

## Assignment 2. Due Sept 25.

We have a population of size  $N$  which is very large and can be considered to be infinite. It consist of two groups of equal size. An opinion survey is to be conducted that results in a simple yes or no answer and the proportion of "yes" in the entire population is to be determined. A sample of size  $n$  is drawn and the proportion of yes among them is offered as an estimate. If in the entire population the proportion is  $p = \frac{p_1+p_2}{2}$  where  $p_1, p_2$  are the proportions in the two groups, exactly how much reduction in variance is obtained by selecting a sample of size  $\frac{n}{2}$  from each group (rather than selecting  $n$  from the entire population) ?