

Elementary Statistics

Transpose your answers to the answer sheet provided. If you feel the answer is none of the choices given, submit your answer to the question.

1. What is your test ID ? **T1134C**

2. The data show the total number of medals (gold, silver, and bronze) won by each country winning at least one gold medal in the 2006 Winter Olympics. Find the mean, median, and mode of the numbers of medals won by these countries.

mean = 20.111 median = 22 mode = 14

Country (Ranking)	1	2	3	3	4	9	9	11	11
Medal Count	11	14	14	19	22	23	24	25	29

3. The board of examiners that administers the real estate broker's examination in a certain state found that the mean score on the test was 493 and the standard deviation was 72. If the board wants to set the passing score so that only the best 10% of all applicants pass, which of the scores below would represent the passing score? Assume that the scores are normally distributed.

(A) 400.73 (B) **585.27** (C) 550.75 (D) 425.12

4. To calculate the variance and standard deviation to measure variability, we must square the deviations from the mean in order to avoid a zero sum. Eliminating the zero sum could also have been accomplished by taking the absolute values of the deviations, as in calculating the MAD. Why wasn't that method used when these processes were originally formulated? **Second moment in physics**

5. In calculating the variance we divide by one less than the number of data items. This is done

(A) to accommodate proper labeling (C) to remove the effect of outliers

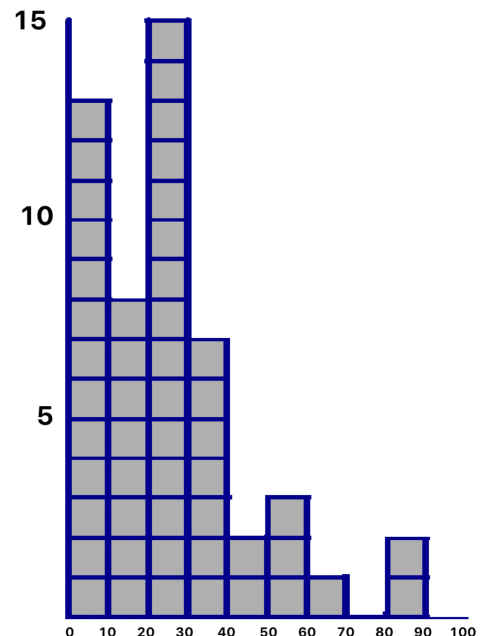
(B) to standardize the data (D) **to remove bias**

6. This histogram shows the closing price of a stock on 50 days. In which range does the first quartile lie?

(A) 0 to 10 (C) 20 to 30
 (B) **10 to 20** (D) 30 to 40

7. In this histogram, would the mean be higher or lower than the median?

(A) **higher** (B) lower



8. Is the data 1, 2, 3, 23, 52, 46, 11, 11, 12, and 15 normally distributed? Explain.

No, reject normality at 0.05

9. A vending machine automatically pours coffee into cups. The amount of coffee dispensed into a cup is roughly bell shaped with a mean of 7.6 ounces. We know that 95% of the cups contain an amount of coffee between 6.8 and 8.4 ounces. Thus, the standard deviation of the distribution is approximately equal to:

(A) 0.8 ounces (B) **0.4 ounces** (C) 1.2 ounces (D) 0.2 ounces

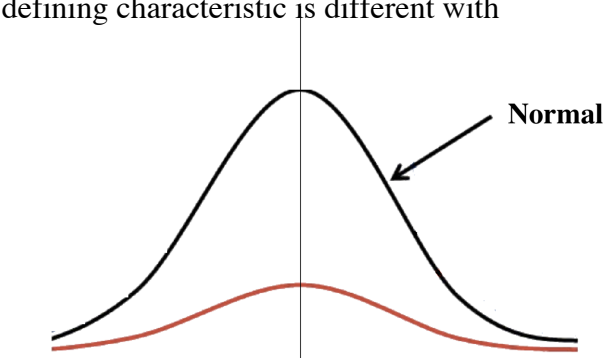
10. The frequency distribution for the mean amount of rainfall in a certain month over a period of 30 years is given below. Approximately, what is the mean?

mean = 7.4

Rainfall (in inches)	Number. of years
2.0 - 4.0	3
4.0 - 6.0	6
6.0 - 8.0	8
8.0 - 10.0	8
10.0 - 12.0	5

11. In the diagram below, we have the envelopes of two histograms with the same mean and the same standard deviation. What defining characteristic is different with respect to these two curves?

(A) median (C) skewness
(B) **kurtosis** (D) inflection



12. A researcher is studying the hatching Yellow Bellied Sapsuckers. She has a study group of 40 eggs. A similar study has shown that the eggs' hatching times should have a mean of 42 days with a standard deviation of 3 days and are normally distributed. Approximately how many eggs will have hatching times between 36 and 48 days?

(A) 22 (B) 27 (C) 30 (D) **38**

13. A student scored 600 on the SAT-Math (Mean = 500, SD = 100) and 22 on the ACT-Math (Mean = 18, SD = 6). Which score is more impressive?

(A) **SAT $z = 1.0$** (B) **ACT $z = 0.666$**

14. Approximately what percent of the observations in a distribution lie between the first quartile Q1 and the third quartile Q3?

- (A) 25% (B) **50%** (C) 75% (D) 100%

15. A professor scaled (curved) the scores on an exam by multiplying the student's raw score by 1.2, then adding 15 points. If the mean and standard deviation of the scores before the curve were 51 and 5, respectively, then the mean and standard deviation of the scaled scores are respectively:

- (A) 76.2 and 21. (B) **76.2 and 6.** (C) 76.2 and 5. (D) 61 and 6.

16. Which of the following would indicate that a dataset is not bell-shaped?

- (A) The range is equal to 5 standard deviations.
(B) The range is larger than the interquartile range.
(C) **The mean is much smaller than the median.**
(D) There are no outliers.

17. The following is a stem-plot of the birth weights of male babies born to a smoking group. The stems are in units of kg. What is the median birth weight? **3.3 kg**

5 | 23556
4 | 123
3 | 223346789
2 | 3467788889

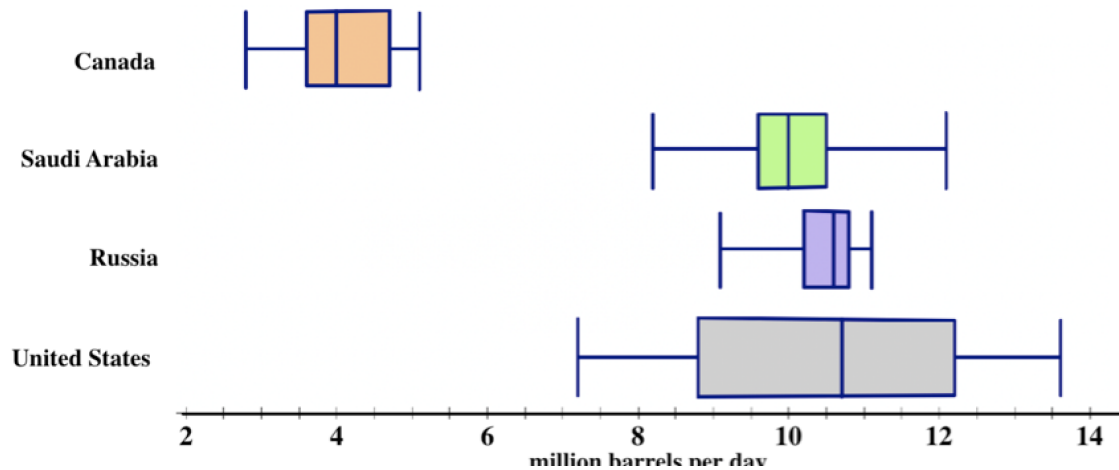
- (A) 13.5 kg (B) 3.5 kg (C) 3.2 kg (D) 3.7 kg

18. One advantage of using a stem-and-leaf plot rather than a histogram is that the stem-and-leaf plot

- (A) shows the shape of the distribution more easily than the histogram.
(B) changes easily from frequency to relative frequency.
(C) **shows all of the data on the graph.**
(D) presents the percentage distribution of the data.

19. The Medical College Admission Test (MCAT) has a mean of 512 and a standard deviation of 7. If your score a raw score of 78 in a region whose mean score is 75 with a standard deviation of 4, what is your MCAT score? **517.25**

20. Below are plots of the annual oil production for the top four oil producing countries in the world over the 2010-2025 period. (Energy Institute Statistical Review of World Energy 2026). Which of the four statements below is true?



(A) Russia has a higher median production than Saudi Arabia, while the middle 50% of Russia's production values have less variability.

(B) Russia has a higher median production than Saudi Arabia, while the middle 50% of Russia's production values have greater variability.

(C) Saudi Arabia has a higher median production than Canada, and the middle 50% of Saudi Arabia's production values have greater variability.

(D) Saudi Arabia has a lower median production than Russia, while the overall range of Saudi Arabia's production values is smaller

21. Does the data 1, 2, 3, 23, 52, 46, 11, 11, 12, and 15 contain any outliers? Explain.

No, Examine modified boxplot, normality assessment, or upper/lower fences