9.1.

a. $(65 - 50) \pm 1.645\sqrt{(64/150) + (36/100}$; 13.541 ----- 16.459; This indicated the range, at the 90% confidence level, of the difference between the two population means.

b. $(65 - 50) \pm 2.33\sqrt{(64/150) + (36/100}$; 12.933 ----- 17.067; This indicated the range, at the 98% confidence level, of the difference between the two population means.

c. The advantage is you are less likely to make the error of not including the true difference in means in your estimate. The disadvantage is that there is a larger error margin since the interval is wider.

9.7.

a. $$s_p = \sqrt{\frac{(14-1)\,2.5^2 + (14-1)1.8^2}{14+14-2}} = 2.1783$$

$(17.2 - 15.9) \pm 1.7056(2.1783)\sqrt{(1/14) + (1/14)}$; -0.1043 ----- 2.7043; No because the interval contains the value 0 you cannot say that there is a difference setup time for the two additives.

b. No because again you cannot say that there is a difference in the setup time for the two additives.

9.11.

a.

Credit Card Balances - Male	
Mean	746.512931
Standard Error	19.33632279
Median	738.5
Mode	1018
Standard Deviation	294.5220941
Count	232

Credit Card Account Balance - Female	
Mean	778.1323529
Standard Error	35.80014705

Median	737
Mode	600
Standard Deviation	295.2155754
Count	68

Since the sample size for both male and female are greater than 30 determine the confidence interval using:

$$(778.1324 - 746.5129) \pm 1.96\sqrt{\frac{87{,}152.2505}{68}+\frac{86{,}743.2639}{232}}\text{; } -48.13 \text{ ----- } 111.37$$

b. Student answers will vary but should include comments that based upon this confidence interval it cannot be concluded that there is a difference between male and female credit card balances because the interval includes the value 0.

9.13.

Since the dataset has SAT and ACT scores together for both city and suburb you must separate out the ACT scores and the SAT scores. The SAT scores are the larger numbers. You must also remove all -99 data.

a.

Average of SAT Suburb	946.9545
Average of SAT City	854.7143

Point average of differences = 946.9545 – 854.7143 = 94.2402; no, because the only number you have is 94.2402 b.

	SAT - City	SAT - Suburb
Average	854.7143	946.9545
Standard Deviation	81.5	61.1

Count of SAT Suburb	22
Count of SAT City	21

$$s_p = \sqrt{\frac{(21-1)81.5^2 + (22-1)\,61.1^2}{21+22-2}} = 71.8$$

(946.9545 – 854.7143) $\pm$ 2.0195(71.8) $\sqrt{(1/22)+(1/21)}$; 48 ----- 136.5; based on this confidence interval you could not conclude that it might be as high as 150 because this interval does not contain the value 150. Excel's TINV function is used to find the t value.

c.

(946.9545 – 854.7143) $\pm$ 1.3025(71.8) $\sqrt{(1/22)+(1/21)}$; 63.7 ----- 120.8 it has reduced the width of the confidence interval because you have reduced the confidence level and increased the probability the interval will not contain the population mean.

9.36.

b. (.7 - .75) $\pm$ 1.96 $\sqrt{(0.7(1-0.7)/100) + (0.75(1-0.75)/100)]}$; -.0736 -------- .1736

9.40.

a. (0.38 – 0.3143) $\pm$ 1.96 $\sqrt{\frac{(0.38)(1-0.38)}{50} + \frac{(0.3143)(1-0.3143)}{70}}$; -0.1073 ----- 0.2387

Yes they give compatible results. The hypothesis test concluded that there was no difference and the confidence interval concludes the same thing because the interval contains the value 0.