FR

Ch. 6 - 9 Review

EXAM 1

STATISTICS
SECTION II
Part B

Question: 6
Spend about 25 minutes on this part of the exam.
Percent of Section II grade: 25

Directions: Show all your work. Indicate clearly the methods you use, because you will be graded on the correctness of your methods as well as on the accuracy of your results and explanations.

6. About 48% of U.S. women of all ages engage in walking for physical activity.
   a. Explain *how* you would conduct a simulation using the random-number table displayed in part (b) to estimate the number of walkers from a sample of 10 women.

   b. Perform your simulation 20 times. Start at the leftmost digit in the first row and move across. By marking directly on or above the table, make your procedure clear enough that someone else can follow what you did. Record the number of walkers for each of your trials.

69165	01210	02156	38425	02216	90078	41061	02463	40374	13298	80188	21906
44494	01096	29950	16306	92255	75170	57400	09191	80522	09235	86386	78007
47007	72848	02846	46633	41906	59357	03933	19473	37483	01769	76267	78340
52435	85822	33415	94602	99499	42195	24360	06706	10948	34268	66144	10375
39832	85409	14239	61405	40866	17083	53189	10901	62926	85304	64067	56177
69221	41200	84407	48185	96361	09404	60255	56996	41696	84481	27388	82125
64091	81760	78188	76031	43483	81928	05945	93758	49307	66038	23405	10343
94975	14597	66416	01014	05406	65230	00456	62101	94834	35086	99930	75912

c. From your results, create a frequency table showing the number of women who walk.

d. Another researcher collected 20 random samples of size 10 and recorded the number of women who walk for physical activity.

Number of Walkers	Frequency
1	1
2	2
3	3
4	3
5	2
6	4
7	4
8	1

Create an appropriate graphical display of the researcher's data *and* the data from *your* simulation so that the two data sets can be compared.

e. Write a few sentences comparing the two data sets. Use your display from part (d).

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Exam 1

3. Wrestling is a somewhat unique sport in that it can be viewed as both an individual and a team sport. The Anytown High School wrestling team consists of five wrestlers, each competing in a different weight class. The point differentials (difference in points between these wrestlers and their opponents) for the first ten meets are recorded for these five wrestlers, and the distributions of their individual results are approximately normal with the following means and standard deviations. (For matches resulting in pins, the point differential was recorded as 15, the same as for a technical fall.)

Weight Class	Mean Point Differential	Standard Deviation
125 lb	7.4	3.2
140 lb	7.9	5.1
152 lb	7.2	4.7
189 lb	8.1	5.3
215 lb	6.4	4.9

a. What is the probability that the 215-lb wrestler will beat his next opponent by *at least* 14 points?

b. Suppose the team score is calculated directly from the point differentials. What would be the mean score and standard deviation for *this* team?

c. Team scores are *not* calculated directly from the point differentials. If the *real* team score average for last season was 39.5 with a standard deviation of 13.202, do you have any reservations about using this information and part (b) to determine if there is a significant difference in the two scoring methods? Explain.

2. A baseball player's overall batting average is 0.320. His average with runners on base decreases to 0.275. Assuming that there is a 40% chance of a runner on base whenever the player comes up to bat, what is his batting average without runners on base?

FR Exam 2

1. A shipment of computer chips consists of 10,000 units. The manufacturer claims that the probability of selecting a defective unit is 0.003.
   a. How many defective units should the receiver of the shipment expect?

   b. What is the probability that the receiver of the shipment will get more defective units than expected?

   c. What is the probability that fewer than 18 units will be defective in this shipment?

3. Suppose that the weights of a name-brand cereal vary normally with mean $\mu = 11.13$ oz and standard deviation $\sigma = 0.08$ oz. The advertised weight is 11 oz. For the equivalent generic brand with an advertised weight of 11 oz, the weights vary normally with mean $\mu = 11.15$ oz and standard deviation $\sigma = 0.16$ oz.
   a. For each of the brands, find the probability that the weight of a box of cereal will be less than the advertised weight.

   b. For each of the brands, find the probability that the average weight for a purchase of four boxes of cereal will exceed 11.25 oz.

   c. If you believe strongly in getting what you pay for, that is, you want to make sure you get at least the weight advertised on the box, which brand of cereal are you more likely to buy and why?

   d. If you wanted to get the most for your money, that is, you would like to get much more than the advertised weight, which brand of cereal are you more likely to buy and why?