

Equations

Ex 1

① $x = 8$

② $x = 10$

③ $x = 13$

④ $x = 3$

⑤ $x = 19$

⑥ $x = 6$

⑦ $x = 4$

⑧ $x = 1$

⑨ $x = 8$

⑩ $x = -2$

⑪ $x = -3$

⑫ $x = -5$

⑬ $y = 2$

⑭ $y = -2$

⑮ $y = 10$

⑯ $y = -5$

⑰ $y = 1$

⑱ $y = -10$

⑲ $x = 5$

⑳ $x = 2$

㉑ $x = 16$

㉒ $a = -8$

㉓ $a = 4$

㉔ $a = -6$

㉕ $x = 12$

㉖ $x = 9$

㉗ $x = 18$

㉘ $x = 4$

㉙ $x = 17$

㉚ $x = -5$

㉛ $x = 6$

㉜ $x = -7$

㉝ $x = 4$

㉞ $x = 8$

㉟ $y = 17$

㊱ $y = -5$

㊲ $x = 5$

㊳ $x = 12$

㊴ $x = 11$

㊵ $x = 19$

㊶ $x = -6$

㊷ $x = 23$

㊸ $x = 7$

㊹ $x = 12$

㊺ $x = -16$

㊻ $x = 1$

㊼ $x = 5$

㊽ $x = -12$

㊾ $x = 5$

㊿ $y = 3$

Ex 2

① $x = 3$

② $x = 6$

③ $x = 7$

④ $x = 6$

⑤ $x = 8$

⑥ $x = 9$

⑦ $x = 9$

⑧ $x = 10$

⑨ $x = 30$

⑩ $x = 5$

⑪ $x = 100$

⑫ $x = 12$

⑬ $x = \frac{2}{5}$

⑭ $x = \frac{5}{7}$

⑮ $x = \frac{3}{8}$

⑯ $x = \frac{1}{4}$

⑰ $x = \frac{1}{2}$

⑱ $x = \frac{5}{9}$

⑲ $x = \frac{5}{3}$

⑳ $x = \frac{7}{4}$

㉑ $x = 1\frac{2}{3}$

㉒ $x = 1\frac{3}{4}$

㉓ $x = \frac{7}{3}$

㉔ $x = \frac{9}{2}$

㉕ $x = \frac{10}{3}$

㉖ $x = \frac{11}{5}$

$x = 2\frac{1}{3}$

$x = 4\frac{1}{2}$

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

$x = 2\frac{1}{5}$

㉗ $x = -\frac{4}{5}$

㉘ $x = -4$

㉙ $x = -2$

㉚ $x = -9$

㉛ $x = -\frac{2}{3}$

㉜ $x = -\frac{1}{12}$

㉝ $x = -\frac{10}{7}$

㉞ $x = \frac{1}{5}$

$x = -1\frac{3}{7}$

㉟ $x = -\frac{19}{4}$

㊱ $x = -1$

㊲ $x = -1$

㊳ $x = -4$

$x = -4\frac{3}{4}$

㊴ $x = 2$

㊵ $x = 5$

㊶ $y = 4$

㊷ $a = 8$

㊸ $a = \frac{6}{5}$

㊹ $z = \frac{15}{2}$

㊺ $y = -4$

㊻ $x = -\frac{7}{2}$

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

$z = 7\frac{1}{2}$

$x = -3\frac{1}{2}$

㊼ $m = -3$

㊽ $n = -3$

㊾ $x = 10$

㊿ $y = 10$

$$(49) a = -5$$

$$(50) x = \frac{1}{2}$$

● Ex 3

$$(1) 2x = 6 \\ x = 3$$

$$(2) 3x = 6 \\ x = 2$$

$$(3) 4x = 8 \\ x = 2$$

$$(4) 3x = 18 \\ x = 6$$

$$(5) 5x = 10 \\ x = 2$$

$$(6) 7x = 28 \\ x = 4$$

$$(7) 2x = 6 \\ x = 3$$

$$(8) 3x = 12 \\ x = 4$$

$$(9) 4x = 3 \\ x = \frac{3}{4}$$

$$(10) 5x = 6 \\ x = \frac{6}{5}$$

$$(11) 5x = 13 \\ x = \frac{13}{5}$$

$$(12) 3x = 1 \\ x = \frac{1}{3}$$

$$(13) 2y = 1 \\ y = \frac{1}{2}$$

$$(14) 3y = 3 \\ y = 1$$

$$(15) 2y = -1 \\ y = -\frac{1}{2}$$

$$(16) 3y = -3 \\ y = -1$$

$$(17) 4y = 0 \\ y = 0$$

$$(18) 3y = 2 \\ y = \frac{2}{3}$$

$$(19) 5a = 4 \\ a = \frac{4}{5}$$

$$(20) 7a = -4 \\ a = -\frac{4}{7}$$

$$(21) 9a = 7 \\ a = \frac{7}{9}$$

$$(22) 10a = 3 \\ a = \frac{3}{10}$$

$$(23) 5n = 14 \\ n = \frac{14}{5}$$

$$(24) 6n = -5 \\ n = -\frac{5}{6}$$

$$(25) 3x = -7 \\ x = -\frac{7}{3}$$

$$(26) 8x = 12 \\ x = \frac{12}{8} \\ x = \frac{3}{2}$$

$$(27) 4t = -10 \\ t = -\frac{10}{4} \\ t = -\frac{5}{2}$$

$$(28) 3x = -6 \\ x = -2$$

$$(29) 2x = 8 \\ x = 4$$

$$(30) 4x = 13 \\ x = \frac{13}{4}$$

$$(31) 8x = 5 \\ x = \frac{5}{8}$$

$$(32) 5x = -6 \\ x = -\frac{6}{5}$$

$$\begin{aligned} (33) \quad 7x &= -1 \\ x &= -\frac{1}{7} \end{aligned}$$

$$\begin{aligned} (34) \quad 5x &= -8 \\ x &= -\frac{8}{5} \end{aligned}$$

$$\begin{aligned} (35) \quad 3x &= -9 \\ x &= -3 \end{aligned}$$

$$\begin{aligned} (36) \quad 3x &= -6 \\ x &= -2 \end{aligned}$$

$$\begin{aligned} (37) \quad 2x &= 7 \\ x &= \frac{7}{2} \end{aligned}$$

$$\begin{aligned} (38) \quad 3x &= 6 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} (39) \quad 4x &= 12 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} (40) \quad 5x &= 5 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} (41) \quad 3x &= 1 \\ x &= \frac{1}{3} \end{aligned}$$

$$\begin{aligned} (42) \quad 3x &= -6 \\ x &= -2 \end{aligned}$$

$$\begin{aligned} (43) \quad 3x &= 10 \\ x &= \frac{10}{3} \end{aligned}$$

$$\begin{aligned} (44) \quad 2x &= -3 \\ x &= -\frac{3}{2} \end{aligned}$$

$$\begin{aligned} (45) \quad 10x &= 1 \\ x &= \frac{1}{10} \end{aligned}$$

$$\begin{aligned} (46) \quad 11x &= -2 \\ x &= -\frac{2}{11} \end{aligned}$$

$$\begin{aligned} (47) \quad 6x &= 24 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} (48) \quad 3x &= 0 \\ x &= 0 \end{aligned}$$

$$\begin{aligned} (49) \quad 3x &= 15 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} (50) \quad 4x &= 24 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} (51) \quad 2x &= 4 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} (52) \quad 5x &= 4 \\ x &= \frac{4}{5} \end{aligned}$$

$$\begin{aligned} (53) \quad 3x &= 7 \\ x &= \frac{7}{3} \end{aligned}$$

$$\begin{aligned} (54) \quad 2x &= 15 \\ x &= \frac{15}{2} \end{aligned}$$

$$\begin{aligned} (55) \quad 6x &= 11 \\ x &= \frac{11}{6} \end{aligned}$$

$$\begin{aligned} (56) \quad 7x &= 0 \\ x &= 0 \end{aligned}$$

$$\begin{aligned} (57) \quad 3x &= 12 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} (58) \quad 5x &= 15 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} (59) \quad 4y &= 16 \\ y &= 4 \end{aligned}$$

$$\begin{aligned} (60) \quad 2y &= 10 \\ y &= 5 \end{aligned}$$

$$\begin{aligned} (61) \quad 8z &= 16 \\ z &= 2 \end{aligned}$$

$$\begin{aligned} (62) \quad 6a &= 18 \\ a &= 3 \end{aligned}$$

$$\begin{aligned} (63) \quad 7b &= 28 \\ b &= 4 \end{aligned}$$

$$\begin{aligned} (64) \quad 5c &= 25 \\ c &= 5 \end{aligned}$$

$$\begin{aligned} (65) \quad 9m &= 36 \\ m &= 4 \end{aligned}$$

$$\begin{aligned} (66) \quad 8n &= 48 \\ n &= 6 \end{aligned}$$

$$\begin{aligned} (67) \quad 6x &= 6 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} (68) \quad 3y &= 21 \\ y &= 7 \end{aligned}$$

$$\begin{aligned} (69) \quad 8t &= 32 \\ t &= 4 \end{aligned}$$

$$\begin{aligned} (70) \quad 3z &= 9 \\ z &= 3 \end{aligned}$$

$$\begin{aligned} (71) \quad 4a &= 8 \\ a &= 2 \end{aligned}$$

$$\begin{aligned} (72) \quad 5b &= 25 \\ b &= 5 \end{aligned}$$

$$\begin{aligned} (73) \quad 7c &= 49 \\ c &= 7 \end{aligned}$$

$$\begin{aligned} (74) \quad 9d &= 18 \\ d &= 2 \end{aligned}$$

$$\begin{aligned} (75) \quad 12p &= 72 \\ p &= 6 \end{aligned}$$

$$\begin{aligned} (76) \quad 11q &= 44 \\ q &= 4 \end{aligned}$$

$$\begin{aligned} (77) \quad 3x &= 21 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} (78) \quad 4x &= 12 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} (79) \quad 6y &= 6 \\ y &= 1 \end{aligned}$$

$$\begin{aligned} (80) \quad 7y &= 14 \\ y &= 2 \end{aligned}$$

$$\begin{aligned} (81) \quad 6z &= 18 \\ z &= 3 \end{aligned}$$

$$\begin{aligned} (82) \quad 2t &= 18 \\ t &= 9 \end{aligned}$$

$$\begin{aligned} (83) \quad 3a &= 21 \\ a &= 7 \end{aligned}$$

$$\begin{aligned} (84) \quad 5b &= 25 \\ b &= 5 \end{aligned}$$

$$\begin{aligned} (85) \quad 4c &= 24 \\ c &= 6 \end{aligned}$$

$$\begin{aligned} (86) \quad 8d &= 24 \\ d &= 3 \end{aligned}$$

$$\begin{aligned} (87) \quad 5m &= 25 \\ m &= 5 \end{aligned}$$

$$\begin{aligned} (88) \quad 7n &= 35 \\ n &= 5 \end{aligned}$$

$$\begin{aligned} (89) \quad 9p &= 36 \\ p &= 4 \end{aligned}$$

$$\begin{aligned} (90) \quad 6q &= 54 \\ q &= 9 \end{aligned}$$

$$\begin{aligned} (91) \quad 8x &= 32 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} (92) \quad 7x &= 35 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} (93) \quad 6y &= 36 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} (94) \quad 9y &= 54 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} (95) \quad 12z &= 36 \\ z &= 3 \end{aligned}$$

$$\begin{aligned} (96) \quad 11t &= 55 \\ t &= 5 \end{aligned}$$

$$\begin{aligned} (97) \quad 9x &= 5 \\ x &= \frac{5}{9} \end{aligned}$$

$$\begin{aligned} (98) \quad 11x &= 11 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} (99) \quad 15y &= 3 \\ y &= \frac{3}{15} \\ y &= \frac{1}{5} \end{aligned}$$

$$\begin{aligned} (100) \quad 7y &= 2 \\ y &= \frac{2}{7} \end{aligned}$$

Equations Ex 5

①

$$\begin{aligned} 1) \quad 2x - 2 &= 4 \\ 2x &= 6 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 2) \quad 3x + 3 &= 9 \\ 3x &= 6 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 3) \quad 4x - 8 &= 8 \\ 4x &= 16 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 4) \quad 5x - 15 &= 10 \\ 5x &= 25 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} 5) \quad 6x - 3 &= 9 \\ 6x &= 12 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 6) \quad 6x + 6 &= 12 \\ 6x &= 6 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} 7) \quad 15x - 10 &= 15 \\ 15x &= 25 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} 8) \quad 6x - 10 &= 8 \\ 6x &= 18 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 9) \quad 10x - 20 &= 8 \\ 10x &= 28 \\ x &= \frac{28}{10} = \frac{14}{5} \end{aligned}$$

$$\begin{aligned} 10) \quad 12x + 3 &= 15 \\ 12x &= 12 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} 11) \quad 7x - 21 &= 10 - x \\ 8x &= 31 \\ x &= \frac{31}{8} \end{aligned}$$

$$\begin{aligned} 12) \quad 2x + 2 &= x + 5 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 3) \quad 5x + 10 &= 2x + 16 \\ 3x &= 6 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 14) \quad 7x + 21 &= 5x + 29 \\ 2x &= 8 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 15) \quad 4y + 4 &= y + 13 \\ 3y &= 9 \\ y &= 3 \end{aligned}$$

$$\begin{aligned} 16) \quad 8z - 16 &= 3z + 9 \\ 5z &= 25 \\ z &= 5 \end{aligned}$$

$$\begin{aligned} 17) \quad 6t - 18 &= 2t + 10 \\ 4t &= 28 \\ t &= 7 \end{aligned}$$

$$\begin{aligned} 18) \quad 9u - 9 &= 8u + 3 \\ u &= 12 \end{aligned}$$

(2)

19) $5v - 20 = 2v - 5$ 20) $7m - 14 = 5m - 4$

$$3v = 15$$
$$v = 5$$

$$2m = 10$$
$$m = 5$$

21) $4n - 20 = n - 2$

$$3n = 18$$
$$n = 6$$

22) $3a - 6 = 9 - 2a$

$$5a = 15$$
$$a = 3$$

23) $8x + 16 = 3x + 21$

$$5x = 5$$
$$x = 1$$

24) $4x - 8 = 2x + 2$

$$2x = 10$$
$$x = 5$$

25) $9z + 9 = 5z + 25$

$$4z = 16$$
$$z = 4$$

26) $5x - 15 = 3x + 6$

$$2x = 21$$
$$x = \frac{21}{2}$$

27) $7u - 21 = 3u + 15$

$$4u = 36$$
$$u = 9$$

28) $3x + 6 = 2x - 2$

$$x = -8$$

29) $9p - 27 = 7p - 7$

$$2p = 20$$
$$p = 10$$

30) $5x - 15 = 2x - 14$

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

Progressing onto NS - Equations

Ex 6

1) $3(x+2) + 2(x+1) = 23$

$$3x + 6 + 2x + 2 = 23$$

$$5x + 8 = 23$$

$$5x = 15$$

$$x = 3$$

2) $5(a+2) - 2(a+3) = 19$

$$5a + 10 - 2a - 6 = 19$$

$$3a + 4 = 19$$

$$3a = 15$$

$$a = 5$$

3) $4(x+3) + 3(x+2) = 32$

$$4x + 12 + 3x + 6 = 32$$

$$7x + 18 = 32$$

$$7x = 14$$

$$x = 2$$

4) $8(b+3) - 4(b+4) = 12$

$$8b + 24 - 4b - 16 = 12$$

$$4b + 8 = 12$$

$$4b = 4$$

$$b = 1$$

5) $5(y+1) + 3(y+4) = 25$

$$5y + 5 + 3y + 12 = 25$$

$$8y + 17 = 25$$

$$8y = 8$$

$$y = 1$$

6) $4(c+2) - 2(c+5) = 14$

$$4c + 8 - 2c - 10 = 14$$

$$2c - 2 = 14$$

$$2c = 16$$

$$c = 8$$

7) $3(z+4) + 2(z-3) = 26$

$$3z + 12 + 2z - 6 = 26$$

$$5z + 6 = 26$$

$$5z = 20$$

$$z = 4$$

8) $5(t-1) - 3(t+2) = 1$

$$5t - 5 - 3t - 6 = 1$$

$$2t - 11 = 1$$

$$2t = 12$$

$$t = 6$$

Progressing Onto NS - Equations

Ex 6 contd

$$9) 5(t+2) + 3(t-1) = 31$$

$$5t + 10 + 3t - 3 = 31$$

$$8t + 7 = 31$$

$$8t = 24$$

$$t = 3$$

$$10) 6(u-2) - 2(u+4) = 8$$

$$6u - 12 - 2u - 8 = 8$$

$$4u - 20 = 8$$

$$4u = 28$$

$$u = 7$$

$$11) 5x - 2(x-2) = 6 - 2x$$

$$5x - 2x + 4 = 6 - 2x$$

$$3x + 4 = 6$$

$$3x = 2$$

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

$$12) 3(x-1) = 2(x+1) - 2$$

$$3x - 3 = 2x + 2 - 2$$

$$3x - 3 = 2x$$

$$x = 3$$

$$13) 3(x+1) + 2(x+2) = 10$$

$$3x + 3 + 2x + 4 = 10$$

$$5x + 7 = 10$$

$$5x = 3$$

$$x = \frac{3}{5}$$

$$14) 4(2x-1) = 3(x+1) - 2$$

$$8x - 4 = 3x + 3 - 2$$

$$8x - 4 = 3x + 1$$

$$5x = 5$$

$$x = 1$$

$$15) 4(x+3) + 2(x-1) = 4$$

$$4x + 12 + 2x - 2 = 4$$

$$6x + 10 = 4$$

$$6x = -6$$

$$x = -1$$

$$16) 5 + 2(x+1) = 5(x-1)$$

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

$$2x + 7 = 5x - 5$$

$$3x = 12$$

$$x = 4$$

Progressing Onto NS - Equations

Exb Contd

$$\begin{aligned} 17) \quad 3(x-2) - 2(x+1) &= 5 \\ 3x - 6 - 2x - 2 &= 5 \\ x - 8 &= 5 \\ x &= 13 \end{aligned}$$

$$\begin{aligned} 18) \quad 6 + 3(x+2) &= 2(x+5) + 4 \\ 6 + 3x + 6 &= 2x + 10 + 4 \\ 3x + 12 &= 2x + 14 \\ x &= -2 \end{aligned}$$

$$\begin{aligned} 19) \quad 5(x-3) + 3(x+2) &= 7x \\ 5x - 15 + 3x + 6 &= 7x \\ 8x - 9 &= 7x \\ x &= 9 \end{aligned}$$

$$\begin{aligned} 20) \quad 5(x+1) &= 2x + 3 + x \\ 5x + 5 &= 3x + 3 \\ 2x &= -2 \\ x &= -1 \end{aligned}$$

$$\begin{aligned} 21) \quad 3(2x+1) - 2(2x+1) &= 10 \\ 6x + 3 - 4x - 2 &= 10 \\ 2x + 1 &= 10 \\ 2x &= 9 \\ x &= \frac{9}{2} / 4\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 22) \quad 4(2x-2) &= 5x - 17 \\ 8x - 8 &= 5x - 17 \\ 3x &= -9 \\ x &= -3 \end{aligned}$$

$$\begin{aligned} 23) \quad 4(3x-1) - 3(3x+2) &= 0 \\ 12x - 4 - 9x - 6 &= 0 \\ 3x - 10 &= 0 \\ 3x &= 10 \\ x &= \frac{10}{3} \end{aligned}$$

$$\begin{aligned} 24) \quad x + 2(x+4) &= -4 \\ x + 2x + 8 &= -4 \\ 3x + 8 &= -4 \\ 3x &= -12 \\ x &= -4 \end{aligned}$$

Progressing Onto NS - Equations

Ex 6 contd.

25) $7 - (2 - 3x) = 17$

$$7 - 2 + 3x = 17$$

$$3x + 5 = 17$$

$$3x = 12$$

$$x = 4$$

26) $3(t+4) - 1 = 3 - (4t-1)$

$$3t + 12 - 1 = 3 - 4t + 1$$

$$3t + 11 = 4 - 4t$$

$$7t = -7$$

$$t = -1$$

27) $5(6+y) - 10 = 9 - (2y+3)$ 28) $3 - (2d - 5) = -(5d + 1)$

$$30 + 5y - 10 = 9 - 2y - 3$$

$$5y + 20 = 6 - 2y$$

$$7y = -14$$

$$y = -2$$

$$3 - 2d + 5 = -5d - 1$$

$$8 - 2d = -5d - 1$$

$$3d = -9$$

$$d = -3$$

29) $4(1-3y) = 7 - (4y-5)$ 30) $5p - (1-2p) = 9 - (p-8)$

$$4 - 12y = 7 - 4y + 5$$

$$4 - 12y = 12 - 4y$$

$$8y = -8$$

$$y = -1$$

$$5p - 1 + 2p = 9 - p + 8$$

$$7p - 1 = 17 - p$$

$$8p = 18$$

$$p = \frac{18}{8}$$

$$p = \frac{9}{4} \text{ or } 2\frac{1}{4}$$