

# Classroom Voting Questions: Elementary Statistics

## Tests of Significance

1. Child and Protective Services, a branch of the Department of Health and Human Services is investigating the monthly average number of children in foster care over the last several years. They are interested in seeing if the average is dropping from 235 children per month in 2001.

The null hypothesis for this problem would be:

- (a)  $H_0 : \mu < 235$
- (b)  $H_0 = 235$
- (c)  $H_0 : p = 235$
- (d)  $H_0 : \mu = 235$
- (e) None of the above

2. Which of the following pairs gives a legitimate null and alternative hypothesis for carrying out a hypothesis test?

- (a)  $H_0 : \pi = 0.4$     $H_a : \pi > 0.6$
- (b)  $H_0 : \mu < 80$     $H_a : \mu > 80$
- (c)  $H_0 : \mu = 80$     $H_a : \mu < 80$
- (d)  $H_0 : \bar{x} = 25$     $H_a : \bar{x} > 25$

3. A grocery store manager is interested in determining if the proportion of customers who pay by credit card at his store is greater than the reported national figure of 0.10. What hypotheses should the store manager test?

- (a)  $H_0 : \mu > 0.1$     $H_a : \mu = 0.1$
- (b)  $H_0 : \mu = 0.1$     $H_a : \mu > 0.1$
- (c)  $H_0 : \pi = 0.1$     $H_a : \pi > 0.1$
- (d)  $H_0 : \pi > 0.1$     $H_a : \pi = 0.1$
- (e)  $H_0 : \pi > 0.1$     $H_a : \pi < 0.1$

4. A drug company believes their newest drug for controlling cardiac arrhythmias is more effective and has less side effects than the current drug being used in the market. They submit their new drug to the FDA for a clinical trial to assess the efficacy of their drug in comparison to the current drug. What is the most appropriate null hypothesis for this clinical trial?
- (a)  $H_0$ : Efficacy of new drug = Efficacy of old drug
  - (b)  $H_0$ : Efficacy of new drug  $>$  Efficacy of old drug
  - (c)  $H_0$ : Efficacy of new drug  $<$  Efficacy of old drug
  - (d)  $H_0$ : Efficacy of new drug  $\neq$  Efficacy of old drug
  - (e) None of the above
5. If the conclusion in a hypothesis test is to fail to reject  $H_0$ , we can conclude that there is strong evidence that the null hypothesis is true.
- (a) True, and I am very confident.
  - (b) True, and I am not very confident.
  - (c) False, and I am not very confident.
  - (d) False, and I am very confident.