SATPREP

Assignment : *Average*

Easy

1. The average (arithmetic mean) of 5, 14, and x is 15. What is the value of x?
   a) 25
   b) 26
   c) 27
   d) 28

2. Mary has the following scores on 7 quizzes in Algebra class: 84, 79, 83, 87, 81, 94, and 87. What was the median score of all of her Algebra quizzes? ®
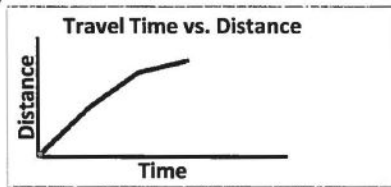   a) 81
   b) 84
   c) 85
   d) 86

3. If the average (arithmetic mean) of 7 numbers is greater than 25 and less than 30, which of the following could be the sum of the 7 numbers?
   a) 150
   b) 170
   c) 190
   d) 210

4. Which of the following sets of numbers has an average (arithmetic mean) that is equal to its median? ®
   a) {−2, −1, 1}
   b) {−2, −1, 1, 2, 3}
   c) {1, 2, 3, 6}
   d) {1, 2, 3, 4, 5}

5. X is a set of numbers whose average (arithmetic mean) is 5. Y is a set that is created by doubling and adding 3 to each number in X. What is the average of the numbers in the set Y?
   a) 10
   b) 11
   c) 12
   d) 13

6. Let A represents the average of all winter monthly heating bills for John's family. What is the result of multiplying A by the number of months in winter? ®
   a) The average of all heating expenses for John's family in the year.
   b) The highest monthly heating bill for John's family that winter.
   c) The sum of the gas bills for the whole year for John's family.
   d) The sum of the heating expense in winter for John's family.

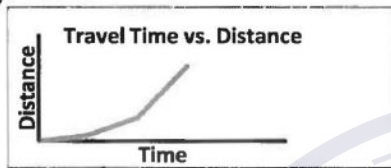7. If the average of 3a, 4a, and 5a is equal to 8, what is a equal to?

8. The median of a set of 13 consecutive integers is 35. What is the greatest of these 13 integers?
   a) 37
   b) 38
   c) 40
   d) 41

9. If the average (arithmetic mean) of 2, X, and Y is 3, what is the value of X + Y?
   a) 4
   b) 5
   c) 7
   d) 8

10. The average score of John's 5 math tests is 75. If the teacher decides not to count his lowest score, which is 55, what will be John's new average score?
    a) 78
    b) 79
    c) 80
    d) 81

11. If the average (arithmetic mean) of x and $2x$ is 12, what is the value of x?

12. The average (arithmetic mean) of the weights of 15 boxes of oranges is x pounds. In terms of x, what is the total weight of the boxes, in pounds?
    a) $15 + x$
    b) $15 - x$
    c) $15 \div x$
    d) $15x$

13. If the sum of 4 numbers is between 61 and 63, then the average (arithmetic mean) of the 4 numbers could be which of the following?
    a) 15
    b) 15.2
    c) 15.5
    d) 16

14. Joe goes on a business trip that includes 3 different types of transportation: bike, bus, and airplane, in that order. If all three transportations take roughly the same amount of time, which of the following could be the graph of the distance traveled by the three transportations? Ⓡ
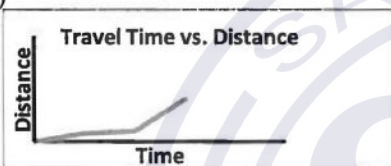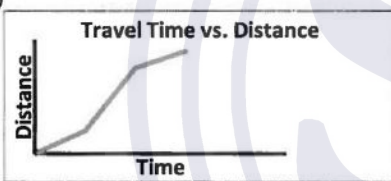
a)

Travel Time vs. Distance

Distance

Time

a)

Travel Time vs. Distance

Distance

Time

b)

Travel Time vs. Distance

Distance

Time

c)

Travel Time vs. Distance

Distance

Time

Medium

15. If the sum of 7 numbers is between 41 and 43, then the average (arithmetic mean) of the 7 numbers could be which of the following?

a) 5

b) $5\frac{1}{2}$

c) 6

d) $6\frac{1}{2}$

16. On a certain test, the highest possible score is 100 and the lowest is 0. If the average score of 5 students is 82, what is the lowest possible score of the fifth student?

    a) 0
    b) 5
    c) 7
    d) 10

17. If a solution of iodine and alcohol contains 3 ounces of iodine and 13.5 ounces of alcohol, how many ounces of alcohol need to evaporate so that the ratio of iodine to alcohol is 2 to 5?

    a) 6
    b) 7
    c) 8
    d) 9

Math Midterm	
Scores	Number of Students
100	1
95	3
90	5
85	8
80	3

18. The scores of the math midterm for every student in Sam's class are shown in the table above. Sam, who was the only student absent, will take the test next week. If Sam receives a score of 95 on the test, what will be the median score for the test?

    a) 75
    b) 82.5
    c) 85
    d) 87.5

19. On an Algebra final exam, class A has an average score of 90 with 10 students. Class B has an average score of 85 with 20 students. When the scores of class A and B are combined, what is the average score of class A and B?

    a) 82
    b) 82.5
    c) 83
    d) 86.7

20. If the average (arithmetic mean) of x, y, and z is k, which of the following is the average of w, x, y and z? Ⓡ

a) $\dfrac{k+w}{2}$

b) $\dfrac{2k+w}{3}$

c) $\dfrac{3k+w}{3}$

d) $\dfrac{3k+w}{4}$

21. If 8 out of 24 students in a math class get a perfect score, then the class average (arithmetic mean) on this test will be 91 points out of 100. What was the average score for the remaining students?

a) 86

b) 86.5

c) 87.5

d) 88

$$3, 5, 7, 9$$

22. In the list above, if we add a positive integer P to the list, which of the following could be the median of the new list of five numbers? Ⓡ

I. 5

II. 6

III. 7

a) I only

b) I, II only

c) I, III only

d) I, II, III

23. On a biology test with total of 100 points, a class of 21 students had an average of 93. If 5 of the students had a perfect score, what was the average score for the remaining students?

a) 89

b) 90

c) 91

d) 91.5

24. Which of the following could be the sum of 8 numbers if the average of these 8 numbers is greater than 9 and less than 10?
    a) 85
    b) 83
    c) 82
    d) 79

Hard

25. We start out with a set of 7 numbers. We subtract 3 from 3 of these numbers. If the average (arithmetic mean) of these seven numbers was 11 originally, what is the new average?
    a) 7.5
    b) 8
    c) 8.5
    d) 9.7

26. If the average (arithmetic mean) of 12, 16 and x is equal to x, what is the value of x?
    a) 9
    b) 10
    c) 14
    d) 16

27. The average (arithmetic mean) of 24 exam scores is 88. After removing the highest and lowest scores from the set, the average of the remaining 22 exam scores is 89. What is the sum of the scores of the 2 exams that were removed?
    a) 150
    b) 152
    c) 154
    d) 156

28. If the average (arithmetic mean) of a and b is m, which of the following is the average of a, b, and c? ®
    a) $\frac{2m+c}{3}$
    b) $\frac{m+c}{2}$
    c) $\frac{2m+c}{2}$
    d) $\frac{m+2c}{2}$

29. Class A has X students and class B has Y students. The average of the test scores of class A is 80, and the average of the test scores of class B is 90. When the scores of class A and B are combined, the average score is 88. What is the ratio of X to Y?

   a) $\frac{1}{2}$

   b) $\frac{1}{3}$

   c) $\frac{1}{4}$

   d) $\frac{2}{3}$

30. N students have an average of K scores on a math test. Another 3 students were absent and received zeroes on the test. What is the average score of this math test in terms of N and K, taking into accounts all of the students? ®

   a) $\frac{NK}{3}$

   b) $\frac{NK}{K+3}$

   c) $\frac{NK}{N+3}$

   d) $\frac{N-3}{K}$

31. Which of the following CANNOT affect the value of the median in a set of nonzero unique numbers with more than two elements? ®

   a) Increase each number by 5
   b) Double each number
   c) Increase the smallest number only
   d) Decrease the smallest number only