# CHAPTER 9

## LINEAR EQUATIONS

**1. Solve:**

**(i) x + 2 = 6**

**(ii) x + 6 = 2**

**(iii) y + 8 = 5**

**(iv) x + 4 = – 3**

**(v) y + 2 = – 8**

**Solution:**

(i) x + 2 = 6

x = 6 – 2

We get,

x = 4

Hence, the value of x for x + 2 is 4

(ii) x + 6 = 2

x = 2 – 6

We get,

x = = – 4

Hence, the value of x for x + 6 = 2 is – 4

(iii) y + 8 = 5

y = 5 – 8

We get,

y = – 3

Hence, the value of y for y + 8 = 5 is – 3

(iv) x + 4 = – 3

x = – 3 – 4

We get,

x = – 7

Hence, the value of x for x + 4 = – 3 is – 7

(v) y + 2 = – 8

y = – 8 – 2

We get,

y = – 10

Hence, the value of y for y + 2 = – 8 is – 10

**2. Solve:**

**(i) x – 3 = 2**

**(ii) m – 2 = – 5**

**(iii) b – 5 = 7**

**(iv) a – 2.5 = – 4**

**(v) y – 3 (1 / 2) = 6**

**Solution:**

(i) x – 3 = 2

x = 2 + 3

We get,

x = 5

Therefore, the value of x for x – 3 = 2 is 5

(ii) m – 2 = – 5

m = – 5 + 2

We get,

m = – 3

Therefore, the value of m for m – 2 = – 5 is – 3

(iii) b – 5 = 7

b = 7 + 5

We get,

b = 12

Therefore, the value of b for b – 5 = 7 is 12

(iv) a – 2. 5 = – 4

a = – 4 + 2. 5

We get,

a = – 1. 5

Therefore, the value of a for (a – 2. 5) = – 4 is – 1. 5

(v) y – 3 (1 / 2) = 6

This can be written as,

y – (7 / 2) = 6

y = 6 + (7 / 2)

y = (12 + 7) / 2

y = 19 / 2

y = $9\frac{1}{2}$

Therefore, the value of y for y – 3 (1 / 2) = 6 is
$9\frac{1}{2}$

**3. Solve:**

**(i) 3x = 12**

**(ii) 2y = 9**

**(iii) 5z = 8.5**

**(iv) 2.5m = 7.5**

**(v) 3.2p = 16**

**Solution:**

(i) 3x = 12

x = 12 / 3

We get,

x = 4

Hence, the value of x for 3x = 12 is 4

(ii) 2y = 9

y = 9 / 2

We get,

y = 4.5

Hence, the value of y for 2y = 9 is 4.5

(iii) 5z = 8.5

z = 8.5 / 5

We get.

z = 1.7

Hence, the value of z for 5z = 8.5 is 1.7

(iv) 2.5m = 7.5

m = 7.5 / 2.5

We get,

m = 3

Hence, the value of m for 2.5m = 7.5 is 3

(v) 3.2p = 16

p = 16 / 3.2

p = (16 × 10) / 32

p = 160 / 32

p = 5

Hence, the value of p for 3.2p = 16 is 5

**4. Solve:**

**(i) x / 2 = 5**

**(ii) y / 3 = – 2**

**(iii) a / 5 = – 15**

**(iv) z / 4 = 3 (1 / 4)**

**(v) m / 6 = 2 (1 / 2)**

**Solution:**

(i) x / 2 = 5

x = 5 × 2

We get,

x = 10

Hence, the value of x for x / 2 = 5 is 10

(ii) y / 3 = – 2

y = – 2 × 3

We get,

y = – 6

Hence, the value of y for y / 3 = – 2 is – 6

(iii) a / 5 = – 15

a = – 15 × 5

We get,

a = – 75

Hence, the value of a for a / 5 = – 15 is – 75

(iv) z / 4 = 3 (1 / 4)

This can be written as,

z / 4 = 13 / 4

z = 13 / 4 × 4

We get,

z = 13

Hence, the value of z for z / 4 = 3 (1 / 4) is 13

(v) m / 6 = 2 (1 / 2)

This can be written as,

m / 6 = 5 / 2

m = 5 / 2 × 6

m = 5 × 3

We get,

m = 15

Hence, the value of m for m / 6 = 2 (1 / 2) is 15

**5. Solve:**

**(i) – 2x = 8**

**(ii) – 3.5y = 14**

**(iii) – 5z = 4**

**(iv) – 5 = a + 3**

**(v) 2 = p + 5**

**Solution:**

(i) – 2x = 8

x = – 8 / 2

We get,

x = – 4

Therefore, the value of x for – 2x = 8 is – 4

(ii) – 3.5y = 14

y = – 14 / 3. 5

We get,

y = – 4

Therefore, the value of y for – 3.5y = 14 is – 4

(iii) – 5z = 4

z = – 4 / 5

We get,

z = – 0.8

Therefore, the value of z for – 5z = 4 is – 0.8

(iv) – 5 = a + 3

– 5 – 3 = a

On calculating, we get

a = – 8

Therefore, the value of a for – 5 = a + 3 is – 8

(v) 2 = p + 5

2 – 5 = p

We get,

p = – 3

Therefore, the value of p for 2 = p + 5 is – 3

**6. Solve:**

**(i) 2x + 5 = 17**

**(ii) 3y – 2 = 1**

**(iii) 5p + 4 = 29**

**(iv) 4a – 3 = – 27**

**(v) 2z + 3 = – 19**

**Solution:**

(i) 2x + 5 = 17

2x = 17 – 5

2x = 12

x = 12 / 2

We get,

$x = 6$

Therefore, the value of $x = 6$

(ii) $3y - 2 = 1$

$3y = 1 + 2$

$3y = 3$

$y = 3 / 3$

We get,

$y = 1$

Therefore, the value of $y = 1$

(iii) $5p + 4 = 29$

$5p = 29 - 4$

$5p = 25$

$p = 25 / 5$

We get,

$p = 5$

Therefore, the value of $p = 5$

(iv) $4a - 3 = -27$

$4a = -27 + 3$

$4a = -24$

$a = -24 / 4$

We get,

$a = -6$

Therefore, the value of a = – 6

(v) 2z + 3 = – 19

2z = – 19 – 3

2z = – 22

z = – 22 / 2

We get,

z = – 11

Therefore, the value of z = – 11

**7. Solve:**

**(i) x / 3 – 5 = 2**

**(ii) y / 2 – 3 = 8**

**(iii) z / 7 + 1 = 2 (1 / 2)**

**(iv) a / 2.4 – 5 = 2.4**

**(v) b / 1.6 + 3 = – 2.5**

**Solution:**

(i) x / 3 – 5 = 2

x / 3 = 2 + 5

x / 3 = 7

x = 7 × 3

We get,

x = 21

Hence, the value of x = 21

(ii) y / 2 – 3 = 8

y / 2 = 8 + 3

y / 2 = 11

y = 11 × 2

We get,

y = 22

Hence, the value of y = 22

(iii) z / 7 + 1 = 2 (1 / 2)

This can be written as,

z / 7 + 1 = 5 / 2

z / 7 = 5 / 2 – 1

z / 7 = (5 – 2) / 2

We get,

z / 7 = 3 / 2

z = (3 / 2) × 7

On calculating, we get

z = 21 / 2

z = $10\frac{1}{2}$

Hence, the value of z = $10\frac{1}{2}$

(iv) a / 2.4 – 5 = 2.4

a / 2.4 = 2.4 + 5

a / 2.4 = 7.4

a = 7.4 × 2.4

We get,

a = 17.76

Hence, the value of a = 17.76

(v) b / 1.6 + 3 = – 2.5

b / 1.6 = – 2.5 – 3

b / 1.6 = -5.5

b = – 5.5 × 1.6

We get,

b = – 8.8

Hence, the value of b = – 8.8

**8. Solve:**

**(i) – 8m – 2 = – 10**

**(ii) 4x + 2x = 3 + 5**

**(iii) 4x – x + 5 = 8**

**(iv) 6x + 2 = 2x + 10**

**(v) 18 – (2a – 12) = 8a**

**Solution:**

(i) – 8m – 2 = – 10

– 8m = – 10 + 2

– 8m = – 8

m = – 8 / – 8

We get,

m = 1

Therefore, the value of m = 1

(ii) 4x + 2x = 3 + 5

6x = 8

x = 8 / 6

We get,

x = 4 / 3

x = $1\frac{1}{3}$

Therefore, the value of x = $1\frac{1}{3}$

(iii) 4x – x + 5 = 8

3x = 8 – 5

3x = 3

x = 3 / 3

We get,

x = 1

Therefore, the value of x = 1

(iv) 6x + 2 = 2x + 10

6x – 2x = 10 – 2

On further calculation, we get

4x = 8

x = 8 /4

x = 2

Therefore, the value of x = 2

(v) 18 – (2a – 12) = 8a

18 – 2a + 12 = 8a

30 = 8a + 2a

30 = 10a

a = 30 / 10

We get,

a = 3

Therefore, the value of a = 3