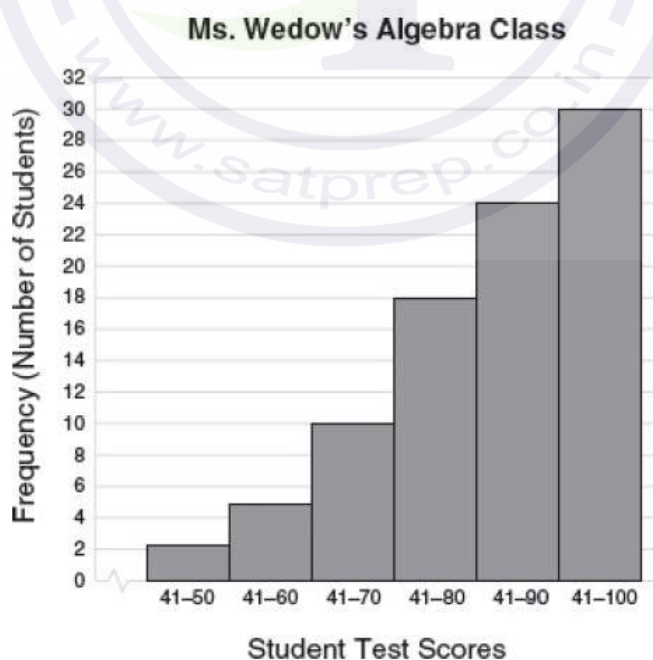


SATPREP

Summerizing data Using statistics

Multiple-Choice

- The average (arithmetic mean) of a set of seven numbers is 81. If one of the numbers is discarded, the average of the remaining numbers is 78. What is the value of the number that was discarded?
(A) 98
(B) 99
(C) 100
(D) 101
- The arithmetic mean of a set of 20 test scores is represented by x . If each score is increased by y points, which expression represents the arithmetic mean of the revised set of test scores?
(A) $x + y$
(B) $x + 20y$
(C) $x + \frac{y}{20}$
(D) $\frac{x + y}{20}$
- What is the area of the circle whose radius is the average of the radii of two circles with areas of 16π and 100π ?
(A) 25π
(B) 36π
(C) 49π
(D) 64π



- The diagram above shows a graph of the students' test scores in Ms. Wedow's algebra class. Which *ten-point* interval contains the median?

- (A) 61–70
- (B) 71–80
- (C) 81–90
- (D) 91–100

5. If k is a positive integer, which of the following represents the average of 3^k and 3^{k+2} ?

- (A) $\frac{1}{2} \cdot 3^{k+1}$
- (B) $5 \cdot 3^k$
- (C) $6^{\frac{3}{2}k}$
- (D) $\frac{1}{2} \cdot 3^{3k}$

6. When x is subtracted from $2y$, the difference is equal to the average of x and y . What is the value of $\frac{x}{y}$?

- (A) $\frac{1}{2}$
- (B) $\frac{2}{3}$
- (C) 1
- (D) $\frac{3}{2}$

7. If the average of x , y , and z is 32 and the average of y and z is 27, what is the average of x and $2x$?

- (A) 42
- (B) 45
- (C) 48
- (D) 63

Company 1		Company 2	
Worker's Age in Years	Salary in Dollars	Worker's Age in Years	Salary in Dollars
25	30,000	25	29,000
27	32,000	28	35,500
28	35,000	29	37,000
33	38,000	31	65,000

8. Which of the following statements is true about the data in the tables above?

- I. The mean salaries for both companies are greater than \$35,000.
- II. The mean age of workers in Company 1 is greater than the mean age of workers in Company 2.
- III. The salary range in Company 2 is greater than the salary range in Company 1.

- (A) I only
- (B) III only
- (C) I and II only
- (D) II and III only

9. A man drove a car at an average rate of speed of 45 miles per hour for the first 3 hours of a 7-hour

car trip. If the average rate of speed for the entire trip was 53 miles per hour, what was the average rate of speed in miles per hour for the remaining part of the trip?

- (A) 50
- (B) 55
- (C) 57
- (D) 59

10. In a set of n data values, m represents the median. If each number in the set is decreased by 3, which expression represents the median of the revised set of data values?

- (A) m
- (B) $m - 3$
- (C) $m - \frac{3}{n}$
- (D) $\frac{m - 3}{n}$

11. Susan received grades of 78, 93, 82, and 76 on four math exams. What is the lowest score she can receive on her next math exam and have an average of at least 85 on the five exams?

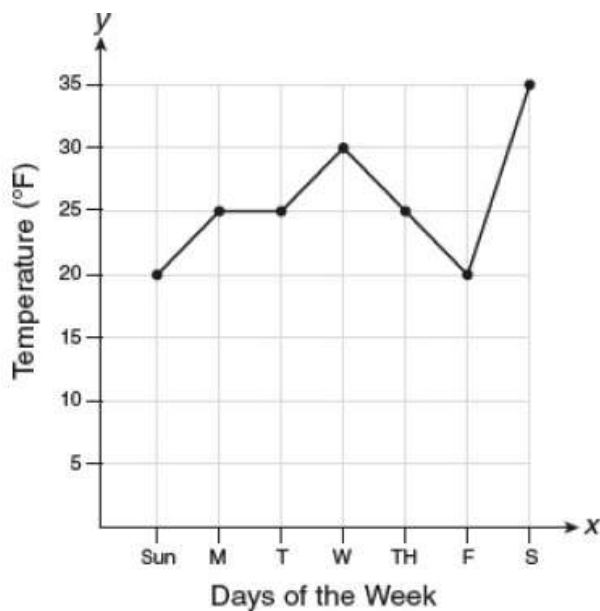
- (A) 96
- (B) 94
- (C) 92
- (D) 90

12. What is the average of $(x + y)^2$ and $(x - y)^2$?

- (A) $\frac{x + y}{2}$
- (B) xy
- (C) $x^2 - y^2$
- (D) $x^2 + y^2$

13. The average of the test scores of a group of x students is 76 and the average of the test scores of a group of y students is 90. When the scores of the two groups of students are combined, the average test score is 85. What is the value of $\frac{x}{y}$?

- (A) $\frac{4}{7}$
- (B) $\frac{5}{9}$
- (C) $\frac{2}{3}$
- (D) $\frac{7}{4}$



14. The graph above shows the average daily temperature during a particular week in January in a certain city. Which statement best describes the temperature data in the graph above?
- (A) median = mean
 (B) mean < mode
 (C) median = mode
 (D) mean = mode
15. The average of a , b , c , d , and e is 28. If the average of a , c , and e is 24, what is the average of b and d ?
- (A) 31
 (B) 32
 (C) 33
 (D) 34
16. If $2a + b = 7$ and $b + 2c = 23$, what is the average of a , b , and c ?
- (A) 5
 (B) 7.5
 (C) 15
 (D) 12.25

Minutes	14	15	16	17	18	19	20
Number of Students	5	3	x	5	2	10	1

17. The number of minutes students took to complete a quiz is summarized in the table above. If the mean number of minutes was 17, which equation could be used to calculate x ?

- (A) $17 = \frac{119 + x}{x}$
 (B) $17 = \frac{119 + 16x}{x}$
 (C) $17 = \frac{446 + x}{26 + x}$
 (D) $17 = \frac{446 + 16x}{26 + x}$

18. The average of a , b , c , and d is p . If the average of a and c is q , what is the average of b and d in terms of p and q ?

- (A) $2p + q$
 (B) $2p - q$
 (C) $2q + p$
 (D) $2q - p$

19. The lowest value in a set of ordered scores is x and the highest value is y . If each score is increased by k , then which of the following must be true of the revised set of scores?

- I. The mean is increased by k .
 II. The range is k .
 III. The median remains unchanged.

- (A) I only
 (B) II only
 (C) I and III
 (D) II and III

Class X		Class Y	
Grade	Frequency	Grade	Frequency
A	4	A	6
B	11	B	4
C	3	C	2
D	2	D	6
F	1	F	3

20. The tables above give the distribution of grades for 21 students in two different college mathematics classes. For purposes of making statistical calculations, $A = 4$, $B = 3$, $C = 2$, $D = 1$, and $F = 0$. Which of the following statements is true about the data shown for these two classes?

- I. The standard deviation of grades is greater for class X.
 II. The standard deviation of grades is greater for class Y.
 III. The median letter grade is the same for classes X and Y.

- (A) I only
 (B) II only
 (C) I and III only
 (D) II and III only

Player's Annual Salaries (millions of dollars)					
0.5	0.5	0.6	0.7	0.75	0.8
1.0	1.0	1.1	1.25	1.3	1.4
1.4	1.8	2.5	3.7	3.8	4
4.2	4.6	5.1	6	6.3	7.2

21–22 The table above shows the annual salaries for the 24 members of a professional sports team in terms of millions of dollars.

21. If each player's salary is increased by 10%, which of the following statistics does *not* increase by 10%?
- (A) median
 (B) mean
 (C) mode
 (D) all increase by 10%
22. The team signs an additional player to a contract with an annual salary of 7.5 million dollars per year, which brings the sum of the salaries of the 25 players to 69 million dollars. By what amount, in dollars, does the mean increase?
- (A) 197,500
 (B) 256,250
 (C) 300,000
 (D) It cannot be determined.

Grid-In

- The average of r and s is 7.5, and the average of r , s and t is 11. What is the value of t ?
- If the average of x , y , and z is 12, what is the average of $3x$, $3y$, and $3z$?
- In order to compensate for a difficult midterm exam, Danielle's mathematics teacher adjusted each of the 25 students' midterm exam scores by replacing it by one-half of the original score increased by 50. If the mean of the revised set of midterm scores is 82, what was the mean of the original set of scores?
- On a test that has a normal distribution of scores, a score of 58 falls two standard deviations below the mean, and a score of 85 is one standard deviation above the mean. What is the mean score of this test?