EHF

LEARNING FOR LIFE

EDUHEAL FOUNDATION

CLASS 10

LEVEL–1

Set A1

EHF OLYMPIADS

• 4000 schools • 6 lakh students

• 10 olympiads • Global outreach

NIMO

EHF NATIONAL INTERACTIVE MATHS OLYMPIAD

Name : .....

Roll No : .....

Class : .....

School : .....

BSE international finance olympiad (BIFO)

NATIONAL IIT-PMT OLYMPIAD (NIPO)

Level - 1 : All Level-1 successful* participants will get certificate, apititude report and online subscription, and school toppers will be eligible for school hero medals.

Level - 2 : School toppers* will be selected for level-2-National level - online computer based interactive test held at exam centres all over India. Besides selection for level-3, winner will get merit certificate, medals, educational CDs, laptop, scholarship and other prizes. There is no level-2 in Art and Cricket.

Level - 3 : Toppers will qualify# for level-3-International level-where you will compete with students globally. Get selected for EHFs International Olympiad training camp. Only Indian organization giving students exposure to global competitions. Represent India & win laurels. Guidance by top scientists. Prizes ranges from cash (millions of $), gadgets, foreign trips, publicity, fame, scholarships, Internships, conference participation and more.

* # See prospectus/website for details

Instructions for the Candidate

1. You are allowed additional 10 minutes to fill the required details in the RESPONSE SHEET (OMR).
2. The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the teacher.
3. Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. THE STUDENT CAN RETAIN THE QUESTION PAPER.

WEBSITE : WWW.EDUHEALFOUNDATION.ORG
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ROUGH WORK

MENTAL ABILITY

1. Arrange the given words in the sequence in which they occur in the dictionary and choose the correct sequence.

(A) Precede (B) Precision
(C) Precise (D) Precept
(E) Preach (F) Prelude

(1) E, C, A, D, B, F (2) E, A, D, C, B, F
(3) E, A, C, D, B, F (4) None of these

Direction: Read the following information and answer the questions that follow.

There are 70 clerks working with M/s. Jha Lal Khanna & Co. chartered accountant, of which 30 are female.

I. 30 clerks are married.
II. 24 clerks are above 25 years of age
III. 19 Married clerks are above 25 years of age; among them 7 are males.
IV. 12 males are above 25 years of age
V. 15 males are married.

2. How many unmarried girls are there?

(1) 12 (2) 15
(3) 18 (4) None of these

Directions: 1, 2, 3 and 4 are to be seated in a row. But 3 and 4 cannot be together.

Also 2 cannot be at the third place.

3. Which of the following must be false?

(1) A is at the first place
(2) A is at the second place
(3) A is at third place
(4) None of these

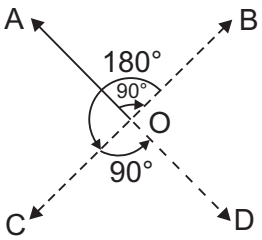
Directions:

A + B mans 'A is father of B'
A – B means 'A is wife of B'
A × B means 'A is brother of B'
A ÷ B means 'A is daughter of B'

4. P ÷ R + S + Q, which of the following is true?

(1) P is daughter of Q (2) Q is aunt of P
(3) P is aunt of Q (4) None of these

5. A man is facing North-West. He turns 900 in the clockwise direction, then 1800 in the anticlockwise direction and then another 900 in the same direction. Which direction is he facing now?

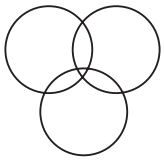


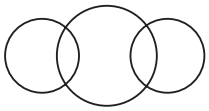
(1) South
(2) South-West
(3) South-East
(4) None of these

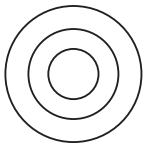
Directions: In the following questions, numbers given in four out of the five alternatives have some relationship. You have to choose the one which does not belong to the group.

6. (1) 3 : 8 (3) 6 : 35
(3) 7 : 50 (4) None of these

7. Which of the following diagrams correctly represents the relationship among Tennis fans, Cricket players and Students.

(1) 

(2) 

(3) 

(4) None of t6hese

8. Find the day of the week on 26 January, 1995.

(1) Tuesday
(3) Friday
(3) Thursday
(4) None of these

9. At what time are the hands of a clock together between 5 and 6 ?

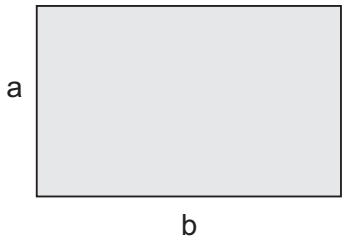
(1) $33\frac{3}{11}$ min, past 5

(2) $28\frac{3}{11}$ min. past 5

(3) $27\frac{3}{11}$ min. past 5

(4) None of these

10. Find the area of the figure if $a = 3$ and $b = 5$.



(1) 6 square units (2) 15 square units
(3) 225 square units (4) None of these

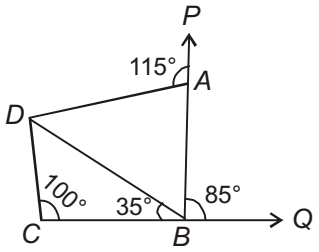
11. Use Euclid's division algorithm to find the HCF of:
(1) 135 and 225
(2) 196 and 38220
(3) 867 and 255
(4) None of these

12. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients
(1) $x^2 - 2x - 8$
(2) $4s^2 - 4s + 1$
(3) $6x^2 - 3 - 7x$
(4) None of these

13. Point (3, –5) lies in the
(1) 3rd quadrant
(2) 2nd quadrant
(3) 4th quadrant
(4) None of these

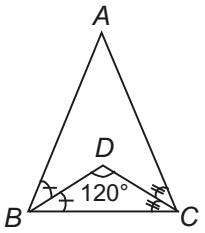
14. The point whose abcissa is –5 and lies x-axis
(1) (5,0)
(2) (0,–5)
(3) –5, 0
(4) None of these

15. In the given figure, sides BA and CB of quadrilateral ABCD are extended to points P and Q respectively. What is the measure of ∠CDA?



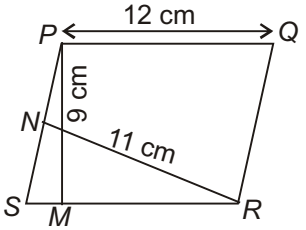
(1) 80°
(2) 90°
(3) 110°
(4) None of these

16. The given figure shows a ΔABC, bisectors of ∠ABC and ∠ACB i.e., BD and CD respectively, meet at point D.



What is the measure of ∠A?
(1) 40°
(2) 50°
(3) 60°
(4) None of these

17. In parallelogram PQRS, PQ = 12 cm. The altitudes corresponding to the sides PQ and PS are respectively 9 cm and 11 cm. Find PS.



(1) $\frac{108}{4}$ cm
(2) $\frac{110}{13}$ cm
(3) $\frac{100}{21}$ cm
(4) None of these

18. If the side of a quadrilateral are in the ratio 2:5:7:10, and its perimeter is 300m, then the measure of its sides are respectively

(1) 22m, 55m, 77m, 110m

(2) 30, 75m, 105m, 150m

(3) 25m, 62.5m, 87.5m, 125m

(4) None of these

19. Perimeter of a square is one fourth of its area, then the side of the square measures-

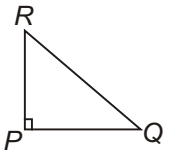
(1) 8 units

(2) 16 units

(3) 32 units

(4) None of these

20. In the given figure, the lengths of PR and PQ are 16 cm and 30 cm respectively.



What is the radius of the circumcircle of ΔPQR?

(1) 20 cm

(2) 19 cm

(3) 17 cm

(4) None of these

21. The volume of a sphere is $\frac{88}{21} \times (14^3)$. The curved surface of its sphere is

(1) 2424 cm^2

(2) 2446 cm^2

(3) 2484 cm^2

(4) None of these

22. What is the volume of a cylinder whose height and surface area are 6 cm and 60π cm^2 respectively $\left(\text{use } \pi = \frac{22}{7}\right)$?

(1) 150π cm^3 (2) 160π cm^3

(3) 180π cm^3 (4) None of these

23. A bag contains 6 blue balls, 8 yellow balls and 2 pink balls. Sipho takes balls from the bag without looking at them. The least number of balls that he must remove in order to ensure that he has three of the probability of drawing yellow ball is

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

(3) $\frac{4}{5}$ (4) None of these

24. A triangle with no equal sides is called:

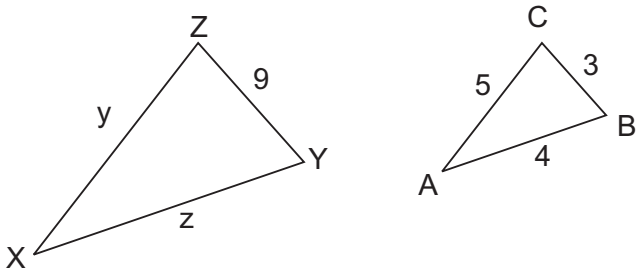
(1) a scalene triangle

(2) a right angle

(3) an isosceles triangle

(4) a straight triangle

25. Give that ΔXYZ is similar to ΔABC, what is the sum of the lengths of sides XY and XZ in ΔXYZ below?



(1) 9 (2) 27

(3) 15 (4) None of these

26. A three-digit number is divisible by 8, 12 and 30. The smallest possible number is:

(1) 108 (3) 120

(2) 240 (4) None of these

27. The chart shows the number of symphony tickets sold by 11:00 on Thursday.

Time	Number of tickets
09:00 – 09:29	65
09:30 – 09:59	78
10:00 – 10:29	94
10:30 – 11:00	36

The total number of tickets sold before 10:30 is:

(1) 143 (2) 237

(3) 273 (4) None of these

28. If $a = 2$ and $b = 3$ then the answer of $b^{a-1} + a^{b+1}$ are:

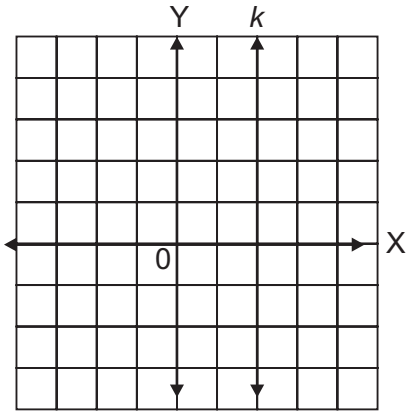
(1) 19

(2) 25

(3) 17

(4) 13

29. The equation of line k is:



(1) $x = 2$

(2) $x = -2$

(3) $y = 2$

(4) $y = -2$

30. Which expression is equivalent to $2x + 4 = 8$?

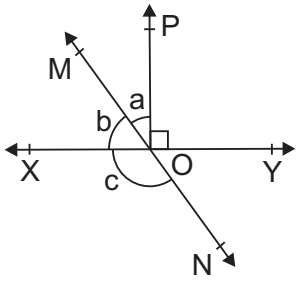
(1) $2x + 4 - 4 = 8 + 4$

(2) $2x = 4$

(3) $2x + 2 = 4$

(4) None of these

31. In the figure $x + y = w + z$ which of the following is true:



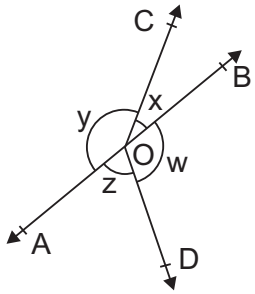
(1) AOB is straight line

(2) $x = w$

(3) $x + z = z$

(4) None of these

32. In figure, lines XY and MN intersect at O. If $\Delta POY = 90°$ and $a : b = 2 : 3$, then c:



(1) $c = 126°$

(2) $c = 35°$

(3) $c = 90°$

(4) None of these

33. An electric pole is 10 m high. A steel wire tied to the top of the pole is affixed at a point on the ground to keep the pole upright. If the wire makes an angle of 45° with horizontal through the foot of the pole, find the length of the wire. (Use $\sqrt{2} = 1.414$)

(1) 7.70 m

(2) 14.14 m

(3) 13.14 m

(4) None of these

34. To draw a histogram to represent the following frequency distribution:

Class interval	5-10	10-15	15-25	25-45	45-75
Frequency	6	12	10	8	15

The adjusted frequency for the class 25-45 is:

(1) 6

(2) 5

(3) 2

(4) None of these

35. If $\bar{x}$ be the mean of $x_1, x_2, ..., x_n$, then for $a \neq 0$, the mean of $ax_1, ax_2, ..., ax_n, \frac{x_1}{a}, \frac{x_2}{a}, ..., \frac{x_n}{a}$ is

(1) $\left(a + \frac{1}{a}\right)\bar{x}$

(2) $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{2}$

(3) $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{n}$

(4) None of these

36. Find the median of 3, 4, 10, 12, 27, 32, 41, 49, 50, 55, 60, 63, 71, 75, 80.

(1) 55

(2) 49

(3) 75

(4) None of these

37. Find the mode for each set of numbers: 21, 44, 25, 27, 32, 36, 37, 44

(1) 27

(2) 44

(3) 36

(4) None of these

38. The area of a square field is 24200 sq m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr?

(1) 3 minutes

(2) 2 minutes

(3) 2.4 minutes

(4) None of these

39. A square sheet of paper is converted into a cylinder by rolling it along its length. What is the ratio of the base radius to the side of the square?

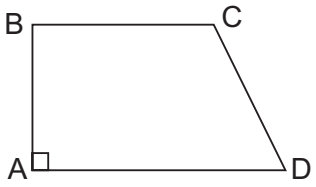
(1) $\frac{1}{2\pi}$

(2) $\frac{(\sqrt{2})}{\pi}$

(3) $\frac{1}{(\sqrt{2}\pi)}$

(4) None of these

40. ABCD has area equal to 28. BC is parallel to AD. BA is perpendicular to AD. If BC is 6 and AD is 8, then what is CD?



(1) $2\sqrt{2}$ (2) $2\sqrt{3}$

(3) $2\sqrt{5}$ (4) None of these

INTERACTIVE SECTION

41. If $\sec^2\theta\,(1 + \sin\theta)(1 - \sin\theta) = k$, then find k.

(1) 0 (2) 1

(3) 4 (4) None of these

42. If one of the roots of the quadratic equation $2x^2 + px - 4 = 0$ is 4, then the value of p is:

(1) 7 (2) –7

(3) 5 (4) None of these

43. In the A.P. 3, 15, 27, 39, … which term will be 120 more than the twenty first term?

(1) 21 (2) 41

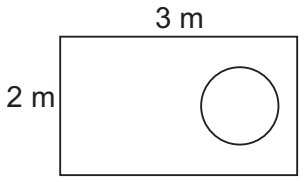
(3) 31 (4) None of these

44. A plane when flying at a height of 3125 m from the ground passes vertically below another plane at an instant when the angles of elevation of the two planes from the same point on the ground are 30° and 60° respectively. Find the length of ground between the two planes at that instant.

(1) 6230 (2) 6240

(3) 6250 (4) None of these

45. Suppose you drop a die at random on the rectangular region shown in the figure what is the probability that it will land inside the circle with diameter m

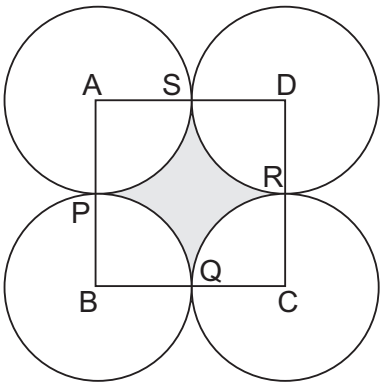


(1) $\frac{11}{84}$ (2) $\frac{11}{56}$

(3) $\frac{11}{95}$ (4) None of these

46. Four equal circles are described about the four corners of a square so that each touches two of the others. The shaded area enclosed between the circles being $\frac{24}{7}$ sq. cm, find the radius of the circles.

$\left[\text{Use} = \frac{22}{7}\right]$



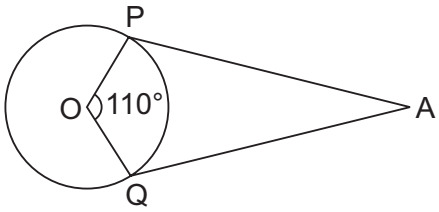
(1) 2 cm

(2) 3 cm

(3) 4 cm

(4) None of these

47. If AP and AQ are the two tangents a circle with centre O so that $\angle POQ = 110°$ then $\angle PAQ$ is equal to ____



(1) 80°

(2) 70°

(3) 100°

(4) None of these

48. Three cubes of a metal whose edges are in the ratio 3 : 4 : 5 are melted and converted into a single cube of diagonal $24\sqrt{3}$ cm. Find the edges of the three cubes.

(1) $5\sqrt{3}, 6\sqrt{3}, 7\sqrt{3}$

(2) $4\sqrt{3}, 5\sqrt{3}, 6\sqrt{3}$

(3) $6\sqrt{3}, 8\sqrt{3}, 10\sqrt{3}$

(4) None of these

49. A tree was broken by a wind and top of the tree is touching the ground making an angle of 30°. If the point where top touches the ground to the bottom of the tree is 20m, then find the height of the tree before it was broken.

(1) $18\sqrt{3}$

(2) $16\sqrt{3}$

(3) $20\sqrt{3}$

(4) None of these

50. In the formula of mode

mode $= l = \left[\frac{f_1 - f_0}{2f - f_0 - f_2}\right] \times h$, f_0 represents

(1) frequency of preceding model class

(2) frequency of succeeding model class

(3) frequency of model class

(4) frequency of zero model class

END OF THE EXAM