



College entrance exam and science high school entrance test tips. Conquer UPCAT, ACET, USTET, DLSUCET, PSHS-NCE, and other entrance tests.

MATHEMATICS PROFICIENCY (Advance Algebra and Statistics)

Directions: This subtest is a measure of ability to think out solutions to quantitative problems. Solve each problem carefully and then decide which is the best among the answer choices. Blacken the circle it corresponds to after the appropriate item number on your answer sheet.

Notes:

► Calculators of any kind are not permitted. All numbers used are real numbers.

► Figures which accompany problems in this subtest are intended to provide information useful in solving the problems. They are drawn as accurately as possible except when it is stated in a specific problem that its figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

BEGIN HERE:

1. Which of the following expressions is not a function?

a. $y = 2x + 1$

c. $y = \sqrt{x}$

b. $y = \frac{5x - 3}{7}$

d. $y = 9 - x$

2. Given the table below, what is the equation of the given relation?

x	0	1	2	3	4	5
y	1	3	5	7	9	11

a. $y = x$

c. $y = 2x + 1$

b. $y = 2x$

d. $y = 2x - 1$

3. If $f(x) = \frac{1}{x - 3}$, what is the domain of $f(x)$?

a. The domain of $f(x)$ are all real numbers.

b. The domain of $f(x)$ are all real numbers except 0.

c. The domain of $f(x)$ are all real numbers except -3.

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- d. The domain of $f(x)$ are all real numbers except 3.
4. What is the range of $g(x) = \frac{2x^2 - 1}{5}$?
- all real numbers
 - all real numbers greater than 0
 - all real numbers greater than $-\frac{1}{5}$
 - all real numbers greater than or equal to $-\frac{1}{5}$
5. If Jun saves P10.00 on the first week and adds P4.00 each week, how much will he save on the last week of the fourth month?
- P58.00
 - P54.00
 - P50.00
 - P40.00
6. If Nelly gets 3 in his first quiz and 6 in his second quiz, and doubles his quiz everytime they have quiz, what will be his average score after their fifth quiz?
- 18.6
 - 20.4
 - 21.5
 - 22.8
7. Which of the following is/are TRUE?
- Given the sequence 5, 10, 20, 40, 80, . . . is an arithmetic sequence
 - In the sequence 7, 14, 21, 28, 35, . . the next term is 70
 - Given the sequence 2, 5, 8, 11, 14, 17 the common difference is 3
- I only
 - II only
 - III only
 - I and II only
8. The first term of an arithmetic progression is 6 and the common difference is -3 . What term is -51 ?
- 23
 - 22
 - 21
 - 20
9. What is the 25th term of an arithmetic sequence whose 7th and 20th terms are 20 and 59 respectively?
- 51
 - 55
 - 74
 - 77

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10. Fifty-one electric poles are placed along a straight highway such that the distance between the first and the last pole is 2 250 meters and the distance between any two consecutive poles are equal. How many meters apart are any two successive poles?
 - a. 50 meters
 - b. 45 meters
 - c. 40 meters
 - d. 30 meters

11. Linda started working at a monthly salary of P5, 600.00 and steadily received an annual increase of P250. How much did she earn in the 11 years that she worked in that office?
 - a. P69, 950.00
 - b. P69, 700.00
 - c. P67, 200.00
 - d. P64, 100.00

12. In the geometric progression 4, 12, 36, 108, . . . the common ratio is:
 - a. 3
 - b. 2
 - c. 1
 - d. $\frac{1}{3}$

13. What is the sum of the first six terms in the arithmetic progression whose first three terms are -1, 1, and 3?
 - a. 17
 - b. 16
 - c. 15
 - d. 14

14. In a geometric progression 1, 2, 4, 8, . . . how many terms are added if the sum is 127?
 - a. 6
 - b. 7
 - c. 8
 - d. 9

15. If an amoeba can produce 4 amoebas every six hours, how many amoebas will there be after one day if the reproduction started with one amoeba?
 - a. 81
 - b. 83
 - c. 85
 - d. 87

16. If $x_1 = 5$, $x_2 = 6$, $x_3 = 9$, $x_4 = 13$, $x_5 = 14$, $x_6 = 16$, what is the value of $\sum_{i=1}^5 x_i$?
 - a. 45
 - b. 47
 - c. 49
 - d. 50

17. In statistics, a/an _____ is an arrangement of data according to size or magnitude.
 - a. Array
 - b. Matrix
 - c. Discriminant
 - d. Frequency

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For numbers 18 – 22, refer to the following data.

A sample of 30 companies belonging to a certain industry reported the following number of employees.

43	33	24	51	36	31
50	46	50	29	40	25
38	35	31	35	42	50
47	21	45	45	28	36
58	62	37	55	52	49

18. What is the population mean if the sum is 1224?
a. 48.3
b. 46.4
c. 40.8
d. 40.6
19. What is the median?
a. 40
b. 41
c. 42
d. 43
20. What is/are the mode/s of the set of data?
a. 50
b. 45 and 35
c. 50 and 45
d. 45
21. What is the range of given set of data?
a. 55
b. 50
c. 45
d. 40
22. The percentiles are the scores-points that divide a distribution into 100 equal parts. What do you call a distribution that divides into 10 equal parts?
a. Quartile
b. Decile
c. inter quartile
d. tenths
23. If two dice are tossed together, in how many ways can they fall?
a. 36
b. 24
c. 12
d. 6
24. What is the value of $3!$ (3 factorial)?
a. 1
c. 6

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b. $\frac{2}{3}$

d. $\frac{7}{12}$

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