RS Aggarwal Solutions for Class 6 Maths Chapter 9 – Linear Equations in One Variable

Exercise 9A

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1.

Solution

(i) Let required number be x

5 times a number = 5x

∴ 5 times a number equals 40 can be written as 5x = 40

(ii) Let the number be x

A number increased by 8 = x + 8

∴ A number increased by 8 equals 15 can be written as x + 8 = 15

(iii) Let the number be x

25 exceeds a number = 25 – x

∴ 25 exceeds a number by 7 can be written as 25 – x = 7

(iv) Let the required number be x

A number exceeds 5 = x – 5

∴ A number exceeds 5 by 3 can be written as x – 5 = 3

(v) Let the required number be x

Thrice a number = 3x

5 subtracted from thrice a number = 3x – 5

∴ 5 subtracted from thrice a number is 16 can be written as 3x – 5 = 16

(vi) Let the number be x

12 subtracted from a number = x – 12

∴ If 12 is subtracted from a number, the result is 24 can be written as x – 12 = 24

(vii) Let the number be x

Twice a number = 2x

Twice a number subtracted from 19 = 19 – 2x

∴ Twice a number subtracted from 19 is 11 can be written as 19 – 2x = 11

(viii) Let the number be x

A number divided by 8 = x / 8

∴ A number divided by 8 gives 7 can be written as x / 8 = 7

(ix) Let he number be x

4 times a number = 4x

3 less than 4 times a number = 4x – 3

∴ 3 less than 4 times a number is 17 can be written as 4x – 3 = 17

(x) Let the number be x

6 times a number = 6x

5 more than the number = x + 5

∴ 6 times a number is 5 more than the number can be written as 6x = x + 5

2.

Solutions

(i) The statement of equation x – 7 = 14 can be written as 7 less from the number x is 14

(ii) The statement of equation 2y = 18 can be written as twice a number y is 18

(iii) The statement of equation 11 + 3x = 17 can be written as 11 increased by thrice a number x is 17

(iv) The statement of equation 2x – 3 = 13 can be written as 3 less from twice the number x is 13

(v) The statement of equation 12y – 30 = 6 can be written as 12 times the number y decreased by 30 is 6

(vi) The statement of equation 2z / 3 = 8 can be written as twice the number z divided by 3 is 8

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Exercise 9B

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1.

Solution

Given x + 5 = 12

Subtracting -5 from both sides

x + 5 – 5 = 12 – 5

x = 7

Check

Substituting x = 7 in equation x + 5 = 12

We get

7 + 5 = 12

12 = 12

LHS = RHS

∴ LHS = RHS, when x = 7

2.

Solution

Given

x + 3 = – 2

Subtracting -3 from both sides

x + 3 – 3 = -2 – 3

x = -5

Check

Substituting x = -5 in equation x + 3 = – 2

We get,

x + 3 = -2

-5 + 3 = -2

-2 = -2

LHS = RHS

∴ LHS = RHS, when x = -5

3.

Solution

Given

$x - 7 = 6$

Adding 7 to both sides

$x - 7 + 7 = 6 + 7$

$x = 13$

Check

Substituting $x = 13$ in equation $x - 7 = 6$

We get,

$x - 7 = 6$

$13 - 7 = 6$

$6 = 6$

LHS = RHS

$\therefore$ LHS = RHS, when $x = 13$

4.

Solution

Given

$x - 2 = -5$

Adding 2 to both side

$x - 2 + 2 = -5 + 2$

$x = -3$

Check

Substituting $x = -3$ in equation $x - 2 = -5$

We get,

$x - 2 = -5$

$-3 - 2 = -5$

$-5 = -5$

LHS = RHS

$\therefore$ LHS = RHS, when $x = -3$

5.

Solution

Given

$3x - 5 = 13$

Adding 5 to both sides

3x – 5 + 5 = 13 + 5

3x = 18

x = 18 / 3

x = 6

Check

Substituting x = 6 in equation 3x – 5 = 13

We get,

3x – 5 = 13

3 (6) – 5 = 13

3 × 6 – 5 = 13

18 – 5 = 13

13 = 13

LHS = RHS

∴ LHS = RHS, when x = 6

6.

Solution

Given

4x + 7 = 15

Subtracting 7 from both sides

4x + 7 – 7 = 15 – 7

4x = 8

x = 8 / 4

x = 2

Check

Substituting x = 2 in equation 4x + 7 = 15

We get,

4x + 7 = 15

4 (2) + 7 = 15

4 × 2 + 7 = 15

8 + 7 = 15

15 = 15

LHS = RHS

∴ LHS = RHS, when x = 2

7.

Solution

Given

x / 5 = 12

Multiplying both sides by 5

x / 5 × 5 = 12 × 5

x = 60

Check

Substitute x = 60 in equation x / 5 = 12

60 / 5 = 12

12 = 12

LHS = RHS

∴ LHS = RHS, when x = 60

8.

Solution

Given

3x / 5 = 15

Multiplying both sides by 5

3x / 5 × 5 = 15 × 5

3x = 75

x = 75 / 3

x = 25

Check

Substitute x = 25 in equation 3x / 5 = 15

3x / 5 = 15

3 × 25 / 5 = 15

3 × 5 = 15

15 = 15

LHS = RHS

∴ LHS = RHS, when x = 25

9.

Solution

Given

5x – 3 = x + 17

Transposing x to LHS and -3 to RHS

5x – x = 17 + 3

4x = 20

x = 20 / 4

x = 5

Check

Substituting x = 5 in equation 5x – 3 = x + 17

5x -3 = x + 17

5 (5) – 3 = 5 + 17

5 × 5 – 3 = 22

25 – 3 = 22

22 = 22

LHS = RHS

∴ LHS = RHS, when x = 5

10.

Solution

Given

2x – 1 / 2 = 3

Adding 1 / 2 to both sides

2x – 1 / 2 + 1 / 2 = 3 + 1 / 2

2x – 0 = (6 +1) / 2 [By taking LCM]

2x = 7 / 2

Dividing both sides by 2

2x / 2 = 7 / 2 × 2

x = 7 / 4

Check

Substituting x = 7 / 4 in equation 2x – 1 / 2 = 3

2x – 1 / 2 = 3

2 (7 / 4) – 1 / 2 = 3

2 × 7 / 4 – 1 / 2 = 3

7 / 2 – 1 / 2 = 3

(7 – 1) / 2 = 3

6 / 2 = 3

3 = 3

LHS = RHS

∴ LHS = RHS, when x = 7 / 4

11.

Solution

Given

3(x + 6) = 24

3x + 18 = 24 [removing parentheses]

Subtracting 18 from both sides

3x + 18 – 18 = 24 – 18

3x = 6

x = 6 / 3

x = 2

Check

Substituting x = 2 in equation 3(x + 6) = 24

3(x + 6) = 24

3(2 + 6) = 24

3 (8) = 24

3 × 8 = 24

24 = 24

LHS = RHS

∴ LHS = RHS, when x = 2

12.

Solution

Given

6x + 5 = 2x + 17

Transposing 2x to LHS and 5 to RHS

6x – 2x = 17 – 5

4x = 12

x = 12 / 4

x = 3

Check

Substituting x = 3 in equation 6x + 5 = 2x + 17

LHS = 6x + 5

= 6 (3) + 5

= 6 × 3 + 5

= 18 + 5

= 23

RHS = 2x + 17

= 2 (3) + 17

= 2 × 3 + 17

= 6 + 17

= 23

LHS = RHS

∴ LHS = RHS, when x = 3

13.

Solution

Given

x / 4 – 8 = 1

Adding 8 to both sides

x / 4 – 8 + 8 = 1 + 8

x / 4 = 9

Multiplying both sides by 4

x / 4 × 4 = 9 × 4

x = 36

Check

Substituting x = 36 in equation x / 4 – 8 = 1

x / 4 – 8 = 1

36 / 4 – 8 = 1

9 – 8 = 1

1 = 1

LHS = RHS

∴ LHS = RHS, when x = 36

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Exercise 9C

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1.

Solution

Let the number be x

9 added to a number = x + 9

Given

x + 9 = 36

x = 36 – 9

x = 27

∴ The number when added to 9 gives 36 is 27

2.

Solution

Let the number be x

4 times a number = 4x

Given

4x – 11 = 89

4x = 89 + 11

4x = 100

x = 100 / 4

x = 25

3.

Solution

Let the number be x

Multiplied by 5 = 5x

According to the question

5x = x + 80

5x – x = 80

4x = 80

x = 80 / 4

x = 20

∴ A number which when multiplied by 5 is increased by 80 is 20

4.

Solution

Let the three consecutive natural numbers be x, (x + 1), and (x + 2)

Given

x + (x + 1) + (x + 2) = 114

x + x + 1 + x + 2 = 114

3x + 3 = 114 [subtracting 3 from both sides]

3x + 3 – 3 = 114 – 3

3x = 111

Dividing both sides by 3

3x / 3 = 111/3

x = 111 / 3

x = 37

x + 1 = 37 + 1

= 38

x + 2 = 37 + 2

= 39

The three consecutive natural numbers are 37, 38 and 39

5.

Solution

Let the number be x

When multiplied by 17 becomes 17x

Given

17x + 4 = 225

Subtracting 4 from both sides

17x + 4 – 4 = 225 – 4

17x = 221

Divide both sides by 17

17x / 17 = 221 / 17

x = 221 / 17

x =13

∴ The number is 13 when Raju multiplies by 17 and adds to the product, he gets 225

6.

Solution

Let x be the number

According to the question, the number is tripled and increased by 5 we get 50

3x + 5 = 50

Subtracting -5 from both sides

3x + 5 – 5 = 50 – 5

3x = 45

Divide 3 from both sides

3x / 3 = 45 / 3

x = 15

∴ 15 is the number when it is tripled and increased by 5 results in 50

7.

Solution

Let one of the number be x

Exceeds the other by 18 = x + 18

According to the question

x + (x + 18) = 92

2x + 18 = 92

Subtracting -18 from both sides

2x + 18 – 18 = 92 – 18

2x = 74

Dividing both sides by 2

x = 74 / 2

x = 37

x = 37

(x + 18) = 37 + 18

= 55

∴ The two numbers are 37 and 55

8.

Solution

Let one number be x

According to the question

x + 3x = 124

4x = 124

Dividing both sides by 4

$4x / 4 = 124 / 4$

$x = 31$

$x = 31$ and $3x = 3 \times 31$

$= 93$

∴ Required numbers are 31 and 93

9.

Solution

Let one number be x

The other number is 5x

According to the question

$5x – x = 132$

$4x = 132$

Dividing both sides by 4

$4x / 4 = 132 / 4$

$x = 33$

$x = 33$ and $5x = 5 (33)$

$= 5 \times 33$

$= 165$

∴ required two numbers are 33 and 165

10.

Solution

Let one of the even number be x

The other consecutive even number (be x + 2)

As per the question

$x + (x + 2) = 74$

$2x + 2 = 74$

Subtracting -2 from both sides

$2x + 2 – 2 = 74 – 2$

$2x = 72$

Dividing 2 from both sides

$2x / 2 = 72 / 2$

$x = 36$

x = 36 and (x + 2) = 36 + 2

= 38

∴ 36 and 38 are the two consecutive even number

11.

Solution

Let one of the required odd number be x

The other two consecutive odd numbers be (x + 2) and (x + 4)

As per the question

x + (x + 2) + (x + 4) = 21

2x + 2 + x + 4 = 21

2x + x + 2 + 4 = 21

3x + 6 = 21

Subtracting both sides by -6

3x + 6 – 6 = 21 – 6

3x = 15

Dividing both sides by 3

3x / 3 = 15 / 3

x = 5

x + 2 = 5 + 2 = 7

x + 4 = 5 + 4 = 9

∴ 5, 7 and 9 are the three consecutive odd numbers

12.

Solution

Let x years be the present age of Ajay

Reena is 6 years older than Ajay shows (x + 6) years

According to the question

x + (x + 6) = 28

2x + 6 = 28

Subtracting -6 from both sides

2x + 6 – 6 = 28 – 6

2x = 22

Dividing both sides by 2

2x / 2 = 22 / 2

x = 11

x = 11 years and (x + 6) = 11 + 6 = 17 years

∴ Present age of Ajay is 11 years and Reena's age is 17 years