

This is part of a BRM exam given previously. It is provided in order to familiarize you with the format & type of questions. The forthcoming midterm may or may not be similar.

Multiple Choice (Write the letter of the *best* answer in the space provided)

- ____ 1. An article in *USA Today* on August 9, 1999 said that "a nationally representative survey of 3,617 Americans" shows that "People who attend religious services at least once a month live significantly longer than those who don't." But churchgoers are more likely to be nonsmokers and to have good health habits. Does attending religious services cause longer life?
a) Yes, because this study is a comparative experiment. **b)** We can't say: the effects of going to church are confounded with the effects of other behavior such as not smoking. **c)** Yes, because a sample survey with a large sample size will have a small margin of error. **d)** No, we can be sure that only physical habits like not smoking can affect how long we live.

Use the following to answer question 2: A 1996 Gallup poll of eligible New Hampshire primary voters reported that "of 1200 voters surveyed, 24% would vote for Senator Bob Dole if the primary election were held today". The Gallup organization also reported that the margin of error for a sample of 1200 people is 3 percentage points. Sample of size 1,200 is plus or minus 3 percentage points.

- ____ 2. The margin of error gives a range such that **a)** we can be certain a conclusion is correct within this margin. **b)** we can be 99% confident that conclusions are correct within this margin. **c)** we can be 95% confident that conclusions are correct within this margin. **d)** we can be 90% confident that conclusions are correct within this margin.
- ____ 3. The margin of error for a poll is 4%. This means that **a)** 4% of those sampled did not answer the question asked **b)** we have 95% confidence that the sample statistic is within 4% of the population parameter **c)** 4% of those sampled gave the wrong answer to the question asked **d)** 4% of the population were in the sample **e)** the confidence we have in the statistic is 4%
- ____ 4. In 1970, 8.4 billion cigars were smoked in the United States. In 1989, 2.0 billion cigars were smoked. What percentage change is this? **a)** 7.6% decrease **b)** 7.6% increase **c)** 176% decrease **d)** 76% increase **e)** 76% decrease

Use the following to answer question 5: Were the extinctions that occurred in the last ice age more frequent among species of animals with large body sizes? A researcher gathers data on the average body mass (in kilograms) of all species known to have existed at that time.

- ____ 5. These measurements are values of **a)** a categorical variable. **b)** a quantitative variable. **c)** an invalid variable. **d)** a margin of error.

Use the following to answer question 6: Students in a large statistics class were randomly divided into two groups. The first group took the midterm exam with soft music playing in the background while the second group took the exam with no music playing. The scores of the two groups on the exam were compared.

- ____ 6. This experiment was not double-blind because **a)** students were allowed to keep their eyes open while taking the exam **b)** the exam was too long **c)** the students knew whether or not music was playing while they were taking the exam **d)** some of the students did not study for the exam **e)** students were randomized into the two groups
- ____ 7. Medical experiments, such as one to compare aspirin with a placebo for preventing heart attacks, are often *double blind*. This means that **a)** neither the subject nor the doctors know which treatment the patient received. **b)** subjects choose which treatment they get, but do not tell the doctors. **c)** the doctors choose which treatment to give each subject, but do not tell the subjects. **d)** subjects are not told either their treatment or their medical condition. **e)** all individual data are kept confidential.

Problems, etc (Give BRIEF but COMPLETE answers. Show calculations.)

E.1 What function(s) and/or formula(s) would you use to generate random whole numbers (*i.e.*, no fractions) in the range between 25 and 50? Show exactly what you would enter into an *Excel* cell.

I.13 At a party there are 25 students over age 21 and 20 students under age 21. You choose at random 5 of those over 21 and separately choose at random 4 of those under 21 to interview about attitudes toward alcohol. You have given every student the same chance to be interviewed.

What is that chance?

What is this kind of sample called?

D.6 A report on the problem of vacation cruise ships polluting by dumping garbage said:

On a 7-day cruise, a ship of about 1000 passengers might use 240,000 coffee cups, 70,000 soda cans, 49,000 beer cans, & 11,200 wine bottles.

Are these numbers plausible? Back-up your answer.