S I M S®

(SCHOLARS INTEGRAL MATHS & SCIENCE OLYMPIADS)

CLASS VIII

BIGGEST NATIONAL LEVEL OLYMPIAD : 2016-17

MAX. MARKS : 100 **SIMO QUESTION PAPER** **TIME: 60 MIN.**

NAME OF THE STUDENT : .....

HALL TICKET NUMBER : .....

NAME OF THE SCHOOL : .....

INSTRUCTIONS:

- **This question paper contains 41 questions.**
- **First 32 questions (1 to 32) are single correct answer type. Each question carries 2 marks.**
- **Next 9 questions (33 to 41) are more than one correct answer type. Each question carries 4 marks.**
- **Marks are non deducted for wrong answers. (No negative marks).**
- **You have 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.org**

SINGLE CORRECT ANSWER TYPE: 32 × 2 = 64

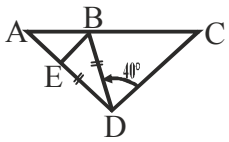
1. Rectangle ABCD has side AB and BC in the ratio 3 : 1. If the diagonal AC is 5 cm, then the area of the rectangle is

   1) 9 sq.cm 2) 15/2 sq.cm 3) 8 sq.cm 4) 15 sq.cm

2. The product of two numbers is 504 and each of the numbers is divisible by 6. Neither of the two numbers is 6. What is the larger of the two numbers?

   1) 48 2) 84 3) 42 4) 14

3. In the figure given below, AD = DC; ED = BD and $\angle BDC = 40°$. Find $\angle ABE$.



   1) 10° 2) 20° 3) 30° 4) None of these

4. Raju earns ₹12,000 per month, he spends 1/4 of his income on food, 3/10 of remaining money on house rent and 5/21 of remaining money on the education of his children. The money saved is

   1) ₹ 4500 2) ₹ 4800 3) ₹ 5000 4) ₹ 1200

5. Three students gave an improvement test. Ajay scored 30/60 in his first test and 35/60 in improvement test. Sonu scored 42/70 in his first test and 50/60 in improvement test. Manish scored 50/60 in his first test and 42/50 in improvement test. Which student improved the most?

   1) Ajay 2) Sonu

   3) Manish 4) Ajay and Manish improved by same percent

6. If the number 3254 p06q is exactly divisible by 3 and 5, then the maximum value of p + q is

1) 12 2) 13 3) 14 4) 15

7. If $\frac{9^n \times 3^2 \times (3^{-n/2})^{-2} - (27)^n}{3^{3m} \times 2^3} = \frac{1}{27}$, then the relationship between m and n is

1) m + n = 1 2) m – n = 1 3) m = 1 – n 4) $\frac{m}{n} = 1$

8. If two positive integers a and b are written as $a = x^5y^3$ and $b = x^2y^4$, x and y are prime numbers then HCF (a, b) is

1) xy 2) x^5y^4 3) x^2y^3 4) x^7y^7

9. If LCM [p(x), q(x)] = $24x^2y$, HCF [p(x), q(x)] = 2xy and p(x) = 8xy, then q(x) is

1) $3x^2y$ 2) $6x^2$ 3) $6x^2y$ 4) $3x^2$

10. A fraction becomes $\frac{4}{5}$ when 1 is added to each of the numerator and denominator. However, if we subtract 5 from each of them, it becomes $\frac{1}{2}$. Then, the numerator of fraction is

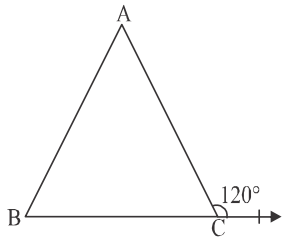
1) 6 2) 7 3) 8 4) 9

11. If x and y are two positive rational numbers, then which of the following is correct?

1) $x > y \Rightarrow -x > -y$ 2) $x > y \Rightarrow -x < -y$

3) $x > y \Rightarrow \frac{1}{x} > \frac{1}{y}$ 4) $x > y \Rightarrow \frac{1}{x} < -\frac{1}{y}$

12. In the given figure, if $\angle A : \angle B = 2 : 3$, then the value of $\angle A + \angle B - \angle C$ is

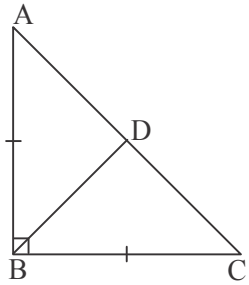


1) 70° 2) 60° 3) 30° 4) 50°

13. The value of $\frac{5^{n+2} - 6 \times 5^{n+1}}{13 \times 5^n - 2 \times 5^{n+1}}$ is

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

14. In the given figure, $\angle ABC = 90°$ and AB = BC. If BD is bisector of $\angle ABC$, then in ΔBDC, the longest side is



1) BC 2) BD 3) CD 4) None of these

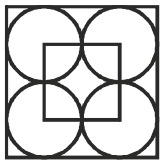
15. If $\sqrt{188+\sqrt{53+\sqrt{y}}}=14$, then the value of y is

1) 121 2) 11 3) 1331 4) 161

16. The remainder when $5m^3 - 13m^2 + 15m + 7$ is divided by $4 - 3m + m^2$, is

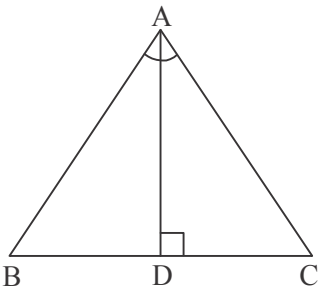
1) m + 1 2) m – 1 3) 2m + 1 4) 2m – 1

17. In the diagram, four equal circles fit perfectly inside a square; their centres are the vertices of the smaller square. If the area of the smaller square is 4 sq. units, then the area of the larger square is



1) 4 sq. units 2) 8 sq. units 3) 16 sq. units 4) 64 sq. units

18. In the given figure, if bisector of $\angle A$ divides BC in the ratio 1 : 1 and $\angle D = 90°$, then, ΔABC is



1) right angled triangle 2) isosceles triangle 3) equilateral triangle 4) Obtuse angled triangle

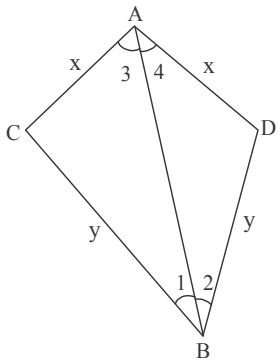
19. If the sum of a number and its reciprocal is 14. Then, the value of sum of the cubes of the number and its reciprocal is

1) 2072 2) 2027 3) 2772 4) 2702

20. Which of the following has a non-terminating decimal expansion?

1) $\frac{31}{2\times5}$ 2) $\frac{127}{2^2}$ 3) $\frac{131}{2^2\times5^2}$ 4) $\frac{7}{2^2\times5^2\times3^1}$

21. In the given figure, if $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$.



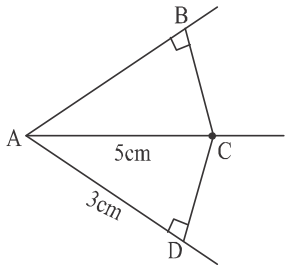
Then, by which congruence property, two ΔABC and ΔABD shown in figure are

1) SAS 2) SSS 3) RHS 4) SSA

22. If $\dfrac{3x}{1+\dfrac{1}{1+\dfrac{x}{1-x}}} = 1,$ then what is the value of x?

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

23. In the given figure, if AC is bisector of ∠BAD such that AD = 3 cm and AC = 5 cm, then the value of CD + BC is



1) 4 cm 2) 6 cm 3) 8 cm 4) 5 cm

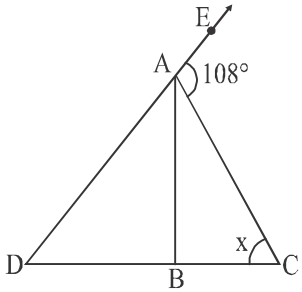
24. If x =1–q and y = 2q+1, then for what value of q, the value of x is equal to y ?

1) 0 2) 1 3) 1/2 4) –1

25. Raju's present age is five years more than thrice of Shyam, then what is Raju's present age, if the sum of their present ages is 25 yr ?

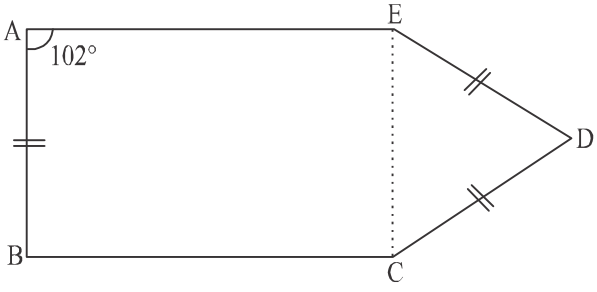
1) 5 yr. 2) 15 yr. 3) 20 yr. 4) 32 yr.

26. In the given figure, if AB divides ∠DAC in the ratio 1 : 2 and AB = DB. Then, the value of x is

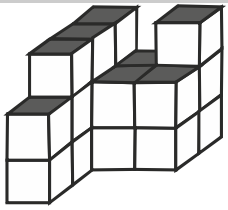


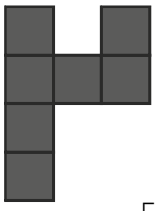
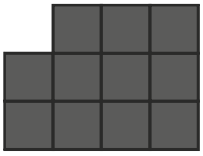
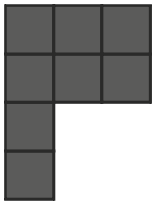
1) 62° 2) 84° 3) 90° 4) 70°

27. In the given figure, AE = BC and AE || BC and the three sides AB, CD and ED are equal in length. If ∠A = 102°, then the value of ∠BCD is



1) 138° 2) 162° 3) 78° 4) 126°

28.  Which drawing represents the top view of this solid ?

1)  2)  3)  4) None of these

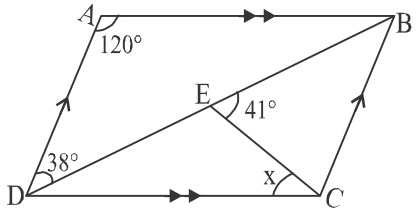
29. The value of $\left[35.7+\left(3+\frac{1}{3+\frac{1}{3}}\right)+\left(2+\frac{1}{2+\frac{1}{2}}\right)\right]$

1) 30 2) $\frac{207}{5}$ 3) 36.6 4) 41.4

30. $\left[\frac{1}{2}\left(\frac{1}{2}\left\{\frac{1}{2}\right\}^{\frac{1}{2}}\right)^{\frac{1}{2}}\right]^{\frac{1}{2}} \div 2^{\frac{1}{8}}$

1) 1/2 2) $\sqrt{2}$ 3) $\sqrt[3]{2}$ 4) $\sqrt[4]{2}$

31. In the given figure, ABCD is parallelogram. The value of x is



1) 19° 2) 22° 3) 38° 4) 42°

32. $\left(1+\frac{1}{3}+\frac{1}{5}\right)\times\left(\frac{1}{3}+\frac{1}{5}+\frac{1}{7}\right)-\left(1+\frac{1}{3}+\frac{1}{5}+\frac{1}{7}\right)\times\left(\frac{1}{3}+\frac{1}{5}\right)=$

1) 1 / 5 2) 1 / 3 3) 1 / 7 4) 1 / 9

MORE THAN ONE CORRECT ANSWER TYPE: **9 × 4 = 36**

33. If $A=(-1)^1+(-1)^2+(-1)^3+\ldots+(-1)^{2009}$, $B=(-1)^1-(-1)^2-(-1)^3+\ldots+(-1)^{2009}$ then

1) A = –1 2) B = 1 3) A–B = –2 4) $A^B = -1$

34. Which of the following statement(s) is/are TRUE ?

1) If p/q is a rational number, then $p \neq 0$

2) If b/a is multiplicative inverse of a/b, then $a \neq 0, b \neq 0$

3) For any rational number x, $x + (-1) = -x$

4) Rational numbers $\frac{1}{2}$ and $-\frac{3}{6}$ are on the opposite sides of '0' on the number line.

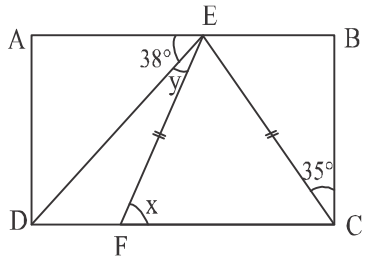
35. The number 222222222222 is divisible by

1) 11 2) 9 3) 3 4) 33

36. If 20% of x = y and 60% of (x + y) is 360, then x and y are

1) x = 500 2) y = 400 3) y = 100 4) x = 300

37. ABCD is rectangle and CEF is an isosceles triangle. Find the values of $\angle x$ and $\angle y$.



1) x = 55° 2) x = 35° 3) y = 17° 4) y = 33°

38. If 373a is divisible by 9, 473b is divisible by 11 and 373c is divisible by 6, then the value of

1) a+b+c = 7 2) a–b+c = 7 3) abc = 0 4) b = 0

39. Which of the following are FALSE ?

1) When a square number ends in 6, the number whose square it is, will have either 4 or 7 in unit's place.

2) The sum of two perfect squares is a perfect square

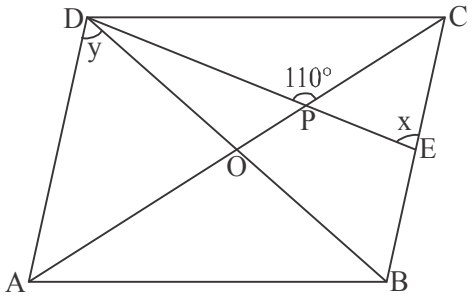
3) The number of perfect cubes greater than 1 and less than 1000 is 8

4) As the square of negative number is positive, similarly the cube of negative number is also positive

40. If two angles of a quadrilateral are 60^o and 40^o and the other two angles in the ratio 8 : 5, then the measure of other two angles are

1) 80^o 2) 100^o 3) 160^o 4) 180^o

41. In the given figure, if ABCD is a rhombus and $\angle BCD = 80°$, then find the values of x and y ?



1) y = 20° 2) x = 70° 3) x = 55° 4) y = 50°

❖ ❖ ❖ *All The Best* ❖ ❖ ❖