AP Statistics Unit 1 Test 1718 Congress/Renazco Name:

Graphing Calculators and Green Packets allowed

Part II: **Free Response** Please write ***clear*** solutions. Support all your statements.

1. Here are data on the percent of people in several age groups who attended a movie in the past 12 months:

Age Group	Movie Attendance
18 to 24 years	83%
25 to 34 years	73%
35 to 44 years	68%
45 to 54 years	60%
55 to 64 years	47%
65 to 74 years	32%
75 years and over	20%

a. Would it be correct to make a pie chart of these data? Why? **[2pt]**

b. Does the above data provide the movie studio with the percentage of total audience that is 18 to 24 years old? If yes, then explain why. If not, then explain what information is necessary to find the percent of total audience for movies between 18 to 24 years old. **[2pt]**

2. Ms. Renazco and Ms. Congress have both used Standards Based Grading in other classes that they teach. Both teachers use the scores on a recent quiz (max score is 4) to offer each other instructional ideas to improve learning. Ms. Renazco wonders if her absences may be impacting her students' learning in her classes. Ms. Renazco decides to solicit you, an independent statistical consultant, to help rule on this matter.

The two teachers agree that the cumulative quiz score average are the best indicators of students knowledge and learning. Here are the quiz score average (***note: Renazco has 15 students, and Congress has 18 students.***):

Renazco scores	2.9	2.86	2.6	3.6	3.2	2.7	3.1	3.085	3.75	3.4	3.358	3.56	3.8	3.2	3.1			
Congress scores	2.9	3.3	3.98	2.9	3.2	3.5	2.8	2.9	3.95	3.1	2.85	2.9	3.245	3.0	3.0	2.8	2.9	3.2

a. ***Compare*** the distributions with appropriate ***graphical*** displays. **[5pts]**

b. ***Compare*** the distributions with appropriate ***written*** summaries. **[10pts]**

c. Did Ms. Renazco's absences potentially hurt her student's learning? Clearly support your conclusion? **[3pt]**

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5. The average sale price (online) for four-year-old Harley Davidson touring motorcycle is approximately Normally distributed with a mean of $14,000 and a standard deviation of $4,000. Include a sketch to support your answers.
   a. Molly has saved up $15,000 to spend on a motorcycle. What proportion of the available motorcycles of this type can she afford? **[3pts]**

   b. What is the 30th percentile for the prices of motorcycles of this type? **[3pt]**

   c. Show that a motorcycle priced at $25,000 would be considered an outlier by the 1.5 x IQR rule. **[2pt]**

6. Basketball statisticians record the number of rebounds each player makes per game. The average number of rebounds for the top 18 players in the NBA (National Basketball Association) are given below:

Average # of Rebounds per game	11.4	11.1	11.0	10.9	10.9	10.9	10.8	10.8	10.6	10.6	10.6	10.4	10.3	9.9	9.7	9.7	9.6	9.4

Decide if the distribution is approximately normal, and clearly explain/support your conclusion. **[3pt]**