Chapter – 4
Simple Equations
Exercise 4.3

1. Solve the following equations.

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

(b) $5t + 28 = 10$

(c) $\dfrac{a}{5} + 3 = 2$

(d) $\dfrac{q}{4} + 7 = 5$

(e) $\dfrac{5}{2}x = -10$

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

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

(h) $6z + 10 = -2$

(i) $\dfrac{3t}{2} = \dfrac{2}{3}$

(j) $\dfrac{2b}{3} = 5 - 3$

Answer:

The parts of the given question are solved below:

(a) We have,

$2y + \dfrac{5}{2} = \dfrac{37}{2}$

Now,

In order to solve the given equation for y,

We will follow the following steps:

$2y + \dfrac{5}{2} - \dfrac{5}{2} = \dfrac{37}{2} - \dfrac{5}{2}$

$2y = \dfrac{32}{2}$

2y = 16

Now,

Dividing both sides by 2, we get:

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

y = 8

(b) We have,

5t + 28 = 10

Now,

In order to solve the given equation for t,

We will follow the following steps:

5t + 28 – 28 = 10 – 28

5t = - 18

Now,

Dividing both sides by 5, we get:

$$\frac{5t}{5} = -\frac{18}{5}$$

$$t = -\frac{18}{5}$$

(c) We have,

$$\frac{a}{5} + 3 = 2$$

Now,

In order to solve the given equation for a,

We will follow the following steps:

$$\frac{a}{5} + 3 - 3 = 2 - 3$$

$$\frac{a}{5} = -1$$

Now,

Multiplying both sides by 5, we get:

$\frac{a}{5} \times 5 = -1 \times 5$

Therefore,

a = -5

(d) We have,

$\frac{q}{4} + 7 = 5$

Now,

In order to solve the given equation for q,

We will follow the following steps:

$\frac{q}{4} + 7 - 7 = 5 - 7$

$\frac{q}{4} = -2$

$\frac{q}{4} = -2$

Now,

Multiplying both sides by 4, we get:

$\frac{q}{4} = -2 \times 4$

q = -8

(e) We have,

$\frac{5}{2}x = -10$

Now,

In order to solve the given equation for x,

We will follow the following steps:

$\frac{5}{2}x = -10$

Now,

Multiplying both sides by $\frac{2}{5}$, we get:

$$\frac{5x}{2} \times \frac{2}{5} = -10 \times \frac{2}{5}$$

x = -4

(f) We have,

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

Now,

In order to solve the given equation for x,

We will follow the following steps:

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

Now,

Dividing both sides by $\frac{2}{5}$, we get:

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

Therefore,

$$x = \frac{5}{2}$$

(g) We have,

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

Now,

In order to solve the given equation for m,

We will follow the following steps:

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

Now,

Dividing both sides by 7, we get:

$$\frac{7m}{7} = \frac{7}{2 \times 7}$$

$$m = \frac{1}{2}$$

(h) We have,

$$6z + 10 = -2$$

Now,

In order to solve the given equation for z,

We will follow the following steps:

6z + 10 − 10 = -2 − 10

6z = -12

Now,

Dividing both sides by 6, we get:

$$\frac{6z}{6} = -\frac{12}{6}$$

Therefore,

z = -2

(i) We have,

$$\frac{3t}{2} = \frac{2}{3}$$

Now,

In order to solve the given equation for t,

We will follow the following steps:

$$\frac{3t}{2} = \frac{2}{3}$$

Now,

Multiplying both sides by $\frac{2}{3}$, we get:

$$\frac{3t}{2} \times \frac{2}{3} = \frac{2}{3} \times \frac{2}{3}$$

Therefore, $t = \dfrac{4}{9}$

(j) We have,

$\dfrac{2b}{3} - 5 = 3$

Now,

In order to solve the given equation for y,

We will follow the following steps:

$\dfrac{2b}{3} - 5 + 5 = 3 + 5$

$\dfrac{2b}{3} = 8$

Now,

Multiplying both sides by $\dfrac{3}{2}$, we get:

$\dfrac{2b}{3} \times \dfrac{3}{2} = 8 \times \dfrac{3}{2}$

b = 12

2. Solve the following equations:
    (a) $2(x + 4) = 12$
    (b) $3(n - 5) = 21$
    (c) $3(n - 5) = -21$
    (d) $-4(2 + x) = 8$
    (e) $4(2 - x) = 8$

Answer:

The parts of the given questions are solved below:

(a) Here,

We have to solve the given equation for x.

Therefore,

We have,

$2(x + 4) = 12$

Dividing both sides by 2 we get,

$(x + 4) = \dfrac{12}{2}$

$(x + 4) = 6$

Transpose 4 to right hand side

$\Rightarrow x = 6 - 4$

$\Rightarrow x = 2$

(b) Here,

We have to solve the given equation for n.

Therefore,

We have,

$3(n - 5) = 21$

Dividing both sides by 3, we get:

$(n - 5) = \dfrac{21}{3}$

$(n - 5) = 7$

Transpose -5 to right hand side

$\Rightarrow n = 7 + 5$

$\Rightarrow n = 12$

(c) Here,

We have to solve the given equation for n.

Therefore,

We have,

$3(n - 5) = -21$

Dividing both sides by 3 we get,

$(n - 5) = -\dfrac{21}{3}$

$(n - 5) = -7$

Transpose -5 to right hand side

$n = -7 + 5$

$n = -2$

(d) Here,

We have to solve the given equation for x.

Therefore,

We have,

$-4(2 + x) = 8$

Dividing both sides by -4 we get,

$(2 + x) = \dfrac{8}{-4}$

$(2 + x) = -2$

Transpose 2 to right hand side

$x = -2 - 2$

$x = -4$

(e) Here,

We have to solve the given equation for x.

Therefore,

We have,

$4(2 - x) = 8$

Dividing both sides by 4 we get,

$(2 - x) = \dfrac{8}{4}$

$(2 - x) = 2$

Transpose 2 to right hand side

-x = 2 − 2

-x = 0

x = 0

3. Solve the following equations:
    (a) $4 = 5(p - 2)$
    (b) $- 4 = 5(p - 2)$
    (c) $16 = 4 + 3(t + 2)$
    (d) $4 + 5(p - 1) = 34$
    (e) $0 = 16 + 4(m - 6)$

Answer:

The parts of the given question are solved below:

(a) We have to solve the given equation for p.

Therefore,

We have,

$4 = 5(p - 2)$

Multiply 5 with both terms on RHS, 4 = 5p − 10 Add 10 on the both sides of equation 4 + 10 = 5p − 10 + 1014 = 5p

$p = \dfrac{14}{5}$

(b) We have to solve the given equation for p.

Therefore,

We have,

$- 4 = 5(p - 2)$

Multiply 5 with both terms on RHS, - 4 = 5p − 10 Add 10 on the both sides of equation - 4 + 10 = 5p − 10 + 106 = 5p

Dividing both sides by 5 we get,

$p = \frac{6}{5}$

(c) We have to solve the given equation for t.

Therefore,

We have,

$16 = 4 + 3(t + 2)$

$16 - 4 = 3(t + 2)$

$12 = 3(t + 2)$

Dividing both sides by 3, we get,

$\frac{12}{3} = (t + 2)$

$4 = t + 2$ Subtract 2 on both sides $4 - 2 = t + 2 - 2$

$t = 2$

(d) We have to solve the given equation for p.

Therefore,

We have,

$4 + 5(p - 1) = 34$

$4 + 5(p - 1) = 34$

$5(p - 1) = 34 - 4$

$5(p - 1) = 30$

Dividing both sides by 5, we get,

$p - 1 = \frac{30}{5}$

$p - 1 = 6$

$p = 6 + 1$

$p = 7$

(e) We have to solve the given equation for m

Therefore,

We have,

$0 = 16 + 4(m - 6)$

$-16 = 4(m - 6)$

Dividing both sides by 4, we get,

$\frac{-16}{4} = (m - 6)$

$-4 = m - 6$

$-4 + 6 = m$

$m = 2$

4.

(A) Construct 3 equations starting with x = 2.

Answer:

The parts of the given question are solved below:

Here,

We have to frame three equations starting with x = 2

We have,

$x = 2$

Now,

Multiplying both sides by 5, we get:

$5x = 10 \ (i)$

Now,

Subtracting 3 from both sides, we get:

$5x - 3 = 10 - 3$

$5x - 3 = 7 \ (ii)$

Now,

Dividing both sides by 4, we get:

$\frac{5x}{4} - \frac{3}{4} = \frac{7}{4}$ (iii)

Hence,

(i), (ii) and (iii) are the required equations.

   (B)   Construct 3 equations starting with x = - 2.

Answer:

The parts of the given question are solved below:

Here,

We have to frame three equations starting with x = -2

We have,

x = -2

Now,

Multiplying both sides by 5, we get:

5x = -10 (i)

Now,

Subtracting 3 from both sides, we get:

5x – 3 = -10 – 3

5x – 3 = -13 (ii)

Now,

Dividing both sides by 4, we get:

$\frac{5x}{4} - \frac{3}{4} = -\frac{13}{4}$ (iii)

Hence,

(i), (ii) and (iii) are the required equations.