



RAMAGYA SCHOOL, NOIDA
X/MATHS/2018-19
OLYMPIAD PRACTICE WORKSHEET

(Concept based)

- The sum of two numbers is 8 and the sum of their reciprocals is $\frac{8}{15}$. Find the numbers.
(A) 5, 3 (B) 7, 1 (C) 4, 4 (D) 2, 6
- The sum of the digits of a two digit number is 12. The numbers obtained by interchanging the two digits exceeds the given number by 18. Find the number.
(A) 57 (B) 75 (C) 85 (D) 58
- The denominator of a rational number is greater than its numerator by 3. If 3 is subtracted from the numerator and 2 is added to the denominator, the new number becomes $\frac{1}{5}$. Then the original number was _____
(A) $\frac{7}{11}$ (B) $\frac{3}{5}$ (C) $\frac{5}{8}$ (D) $\frac{4}{7}$
- If $am = bl$ and $bm \neq cm$, then the system of equations $ax + by = c$ and $lx + my = n$
(A) has a unique solution (B) has no solution
(C) has infinitely many solutions (D) may or may not have a solution
- The value of k for which the system of equations $kx - 3y + 6 = 0$ and $4x - 6y + 15 = 0$ represent parallel line is _____
(A) 1 (B) 2 (C) 3 (D) 4

(Application based)

- If the system of equations $2x + 3y = 7$ and $2ax + (a + b)y = 28$ has infinitely many solutions, then the values of a and b are _____
(A) 2, 5 (B) 5, 8 (C) 4, 8 (D) 3, 6
- In $\triangle ABC$, $\angle C = 3\angle B = 2(\angle A + \angle B)$. The three angles will be
(A) $20^\circ, 40^\circ, 120^\circ$ (B) $30^\circ, 60^\circ, 90^\circ$ (C) $45^\circ, 45^\circ, 90^\circ$ (D) $90^\circ, 40^\circ, 50^\circ$
- $ax + by = c$ does not represent an equation of line when _____
(A) $a = c = 0, b \neq 0$ (B) $b = c = 0, a \neq 0$ (C) $a = b = 0$ (D) $a = b \neq 0$
- How many values of c , for which the system of equations $6x + 3y = c - 3$, $12x + cy = c$ has infinite many solutions.
(A) 1 (B) 2 (C) 3 (D) infinite

10. Value of x in a pair of linear equations $36x + 24y = 702$ and $24x + 36y = 558$ is _____

- (A) $\frac{33}{2}$ (B) $\frac{145}{7}$ (C) 16 (D) 17

(Value based)

11. The ratio of a 2 digit number to the sum of the digits of that number is 4 : 1. If the digits in the unit place is 3 more than digits in the tens place, then what is the number?

- (A) 63 (B) 36 (C) 24 (D) 40

12. The sum of two numbers is 64 and their difference is 22. Find the numbers

- (A) 42, 22 (B) 43, 21 (C) 40, 24 (D) 50, 28

13. A boat goes 32km upstream and 36km downstream in 7 hours. In 9 hours it can go 40km upstream and 48km downstream. If x represents the speed of the boat in still water in km/hr and y represents the speed of the 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) $x + y = 10, x - y = 6$

14. At the end of the year 2002, Ram was half as old as his grandpa. The sum of the years in which they were born is 3854. Age of Ram at the end of the year 2003 is _____

- (A) 50 years (B) 35 years (C) 51 years (D) 36 years

15. On selling a tea-set at 5% loss and lemon set at 15% gain, a crockery seller gains D7. If he sells the tea-set at 5% gain and the lemon set at 10% gain, he gains D13. Find the actual prices of tea-set and the lemon set.

- (A) D100, D80 (B) D90, D100 (C) D120, D60 (D) D150, D80

(Logical Reasoning)

16. Find out the missing terms marked with “?”

-4, 7, 29, 62, ?

- (A) 95 (B) 106 (C) 62 (D) 102

17. FOX : CUNNING :: RABBIT : ?

- (A) Courageous (B) Dangerous (C) Timid (D) Ferocious

18. In each of the four groups of letters, one is different from others. Select the odd one out

- (A) aBC (B) BaC (C) abC (D) BCa

19 In a certain code, PAPER is written as SCTGW. How is MOTHER written in that code?

- (A) PQXKJV (B) PQVJGT (C) PQXJTT (D) ORVLGW

20. Pointing out to a lady, Rajan said, “She is the daughter of the woman who is the mother of the husband of my mother.” Who is the lady to Rajan?

- (A) Aunt (B) Granddaughter (C) Daughter (D) Sister