1. Researchers were interested to know whether internal vehicle temperatures vary by outside temperatures. To evaluate this, temperature rise was measured continuously over a 60-minute period in a dark SUV on 16 different clear, sunny days with outside temperatures ranging from 72°F to 96°F. The researchers' method of analysis is best described as:
   a. a census  
   b. a survey  
   c. an observational study  
   d. a randomized comparative experiment  
   e. a single-blind randomized comparative experiment.
2. A company sponsoring a new Internet search engine wants to collect data on the ease of using it. Which is the best way to collect the data?
   a. census  
   b. sample survey  
   c. observational study  
   d. experiment  
   e. simulation
3. A basketball player has a 70% free throw percentage. Which plan could be used to simulate the number of free throws she will make in her next five free throw attempts?
   I. Let 0, 1 represent making the first shot, 2, 3 represent making the second shot, ..., 8, 9 represent making the fifth shot. Generate five random numbers 0-9, ignoring repeats.
   II. Let 0, 1, 2 represent missing a shot and 3, 4, ..., 9 represent making a shot. Generate five random numbers 0-9 and count how many numbers are in 3-9.
   III. Let 0, 1, 2 represent missing a shot and 3, 4, ..., 9 represent making a shot. Generate five random numbers 0-9 and count how many numbers are in 3-9, ignoring repeats.
   a. I only  
   b. II only  
   c. III only  
   d. II and III  
   e. I, II, and III
4. More dogs are being diagnosed with thyroid problems than have been diagnosed in the past. A researcher identified 50 puppies without thyroid problems and kept records of their diets for several years to see if any developed thyroid problems. This is an(n)
   a. randomized experiment  
   b. survey  
   c. prospective study  
   d. retrospective study  
   e. blocked experiment
5. A chemistry professor who teaches a large lecture class surveys his students who attend his class about how he can make the class more interesting, hoping he can get more students to attend. This survey method suffers from
   a. voluntary response bias  
   b. nonresponse bias  
   c. response bias  
   d. undercoverage  
   e. None of the above
6. Placebos are a tool for
   a. sampling  
   b. blocking  
   c. blinding  
   d. control  
   e. randomization
7. 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. A) is completely randomized.  
   b. uses matched pairs.  
   c. has two factors, medication and age.  
   d. has one factor (medication) blocked by age.  
   e. has one factor (age) blocked by medication type
8. Double-blinding in experiments is important so that
   I. The evaluators do not know which treatment group the participants are in.  
   II. The participants do not know which treatment group they are in.  
   III. No one knows which treatment any of the participants is getting.  
   a. I only  
   b. II only  
   c. III only  
   d. I and II  
   e. I, II, and III
9. **Good CDs** Brian is a systems manager for a large company. In his work, he has found that about 5% of all CDs he orders are bad. He needs to give one of the executives at his company five good CDs. Conduct a simulation to estimate how many CDs Brian will have to check to get five good CDs for the executive.
   a. Describe how you will use a random number table to conduct this simulation.
   b. Show three trials by clearly labeling the random number table given below. Specify the outcome for each trial.

<table>
<thead>
<tr>
<th>Trial</th>
<th>Simulation</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>03242 50692 18977 28370</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>78695 21402 85525 81183</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>60809 06765 39996 81915</td>
<td></td>
</tr>
</tbody>
</table>
   c. State your conclusion.

10. **Bone Builder** Researchers believe that a new drug called Bone Builder will help bones heal after children have broken or fractured a bone. The researchers believe that Bone Builder will work differently on bone breaks than on bone fractures, because of differences in initial bone condition. Bone Builder will be used in conjunction with traditional casts. To test the impact of Bone Builder on bone healing, the researchers recruit 18 children with bone breaks and 30 children with bone fractures. Design an appropriate experiment to determine if Bone Builder will help bones heal.

11. **Military funding** A college group is investigating student opinions about funding of the military. They phone a random sample of students at the college, asking each person one of these questions (randomly chosen):

   A: “Do you think that funding of the military should be increased so that the United States can better protect its citizens?”

   B: “Do you think that funding of the military should be increased?”

   Which question do you expect will elicit greater support for increased military funding? Explain. What kind of bias is this?