Linear Equation In One Variable

Check Your Concepts

Q.1. *Match the following*:

Directions: *In each of these questions, three of the four items are related to each other and thus form a group. Find the one that does not belong to this group. Write in the box provided against each group.*

1. Match the following:

Column – I		Column – II	
A.	Value of 'x' in $\frac{x}{2}+\frac{5}{2}=\frac{2}{3}(5x-1)-\left(3x-\frac{2x+1}{3}\right)$	**(i)**	$\frac{-130}{3},\frac{-127}{3},\frac{-124}{3}$
B.	The sum of two numbers is 30 and their ratio is 2 : 3. The numbers are	**(ii)**	–10
C.	Three numbers whose sum is –127 are	**(iii)**	$\frac{-29}{19}$
D.	Value of 'x' in $\frac{2}{3x}-\frac{3}{2x}=\frac{1}{12}$ is	**(iv)**	12 and 18
E.	Solution of $\frac{1-9y}{19-3y}=\frac{5}{8}$ is	**(v)**	4

2. Match the following:

Column – I		Column – II	
A.	If $x+a=b$ then x is equal to	**(i)**	$a\times b$
B.	If $x-a=b$ then x is equal to	**(ii)**	$\frac{b}{a}$
C.	If $x\times a=b$ then x is equal to	**(iii)**	$b+a$
D.	If $\frac{x}{a}=b$ then x is equal to	**(iv)**	$b-a$

Q.2. *Fill in the blanks*:

Directions: *Complete the following statements with an appropriate word / term to be filled in the blank space(s).*

1. If $\frac{15}{x}-7x=9$ then $-7x=$ _____ $\left(9-\frac{15}{4}/a+\frac{15}{4}\right)$.

2. If $6x = 18$ then $x=$ _____ $\left(\frac{18}{6}/18\times 6\right)$.

3. If the present age of a boy is x years, then eight years ago, his age = _____ years, $(x-8/x+8)$

.

4. 2 years ago Rima was x years old. After 5 years, her age will be _____ years, $(x+7/x+5)$.

5. If x is an even number, then the next odd number is _____ $(x+1/x+3)$.

6. If x is a multiple of 11, then the next multiple of 11 is _____ $(x+1/x+11)$.

7. If the difference of two numbers is 27 and one of them is x, then the other number is _____.

8. The sum of two consecutive numbers is 21. If one of them is x then, we have _____.

9. Two numbers are in the ratio 3 : 5. If they differ by 18, then the smaller number is _____.

10. If the sum of two consecutive multiples of 9 is 207, then the greater multiple is _____.

11. $7x+15=50$

$7x=50-15$

$x=$ _____.

12. $\frac{x}{3}+\frac{4}{3}=\frac{3}{2}$

$\frac{x}{3}=\frac{3}{2}-$ _____.

Q.3. *True / False*:

Directions: *Read the following statements and mark your response as true or false.*

1. An equation does not change when the same number is added on both sides of the equation. [ ]

2. The equation $7x-4=11$ is an example of a non-linear equation. [ ]

3. The difference between two alternate even numbers is odd. [ ]

4. The identity, $(a-b)^2=a^2-2ab+b^2$, holds for infinite value of the unknowns. [ ]

5. An equation changes when both sides are multiplied by me same non-zero number. [ ]

6. A linear equation is an equation involving linear polynomials. [ ]

Q.4. *Multiple choice questions*:

Directions: *Read the following questions and choose the answer that best answers the questions.*

1. A grandfather is ten times older than his granddaughter. He is also 54 years older than her then their present ages are

(a) 6, 60 (b) 6, 54 (c) 10, 54 (d) 10, 60

2. Value of $'m'$ in the linear equation $m-\frac{m-1}{2}=1-\frac{m-2}{3}$ is

(a) $\frac{5}{7}$ (b) $\frac{7}{5}$ (c) 7×5 (d) $7+5$

3. (i) Find the solution of the equation.

(ii) Denote the unknown by some variable.

(iii) Translate the statements of the problem into a mathematical statement.

Which one is the correct order to solve a word problem?

(a) i, ii, iii (b) i, iii, ii (c) iii, ii, i (d) ii, iii, i

4. A polynomial is said to be linear if its degree is

(a) 2 (b) 3 (c) 1 (d) 0

5. 2 is a solution of

(a) $x+1=4$ (b) $x-1=1$ (c) $x+2=2x-1$ (d) $2x-6=1$

6. The equation $2x+1=5$ is identical to

(a) $2x+1=5$ (b) $4x+3=10$ (c) $x=4$ (d) $6x+3=15$

7. The equation $5x+7=8$ is the same as:

(a) $5x+7-7=8-7$ (b) $5x+7-9=9-3$ (c) $\frac{5x}{5}+\frac{7}{7}=\frac{8}{8}$ (d) $5x=\frac{8}{7}$

8. (-1) satisfies

(a) $2x-1=-3$ (b) $2x+2=-3$ (c) $2x+3=2$ (d) $2x+1=3$

9. $14+2x=2$

Which of the following equation is equivalent to the above equation?

(a) $14+\frac{2x}{2}=1$ (b) $\frac{14}{2}+2x=1$ (c) $\frac{14}{2}+\frac{2x}{2}=\frac{2}{2}$ (d) $14+2=2x+2$

10. A simple linear equation in one variable can be written in the form

(a) $ax+b=0$ (b) $a+b=c$ (c) $ax+by=c$ (d) None

Q.5. *Subjective questions*:

1. Solve: $\frac{3t-2}{4}-\frac{2t+3}{3}=\frac{2}{3}-t$.

Ans. ……

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2. Solve the following equations:

(i) $\frac{8x-3}{3x}=2$ (ii) $\frac{9x}{7-6x}=15$ (iii) $\frac{z}{z+15}=\frac{4}{9}$ (iv) $\frac{7y+4}{y+2}=\frac{-4}{3}$

Ans. ……

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3. Write the equation and solve.

(i) $\frac{1}{5}$ of a number is 60. What is the number?

(ii) $\frac{1}{6}$ of the length of a stick is 5 cm. What is the length of the stick?

(iii) Heera's father gave him 70 rupees. Now he has 120 rupees. How much money did Heera have in the beginning?

Ans. ……

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4. Classify the linear expressions from the below given expressions, $x^2+1, \frac{5}{4}(x-4), 2x, z^2+z^3$, $12-5z$, $3y-7$, $y+y^2, x+y+z$.

Ans. .....

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5. What is the difference between an expression and an equation?

Ans. .....

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