MATHS

BOOKS - HT Olympiad Previous Year Paper

ALGEBRA

Mathematical Reasoning

1. The equation for the statement 'One-third of a number added to second multiple of 6 is 24

is' _____.

A. $\dfrac{y}{3} = 12 + 24$

B. $\dfrac{y}{3} + 2 = 24$

C. $\dfrac{y}{3} + 12 = 24$

D. $\dfrac{y}{3} = 18 + 24$

Answer: C

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2. When Raju multiplied a certain number by 17 and adds 4 to product, he gets 225. Find that number.

A. 13

B. 14

C. 15

D. 16

Answer: A

3. Equation for the statement 'Twice the product of m and n is equal to thrice their difference' is _____ .

A. $3mn = 2(m - n)$

B. $mn = 2(m - n)$

C. $2mn = m - n$

D. $2mn = 3(m - n)$

Answer: D

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4. If six times of a number is 318, then the number is _____ .

A. 53

B. 91

C. 0

D. 72

Answer: A

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5. An algebraic expression, 11 - y can be written in statement form as _____ .

    A. 11 less than y

    B. y less than 11

    C. y more than 11

    D. y divided by 11

Answer: B

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6. Which of the following equations justify the given statement?

"When x is divided by y, the quotient is added to the product of x and y"

A. $x + \dfrac{y}{x}$

B. $\dfrac{y}{x} + yx$

C. $yx + \dfrac{2x}{y}$

D. $\dfrac{x}{y} + xy$

Answer: D

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7. If twelve less than 3 times of a number is 27, then the number is _____.

A. 29

B. 39

C. 65

D. 13

Answer: D

8. If $x = 3$ and $y = 7$, then find the value of $\dfrac{x}{2} + 4y + 2$.

A. $\dfrac{63}{2}$

B. $\dfrac{65}{2}$

C. $\dfrac{17}{2}$

D. 96

Answer: A

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9. To get the value of 'x', the number to be multiplied to x is in the equation $\dfrac{x}{5} = \dfrac{15}{3}$ is

_____ .

A. -3

B. 15

C. 5

D. 0

Answer: C

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10. If $\dfrac{2}{3}p - 2\dfrac{1}{2} = 3\dfrac{1}{2}$, then the value of p is

_____.

A. -9

B. 6

C. 9

D. 0

Answer: C

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11. Which of the following is an equation?

A. $n - 11$

B. $n + 1 > 0$

C. $n + 1 = 0$

D. $11 - n$

Answer: C

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12. The breadth of a rectangle is w cm and the length is 5 times as long as its breadth. What is the perimeter of the rectangle?

A. 5w cm

B. 12w cm

C. $(10 + 2w)$ cm

D. $(25 + w)$ cm

Answer: B

13. The number of girls in a class is 3 times the number of boys. Which of the following cannot be the total number of students in the class?

A. 24

B. 32

C. 36

D. 41

Answer: D

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14. The algebraic expression for the statement, 'Product of x and reciprocal of a subtracted from product of y and reciprocal of b" is`

A. $\dfrac{y}{b} - \dfrac{x}{a}$

B. $\dfrac{y - x}{a - b}$

C. $xa - yb$

D. $\dfrac{1}{yb - xa}$

Answer: A

15. The algebraic expression for the statement

'Thrice of x is added to twice of y is _____ .

   A. $3x + 2y$

   B. $3x + y$

   C. $3(x + y)$

   D. $2x + 3y$

Answer: A

16. If a = b, then ax = _____ .

A. $a + x$

B. bx

C. $b - x$

D. $b \div x$

Answer: B

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17. Which of the following equations has $x = 3$ as a solution?

A. $x + 2 = 6$

B. $x - 3 = 0$

C. $2x + 1 = 0$

D. $x + 4 = 8$

Answer: B

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18. The equation_____ and $2x + 2 = 0$ have the same solution.

A. $x - 1 = 0$

B. $x + 1 = 0$

C. $x - 2 = 0$

D. $x + 2 = 0$

Answer: B

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19. If $\dfrac{m}{4} - \dfrac{1}{2} = \dfrac{m}{3} + 1$, then the value of m is _____ .

    A. -12

    B. 18

    C. -18

    D. -36

Answer: C

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20. The method of finding solution by trying out various values for the variable is called

A. Error method

B. Trial and error method

C. Testing method

D. Checking method

Answer: B

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1. I had Rs. 350 with me. I gave Rs. $\left(\dfrac{x}{2}\right)$ to Amit, Rs. $\left(\dfrac{x}{3}\right)$ to Shreya and I am left with Rs. $\left(\dfrac{x}{3}\right)$. The amount I gave to Amit is _____.

    A. Rs. 150

    B. Rs. 100

    C. Rs. 250

    D. Rs. 200

Answer: A

2. Preeti travelled 3x km distance by walk, 9y km by cycle and 5 km by bus. The total distance covered by Preeti is _____ .

A. $(3x - 9y + 5)$km

B. $(3x + 9y + 5)$ km

C. $(3x - 9y - 5)$ km

D. $(9x + 3y - 5)$ km

Answer: B

3. Kirti sold 4c cupcakes. Her brother Dishank sold 3 more cupcakes than Kirti. How many cupcakes did they both sell altogether?

    A. $c + 24$

    B. $8c + 3$

    C. $4c + 3$

    D. $3c + 8$

Answer: B

4. Sanjay had s eggs. He used 8 eggs to bake a cake and 7 eggs were broken. Which expression shows the number of eggs left with him?

A. $15s - 1$

B. $15 - s$

C. $s - 15$

D. $1 - 15s$

Answer: C

5. Jaya's score in Mathematics is 30 more than two third of her score in English. If her score in English is x, then which of the following expressions shows her score in Mathematics?

A. $\dfrac{2}{3}(x + 30)$

B. $\dfrac{2x}{3} + 30$

C. $\dfrac{2x}{3} - 30$

D. $30 - \dfrac{2x}{3}$

Answer: B

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Achievers Section Hots

1. Ashima bought 23 things from the market. She bought five more jeans than shirts and two fewer watches than jeans. If x represents the number of shirts in total, then which

mathematical statement can be used to find how many of each thing are bought?

A. $x + (x + 5) + (x + 3) = 23$

B. $x + (x - 5) + (x - 3) = 23$

C. $(x + 5) + (x + 3) = 23$

D. $x + (x + 3) = 23$

Answer: A

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2. Fill in the blanks.

(i) An expression with a variable, constant and the sign of equality is called an _P_ .

(ii) 8 more than 2 times the number x can be written in algebraic form as _Q_ .

(iii) An equation is a condition on a _R_ .

	P	Q	R
(A)	variable	8x + 2	equation
(B)	equation	2x + 8	variable
(C)	equation	2x − 8	variable
(D)	variable	2x + 8	equation

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3. Which of the following equations does not have a solution in integers?

A. $x + 1 = 1$

B. $x - 1 = 3$

C. $2x + 1 = 6$

D. $1 - x = 5$

Answer: C

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4. State 'T' for true and 'F' for false.

P. $x = 15$ is the solution of the equation $41 - x = 25.$

Q. An equation is an algebraic expression which involves an "equal to" sign.

R. 'x exceeds y by 7' can be expressed as x = y+ 7.

	P	Q	R
(A)	F	T	T
(B)	F	T	F
(C)	T	F	T
(D)	T	T	T

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5. Match the following.

Column-I	Column-II
(i) The total weight of 3 boxes is 5 kg. If the weight of two of the boxes is x kg each, then the weight of third box (in kg) is _____.	(a) $x - 11$
(ii) Sid had x toffees. He ate 5 toffees and gave 6 toffees to his neighbour. The number of toffees left with him is _____.	(b) $\dfrac{x}{3}$
(iii) Mohit had ₹ x. He gave the money to his 3 sisters equally. Each girl will get ₹ _____.	(c) $5 - 2x$

A. (i) → (c), (ii) → (a), (iii) → (b)

B. (i) → (b), (ii) → (c), (iii) → (a)

C. (i) → (c), (ii) → (b), (iii) → (a)

D. (i) → (a), (ii) → (b), (iii) → (c)

Answer: A

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