

Your Name: _____

Names of people you worked with: _____

Instructions: Work on this problem in class with your group (if you are attending class synchronously) or out of class (hopefully with a person or two! if you are attending class asynchronously). The problem should be done on a piece of paper with a pencil or on some kind of tablet. The problem should **not** be typed up or done in LaTeX.

Work for a *maximum* of 15 minutes on the problem (regardless of what time you are working). *Do not* come back to the problem to “fix it up” or “finish it.” Be sure to write down the names of the people you worked with during class (or outside of class).

Take a picture of your work and use a scanning app to create a pdf (or create a pdf directly from your tablet). Upload your work to Gradescope (via Sakai) within 24 hours of class.

Task: Let’s say we have 2 batches of paint one of which is quick-dry. The paint is unlabeled, and we forgot which was which! We paint 5 boards from batch 1 and record the drying time. We think batch 1 is quick dry. We also believe that the drying times are normally distributed with a true st dev of $\sigma = 5$ min. The two batches of paint have a true average drying time of either 25 min or 10 min.

$$H_0 : \theta = 25 \text{ min}$$

$$H_1 : \theta = 10 \text{ min}$$

Using the 5 observed drying times, find δ^* that minimizes $\beta(\delta^*)$ subject to $\alpha(\delta^*) \leq .05$ (Note: the level of significance is set to be $\alpha_0 = 0.05$.)