Statistics II Lab 8

Submission Instructions: Welcome to Lab 5. Upon completion, you *should upload* your **Word Document** and **Minitab Project files** to Blackboard by 11:59 PM of the due date Feb 28th.

Problems 100 points
Relationships between Quantitative Variables Lab

Correlation (r value) gives a measure of the linear relationship between two quantitative variables.

- One Sample t test and t Interval
- Two Sample - Unpaired t tests and t Intervals

In this Lab you will learn to:

- Construct hypotheses for all of the above tests.
- Interpret the results of all of the above tests using both CI's and p-values.

  If the data can be assumed to be Normally distributed, we will perform parametric tests and construct parametric confidence intervals.

  Parametric tests assume that the data is normally distributed and use the mean as the measure of location and standard deviation (vairance) as the measure of spread.

Answer the following questions using Minitab. Copy your results to a Word document with the questions stated clearly using statistical symbols where necessary. Also provide explanations as needed.

1. We are given the following data and required to answer the 3 questions below.:

x	10	12	14	16	18	20	22	24	26	28
y	25	24	22	20	19	17	13	12	11	10

   - Take the data given above and construct a scater diagram.
   - Find the correlation coefficient (r) for this data.

2. Construct a scatter diagram for the following data (Note: this is one set of data with 20 pairs).

Group 1:	3.3	3.7	3.5	4.1	3.4	3.5	4.0	3.8	3.2	3.7
Group 2:	3.2	3.6	3.1	3.4	3.0	3.4	2.8	3.1	3.3	3.6

   Is there a difference in the means?

3. In an experiment to detect any relationship between the heights of Aberdonian fathers and their eldest sons, eight pairs of fathers and sons were selected at random from the city population and their exact heights recorded, in inches, as follows:

Father's height:	63.1	74.5	70.4	72.1	65.9	67.1	68.8	66.8
Son's height:	65.6	67.9	69.6	70.8	64.5	68.2	71.5	63.4

Is there a difference in height between fathers and sons?

4. Concentrations of two drugs A and B were measured in the same subjects following equal oral doses of a drug on different days. The pairs (A,B) concentrations are
$(9, 9)(8, 8)(4, 7)(4, 8)(3, 5)(3, 6)(3, 7)(1, 6)(2, 2)$ ng/ml after 1 hour
Does B result in higher concentrations than A?