

TMUA Chapter 1 - Quiz 3: Statistics Supplements S01

Xie Tao TMUA Workbook 2024 (5th Edition)

Time Allowed: 90 minutes

Number of Questions: 15

Difficulty: ★ ★ ★★

Supplement Questions

SQ1

Five positive consecutive integers starting with a have average b .
What is the average of 5 consecutive integers that start with b ?

- (A) $a + 3$
- (B) $a + 4$
- (C) $a + 5$
- (D) $a + 6$
- (E) $a + 7$

SQ2

An iterative average of the numbers 1, 2, 3, 4 and 5 is computed in the following way. Arrange the five numbers in some order. Find the mean of the first two numbers, then find the mean of that with the third number, then the mean of that with the fourth number, and finally the mean of that with the fifth number.

What is the difference between the largest and smallest possible values that can be obtained using this procedure?

- (A) $\frac{31}{16}$
- (B) 2
- (C) $\frac{17}{8}$
- (D) 3
- (E) $\frac{65}{16}$

SQ3

Mrs. Walter gave an exam in a mathematics class of five students. She entered the scores in random order into a spreadsheet, which recalculated the class average after each score was entered. Mrs. Walter noticed that after each score was entered, the average was always an integer. The scores (listed in ascending order) were 71, 76, 80, 82 and 91.

What was the last score Mrs. Walter entered?

- (A) 71
- (B) 76
- (C) 80
- (D) 82
- (E) 91

SQ4

The average value of all the pennies, nickels, dimes and quarters in Paula's purse is 20 cents. If she had one more quarter, the average value would be 21 cents.

How many dimes does she have in her purse?

- (A) 0
- (B) 1
- (C) 2
- (D) 3
- (E) 4

SQ5

The average of the numbers 1, 2, 3, ..., 98, 99 and x is $100x$.

What is x ?

- (A) $\frac{49}{101}$
- (B) $\frac{50}{101}$
- (C) $\frac{1}{2}$
- (D) $\frac{51}{101}$
- (E) $\frac{50}{99}$

SQ6

The mean of three numbers is 10 more than the least of the numbers and 15 less than the greatest. The median of the three numbers is 5.

What is their sum?

- (A) 5
- (B) 20
- (C) 25
- (D) 30
- (E) 36

SQ7

A teacher gave a test to a class in which 10% of the students are juniors and 90% are seniors. The average score on the test was 84. The juniors all received the same score, and the average score of the seniors was 83.

What score did each of the juniors receive on the test?

- (A) 85
- (B) 88
- (C) 93
- (D) 94
- (E) 98

SQ8

Suppose that S is a finite set of positive integers. If the greatest integer in S is removed from S , then the average value (arithmetic mean) of the integers remaining is 32. If the least integer in S is also removed, then the average value of the integers remaining is 35. If the greatest integer is then returned to the set, the average value of the integers rises to 40. The greatest integer in the original set S is 72 greater than the least integer in S .

What is the average value of all the integers in the set S ?

- (A) 36.2
- (B) 36.4
- (C) 36.6
- (D) 36.8
- (E) 37

SQ9

Hiram's algebra notes are 50 pages long and are printed on 25 sheets of paper; the first sheet contains pages 1 and 2, the second sheet contains pages 3 and 4 and so on. One day he leaves his notes on the table before leaving for lunch, and his roommate decides to borrow some pages from the middle of the notes. When Hiram comes back, he discovers that his roommate has taken a consecutive set of sheets from the notes and that the average (mean) of the page numbers on all remaining sheets is exactly 19.

How many sheets were borrowed?

- (A) 10
- (B) 13
- (C) 15
- (D) 17
- (E) 20

SQ10

When the mean, median and mode of the list 10, 2, 5, 2, 4, 2, x are arranged in increasing order, they form a non-constant arithmetic progression.

What is the sum of all possible real values of x ?

- (A) 3
- (B) 6
- (C) 9
- (D) 17
- (E) 20

SQ11

Last year Isabella took 7 math tests and received 7 different scores, each an integer between 91 and 100, inclusive. After each test she noticed that the average of her test scores was an integer. Her score on the seventh test was 95.

What was her score on the sixth test?

- (A) 92
- (B) 94
- (C) 96
- (D) 98
- (E) 100

SQ12

For positive integers m and n such that $m + 10 < n + 1$, both the mean and the median of the set $\{m, m + 4, m + 10, n + 1, n + 2, 2n\}$ are equal to n .

What is $m + n$?

- (A) 20
- (B) 21
- (C) 22
- (D) 23
- (E) 24

SQ13

The sum of 49 consecutive integers is 7^5 .

What is their median?

- (A) 7
- (B) 7^2
- (C) 7^3
- (D) 7^4
- (E) 7^5

SQ14

The set $\{3, 6, 9, 10\}$ is augmented by a fifth element n , not equal to any of the other four. The median of the resulting set is equal to its mean.

What is the sum of all possible values of n ?

- (A) 7
- (B) 9
- (C) 19
- (D) 24
- (E) 26

SQ15

A , B , C are three piles of rocks. The mean weight of the rocks in A is 40 pounds, the mean weight of the rocks in B is 50 pounds, the mean weight of the rocks in the combined piles A and B is 43 pounds, and the mean weight of the rocks in the combined piles A and C is 44 pounds. What is the greatest possible integer value for the mean in pounds of the rocks in the combined piles B and C ?

- (A) 55
- (B) 56
- (C) 57
- (D) 58
- (E) 59