus water, how many degrees of freedom do you have?

- a. 2
- b. 19
- c. 20
- d. 39
- e. 40

## **Question 4**

What is the main difference between:

1-sample t-test

2-sample dependent (repeated measures) t-test

- a. you have twice as much data, so there is less error
- b. the 2-sample test uses a different system of alpha, degrees of freedom, and formulas
- c. you are calculating how rare a sample difference is, instead of how rare a sample mean is
- d. you are not comparing the sample difference to any specific value

## **Question 5**

What is the SE of the sample difference?

A. the estimate of the standard deviation of BEFORE scores *minus* the estimate of the standard deviation of AFTER scores

B. a value for determining the likelihood of getting a sample based on the sample's average difference

C. the sum of squares of the difference values in a sample divided by  $n-1$