

HW 4

6.46, 6.48, 6.52, 6.54, 6.72, 6.74, 6.76, 6.92

6.46 a) $H_0: \mu = 18$ $H_a: \mu < 18$. **b)** $H_0: \mu = 50$ $H_a: \mu > 50$. **c)** $H_0: \mu = 24$ $H_a: \mu \neq 24$.

6.48 a) $H_0: \mu = 62500$ $H_a: \mu > 62500$. **b)** $H_0: \mu = 2.6$ $H_a: \mu \neq 2.6$.

6.52 The differences seen between average earnings of men and women are large enough to be caused by true population effects rather than sampling variation. However, the differences in average earnings between black and white students are most likely due to sampling variation rather than true effects due to race.

6.54 a) The P-value = 0.0013. Yes, older students have better study attitudes. **b)** The assumptions were that the data come from a SRS and that the population has a normal distribution. The assumption of a SRS is most important.

6.72 Yes, this was a designed experiment that used a control group to compare effects. The results show that the probability of observing this large of a difference is very small if in fact there is no difference in the populations. Therefore, the conclusion is that vitamin C can help prevent colds.

6.74 a) (492.224, 543.76). **b)** (509.85, 526.15). **c)** (515.424, 520.576).

6.76 a) No, with a significance level of 0.01, we expect five to do better than guessing. **b)** Retest the four individuals to see if they are consistently better.

6.92 a) The 95% confidence interval would be wider. Greater confidence results in a wider interval. **b)** Yes, a two-sided hypothesis test with an $\alpha = 0.10$ can be decided using a 90% confidence interval. This interval does not contain \$40,000; therefore, we can reject H_0 .