

## Quiz 7 (April 20, 2017)

Statistics for Social Science (201-401-DW)  
Instructor: Emilie Richer

NAME: SOLUTIONS

### [QUESTION 1] (5 MARKS)

Consider the following statement "the brand-name detergent outperforms the cheaper store brand" with corresponding hypotheses:

$H_0$  : There is no difference between brands of detergents

$H_a$  : The brand-name detergent is better

Fill in the following table by placing the following statements in the most relevant cell (note that the same statement may apply to different cells)

- Correct decision
- Incorrect decision
- Type I error
- Type II error
- Brand-name detergent is better
- There is no difference between brands of detergents
- You buy the cheaper brand and get the same results
- You buy the cheaper brand but get worse results
- You buy the more expensive detergent for the same results
- You buy brand-name and get better results

	$H_0$ is true	$H_0$ is false
Fail to reject $H_0$	<ul style="list-style-type: none"><li>• CORRECT dec.</li><li>• NO difference between BRANDS</li><li>• YOU BUY CHEAPER BRAND &amp; GET SAME RESULTS</li></ul>	<ul style="list-style-type: none"><li>• INCORRECT decision</li><li>• BRAND NAME IS BETTER</li><li>• Type II error</li><li>• YOU BUY CHEAPER BRAND BUT GET worse results</li></ul>
Reject $H_0$	<ul style="list-style-type: none"><li>• INCORRECT DECISION</li><li>• NO DIFFERENCE BETWEEN BRANDS</li><li>• Type I error</li><li>• Buy more Exp. for same results</li></ul>	<ul style="list-style-type: none"><li>• correct dec.</li><li>• BRAND NAME IS BETTER</li><li>• YOU BUY BRAND-NAME &amp; Get better results</li></ul>