You are allowed to operate a calculator and refer to one page (front and back of standard 8.5 by 11 inch sheet) of notes while taking this examination. Your solutions should be clear, complete, and sufficiently detailed in order to demonstrate your understanding and communicate your reasoning and method of solving the problem. Each problem will be evaluated on a 5-point standard rubric.

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Student's Name

Problem 1

Healthy females have a mean red blood cell count of 4.8 million cells per microliter of whole blood with a standard deviation of 0.3 million cells per microliter and a mean white blood cell count of 7250 cells per microliter of whole blood with a standard deviation of 1375 cells per microliter. A female patient is given a blood test. Her red blood cell count (RBC) was found to be 4.3 million cells per microliter while her white blood cell count (WBC) was found to be 6100 cells per microliter.

(a) Relatively speaking, does this patient have a lower red blood cell count or white blood cell count?

(b) Classify as to the type of data and determine the level of measurement for the particular data item : blood cell type (red or white).

Problem 2

The principal at Tahoe Elementary School randomly selected three of the school's twelve classes of students to participate in an opinion poll. All of the children in each of the three randomly selected classes were asked the question "What is your favorite fruit to eat?". The following results were obtained.

Apple, Grapes, Apple, Apple, Banana, Apple, Apple, Grapes, Orange, Apple, Apple, Banana, Strawberries, Apple, Apple, Grapes, Apple, Orange, Apple, Apple, Apple, Apple, Grapes, Grapes, Apple, Orange, Apple, Apple, Banana, Apple, Apple, Apple, Strawberries, Apple, Orange, Grapes, Grapes, Apple, Grapes, Grapes, Grapes, Banana, Grapes, Banana, Apple, Banana, Grapes, Apple, Banana, Strawberries, Banana, Apple, Orange, Grapes, Orange, Grapes, Apple, Orange.

(a) Identify the method of sampling used to collect this data.

(b) Construct a percentage distribution table with this data.

Problem 3

Use appropriate descriptive statistics methods to describe the important characteristics of the data collected in Problem 2.

Problem 4

Twenty-five different automobiles were tested in dry conditions at a speed of 65 miles per hour for total stopping distance. The sample results, measured in feet, are given below.

345, 348, 342, 348, 342, 337, 342, 349, 346, 347, 358, 351, 343, 347, 349, 350, 345, 340, 352, 349, 353, 346, 338, 345, 339

(a) Calculate the standard deviation for this data and interpret the result.

(b) According to these results, would it be unusual for an automobile traveling at 65 miles per hour in dry conditions to take a total of 358 feet to come to a complete stop?

Problem 5

(a) Construct a frequency histogram with an initial grouping of 336 to 338 feet for the data collected in Problem 4.

(b) Use appropriate descriptive statistics methods to describe the important characteristics of the data collected in Problem 4.

Problem 6

Thirty-six Loggerhead Sea Turtle (*Caretta caretta*) nests were uncovered, and the number of eggs in each nest (the clutch size) was counted. A stem-and-leaf plot for this sample is given below.

9	2	3							
9	5	7	8	9	9				
10	0	1	1	3	3	4	4		
10	6	6	6	6	8	8	9	9	9
11	1	1	2	2	2	3			
11	5	5	7	8					
12	1	2							
12	6								

(a) Find the percentile for the nest with a clutch size of 98 eggs.

(b) Find the 70^{th} percentile for this data.

(c) Find the median for this data and interpret the result.