Name: _____

1. The head of a Biology Department at a large university wants to know how non-transfer students and transfer students differ in terms of their performance on a test that all incoming biology majors have to take. She collected the following data from a random sample of students in the department and summarized their test scores. There are roughly 2500 non-transfer students and 1500 transfer students in the Biology Department.

	Mean	**SD**	**Sample Size**
Non-Transfer Students	41.48	6.03	119
Transfer Students	40.79	6.79	69

(a) What are we estimating? (Define the parameters of interest.)

(b) Verify that the necessary conditions for inference have been met.

(c) Find a point estimate for the difference in mean biology test score.

(d) Find the standard error for this difference.

(e) Suppose that JMP software calculates a 95% confidence interval for $\mu_T - \mu_N$ to be $(-2.069, 0.689)$. What is the confidence interval for $\mu_N - \mu_T$?

(f) Interpret your confidence interval in Part (e).

(g) Can we conclude that non-transfer students do better on average than transfer students?

2. Do people walk at different speeds in the airport depending on whether they are departing (getting on a plane) or arriving (getting off a plane)? Researcher Seth B. Young measured the walking speeds of different travelers in San Francisco International Airport and Cleveland Hopkins International Airport. His findings are summarized in the following table.

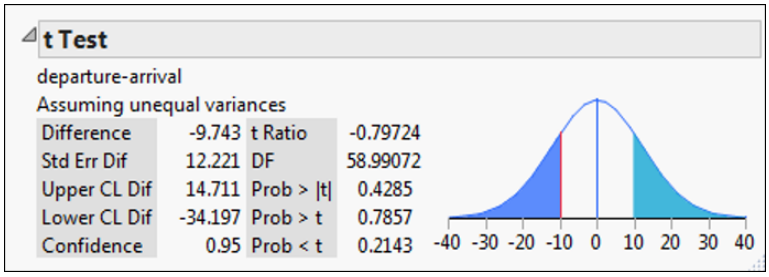
	Mean (ft/min)	**SD (ft/min)**	**Sample Size**
Departure	259.2	60.3	35
Arrival	268.9	39.9	35

(a) Definte the parameters of interest and state the null and alternative hypothesis.

(b) Is the normality condition for inference met?

(c) Calculate the test statistic that could be used to compare these two means in a hypothesis test.

(d) You generate the following JMP output to test the hypotheses defined in Part (a).



What is the p-value for the test?

(e) State your conclusion regarding the hypothesis test in context of the problem.

(f) If a 95% confidence interval for the difference is found, would it contain zero? Explain.