Statistical Reasoning Name:

Unit 6 Quiz Review

1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the best way to blind subjects from knowing whether they are receiving the treatment or not.

2) What is the purpose of double-blinding? Why is it so important?

3) What are the four principals of experimental design? Are any of these principals not required?

1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) A researcher wants to compare the performance of three types of pain relievers in volunteers suffering from arthritis. Because people of different ages may suffer arthritis of varying degrees of severity, the subjects are split into two groups: under 60 and over 60. Subjects in each group are randomly assigned to take one of the medications. Twenty minutes later they rate their levels of pain. This experiment…

a) has one factor (age) blocked by type of medication

b) has one factor (medication) blocked by age

c) uses matched pairs

d) has two factors, medication and age

e) is completely randomized

5) Which is important in designing a good experiment?

i. Randomization in assigning subjects to treatments.  
 ii. Control of potentially confounding variables.  
 iii. Replication of the experiment on a sufficient number of subjects.

a) i and ii b) i and iii c) i, ii, and iii d) ii and iii e) i only

6) A researcher identified 100 men over forty who were not exercising and another 100 men over forty with similar medical histories who were exercising regularly. She followed the men for several years to see if there was any difference between the groups in the rate of heart attacks. This is a(n):

a) completely randomized experiment

b) block design experiment

c) matched pairs experiment

d) observational study

7) Ceramics engineers are testing a new formulation for the material used to make insulators for power lines. They will try baking the insulators at four different temperatures, followed by either slow or rapid cooling. They want to try every combination of the baking and cooling options to see which produces insulators least likely to break during adverse weather conditions.

a) Identify the explanatory variable(s).

b) Identify the response variable.

c) How many treatments are there? List them all.

8) A headline in a local newspaper announced “Video game playing can lead to better spatial reasoning abilities.” The article reported that a study found “statistically significant differences” between teens who play video games and teens who do not, with teens who play video games testing better in spatial reasoning. Do you think the headline was appropriate? Explain.