Exercise 4.1

Question 1:

Complete the last column of the table:

S. No.	Equation	Value	Say, whether the Equation is satisfied. (Yes / No)
(i)	$x+3=0$	$x=3$	
(ii)	$x+3=0$	$x=0$	
(iii)	$x+3=0$	$x=-3$	
(iv)	$x-7=1$	$x=7$	
(v)	$x-7=1$	$x=8$	
(vi)	$5x=25$	$x=0$	
(vii)	$5x=25$	$x=5$	
(viii)	$5x=25$	$x=-5$	
(ix)	$\dfrac{m}{3}=2$	$m=-6$	
(x)	$\dfrac{m}{3}=2$	$m=0$	
(xi)	$\dfrac{m}{3}=2$	$m=6$	

Answer 1:

S. No.	Equation	Value	Say, whether the Equation is satisfied. (Yes / No)
(i)	$x+3=0$	$x=3$	No
(ii)	$x+3=0$	$x=0$	No
(iii)	$x+3=0$	$x=-3$	Yes
(iv)	$x-7=1$	$x=7$	No
(v)	$x-7=1$	$x=8$	Yes

(vi)	$5x = 25$	$x = 0$	No
(vii)	$5x = 25$	$x = 5$	Yes
(viii)	$5x = 25$	$x = -5$	No
(ix)	$\dfrac{m}{3} = 2$	$m = -6$	No
(x)	$\dfrac{m}{3} = 2$	$m = 0$	No
(xi)	$\dfrac{m}{3} = 2$	$m = 6$	Yes

Question 2:

Check whether the value given in the brackets is a solution to the given equation or not:

(a) $n + 5 = 19 \, (n = 1)$ (b) $7n + 5 = 19 \, (n = -2)$

(c) $7n + 5 = 19 \, (n = 2)$ (d) $4p - 3 = 13 \, (p = 1)$

(e) $4p - 3 = 13 \, (p = -4)$ (f) $4p - 3 = 13 \, (p = 0)$

Answer 2:

(a) $n + 5 = 19 \, (n = 1)$

Putting $n = 1$ in L.H.S.,

$1 + 5 = 6$

∵ L.H.S. ≠ R.H.S.,

∴ $n = 1$ is not the solution of given equation.

(b) $7n + 5 = 19 \, (n = -2)$

Putting $n = -2$ in L.H.S.,

$7(-2) + 5 = -14 + 5 = -9$

∵ L.H.S. ≠ R.H.S.,

∴ $n = -2$ is not the solution of given equation.

(c) $7n+5=19\,(n=2)$

Putting $n=2$ in L.H.S.,

$7(2)+5=14+5=19$

∵ L.H.S. = R.H.S.,

∴ $n=2$ is the solution of given equation.

(d) 1)

Putting $p=1$ in L.H.S.,

$4(1)-3=4-3=1$

∵ L.H.S. ≠ R.H.S.,

∴ $p=1$ is not the solution of given equation.

(e) 4)

Putting $p=-4$ in L.H.S.,

$4(-4)-3=-16-3=-19$

∵ L.H.S. ≠ R.H.S.,

∴ $p=-4$ is not the solution of given equation.

(f) 0)

Putting $p=0$ in L.H.S.,

$4(0)-3=0-3=-3$

∵ L.H.S. ≠ R.H.S.,

∴ $p=0$ is not the solution of given equation.

Question 3:

Solve the following equations by trial and error method:

(i) $5p+2=17$ (ii) $3m-14=4$

Answer 3:

(i) $5p+2=17$

Putting $p=-3$ in L.H.S. $5(-3)+2=-15+2=-13$

∵ $-13\neq17$ Therefore, $p=-3$ is not the solution.

Putting $p = -2$ in L.H.S. $5(-2) + 2 = -10 + 2 = -8$

$\because$ $-8 \neq 17$ Therefore, $p = -2$ is not the solution.

Putting $p = -1$ in L.H.S. $5(-1) + 2 = -5 + 2 = -3$

$\because$ $-3 \neq 17$ Therefore, $p = -1$ is not the solution.

Putting $p = 0$ in L.H.S. $5(0) + 2 = 0 + 2 = 2$

$\because$ $2 \neq 17$ Therefore, $p = 0$ is not the solution.

Putting $p = 1$ in L.H.S. $5(1) + 2 = 5 + 2 = 7$

$\because$ $7 \neq 17$ Therefore, $p = 1$ is not the solution.

Putting $p = 2$ in L.H.S. $5(2) + 2 = 10 + 2 = 12$

$\because$ $12 \neq 17$ Therefore, $p = 2$ is not the solution.

Putting $p = 3$ in L.H.S. $5(3) + 2 = 15 + 2 = 17$

$\because$ $17 = 17$ Therefore, $p = 3$ is the solution.

(ii) $3m - 14 = 4$

Putting $m = -2$ in L.H.S. $3(-2) - 14 = -6 - 14 = -20$

$\because$ $-20 \neq 4$ Therefore, $m = -2$ is not the solution.

Putting $m = -1$ in L.H.S. $3(-1) - 14 = -3 - 14 = -17$

$\because$ $-17 \neq 4$ Therefore, $m = -1$ is not the solution.

Putting $m = 0$ in L.H.S. $3(0) - 14 = 0 - 14 = -14$

$\because$ $-14 \neq 4$ Therefore, $m = 0$ is not the solution.

Putting $m = 1$ in L.H.S. $3(1) - 14 = 3 - 14 = -11$

$\because$ $-11 \neq 4$ Therefore, $m = 1$ is not the solution.

Putting $m = 2$ in L.H.S. $3(2) - 14 = 6 - 14 = -8$

$\because$ $-8 \neq 4$ Therefore, $m = 2$ is not the solution.

Putting $m = 3$ in L.H.S. $3(3) - 14 = 9 - 14 = -5$

$\because$ $-5 \neq 4$ Therefore, $m = 3$ is not the solution.

Putting $m = 4$ in L.H.S. $3(4) - 14 = 12 - 14 = -2$

$\because$ $-2 \neq 4$ Therefore, $m = 4$ is not the solution.

Putting $m = 5$ in L.H.S. $3(5) - 14 = 15 - 14 = 1$

$\because$ $1 \neq 4$ Therefore, $m = 5$ is not the solution.

Putting $m = 6$ in L.H.S. $3(6) - 14 = 18 - 14 = 4$

$\because$ $4 = 4$ Therefore, $m = 6$ is the solution.

Question 4:

Write equations for the following statements:

    (i)   The sum of numbers x and 4 is 9.

    (ii)   2 subtracted from y is 8.

    (iii)   Ten times a is 70.

    (iv)   The number b divided by 5 gives 6.

    (v)   Three-fourth of t is 15.

    (vi)   Seven times m plus 7 gets you 77.

    (vii)   One-fourth of a number x minus 4 gives 4.

    (viii) If you take away 6 from 6 times y, you get 60.

    (ix)   If you add 3 to one-third of z, you get 30.

Answer 4:

(i)	$x+4=9$	(ii)	$y-2=8$
(iii)	$10a=70$	(iv)	$\dfrac{b}{5}=6$
(v)	$\dfrac{3}{4}t=15$	(vi)	$7m+7=77$
(vii)	$\dfrac{x}{4}-4=4$	(viii)	$6y-6=60$
(ix)	$\dfrac{z}{3}+3=30$		

Question 5:

Write the following equations in statement form:

(i)	$p+4=15$	(ii)	$m-7=3$
(iii)	$2m=7$	(iv)	$\dfrac{m}{5}=3$
(v)	$\dfrac{3m}{5}=6$	(vi)	$3p+4=25$
(vii)	$4p-2=18$	(viii)	$\dfrac{p}{2}+2=8$

Answer 5:

(i)   The sum of numbers p and 4 is 15.

(ii)   7 subtracted from m is 3.

(iii)   Two times m is 7.

(iv)   The number m is divided by 5 gives 3.

(v)   Three-fifth of the number m is 6.

(vi)   Three times p plus 4 gets 25.

(vii)   If you take away 2 from 4 times p, you get 18.

(viii)   If you added 2 to half is p, you get 8.

Question 6:

Set up an equation in the following cases:

(i)   Irfan says that he has 7 marbles more than five times the marbles Parmit has. Irfan has 37 marbles. (Tale m to be the number of Parmit's marbles.)

(ii)   Laxmi's father is 49 years old. He is 4 years older than three times Laxmi's age. (Take Laxmi's age to be y years.)

(iii)   The teacher tells the class that the highest marks obtained by a student in her class are twice the lowest marks plus 7. The highest score is 87. (Take the lowest score to be l.)

(iv)   In an isosceles triangle, the vertex angle is twice either base angle. (Let the base angle be b in degrees. Remember that the sum of angles of a triangle is 180°.)

Answer 6:

(i)   Let m be the number of Parmit's marbles.

$$\therefore \quad 5m + 7 = 37$$

(ii)   Let the age of Laxmi be y years.

$$\therefore \quad 3y + 4 = 49$$

(iii)   Let the lowest score be l.

$$\therefore \quad 2l + 7 = 87$$

(iv)   Let the base angle of the isosceles triangle be b, so vertex angle = $2b$.

$$\therefore \quad 2b + b + b = 180°$$

$$\Rightarrow \quad 4b = 180° \quad \text{[Angle sum property of a } \Delta \text{]}$$