Writing an Hypothesis Statement

The **null hypothesis** (Ho) generally states that there is no difference between the true value and the claimed value. The **alternative hypothesis** (Ha) states that something is different, incorrect, or that something has changed.

**Write them in words and then convert them to symbols.**

1. A local pizza shop advertises “an average delivery time of 20 minutes or less,” but it does not offer a guarantee such as a free pizza. The national manager, Su Lin, wonders if her employees are fulfilling the claim.
2. According to the 2005 U.S. Census Bureau, at least 10.2% of registered births in the United States in 2005 were to teenage mothers. A sociologist believes that this percentage has increased since then.
3. According to the Federal Housing Finance Board, the mean price of a single-family home in 2005 was $299,800. A real estate broker believes that because of recent down turn in home sales that the mean price has decreased since then.

Using P-Value

1. State if the null hypothesis should be rejected given the p-value.
   1. P = 0.2582, 0.05
   2. P = 0.0684, 0.01
   3. P = 0.0153, 0.04
   4. P = 0.0232, 0.03
   5. P = 0.0651, 0.06
2. The college bookstore claims that the average cost of a textbook it $52 with a standard deviation of $4.50. A group of students think that the average cost is higher. The students test a sample of 100 books and find that the average cost is $52.80. Write a hypothesis statement and find the p-value to test this claim. Do we have enough evidence to reject H0?
3. A chemical pollutant has been leaking into a nearby river for years. This has a mean of 34 ppm (part per million) and a standard deviation of 8 ppm. A group of factory executives have claimed that they have lowered the pollution by adding a new filtration system. The river was tested and found that there was a mean of 32.5 ppm. Write a hypothesis statement and find the p-value to test this claim. Do we have enough evidence to reject H0?