College of the Redwoods
Mathematics Department

Elementary Statistics — Math 15
Study Question Quiz #10

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Quiz Questions

Instructions. *Place the solution to each of the following questions on your own paper. You must show all of your work to receive credit for your solution. Staple the quiz to your solutions before submitting your quiz.*

Exercise 1. A publisher believes that the average length of a sentence in David Moor'es *The Basic Practice of Statistics* is significantly different than the average length of a sentence in John Grisham's *The Testament*. 40 sentences are selected at random from Moore's *The Basic Practice of Statistics* and the number of words in each sentence in the sample are counted.

20	3	12	3	30	13	16	18	22	21
14	14	9	11	13	22	13	15	5	12
20	23	7	15	17	18	31	21	17	13
14	23	15	20	12	16	14	20	22	4

Similarly, 28 senetences are selected at random from Grisham's *The Testament* and the number words in each sentence in the sample are counted.

17	21	8	32	13	16	17	37	27	20
30	15	64	34	18	26	23	17	5	10
29	9	22	18	7	16	13	10		

(a) Test the publisher's claim at the $\alpha = 0.05$ significance level.

(b) Find a 95% confidence interval for the difference in means (Moore − Grisham).

Solutions to Exercises

Exercise 1(a) $H_0: \ \mu_1 - \mu_2 = 0$, $H_1: \ \mu_1 - \mu_2 \neq 0$, Observed Value $= -4.8$, D.O.E = 2-Tailed, p-value $= 0.036835$, Reject null at $\alpha = 0.05$ significance level.

□

Exercise 1(b) 95% confidence interval, $t^* = 2.000$ with $df = 66$, $\overline{x}_1 - \overline{x}_2 \pm t^* s_p \sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}} = -4.8 \pm (2.000)(9.1242)\sqrt{1/40 + 1/28}$, $(-9.289, -0.3109)$

□