answers

Chapter 11 Practice Test

1. Explain the difference between a quantitative and categorical variable. Give an example of each.

↓ # data (weight of dogs) ↓ topics (favorite sports)

2. Mrs. Brown is doing a project for her Master's program. She arranged all of her students by grade level and then picked 20 students from each grade and gave them a project rather than the normal test.

A. What type of sampling method did she use? stratified

B. What would the sample be? 80 students

C. What would the population be? all Mrs. Brown's students

3. The average SAT score 2018 was 1210. Is this a parameter or statistic?

parameter

4. Use {88, 95, 92, 60, 86, 78, 95, 98, 92, 96, 70, 80, 96, 89} to answer the following questions:

A. Create a histogram ✓

*B. Create a box plot ✓

C. What type of skew does this data have?

left skew

D. What measure of center and spread would you use?

median & quartiles

5. For the three examples below state which sampling method is being used and if there would be bias

A. The bakery puts a comment box by their door for customer feedback

self select → yes bias

B. Mr. Trimble separates students into the bleachers in the gym and used the entire sophomore bleachers as his sample group

cluster → no bias

C. Jenna goes to every fifth house to sell candy bars

systematic → no bias

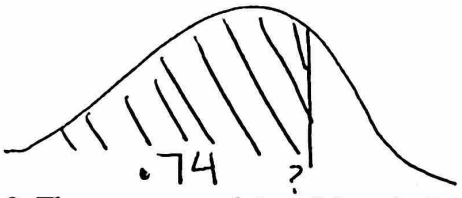
6. A set of barbell prices are normally distributed with a mean of $76 and a standard deviation of $10. What's the probability of the prices being between $65.00 and $89.00?

$z = \frac{65-76}{10} = -1.1$ (LB)

$z = \frac{89-76}{10} = 1.3$ (UB)

76.8%

7. Sarah was in the 74th percentile for her chapter 7 test. The class average was 84 with a standard deviation of 2.1, what was Sarah's score?



$Z = 0.64$ $\quad 0.64 = \frac{X - 84}{2.1}$

$X = 85.3$

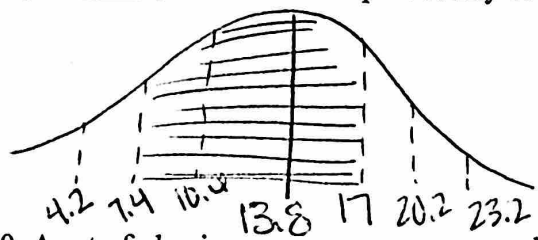
8. The average weight of dogs in Sammamish is 36 lbs with a standard deviation of 5.3. After weighing his 30 friends' dogs, John says that his dog weighs way more than other dogs in Sammamish. His dog weighs 41 lbs. Is he correct? Show work with margin of error!

$ME = \frac{2(5.3)}{\sqrt{30}} = 1.9$

yes b/c 41 is out of range

reasonable range: $36 \pm 1.9 \rightarrow 34.1$ to 37.9

9. The lifespans of seals in a zoo are normally distributed with a $\mu = 13.8$ year and $\sigma = 3.2$ years. Use the empirical rule to estimate the probability of a seal living between 7.4 & 17 years.



$13.5 + 34 + 34 =$ 81.5%

10. A set of physics exam scores are normally distributed with $\bar{x} = 82$ and $\sigma = 7$. Irina got a score of 95 on the exam, what is her percentile?

$Z = \frac{95 - 82}{7} = 1.86$

LB: -CO

UB: 1.86

96.9%

11. A set of middle school student heights are normally distributed with mean 150cm and standard deviation 20cm. Uma has a height of 172cm. What is the probability a student is taller that 172cm?

$Z = \frac{172 - 150}{20} = 1.1$

LB: 1.1

UB: CO

13.6%

12. Jessica's z-score on the mile run was -1.23. The mean run time of the class was 7 minutes and the standard deviation was 1.1 minutes. What was Jessica's run time?

$-1.23 = \frac{X - 7}{1.1}$

$X = 5.6$ $\longrightarrow$ 5min & 36 sec