ASSOCIATION OF MATHEMATICS TEACHERS OF INDIA

Screening Test – Gauss Contest

(NMTC PRIMARY LEVEL—V and VI Grades)

2024-2025

Instructions:

1. Fill in the Response sheet with your Name, Class and the Institution through which you appear, in the specified places.
2. Diagrams are only Visual guides; they are not drawn to scale.
3. You may use separate sheets to do rough work.
4. Use of Electronic gadgets such as Calculator, Mobile Phone or Computer is not permitted.
5. Duration of Test: 10 am to 12 Noon (Two hours)
6. For each correct response you get 1 mark; for each incorrect response, you lose ½ mark.

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1. Saket wanted to add two 2-digit numbers. But he multiplied them and got 629 as the answer. The sum of the two 2-digit numbers is

a) 56 **b)** 52 **c)** 54 **d)** 46

2. The sum of three integers is 1. Their product is 36. The greatest of these three numbers is

a) 12 **b)** 8 **c)** 4 **d)** 6

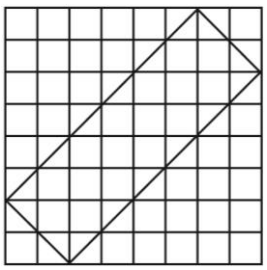
3. The sum of five consecutive even numbers is 150. When written in ascending order, the fourth number is

a) 34 **b)** 32 **c)** 36 **d)** 38

4. The price of a cell phone is decreased by 25%. What percentage increase must be done in the delivered price to get back the original price?

a) 25 % **b)** 27½ % **c)** 30 % **d)** 33⅓ %

5. A rectangular carpet is placed in 8 m × 8 m room, as shown in the diagram. What fraction of the floor is not covered?



a) $\frac{1}{4}$ **b)** $\frac{5}{11}$

c) $\frac{5}{8}$ **d)** $\frac{13}{24}$

6. p and $p+1$ are two prime numbers. Then the value of $\frac{p(p+1)}{2p+1}$ lies between

a) $\frac{4}{5}$ *and* 1 **b)** 1 *and* $\frac{7}{5}$ **c)** $\frac{6}{5}$ *and* $\frac{7}{5}$ **d)** $\frac{7}{5}$ *and* $\frac{8}{5}$

7. a, b, c, d are real numbers such that $a - 2023 = b + 2024 = c - 2025 = d + 2026$. Then the greatest among a, b, c, d is

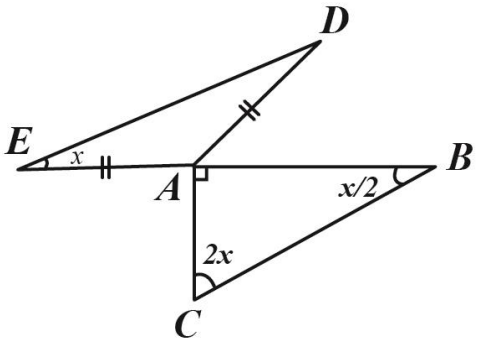
b) a **b)** b **c)** c **d)** d

8. In the adjoining figure, $AD = AE$.

Then measure of $\angle EAD$ is

a) 100° **b)** 105°

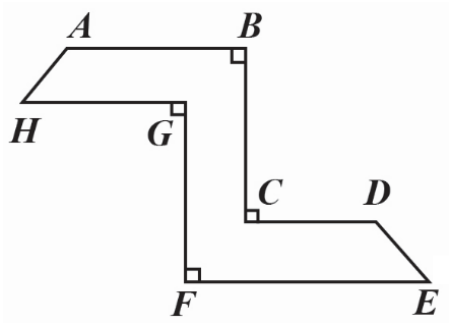
c) 106° **d)** 108°



9. The largest 3-digit number which is exactly divisible by the H.C.F. of 24 and 36 is n. Then $n + 4$ is equal to

a) 994 **b)** 996 **c)** 998 **d)** 1000

10. In the given figure, AB ∥ HG ∥ CD ∥ FE. AB = 6, GH = 4, CD = 5, FE = 9 and BC = 8. Distance between the pair of parallel lines (AB, HG), (BC, GF) and (CD, FE) is the same and equal to 3. The area of the total figure is



a) 64 **b)** 60 **c)** 45 **d)** 65

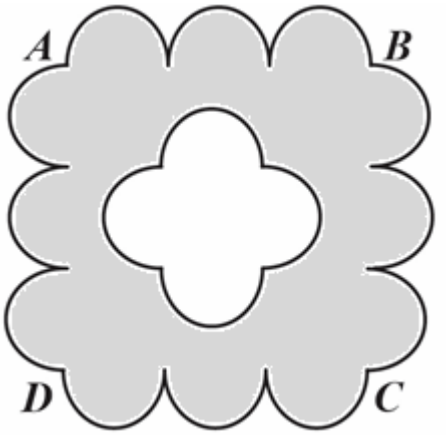
11. The number of pairs of two digit square numbers, the sum or difference of which are also squares is

a) 0 **b)** 1 **c)** 2 **d)** 3

12. There are 20 people around a table. Each of them shakes hands with the people to his (or her) immediate left and immediate right. The total number of handshakes that takes place is

a) 40 **b)** 30 **c)** 32 **d)** 20

13. In the adjoining figure, A, B, C, D are the vertices of a square of side 3 units. All the semi-circles are equal. Then the area of the shaded region is (in *sq.units*)



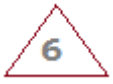
a) 8 + л **b)** 6 + л

c) 12 + л **d)** 7 + л

14. There are two boxes A and B which can hold 38 candles and 20 candles respectively.

288 candles have to be placed to the maximum capacity of the boxes. If we require m number of A-type boxes and n number of B-type boxes, then the value of $\frac{m}{n}$ is

a) 1 **b)** 2 **c)** 3 **d)** 4

15. The divisors of 6 are 1, 2, 3, 6. Leaving 1 and 6, the divisors are 2 and 3. Let us denote 

2 + 3 = 5. Then the value of 

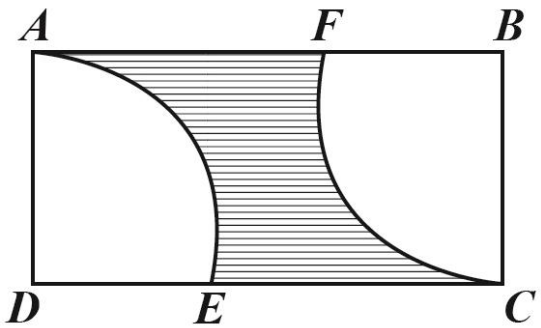
is _____

a) 6 **b)** 8 **c)** 5 **d)** 12

Section B (Fill in the blanks)

16. The fraction $\frac{(2\times3\times4)+(4\times6\times8)+(6\times9\times12)+\ \ldots\ +(20\times30\times40)}{(1\times2\times3)+(2\times4\times6)+(3\times6\times9)+\ \ldots\ +(10\times20\times30)}$ reduces to _____

17. In the adjoining figure, ABCD is a rectangle.



AE and CF are quadrants.

The length of the rectangle is twice its breadth.

Taking $\pi = \frac{22}{7}$, the area of the shaded region is 21 cm^2.

Then the area of the rectangle is _____.

18. The number m has factors 2, 5 and 6. The number n has factors 4 and 8. The smallest value of $m + n$ is _____

19. There are two bus stops on opposite sides of a road. Bus route X has a frequency of 15 minutes at one stop. Bus route Y has a frequency of 40 minutes in the opposite bus stop. Currently both buses arrived in the opposite stops. Again two buses will simultaneously arrive at opposite stops after _____ hours.

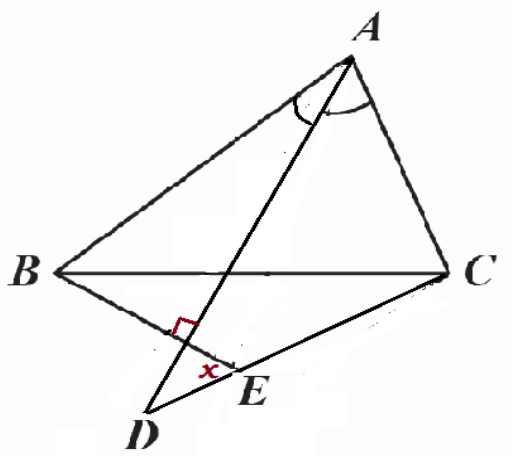
20. In the adjoining figure, $\angle ABC = 60^o$ and $\angle ACB = 80^o$.

AD is the bisector of $\angle A$.

Through C, a line making $\frac{\angle A}{2}$ with BC is drawn.

This line cuts the bisector at D and the perpendicular from B to AD at E.

Then the measure of x (in degrees) is _____



21. For two real numbers a and b, we have

$$a * b = \left(a+\frac{b}{2}\right)\times\left(b+\frac{a}{2}\right).$$

Then the value of $(2 * 8) * 2$ is _____.

22. A 2-digit number has repeated digits. The number of such numbers having exactly 4 divisors is _____

23. The salaries of Peter and Ali are in the ratio 3:2. Their expenditures are in the ratio 5:3 in that order. If each saves Rs.5000, then Peter's income (in Rs) is _____.

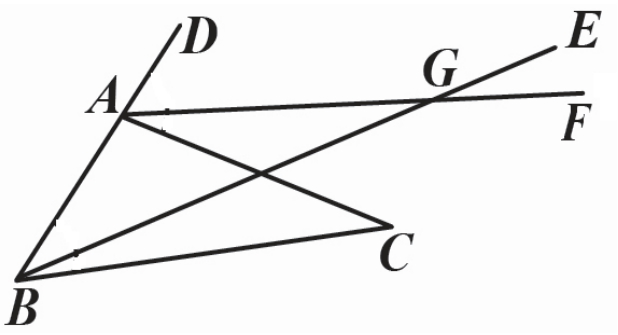
24. In the given figure, $\angle A:\angle B:\angle C = 14:3:1$.

A line BE through B making an angle $\frac{\angle B}{3}$ with BC is drawn.

A line through A, making an angle $\frac{1}{4}\angle CAD$ with AC is drawn.

They cut at G.

Then the measure of $\angle EGF$ is _____degrees.



25. Ramaswamy, Krishnaswamy, Rangawamy, Gopalaswamy and Kumaraswamy have different amounts of money in rupees in their pockets, each an odd number and less than Rs.100. The largest possible total sum of money in rupees is _____

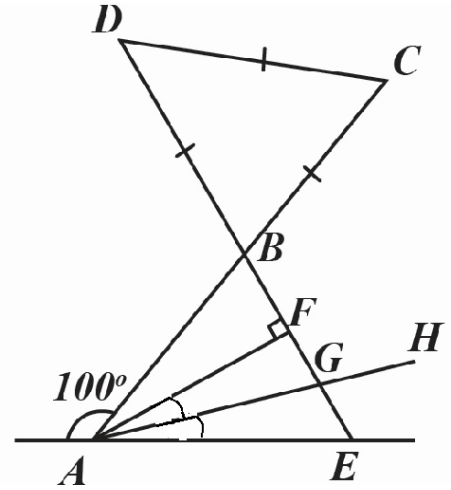
26. The cost price of 10 articles is equal to the selling price of 9 articles. The profit percent is $11\frac{1}{a}$. Then a = _____

27. When $2\frac{6}{11}$ of $1\frac{2}{7}$ is divided by $3\frac{3}{11}$, we get _____.

28. Two cell phones were sold at the same price. If there is 10% gain on the one and 10% loss on the other, then the total percent of loss is _____

29. An office staff works for 4 days consecutively, then has the next day off; he works for 4 more days and has a day off on the next day; and so on. Today is his day-off and it is a Sunday. The minimum number of days the staff must work to have his off-day as Sunday is _____

30. In the adjoining figure, triangle BCD is equilateral. If ∠AFB = 90° and AH is the bisector of ∠FAE, then the measure of ∠HGE (in degrees) is _____



End of Question Paper