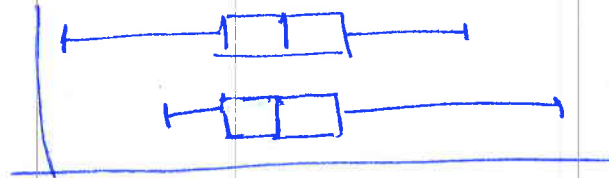


Instructions: Show all work. Use exact answers or appropriate rounding conventions. If you use your calculator, you can show work by saying which calculator commands you used.

1. Fusible interlinings are being used with increasing frequency to support outer fabrics and support the shape and drape of various pieces of clothing. An article gave the accompanying data on extensibility (%) at 100 gm/cm for both high-quality (H) fabric and poor-quality (P) fabric specimens.

H	1.2	0.9	0.7	1.0	1.7	1.7	1.1	0.9	1.7
	1.9	1.3	2.1	1.6	1.8	1.4	1.3	1.9	1.6
	0.8	2.0	1.7	1.6	2.3	2.0			
P	1.6	1.5	1.1	2.1	1.5	1.3	1.0	2.6	

- a. Construct a comparative boxplot. Does it suggest that there is a difference between true average extensibility for high-quality fabric and that for poor-quality fabric? Sketch your boxplots below.



- b. Use a two-sample t-test to decide whether true average extensibility differs for the two types of fabric. Clearly state your hypotheses, the p-values for the test, and your conclusion in the context of the problem.

$$H_0: \mu_1 = \mu_2$$

$$H_a: \mu_1 \neq \mu_2$$

using data L_1, L_2

$$t = -.5109$$

$$p = .6177$$

there is not enough evidence to conclude they are different

2. Lactation promotes a temporary loss of bone mass to provide adequate amounts of calcium for milk production. An article gave the following data on total body bone mineral content (g) for a sample both during lactation (L) and in the postweaning period (P).

	Subject									
	1	2	3	4	5	6	7	8	9	10
L	1928	2549	2825	1924	1628	2175	2114	2621	1843	2541
P	2126	2885	2895	1942	1750	2184	2164	2626	2006	2627

Does the data suggest that true average total body bone mineral content during the postweaning period exceeds that during the lactation period by more than 25g? State and test the appropriate hypotheses using a significance level of 0.05.

$$L_2 - L_1 \rightarrow L_3$$

T-Test on L_3

$$H_0: \mu_2 - \mu_1 \leq 25$$

$$H_a: \mu_2 - \mu_1 > 25$$

$$t = 2.457$$

$$p = .01815$$

reject H_0 there is good evidence to believe change is more than 25g.

3. Do teachers find their work rewarding and satisfying? An article reports the results of a survey of 395 elementary school teachers and 266 high school teachers. Of the elementary school teachers, 224 said they were very satisfied with their jobs, whereas 126 of the high school teachers were very satisfied with their work. Estimate the difference between the proportion of elementary school teachers and high school teachers who are very satisfied. Construct and interpret a 95% confidence interval.

2-prop Z Int

$$x_1 = 224$$

$$n_1 = 395$$

$$x_2 = 126$$

$$n_2 = 266$$

$$(.01602, .17079)$$

The difference in satisfaction between elementary and high school teachers' satisfaction rates is between 1.6% and 17% (higher for elementary school teachers)