1. The null hypothesis is that the flipping is random. The alternative is that the coin is biased toward “heads.” A coin is flipped 20 times and the result is 16 heads. Which choice describes how to calculate a P-value for testing the significance of the data?
   A. The probability of at least 16 heads if the coin flipping is random
   B. The probability of at least 16 heads if the coin flipping is not random
   C. The probability that the flipping is random
   D. The probability that the flipping is not random

2. Suppose the p-value of a significance test is 0.04 (or 4%). Is the following statement true or false? The statistical evidence is strong enough to reject the null hypothesis.
   A. True   B. False

3. Researchers want to see if men have a higher blood pressure than women do. A study is planned in which the blood pressures of 50 men and 50 women will be measured. What's the most appropriate alternative hypothesis about the means of the men and women?
   A. the sample means are the same
   B. the sample mean will be higher for men
   C. the population means are the same
   D. the population mean is higher for men than for women

4. In an American criminal trial, the null hypothesis is that the defendant is not guilty. Which of the following describes a Type I error for a criminal trial?
   A. A guilty verdict for a person who is actually innocent.
   B. There's a biased jury.
   C. A not guilty verdict for a person who actually committed the crime

5. What is the primary purpose of a significance test?
   A. decide between two statements made about a population
   B. decide between two statements made about a sample
   C. estimate a margin of error

6. A null hypothesis is that the mean head circumferences of men and women are the same. The alternative hypothesis is that men have a larger head circumference than women. A statistical test is done and the p-value is 0.357. What’s the appropriate conclusion?
   A. The mean head circumferences of men and women are the same
   B. Men have a greater head circumference
   C. Not enough evidence to say that men have a larger head circumference.
   D. There’s a 0.357 chance that men and women have the same mean

7. At the end of a newspaper article about a new medication for pain relief, the researcher is quoted as saying that there was only a 1 in 100 probability that the observed difference between treatment and control could have occurred due to chance luck. In statistical terms, the researcher is saying the results are ____.
   A. not accurate   B. not statistically significant   C. statistically significant
8 Is the following sentence true or false? In general, the smaller the p-value, the stronger the evidence in favor of the alternative hypothesis.
   A. True   B. False

9. Which of the following choices is a possible problem when a study has an extremely large sample size?
   A. A small, unimportant difference might become statistically significant
   B. There will be a high risk of Type II error
   C. The results are sure to be confounded
   D. An important difference may not achieve statistical significance.

10. A taste test is done to compare Yukon Cola to Happy Time Cola. The null hypothesis is that there is an equal preference for the two drinks and the alternative is that people prefer Yukon Cola. Which of the following sets of experimental results is the most significant evidence in favor of the alternative hypothesis?
   A. 60% of 500 participants prefer Yukon
   B. 60% of 50 participants prefer Yukon
   C. 60% of 5 participants prefer Yukon
   D. Choices A, B, C lead to the same level of significance

11. A psychiatrist examining treatments for depression declares that a new treatment is significantly better than a standard treatment. This was her alternative hypothesis. Which of the following statements is true?
   A. The psychiatrist definitely made a Type I error
   B. The psychiatrist may have made a Type I error
   C. The psychiatrist definitely made a Type II error
   D. The psychiatrist may have made a Type II error

12. Three hundred people are asked to each randomly pick one of the ten numbers 1,2,3,4,5,6,7,8,9,10. The investigator focuses on the proportion that pick the number “6”. Generally, the null hypothesis is that the picking is random. Let p = proportion who pick “6”. What’s the correct null hypothesis for p?
   A. the population p = 0.5
   B. the sample p = 0.5
   C. the population p = 0.1
   D. the sample p = 0.1