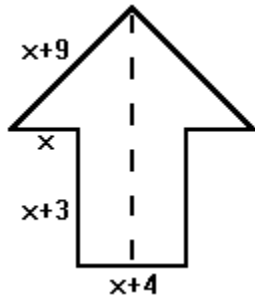# Mathematics

Choose the best alternative among the given choices for the following 25 questions.

1. Which number(s) is(are) equal to the quarter of its (their) square?

   A. 0 and 1   B. 0 and 2   C. 0 and 4   D. 1 and 2

2. Tom travels 60 miles per hour going to a neighboring city and 50 miles per hour coming back using the same road. He drove a total of 5 hours away and back. What is the distance from Tom's house to the city he visited?(round your answer to the nearest mile).

   A. 136miles   B. 163miles   C. 123miles   D. 130miles

3. Find an equation of the line containing (- 4,5) and perpendicular to the line 5x - 3y = 4.

   A. $\frac{1}{5}y + 3x = 13$ B. $y + \frac{1}{3}x = 13$ C. 5y + 3x = 13   D. 5y + 5x = 13

4. A rectangle field has an area of 300 square meters and a perimeter of 80 meters. What are the length and width of the field respectively?

   A. 30 and 10   B. 20and 15   C. 50m and 6m   d. 25 and 12

5. A rectangular garden in Mrs Dorothy's house has a length of 100 meters and a width of 50 meters. A square swimming pool is to be constructed inside the garden. Find the length of one side of the swimming pool if the remaining area (not occupied by the pool) is equal to one half the area of the rectangular garden.

   A. 30meters   B. 25meters   C. 20meters   D. 50meters

6. The numbers 2 , 3 , 5 and x have an average equal to 4. What is x?

   A. 2   B. 6   C. 4   D. 5

7. The numbers x , y , z and w have an average equal to 25. The average of x , y and z is equal to 27. Find w.

   A. 23   B. 19   C. 25   D. 29

8. A is a constant. Find A such that the equation 2x + 1 = 2A + 3(x + A) has a solution at x = 2.

   A. 1/5   B. -1/5   C. 5   D. -5

9. Find the length and width of a rectangle that has a length 3 meters more than its width and a perimeter equal in value to its area ?

   A. L = 2, W= 3 B. L =6, W= 3   C. L = 3, W = 2 D. L = 5, W = 3

10. Given the symmetric shape below with a known perimeter of 77, find the area of the shape.

A. 289.84 B. 238 .45   C. 345.5   D. 200

11. A real estate agent received a 6% commission on the selling price of a house. If his commission was $8,880, what was the selling price of the house?

   A. $53280   B. $1480   C. $148,000   D. $8880

12. An electric motor makes 3,000 revolutions per minutes. How many degrees does it rotate in one second?

   A. 180,000 degrees / second   B. 18,000 degrees / second

   C. 50 degrees / second   D. 500 degrees / second

13. If a tire rotates at 400 revolutions per minute when the car is traveling 72km/h, what is the circumference of the tire?

   A. 0.3meters   B. 333.3meters   C. 3meters   D. 33.3meters

14. In a shop, the cost of 4 shirts, 4 pairs of trousers and 2 hats is $560. The cost of 9 shirts, 9 pairs of trousers and 6 hats is $1,290. What is the total cost of 1 shirt, 1 pair of trousers and 1 hat?

   A. $150   B. $170   C. $200   D. $250

15. Four children have small toys. The first child has 1/10 of the toys, the second child has 12 more toys than the first, the third child has one more toy of what the first child has and the fourth child has double the third child. How many toys are there?

   A. 20 toys   B. 25 toys   C 40 toys   D.30 toys

16. A class average mark in an exam is 70. The average of students who scored below 60 is 50. The average of students who scored 60 or more is 75. If the total number of students in this class is 20, how many students scored below 60?

   A. 5   B. 4   C. 6   D. 3

17. An airplane flies against the wind from A to B in 8 hours. The same airplane returns from B to A, in the same direction as the wind, in 7 hours. Find the ratio of the speed of the airplane (in still air) to the speed of the wind.

   A. 0.06   B. 15   C. 8/7   D. none

18. Find the point(s) of intersection of the parabola with equation $y = x^2 - 5x + 4$ and the line with equation $y = 2x - 2$

    A. (1 , 0) and (6 , 20)   B. (1 , 1) and (6 , 10)

    C. (2 , 0) and (6 , 10)   D. (1 , 0) and (6 , 10)

19. Find the constant k so that : $-x^2 - (k + 7)x - 8 = -(x - 2)(x - 4)$

    A. 1   B -1   C. 2   D. -2

20. Factor the expression $6x^2 - 13x + 5$

    A. (3x - 4)(2x - 1)   B. (2x - 5)(2x - 1)   C. (x - 5)(2x - 1)   D. (3x - 5)(2x - 1)

21. Find all zeros of the polynomial $P(x) = x^3 - 3x^2 - 10x + 24$ knowing that $x = 2$ is a zero of the polynomial.

    A. 4 , -3 and -2   B. 4 , 3 and 2   C. 4 , -3 and 2   D. -4 , -3 and 2

22. If x is an integer, what is the greatest value of x which satisfies $5 < 2x + 2 < 9$?

    A. 3   B. 2   C. 5   D. 4

23. Sets A and B are given by: A = {2 , 3 , 6 , 8, 10} , B = {3 , 5 , 7 , 9}. Find the intersection of sets A and B.

    A. {3,5}   B. {3}   C. {2,5,9}   D. {7}

24. Simplify $| - x^2 + 4x - 4 |$.

    A. $-(x - 2)^2$ B $(x - 2)^2$ C. $(x - 3)^2$ D. $-(x - 3)^2$

25. Simplify $8 x^3 / 2 x^{-3}$

    A. $4 x^6$ B. 4   C. $16 X^6$ D. None

19. b
20. d
21. c
22. a
23. b
24. b
25. a