RAMAGYA SCHOOL, NOIDA

X/ MATHEMATICS/2017-18

OLYMPIAD PRACTICE WORKSHEET

Section-1 - Logical Reasoning (Application based questions)

1. Suganya moves towards South–east a distance of 7 km, then she moves towards West and travels a distance of 14 m. From here, she moves towards North-west a distance of 7 m and finally she moves a distance of 4 m towards East and stood at that point. How far is the starting point from where she stood?

(a) 3 (b) 4 (c) 5 (d) 10

2. If A x B means A is to the south of B; A + B means A is to the north of B; A % B means A is to the east of B; A - B means A is to the west of B; then in P % Q + R - S, S is in which direction with respect to Q?

(a) South-West (b) South-East (c) North-East (d) North-West.

3. One morning after sunrise Nivedita and Niharika were talking to each other face to face at Dalphin crossing. If Niharika's shadow was exactly to the right of Nivedita, Which direction Niharika was facing?

(a) North (b) South (c) East (d) Data is inadequate

4. Ratan who was facing north was called by Ramya. To talk to her Ratan took a 2350 clockwise turn, as soon as he finished talking he was called by Sanju. To talk to Sanju he took a 1950 anti-clockwise turn. As soon as he finished talking to Sanju, Ratan took a 850 clockwise turn as he had to borrow some money from his father. After borrowing the money Ratan took a 1680 clockwise turn to face his favorite cycle shop. Finally he took a turn of 3200 anticlockwise and was facing his home now. In which direction was his home?

(a) North (b) North-West (c) West (d) None

Section-2 : Mathematical Reasoning

Concept based questions:

5. Find the distance of the point (–6, 8) from the origin.

(a) 8 (b) 11 (c) 10 (d) 9

6. Find the coordinates of the point equidistant from the points A(1, 2), B (3, –4) and C(5, –6).

(a) (2,3) (b) (-1,-2) (c) (0,3) (d) (1,3)

7. If *n*th terms of the APs 63, 65, 67, ... and 3, 10, 17, ... are equal, then *n* is

(a) 27 (b) 23 (c) 15 (d) 13

8. The first and last term of an A.P. are 1 and 11. If the sum of its terms is 36, then the number of terms will be
(a) 5 (b) 6 (c) 7 (d) 8

9. If 7th and 13th term of an A.P. are 34 and 64 respectively, then its 18th term is
(a) 87 (b) 88 (c) 89 (d) 90

10. If 3 times the third term of an A.P. is equal to 5 times the fifth term. Then its 8th term is
(a) 0 (b) 1 (c) 2 (d) 3

Section-3 : Value based questions:

11. Find the value of P for which the point (–1, 3), (2, p) and (5, –1) are collinear.
(a) 4 (b) 3 (c) 2 (d) 1

12. In what ratio of line x – y – 2 = 0 divides the line segment joining (3, –1) and (8, 9)?
(a) 1:2 (b) 2:1 (c) 2:3 (d) 1:3

13. If the sum of three consecutive terms of an increasing A.P. is 51 and the product of the first and third of these terms is 273, then the third term is
(a) 13 (b) 9 (c) 21 (d) 17

14. If the first, second and last term of an A.P. are a, b and $2a$ respectively, its sum is
(a) $\frac{ab}{2(b-a)}$ (b) $\frac{ab}{b-a}$
(c) $\frac{3ab}{2(b-a)}$ (d) none of these

15. The number of terms of an A.P. 3, 7, 11, 15... to be taken so that the sum is 406 is
(a) 5 (b) 10 (c) 12 (d) 14

Section-4 : HOTS:

16. Two of the vertices of a ΔABC are given by A(6, 4) and B(–2, 2) and its centroid is G(3, 4). Find the coordinates of the third vertex C of the ΔABC.
(a) (2,3) (b) (4,6) (c) (4,3) (d) (5,6)

17. Find the ratio in which the line joining the points (6, 4) and (1, –7) is divided by x-axis.
(a) 1:3 (b) 2:7 (c) 4:7 (d) 6:7

18. If the sum of first n even natural number is equal to k times the sum of first n odd natural number then value of k will be
(a) $\frac{1}{n}$ (b) $\frac{n-1}{n}$
(c) $\frac{n+1}{2n}$ (d) $\frac{n+1}{n}$

19. Sum of *n* terms of the series $\sqrt{2}+\sqrt{8}+\sqrt{18}+\sqrt{32}\ldots$ is

(a) 1 (b) $\frac{n(n+1)}{\sqrt{2}}$

(c) $\frac{n(n+1)}{2}$ (d) $2n(n+1)$

20. Sum of all natural numbers lying between 250 and 1000 which are exactly divisible by 3 is

(a) 157365 (b) 153657 (c) 156375 (d) 155637