MATHS

BOOKS - HT Olympiad Previous Year Paper

LINEAR EQUATIONS IN TWO VARIABLES

Mathematical Reasoning

1. Which equation satisfies the data given in the table?

x	-1	0	1	2
y	-3	-1	1	3

A. $y = x - 2$

B. $y = 2x - 1$

C. $y = 3x - 3$

D. $y = x + 1$

Answer: B

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2. The graph of $x + y = 6$ intersect coordinate axesat

A. (0, 6)

B. (6, 0)

C. (2, 3)

D. Both (A) and (B)

Answer: D

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3. How many linear equations in x and y can be satisfied by x = 5 and y = 7?

A. Only one

B. Only two

C. Infinitely many

D. None of these

Answer: C

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4. The graph of the linear equation $4x + y = 12$ is a line which meets the y-axis at the point _____.

A. (0, 4)

B. (4, 0)

C. (12, 0)

D. (0, 12)

Answer: D

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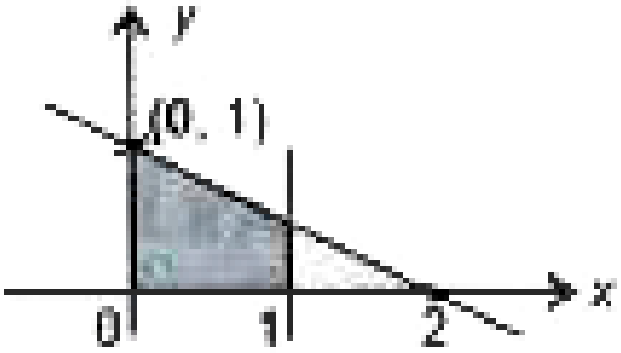
5. In the given rectangular coordinate system, the shaded region is bounded by two straight lines. Which of the following is not an equation of one of the boundary lines?



A. $x = 0$

B. $x = 1$

C. $x - y = 0$

D. x + 2y = 2

Answer: C

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6. $ax + by + c = 0$ does not represent an equation of a line when _____

A. a = c = 0, b $\neq$ 0

B. b = c = 0, a $\neq$ 0

C. a = b = 0

D. $c = 0, a \neq 0, b \neq 0$

Answer: C

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7. A straight line parallel to the y-axis has equation _____.

A. $x = a$

B. $y = a$

C. $y = x$

D. $y = -x$

Answer: A

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8. If $(-3, 2)$ is a solution of the linear equation $5x + 3ky = 3$, then the value of k is _____

A. 3

B. 6

C. 5

D. 2

Answer: A

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9. If the graph of the equation $3x + 5y = 15$ cuts the coordinate axes at P and Q, then hypotenuse of right triangle POQ is of length _____.

A. $\sqrt{17}$ units

B. 5 units

C. $\sqrt{34}$ units

D. None of these

Answer: C

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10. Point $(0, -4)$ lies on the line _____.

A. $x - 2y = 4$

B. $2x + y = 4$

C. $2x - y = 4$

D. $x + y = 4$

Answer: C

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11. The equation y = 5 in two variables, can be written as _____.

A. $1.\ x + 1.\ y = 5$

B. $1.\ x + 0.\ y = 5$

C. $0.\ x + 1.\ y = 5$

D. None of these

Answer: C

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12. The point $(a, -a)$ always lies on _____.

A. $x + y = 0$

B. $x - y = 0$

C. $x = -a$

D. $y = a$

Answer: A

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13. If $\angle A$ and $\angle B$ are complementary angles and $\angle A$ is x, then which equation can be used to find $\angle B$ which is denoted by y?

A. $y = (90^\circ + x)$

B. $y = (90^\circ - x)$

C. $y = (180^\circ - x)$

D. $y = (x + 180^\circ)$

Answer: B

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Everyday Mathematics

1. A and B are friends. A is elderto B by 5 years.

B's sister C is half the age of B while A's father

D is 8 years older than twice the age of B. If the present age of B. If the present age of D is 48 years, then find the present ages of A, B and C respectively.

A. 50 years, 25 years, 20 years

B. 40 years, 20 years, 15 years

C. 20 years, 15 years, 10 years

D. 25 years, 20 years, 10 years

Answer: D

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2. The cost of a notebook is twice the cost of a pen. If the cost of a notebookis ₹ x and that of a pen is ₹ y, then a linear equation in two variables to represent the given condition is _____.

A. $x + 2y = 0$

B. $x - 2y = 0$

C. $2x + y = 0$

D. $2x - y = 0$

Answer: B

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3. Two players A and B together scored 500 runs in a cricket match.

(i) Find the linear equation satisfying the data.

(ii) If player B scored 225 runs, then how much runs player A scored?

A. $\begin{matrix} (\mathrm{i}) & (\mathrm{ii}) \\ 2x + y = 500 & 275 \end{matrix}$

B. $\begin{matrix} (\mathrm{i}) & (\mathrm{ii}) \\ x + y = 500 & 275 \end{matrix}$

C.

(i)	(ii)
$2x + y = 100$	225

D.

(i)	(ii)
$x + 2y = 500$	280

Answer: B

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4. A part of monthly expenses of a family on milk is fixed which is ₹ 700 and remaining varies with quantity of milk taken extra at the rate of ₹ 25 per litre. Taking quantity of milk required extra as x litres and total expenditure

on milk as ₹ y, write a linear equation from the above information.

A. $-25x + y = 700$

B. $20x + y = 500$

C. $20x + 10y = 300$

D. $x + 25y = 900$

Answer: A

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Achievers Section Hots Fill In The Blanks

1. (i) A linear equation in two variables has $\underline{\mathrm{P}}$ solution(s).

(ii) The graph of $\underline{\mathrm{Q}}$ line has an equation of the form x = k, where k is any constant.

(iii) A line parallel to x-axis cuts the y-axis at $\underline{\mathrm{R}}$ point(s).

(iv) Distance between the graph of equation $y = 2$ and $y = -4$ is $\underline{\mathrm{S}}$ units.

A.

P	Q	R	S
Zero	Horizontal	Zero	2

B.

P	Q	R	S
Infinite	Horizontal	Two	6

C.

P	Q	R	S
Infinite	Vertical	One	6

D.

P	Q	R	S
Zero	Vertical	One	2

Answer: C

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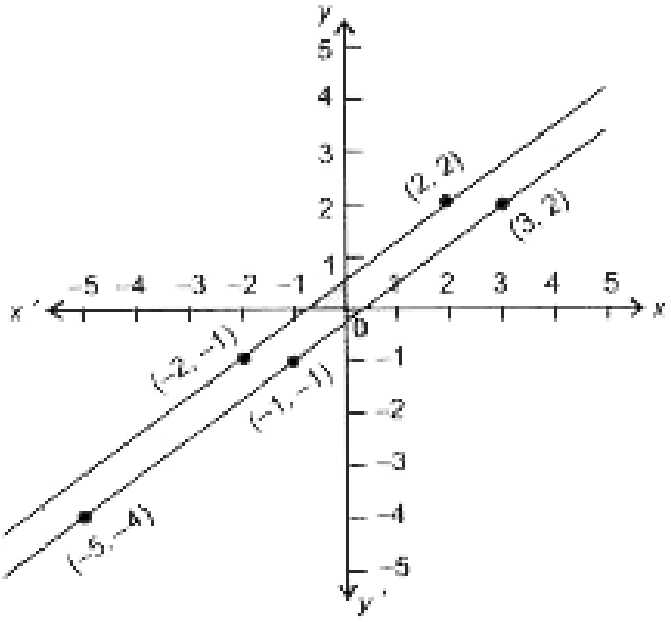
Achievers Section Hots

1. The equation representing the given graph is _____.



A. $7x + 2y = 11, y = \ - 2x = 3$

B. $2x + 7y = 11, 5x + (35y/2) = 25$

C. $3x - 7y = 10, 8y - 6x = 4$

D. $3x - 4y = 1, 8y - 6x = 4$

Answer: D

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2. Match the linear equations in Column-I with their solutions in Column-II

Column-I	Column-II
(P) $4x + 3y = 24$	(i) $(2, -3)$
(Q) $\frac{x}{2} - \frac{y}{3} = 2$	(ii) $(2, 3)$
(R) $3x + 5y = 15$	(iii) $(3, 4)$
(S) $\frac{x-2}{3} = y - 3$	(iv) $\left(3, \frac{6}{5}\right)$

A. (P) $\rightarrow$ (ii), (Q) $\rightarrow$ (i), (R) $\rightarrow$ (iv), (S) $\rightarrow$ (iii)

B. (P) $\rightarrow$ (iii), (Q) $\rightarrow$ (i), (R) $\rightarrow$ (iv), (S) $\rightarrow$ (ii)

C. (P) $\rightarrow$ (ii), (Q) $\rightarrow$ (iv), (R) $\rightarrow$ (i), (S) $\rightarrow$ (iii)

D. (P) $\rightarrow$ (iii), (Q) $\rightarrow$ (iv), (R) $\rightarrow$ (i), (S) $\rightarrow$ (ii)

Answer: B

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