CHAPTER-4

SIMPLE EQUATIONS

SOLUTIONS:

EXERCISE 4.1

1. **Complete the last column of the table.**

SL.	Equation	Value	Calculation	Result
1.	x+3=0	x=3	3+3=6	No
2.	x+3=0	x=0	0+3=3	No
3.	x+3=0	x=-3	-3+3=0	Yes
4.	x-7=1	x=7	7-7=0	No
5.	x-7=1	x=8	8-7=1	Yes
6.	5x=25	x=0	5×0=0	Yes
7.	5x=25	x=5	5×5=25	Yes
8.	5x=25	x=-5	5×(-5)=-25	No
9.	m/3=2	m=-6	-6/3=-2	No
10.	m/3=2	m=0	0/3=0	No
11.	m/3=2	m=6	6/3=2	Yes

2. **Check whether the value given in the brackets is a solution to the given equation or not.**

Soln:- (a) n+5=19(n=1)

L.H.S.=n+5

=1+5=6≠19=R.H.S.

which is not a solution to the given equation.

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

L.H.S.$=7n+5$

$=7\times(-2)+5$

$=-14+5=-9\neq 19=$R.H.S.

which is not a solution of the given equation.

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

L.H.S.$=7n+5$

$=7\times2+5=14+5=19=19=$R.H.S.

which is a solution of the given equation.

(d) $4p-3=13(p=1)$

Now, L.H.S.$=4p-3=4\times1-3=4-3=1\neq$R.H.S.

Which is not a solution of the given equation

(e) $4p-3=13(p=-4)$

Now, L.H.S.$=4p-3=4\times(-4)-3=-16-3=-19\neq$R.H.S.

Which is not a solution of the given equation

(f) $4p-3=13(p=0)$

Now, L.H.S.$=4p-3=4\times0-3=0-3=-3\neq$R.H.S.

DEPARTMENT OF EDUCATION (S)
Government of Manipur

03. Solve the following equations by trial and error method:

i. Soln. 5p+2=17

If p=1, then

L.H.S.=5×1+2=5+2=7≠17

P=3, then

L.H.S.=5×3+2=15+2=17=R.H.S.

Therefore, p=3 is the solution of the equation.

ii. 3m-14=4

When m=5, then

L.H.S.=3×5-14=15-14=1≠4

When m=6, then
L.H.S.=3×6-14=18-14=4=R.H.S.

Therefore, m=6 is the solution of the given equation.

4**. Write equations for the following statements:**

Soln:-

i. x+4=9[sum is+]
ii. y-2=8[subtracted is -]
iii. 10×a=70,ie 10a=70[times means x]
iv. b/5=6
v. (3/4×t)=15,ie 3t/4=15
vi. 7m+7=77
vii. (1/4×x)-4=4, ie x/4-4=4
viii. 6y-6=60
ix. (1/3×z)+3=30,ie z/3+3=30.

5. Write the following equations in statement forms:

Soln:

a) The sum of numbers p and 4 is 15.
b) The number 7 subtracted from m is 3.
c) Two times m is 7.
d) One-fifth of a number m is 3.
e) Three-fifth of a number m is 6.
f) Three times a number p when added to 4 gives 25.
g) 2 subtracted from four times a number p gives 18.
h) Add 2 to half of a number p to get 8.

6. Set up an equation in the following cases.

Soln:-

i. Let m be number of Parmit's marble.
Then, by question, we get
5m+7=37.

ii. Let y be the age of Laxmi, then by question, we get
3y+4=49.

iii. Let *l* be the lowest score of mark, then by question, we get
2*l*+7=87

iv. Let b^0 be the vertex angle, then
2b+b+b=180˚

$\Rightarrow$ 4b=180˚

DEPARTMENT OF EDUCATION (S)
Government of Manipur

EXERCISE 4.2

1. Give first the step you will use to separate the variable and then solve the equation.

Soln:-

(a) $X - 1 = 0 \Rightarrow x=0+1, x=1$

(b) $X + 1 = 0 \Rightarrow x=0-1, x=-1$

(c) $x - 1 = 5 \Rightarrow x=5+1, x=6$

(d) $x + 6 = 2 \Rightarrow x=2-6, x=-4$

(e) $y - 4 = -7 \Rightarrow y=-7+4, y=-3$

(f) $y - 4 = 4 \Rightarrow y=4+4, y=8$

(g) $y + 4 = 4 \Rightarrow y=4-4, y=0$

(h) $y + 4= -4 \Rightarrow y=-4-4, y=-8$

2. Soln:-

a) $3l=42 \Rightarrow l=42/3, l=14$

b) $b/2=6 \Rightarrow b=6\times2, b=12$

c) $p/7=4 \Rightarrow p=4\times7, p=28$

d) $4x=25 \Rightarrow x=25/4$

e) $8y=36 \Rightarrow y=36/8, y=9/2$

f) $z/3=5/4 \Rightarrow z\times4=5\times3 \Rightarrow 4z=15, z=15/4$

g) $a/5=7/15 \Rightarrow 15a=35 \Rightarrow a=35/15, a=7/3$

h) $20t=-10 \Rightarrow t= -10/20, t=-1/2$

3. Soln:-

a) $3n-2=46$

$\Rightarrow 3n=46+2$

$\Rightarrow 3n=48$

$\Rightarrow n=48/3$

=>n=16.

b) 5m+7=17

=>5m=17-7

=>5m=10

=>m=10/5

=>m=2.

c) 20p/3=40

=>20p=40×3

=>20p=120

=>p=120/20

=>p=6.

4. **Solve the following equations:-**

Soln:-

a) 10p=100

=>p=100/10

=>p=10

b) 10p+10=100

=>10p=100-10

=>10p=90

=>p=90/10

=>p=9

c) p/4=5

=>p=5×4

=>p=20

d) –p/3=5

=>-p=5×3

=>p=-15

e) 3p/4=6

=>3p=4×6

=>3p=24

=>p=24/3=8

f) 3s=-9

=>s=-9/3

=>s=-3

g) 3s+12=0

=>3s= -12

=>s= -12/3

=>s= -4

h) 3s = 0

=> s= 0/3

=> s= 0

i) 2q=6

=>q=6/2

=>q=3

j) 2q-6= 0

=>2q=6

=>q=6/2=3

k) 2q+6=0

=>2q= -6

=> q= -6/2= -3

l) 2q+6=12

=>2q = 12-6

=> q= 6/2=3

BOARD OF SECONDARY EDUCATION, MANIPUR
विद्यामृतमश्नुते
DEPARTMENT OF EDUCATION (S)
Government of Manipur

EXERCISE 4.3

1**. Solve the following equations**:-

Soln:-

a) $2y+\frac{5}{2}=\frac{37}{2}$

$=>2y=\frac{5}{2}-\frac{37}{2}$

$=>2y=\frac{37-5}{2}$

$=>2y=\frac{32}{2}$

$=>2y=16$

$=>y=\frac{16}{2}=8$

b) $5t+28=10$

$=>5t=10-28$

$=>5t=-18$

$=>t=-18/5$

c) $a/5+3=2$

$=>a/5=2-3$

$=>a/5=-1$

$=>a=-1\times5=-5$

d) q/4+7=5

=>q/4=5-7

=>q/4=-2

=>q=-2×4=-8

e) $\frac{5}{2}$x =-5

=>5x=-5×2

=>5x=-10

=>x=-10/5=-2

f) $\frac{5}{2}$x=$\frac{25}{4}$

=> $\frac{5}{2}x$=$\frac{25}{4}$

=>20x=50

=>x= $\frac{50}{20}$ = $\frac{5}{2}$

g) 7m+$\frac{19}{2}$=13

=>7m=13- $\frac{19}{2}$

=>7m=$\frac{26-19}{2}$

=>7m=7/2

=>m=7/2÷7

=>m=7/2×1/7=1/2

h) 6z+10=-2

=>6z=-2-10

=>6z=-12

=>z=-12/6=-2

i) $\frac{3l}{2}=\frac{2}{3}$

=>3*l*=$\frac{2}{3}$×2

=>3*l*= $\frac{4}{3}$

=>*l*=$\frac{4}{3}$ ÷3

=>*l* = $\frac{4}{3} \times \frac{1}{3} = \frac{4}{9}$

l= $\frac{4}{9}$

j) 2h/3-5=3

=>2h/3=3+5

=>2h/3=8

=>2h=8×3

=>2h=24

=>h=24/2=12

BOARD OF SECONDARY EDUCATION, MANIPUR
विद्यामृतमश्नुते
DEPARTMENT OF EDUCATION (S)
Government of Manipur

2**. Solve the following equations:-**

Soln:-

a) 2(x+4)=12

=>2x+8=12

=>2x=12-8

=>2x=4

=>x=4/2=2

b) 3(n-5)=21

=>3n-15=21

=>3n=21+15

=>3n=36

=>3n=36/3=12

c) 3(n-5)=-21

=>3n-15=-21

=>3n=-21+15

=>3n=-6

=>n=-6/3=-2

d) -4(2+x)=8

=>-8-4x=8

=>-4x=8+8

=>-4x=16

=>x=-16/4=-4

3. Solve the following equation:

a) 4=5(p-2)
   =>4=5p-10
   =>4+10=5p
   =>14=5p
   P=14/5

b) -4=5(p-2)
   =>-4=5p-10
   =>-4+10=5p
   =>6=5p
   P=6/5

c) 16=4+3(t+2)
   =>16-4=3t+6
   =>12-6=3t
   =>6=3t
   t=6/3=2

d) 4+5(p-1)=34
   =>4+5(p-1)=34
   =>4+5p-5=34
   =>5p-1=34
   => 5p= 34+1
   p= 35/5 = 7

e) 0=16+4(m-6)
   =>-16=4m-24
   =>8=4m
   =>m=8/4=2

4

a) Construct 3 equations starting with x=2

Soln:- The possible equation are

i. 5x+4=14
ii. x/2-1=0
iii. 3x +5=11

b) The possible equation starting with x=-2

i. x-2=-4
ii. 4x+1=-7
iii. 2x-4=-8

BOARD OF SECONDARY EDUCATION, MANIPUR
विद्यामृतमश्नुते
DEPARTMENT OF EDUCATION (S)
Government of Manipur

EXERCISE 4.4

1**. Set up equations and solve them to find the unknown numbers in the following cases.**

Soln:-

a) Let x be the unknown number, then
   8x+4=60
   =>8x=60-4
   =>8x =56
   =>x=56/8=7
   The required unknown number is 7

b) Let x be the unknown number ,then
   1/5 x -4=3
   =>x/5=3+4
   =>x/5=7
   =>x=7x5 =35
   The reqd. Unknown number is 35

c) Let x be the unknown number, then
   3/4x +3=21
   =>3x/4=21-3
   =>3x/4=18
   =>3x=18×4
   =>3x =72
   X=72/3=24

d) Let x be the unknown number, then
   2x-11=15
   =>2x=15+11
   =>2x=26
   =>x=26/2=13

e) Let x be the unknown number, then

50-3x=8

=>-3x=8-50

=>-3x=-42

=>-x=42/3=14

X=14

f) Let x be the number that Ibemhal thinks then, by the question , we get $\frac{x+19}{5}$=8

=>x+19=8x5

=>x=19=40

=>x=40-19

=21

g) Let n be the number that Anwar thinks , then by question , we get

5n/2-7=23

=>5n/2=23+7

=>5n/2=30

=>5n =30×2

n =60/5=12

2

a) **Solve the following** :

Soln:-Let x be the lowest score of mark, obtained by a student.

2x +7 =87

=>2x =87-7

=>2x =80

=>x= 80/2=40

The lowest score of marks obtained by a student is 40

b) Let x^0 be the question base angles of an isosceles triangle, then by question, we get

$x^\circ+x^\circ+40^\circ=180^\circ$ [sum of 3 angle of a triangle is 180°]

$=>2x^\circ=180^\circ-40^\circ$

$=>2x^\circ=140^\circ$

$=>x^\circ=140^\circ$

$=>x^\circ=140^\circ/2 =70^\circ$

The reqd. base angle of an isosceles triangle is 70°.

c) Let x be the number of runs run by Rahul, then the score of Sachin will 2x.

By the question, we get

2x+x=200-2[2 short from double century (one centuary =100]

=>3x=198

=>x=198/3=66

Rahul scored 66 runs and Sachin's is 2x=2×66=132.

3.

I. Let x be the number of marble that Parmit has.

Then by question, we get

5x+7=37

=>5x=37-7

=>5x=30

=>x=30/5=6

The reqd. number of marbles Parmit has is 6.

II. Let x be the age of Laxmi, then by the condition, we get

3x+4=49

=>3x=49-4

=>3x=45

=>x=45/3=15

Hence, the age of Laxmi is 15.

III. Let x be the number of fruit trees in the garden.

Then, by the question, we get

3x+2=77

=>3x=77-2

=>3x=75

=>x=75/3=25

Hence the reqd no of fruit trees is 25.

4. Soln:-

Let x be the number.

Then by the given riddle, we get

7x+50=300-40[triple century=100×3=300]

=>7x+50=260

=>7x=260-50

=>7x=210

=>x=210/7=30.

The required number is 30.

BOARD OF SECONDARY EDUCATION, MANIPUR
DEPARTMENT OF EDUCATION (S)
Government of Manipur

BOARD OF SECONDARY EDUCATION, MANIPUR
विद्यामृतमश्नुते
DEPARTMENT OF EDUCATION (S)
Government of Manipur