RAMAGYA SCHOOL, NOIDA

X/MATHEMATICS/2017-18

OLYMPIAD PRACTICE WORKSHEET

(Concept based)

1. Which of the following numbers have terminating decimal expansion?
(A)8/225   (B) 5/18   (C) 11/21   (D) 21/150

2. A polynomial of the form $ax^5 + bx^3 + cx^2 + dx + e$ has at most _____ zeros
(A)3   (B)5   (C)7   (D)11

3. The ratio of a 2 digit number to the sum of the digits of that number is 4 : 1. If the digits of the unit place is 3 more than the digit in the tens place, what is the number?
(A) 63   (B) 36   (C)24   (D) 40

4. Which term of the AP 5, 2, -1, …………… is -22?
(A) 9   (B) 11   (C)10   (D) 7

5. In what ratio the line segment joining the points (-3,2) and (6,1) is divided by y axis?
(A) 1: 3   (B)2 : 1   (C) 1 : 2   (D) 3 : 1

(Application based)

6. A person observed the angle of elevation of the top of tower as 30°. He walked 10m towards the foot of the tower along ground level and found the angle of elevation of the top of the tower as 60°. Find the height of the tower.
(A) 9.66m   (B) 7.89m   (C) 8.66m   (D) 7.64m

7. AB is the chord of length 24cm of a circle of radius 13cm. The tangents at A and B intersect at a point C. Find the length AC.
(A) 31.2cm   (B) 12cm   (C) 12.8cm   (D) 25cm

8. The diameter of the driving wheel of a bus is 140cm. How many revolution per minute must the wheel make in order to keep a speed of 66km per hour?
(A) 200   (B) 210   (C) 250   (D) 240

9. A rectangular park is 100m by 50m. It is surrounded by semi circular flower beds all around. Find the cost of leveling the semi circular flower beds at 60 paise per m^2.
(A) `31425       (B) `28260   (C) `352.40          (D) `282.60

10. A tent is made in the form of frustum of cone surmounted by another cone. The diameter of the base and the top of the frustum are 20m and 6m respectively and the height is 24m. If the height of the tent is 28m and the radius of the conical part is equal to the radius of the top of the frustum, then quantity of canvas required is _____

(A) $924.17m^2$ (B) $1402.23m^2$ (C) $1124.56m^2$ (D) $1068.57m^2$

(Value based)

11. A boat goes 32km upstream and 36km downstream in 7 hours. In 9 hours, it can go 40 km upstream and 48 km downstream. If x represents the speed of the boat in still water in km/hr and y represents the speed of stream in km/hr, then

(A) x + y = 12, x − y =8   (B) x + y = 5, x − y =11
(C) x + y = 6, x − y =10   (D) x + y = 10, x − y = 6

12. A man walks a distance of 48km in a given time. If he walks 2km/hr faster, he will perform the journey 4hrs before. His normal rate of walking is:

(A) 3km/hr   (B) 4km/hr   (C) -6km/hr or 4km/hr   (D) 5km/hr

13. The product of TV in a factory increases uniformly by a fixed number every year. It produced 8000 sets in 6th year and 11300 in 9th year. Find the production in the 6 years.

(A) 40,500   (B) 20000   (C) 20,500   (D) 31500

14. In a marriage ceremony of her daughter Poonam, Ashok has to make arrangements for the accommodation of 150 persons. For this purpose, he plans to build a conical tent in such a way that each person has 4 sq. metres of the space on ground and 20 cubic metres of air to breathe. What should be the height of the conical tent?

(A)20m   (B) 15m   (C) 12m   (D) 30m

15. The mean weight of a class of 34 students is 46.5 kg. If the weight of the teacher is included, the mean rises by 500g. Then the weight of the teacher is _____

(A) 175kg   (B) 62kg   (C) 64kg   (D) 72kg

(Logical Reasoning)

16. 6 people A, B, C, D, E and F are sitting on the ground in a hexagonal shape. All the sides of the hexagon so formed are of the same length. A is not adjacent to B or C; D is not adjacent to C or E; B and C are adjacent; F is in the middle of D and C. Which if the following is not a correct neighbor pair?

(A) A and F   (B) D and F   (C) B and E   (D) C and F

17. This question is based on the 6 numbers given below:
271 361 912 714 459 187
If the first and second digits of each number are interchanged and if the third digit of each number is placed between these two digits, then which number will be the third number will be the third number from the top, if the new numbers are arranged in the descending order?

(A) 187   (B) 271   (C) 459   (D) 361

18. In a row of 40 boys, Satish was shifted 10 placed to the right of Rohan and Kartik was shifted 10 places to the left of Vikas. If Vikas was 26 from the left and there were 3 boys between Kartik and Satish after shifting, what was the position of Rohan in the row?

(A) 10th from the right end   (B) 10th from the left end   (C) 39th from the right end

(D) Data inadequate

19. A postman was returning to the post office which was in front of him to the north. When the post office was 100m away from him, he turned to the left and moved 50m to deliver the last letter at Shantivilla. He then moved in the same direction for 40m, turned to his right and moved 100m. How many meters was he away from the post office?

(A) 0   (B) 90   (C) 150   (D) 100

20. In a shop, there were 4 dolls of different heights A, B, C and D. D is neither as tall as A nor as short as C. B is shorter than D but taller than C. If Mini wants to purchase the tallest doll, which one should she purchase?

(A) only A   (B) only D   (C) either A or D   (D) either B or D