MATHS

BOOKS - HT Olympiad Previous Year Paper

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

Mathematical Reasoning

1. The sum of two numbers is 8 and the sum of their reciprocals is $\dfrac{8}{15}$. Find the numbers.

A. 5,3

B. 7,1

C. 4,4

D. 2,6

Answer: A

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2. The sum of the digits of a two-digit number is 12. The number obtained by interchanging its digits exceeds the given number by 18. Find the number.

A. 57

B. 75

C. 85

D. 58

Answer: A

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3. 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 its denominator, the new number becomes $\dfrac{1}{5}$. Find the original number. Check your solution.

A. $\dfrac{7}{11}$

B. $\dfrac{3}{5}$

C. $\dfrac{5}{8}$

D. $\dfrac{4}{7}$

Answer: C

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4. If am= bl, then find whether the pair of linear equations $ax + by = c$ and $lx + my = n$ has no solution, unique solution or infinitely many solutions

A. Has a unique solution.

B. Has no solution

C. Has infinitely many solutions

D. May or may not have a solution.

Answer: B

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5. The value of k, for which the system of equations

$kx - 3y + 6 = 0, 4x - 6y + 15 = 0$ represent parallel

lines, is _____

A. 1

B. 2

C. 3

D. 4

Answer: B

6. Find the values of a and b for which the following system of equations has infinitely many solutions :

$$2x + 3y = 7$$

$$2ax + ay = 28 - by$$

A. 2,5

B. 5,8

C. 4,8

D. 3,6

Answer: C

7. In $\triangle ABC$, if $\angle C = 50°$ and $\angle A$ exceeds $\angle B$ by $44°$

, then $\angle A$

    A. $43°$

    B. $40°$

    C. $67°$

    D. $87°$

Answer: D

8. The ratio between a two digit number and the sum of the digits of that number is 4:1. If the digit in the units place is 3 more than the digit in the tens place, what is the number?

A. 63

B. 36

C. 24

D. 40

Answer: B

9. Sum of two numbers is 80 and their difference is 36.

Find the numbers.

A. 58, 22

B. 40,40

C. 44, 36

D. 52, 28

Answer: A

10. If a pair of linear equations in two variables is consistent, then the lines represented by two equations are (a) intersecting (b) parallel (c) always coincident (d) intersecting or coincident

    A. Always intersecting

    B. Parallel

    C. Always coincident

    D. Intersecting or coincident

Answer: D

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11. The solution of the system of equations $\dfrac{2x + 5y}{xy} = 6$ and $\dfrac{4x - 5y}{xy} + 3 = 0$ (where $x \neq 0, y \neq 0$) is

A. 1,2

B. 0,0

C. $-1, 2$

D. $1, -2$

Answer: A

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12. Value of x in pair of linear equations

$36x + 24y = 702$ and $24x + 36y = 558$ is____

A. $\dfrac{33}{2}$

B. $\dfrac{145}{7}$

C. 16

D. 17

Answer: A

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13. Which of the following linear equation coincide with the line $4x + 5y = 15$?

A. $8x + 10y = 25$

B. $2x + 3y = 7$

C. $7x + 14y = 17$

D. $12x + 15y = 45$

Answer: D

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Everyday Mathematics

1. Arun and Prabhat have some books with them. Once Prabhat said to Arun that if Arun gives 3 books to Prabhat then Arun will have only $\dfrac{1}{2}$ of the books that Prabhat will have with him. Then Arun asked frankly that if Prabhat gives him only two books (to Arun), then Prabhat will have as many books as Arun will have. The total number of books that Arun and Prbhat have with them is :

A. 25

B. 56

C. 30

D. Can't be determined

Answer: C

2. Rs. 9000 were divided equally among a certain number of persons. Had there been 20 more persons, each would have got Rs. 160 less. Find the original number of persons.

A. 25

B. 24

C. 26

D. 27

Answer: A

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

A. 50 years

B. 35 years

C. 51 years

D. 36 years

Answer: C

4. X takes 3 hours more than Y to walk 30 km. But if X doubles his pace, he is ahead of Y by $1\dfrac{1}{2}$ hours. The speed of X is

    A. 5km/hr

    B. 9km/hr

    C. 9/7 km/hr
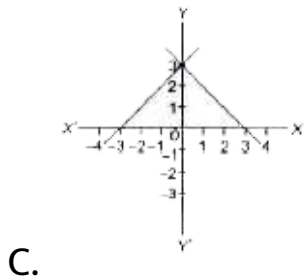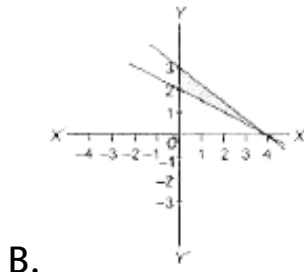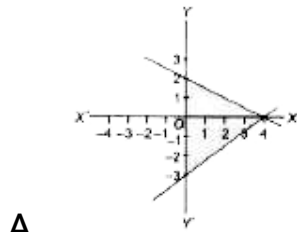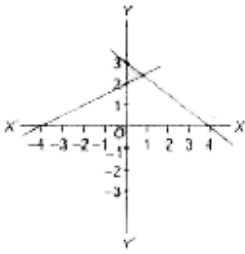
    D. 10/3 km/hr

Answer: D

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1. Which of the following graphs represent the lines

$2x + 4y = 8$ and $3x - 4y = 12$?

A.

B.

C.

D.

Answer: A

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2. Solve for x and y in the following question.

$$\frac{2}{x+2y} + \frac{1}{2x-y} + \frac{5}{9} = 0, \quad \frac{9}{x+2y} + \frac{6}{2x-y} + 4 = 0$$

A. $x = 1, y = 2$

B. $x = 2, y = 1$

C. $x = 2, y = \dfrac{1}{2}$

D. $x = \dfrac{1}{2}, y = 2$

Answer: D

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3. Read the statements carefully and state 'T' for true and 'F' for false.

(i)   The   pair   of   linear   equations $x + 2y = 5$ and $7x + 3y = 13$ has unique solution x = 2, y = 1.

(ii) $\sqrt{2}x + \sqrt{3}y = 0$, $\sqrt{3}x - \sqrt{8}y = 0$ has no solution.

(iii) The values of p and q for which the following system   of   equations

$2x - y = 5, (p + q)x + (2p - q)y = 15$ has   infinite

number of solutions, is p = 1 and q = 5.

A.

i	ii	iii
T	F	T

B.

i	ii	iii
T	T	F

C.

i	ii	iii
F	T	T

D.

i	ii	iii
F	F	T

Answer: D

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