

Level of Significance Worksheet

Name _____

Type 1 and 2 error worksheet

Consider examples below. Then fill in an error table given the context of the problem. For each problem state which type of error has the more severe consequences. I will demonstrate first two as examples in class.

Decision		Hypotheses	
		Type I Error	Correct Decision
		Correct Decision	Type II Error

1. The state of Georgia is considering spending \$350 million on a computerized mathematics curriculum that for grades 3 – 10. They pilot the program with 250 students in grades 5 and 6 whose end-of-course test scores are compared to the state average score of 150.

Decision		Hypotheses	

2. Pharmaceutical researchers are testing a new drug for acne. Severity of acne is rated on a scale of 1 – 7, 7 being “worst.” Side effects for the new drug may include vomiting, upset stomach, mild fever and/or hyperactivity. Their sample size is 80, with participants randomly assigned to a control group (n = 40) and treatment group (n = 40).

Decision		Hypotheses	

3. Researchers are studying the effects of TV watching on cognitive development in toddlers. Recent surveys have shown that 21% of 3-year-olds watch more than 5 hours of TV per day, and reports from cognitive psychologists indicate TV exposure may “rewire” the developing brain in adverse ways. They wish to test if toddlers who watch 5 hours or more of TV daily score less than average of 40 on tests of cognitive ability when entering first grade. Their sample size is 95.

Decision		Hypotheses	

4. Pregnant ladies take a glucose tolerance screening during the 24th week of pregnancy to detect developing gestational diabetes. This condition can lead to premature labor.
5. A manufacturer is testing light bulbs in the quality assurance lab. Each bulb receives a durability score. 100 bulbs from each production run are analyzed. If 11 or more are found to be defective, the entire run of bulbs is discarded. Discarding a run costs the company \$28,000.
6. Researchers at NGCSU are testing the political awareness of the undergraduate population. Due to the Corps of Cadets and an increased level of U. S. military activity, they feel that NGCSU students may be more aware of political policy than average college students. A political awareness survey that has been given nationwide is administered to 1,200 NGCSU students. The average score nationwide is 12.
7. Crop researchers are testing the yield (bushels/acre) of a hybridized soy bean to see if it produces per acre than former strains (treatment vs. control). An increase of 2% could mean increased corporate profits of nearly \$3 million. Seventy-two plots are analyzed, half with the new hybrids, half with the former strains.