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(SCHOLARS INTEGRAL MATHS & SCIENCE OLYMPIADS)



BIGGEST NATIONAL LEVEL OLYMPIADS (STAGE - II) : 2025-26

MAX. MARKS : 90 SIMO QUESTION PAPER TIME: 60 MIN.

NAME OF THE STUDENT	:
HALL TICKET NUMBER	:
NAME OF THE SCHOOL	:

INSTRUCTIONS:

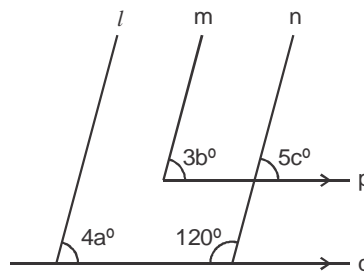
- ✦ This question paper contains 30 questions.
- ✦ First 25 questions (1 to 25) are single correct answer type. Each question carries 3 marks.
- ✦ Next 5 questions (26 to 30) are one or more than one correct answer type. Each question carries 3 marks.
- ✦ No negative marks.
- ✦ You are not allowed to use a calculator or any other electronic devices in the examination hall.
- ✦ Read the instructions given in the answer sheet(OMR sheet) before answering the questions.
- ✦ The answer sheet should be returned to the invigilator before leaving the examination hall (You can retain the question paper with you)
- ✦ Results will be available at www.simsolympiads.com

Single Correct Answer Type:

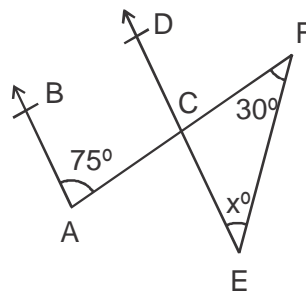
25 × 3 = 75

1. The number of the integers from 1 to 2010 are divisible by all integers 2, 3, 5 and 6 without remainders is ____.
 1) 74 2) 67 3) 11 4) 47
2. If $25^{x-1} = 5^{2x-1} - 100$ then the value of x is _____.
 1) $\frac{1}{2}$ 2) -2 3) 3 4) 2
3. If $x = \sqrt[3]{28}$ and $y = \sqrt[3]{27}$ then find the value of $x+y - \frac{1}{x^2+xy+y^2}$.
 1) 28 2) 6 3) 36 4) 27
4. Two complementary angles are such that two times the measure of one is equal to three times the measure of the other. The measure of the smaller angle is _____.
 1) 45° 2) 30° 3) 36° 4) 45°

5. In the figure, l, m and n are parallel lines and the lines p and q are also parallel, then $a^\circ + b^\circ - c^\circ$ is _____.



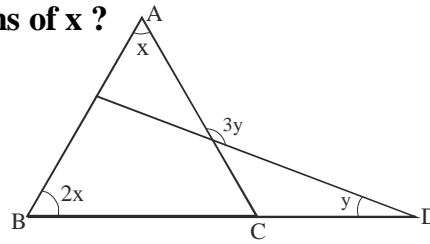
- 1) 20° 2) 23° 3) 27° 4) 35°
6. If the sum and difference of two expressions are $5a^2 - a - 4$ and $a^2 + 9a - 10$ respectively, then their HCF is
- 1) $3a + 7$ 2) $a - 1$ 3) $2a - 3$ 4) $a + 1$
7. Which of the following values satisfy the equation $x = 1 + \frac{1}{x + \frac{1}{x + \frac{1}{x + \dots}}}$?
- 1) $\frac{2}{3}$ 2) $\frac{1}{2}$ 3) $\frac{\sqrt{3}}{2}$ 4) $\frac{3}{2}$
8. In the figure, $AB \parallel CD$. Then the value of x is _____.



- 1) 45° 2) 35° 3) 75° 4) 105°
9. The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was wrongly copied as 125 for computations of mean. Find the correct mean.
- 1) 158 2) 163 3) 161 4) 159
10. Let A, B, C are three sets of values of x :
 A: 2, 3, 7, 1, 3, 2, 3 B: 7, 5, 9, 12, 5, 3, 8 C: 4, 4, 11, 7, 2, 3, 4
 Which of the following statements is correct ?
- 1) Mean of A = Mode of C 2) Mean of C = Median of B
 3) Median of B = Mode of A 4) Mean, Median and mode of A are equal
11. A cone of height 24 cm has a curved surface area 550 cm^2 . Find its volume. (Take $\pi = \frac{22}{7}$).
- 1) 1232 cm^3 2) 15714 cm^3 3) 1245 cm^3 4) 1571 cm^3

12. In the given figure, what is the value of y in terms of x ?

- 1) $\frac{3}{2}x$
- 2) $\frac{4}{3}x$
- 3) x
- 4) $\frac{3}{4}x$

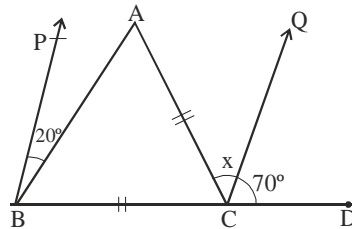


13. If $K = \frac{1}{\sqrt{6}-\sqrt{5}} - \frac{3}{\sqrt{5}-\sqrt{2}} - \frac{4}{\sqrt{6}+\sqrt{2}}$ then $11^K + \frac{5}{7} =$

- 1) $\frac{5}{7}$
- 2) $\frac{7}{5}$
- 3) $\frac{12}{7}$
- 4) 0

14. In the given figure, if $BP \parallel CQ$ and $AC = BC$, then the measure of x is ____.

- 1) 20°
- 2) 30°
- 3) 25°
- 4) 35°



15. A two digit number becomes $\frac{5}{6}$ of itself which its digits are reversed. The two digits differ by 1, then the number is _____.

- 1) 54
- 2) 65
- 3) 45
- 4) 56

16. If $(x+2)$ and $(x-1)$ are the factors of x^3+10x^2+mx+n , then the values of m and n respectively are _____.

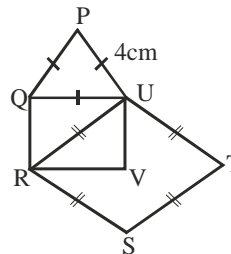
- 1) 5 and -3
- 2) 17 and 8
- 3) 23 and -14
- 4) 7 and -18

17. The factors of $8a^3 + b - 6ab + 1$ are _____.

- 1) $(2a + b - 1), (4a^2 + b^2 + 1 - 3ab - 2a)$
- 2) $(2a + b + 1), (4a^2 + b^2 + 1 - 2ab - b - 2a)$
- 3) $(2a - b + 1), (4a^2 + b^2 - 4ab + 1 - 2a + b)$
- 4) $(2a - 1 + b), (4a^2 + 1 - 4a - b - 2ab)$

18. PQU is an equilateral triangle, QRVU is a rectangle and RSTU is a rhombus. The area of QRVU is 12 cm^2 . The perimeter of the whole figure is

- 1) 26 cm
- 2) 17 cm
- 3) 21 cm
- 4) 30 cm



19. The factor of $12(a + 1)^2 - 25(a + 1)(b + 2) + 12(b + 2)^2$ is

- 1) $(4a - 3b + 2)$
- 2) $(3a - 3b + 2)$
- 3) $(3a - 4b - 5)$
- 4) $(3a - 4b + 5)$

20. In ΔABC , E is the midpoints of median AD such that BE produced, meets AC at F. If $AC = 10.5 \text{ cm}$, then $AF =$ _____.

- 1) 3 cm
- 2) 3.5 cm
- 3) 2.5 cm
- 4) 5 cm

21. If the graph of the equation $4x + 3y = 12$ cuts the co-ordinate axes at A and B, then hypotenuse of the right triangle AOB is ____.
- 1) 4 units 2) 3 units 3) 12 units 4) 5 units
22. In $\triangle ABC$, $\angle B = 35^\circ$, $\angle C = 65^\circ$ and the bisector of $\angle BAC$ meets BC in P. Arrange AP, BP and CP in descending order.
- 1) $BP > AP > CP$ 2) $AP > BP > PC$ 3) $AP > CP > BP$ 4) $PC > AP > BP$
23. A metallic sheet is of rectangular shape with dimensions $48m \times 36m$. From each of its corners, a square is cut off as to make an open box. If the length of the side of the square is 8 m then the volume of the box is _____ m^3 .
- 1) 5120 2) 8960 3) 4830 4) 5130
24. If the eight digit number 2575d568 is divisible by 54 and 87, then the value of the digit 'd' is ____.
- 1) 4 2) 7 3) 0 4) 8
25. 10 years ago, the age of the father was 5 times that of the son. 20 years hence the age of the father will be the twice that of the son. The present age of the father is _____.
- 1) 40 yrs 2) 45 yrs 3) 60 yrs 4) 70 yrs

One or More Correct Answer Types :

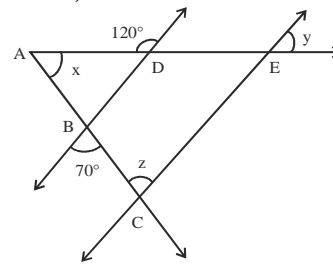
$5 \times 3 = 15M$

26. If $f(x) = x^4 + ax^3 + 3x^2 + b$, when divided by $(x - 1)$ leaves a remainder of 5 and when divided by $(x+1)$ leaves a remainder of 7 then

- 1) $a = -1$ 2) $b = 2$ 3) $a = 1$ 4) $b = 3$

27. In the figure, $BD \parallel CE$, the measure of angles x, y and z are

- 1) $x = 40^\circ$ 2) $x = 50^\circ$
 3) $y = 60^\circ$ 4) $z = 70^\circ$



28. If $\frac{\left[1 - \left(\frac{a}{b}\right)^{-2}\right] a^2}{(\sqrt{a} - \sqrt{b})^2 + 2\sqrt{ab}} = 1$ and $a + b = 5$ then

- 1) $a = 2$ 2) $b = 2$ 3) $a = 3$ 4) $b = 3$

29. Find the positive integers x, y, z such that $x < y < z$ and $\frac{1}{x} - \frac{1}{xy} - \frac{1}{xyz} = \frac{19}{97}$.

- 1) $x = 5$ 2) $y = 49$ 3) $z = 97$ 4) $x = 7$

30. Factors of $x^8 - y^4$ are _____.

- 1) $x^2 - y$ 2) $x^2 + y$ 3) $x^4 + y^2$ 4) $x + y$

*** ALL THE BEST ***