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# Linear Equation

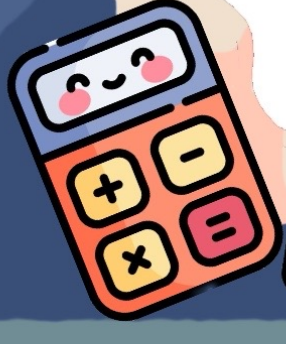
$$x + 2 = 5$$
$$x = 5 - 2$$
$$x = 3$$

$$2x + 7 = 15$$
$$2x = 15 - 7$$
$$2x = 8$$
$$x = \frac{8}{2}$$
$$x = 4$$

$$x - 3 = 4$$
$$x = 4 + 3$$
$$x = 7$$

$$4x = 20$$
$$x = \frac{20}{4}$$
$$x = 5$$

$$\frac{x}{3} = 6$$
$$x = 6 \times 3$$
$$x = 18$$



## Question 1

Solve the equations.

(a) $7 - 3n = 11n + 2$ [2]

$7 - 2 = 11n + 3n$

$5 = 14n$

$n = \frac{5}{14}$

(b) $\frac{p - 3}{5} = 3$ [2]

$p - 3 = 15$

$p = 18$

## Question 2

Solve.

$2 - x = 5x + 1$ [2]

$2 - 1 = 5x + x$

$1 = 6x$

$x = \frac{1}{6}$

## Question 3

Solve the equation.

$6(k - 8) = 78$ [2]

$6k - 48 = 78$

$6k = 78 + 48$

$6k = 126$

$k = 21$

## Question 4

Make $a$ the subject of the formula $s = ut + \frac{1}{2}at^2$. [3]

$s = ut + \frac{1}{2}at^2$

$s - ut = \frac{1}{2}at^2$

$2(s - ut) = at^2$

$a = \frac{2(s - ut)}{t^2}$

$a = \frac{2s - 2ut}{t^2}$

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## Question 5

Solve.

$5(w + 4 \times 10^3) = 6 \times 10^4$ [2]

$5(w + 4 \times 10^3) - 6 \times 10^4 = 0$

$5(w + 4000) - 60000 = 0$

$5w + 20\,000 - 60000 = 0$

$5w - 40000 = 0$

$5w = 40\,000$

$w = 8000$

$w = 8 \times 10^3$

## Question 6

Solve the equation.

$3(x + 4) = 2(4x - 1)$ [3]

$3x + 12 = 8x - 2$

$12 + 2 = 8x - 3x$

$14 = 5x$

$\frac{14}{5} = x$

## Question 7

Solve the equation.

$\frac{x + 5}{x} = \frac{7}{3}$ [3]

$3(x + 5) = 7x$

$3x + 15 = 7x$

$15 = 7x - 3x$

$15 = 4x$

$\frac{15}{4} = x$

## Question 8

Solve the equation.

$\frac{2x + 5}{3} = 8$ [3]

$2x + 5 = 24$

$2x = 19$

$x = \frac{19}{2}$

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## Question 1

Solve the equation. $\frac{n-8}{2} = 11$ [2]

$n - 8 = 22$

$n = 30$

## Question 2

Solve the equation. $5 - 2x = 3x - 19$ [2]

$5 + 19 = 3x + 2x$

$24 = 5x$

$\frac{24}{5} = x$

## Question 3

Solve the equation $1 + 2x = -15$. [2]

$2x = -15 - 1$

$2x = -16$

$x = -8$

## Question 4

Solve the equation. $5(2y - 17) = 60$ [3]

$10y - 85 = 60$

$10y = 60 + 85$

$10y = 145$

$y = 14.5$

## Question 5

Solve the equation $4x - 12 = 2(11 - 3x)$. [3]

$4x - 12 = 22 - 6x$

$4x + 6x = 22 + 12$

$10x = 34$

$x = 3.4$

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## Question 6

The cost of a cup of tea is $t$ cents.

The cost of a cup of coffee is $(t + 5)$ cents.

The total cost of 7 cups of tea and 11 cups of coffee is 2215 cents.

Find the cost of one cup of tea. [3]

$7t + 11(t+5) = 2215$

$7t + 11t + 55 = 2215$

$18t = 2215 - 55$

$18t = 2160$

$t = 120$

one cup of tea ($t$) = 120¢

## Question 7

Solve the equation $3(y - 4) + \frac{y}{2} = 9$. [3]

$(3y - 12) + \frac{y}{2} = 9$

$6y - 24 + y = 18$

$7y = 18 + 24$

$7y = 42$

$y = 6$

## Question 8

Solve the equation

$$\frac{x-2}{4} = \frac{2x+5}{3}.$$ [3]

$3x - 6 = 8x + 20$

$3x - 8x = 20 + 6$

$-5x = 26$

$x = -\frac{26}{5}$

## Question 9

Solve the equation

$$\frac{3x-2}{5} = 8.$$ [2]

$3x - 2 = 40$

$3x = 42$

$x = 14$

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**1.** (a) Solve $2y = 8$

$y = 4$

$y =$ ..... 4 .....

**(1)**

(b) Solve $t - 4 = 7$

$t = 11$

$t =$ ..... 11 .....

**(1)**

(c) Solve $\frac{x}{4} = 3$

$x = 12$

$x =$ ..... 12 .....

**(1)**

**(3 marks)**

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**2.** (a) Solve $\frac{y}{3} = 6$

$y = 18$

$y =$ ..... 18 .....

**(1)**

(b) Solve $7y = 54$

$y = \frac{54}{7}$

$y =$ ..... $\frac{54}{7}$ .....

**(1)**

(c) Solve $2t - 5 = 9$

$2t = 14$

$t = 7$

$t =$ ..... 7 .....

**(2)**

**(4 marks)**

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**3.** (a) Solve $4w = 20$

$w = 5$

$w =$ ..... 5 .....

**(1)**

(b) Solve $x - 6 = 3$

$x = 9$

$x =$ ..... 9 .....

**(1)**

(c) Solve $\frac{y}{3} = 7$

$y = 21$

$y =$ ..... 21 .....

**(1)**

**(3 marks)**

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**4.** (a) Solve $3x = 12$

$x = 4$

$x =$ ..... 4 .....

**(1)**

(b) Solve $y - 7 = 5$

$y = 12$

$y =$ ..... 12 .....

**(1)**

(c) Solve $2t + 8 = 3$

$2t = -5$

$t = -\frac{5}{2}$

$t =$ ..... $-\frac{5}{2}$ .....

**(2)**

(d) Solve $\frac{2y}{5} = 4$

$2y = 20$

$y = 10$

$y =$ ..... 10 .....

**(2)**

**(3 marks)**

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**5.** (a) Solve $6g = 18$

$g = 3$

$g =$ 3

**(1)**

(b) Solve $y + 5 = 12$

$y = 7$

$y =$ 7

**(1)**

(c) Solve $\frac{x}{4} = 3$

$x = 12$

$x =$ 12

**(1)**

(d) Solve $5h + 7 = 17$

$5h = 10$

$h = 2$

$h =$ 2

**(2)**

**(5 marks)**

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**6.** (a) Solve $b - 7 = 12$

$b = 19$

$b =$ 19

**(1)**

(b) Solve $5e = 40$

$e = 8$

$e =$ 8

**(1)**

(c) Solve $4m + 6 = 15$

$4m = 9$

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

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

**(2)**

(d) Solve $5w - 6 = 10$

$5w = 16$

$w = \frac{16}{5}$

$w =$ $\frac{16}{5}$

**(2)**

**(6 marks)**

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**7.** (a) Solve $4x + 1 = 9$

$4x = 8$

$x = 2$

$x =$ 2

**(2)**

(b) Solve $2x - 5 = 4$

$2x = 9$

$x = \frac{9}{2}$

$x =$ $\frac{9}{2}$

**(2)**

(c) Solve $2y - 1 = 12$

$2y = 13$

$y = \frac{13}{2}$

$y =$ $\frac{13}{2}$

**(2)**

**(6 marks)**

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**8.** (a) Solve $4x + 1 = 19$

$4x = 18$

$x = \frac{18}{4}$

$= \frac{9}{2}$

$x =$ $\frac{9}{2}$

**(2)**

(b) Solve $4x + 3 = 19$

$4x = 16$

$x = 4$

$x =$ 4

**(2)**

(c) Solve $2q + 7 = 1$

$2q = -6$

$q = -3$

$q =$ $-3$

**(2)**

**(6 marks)**

**9.** (a) Solve $x + x + x = 15$

$3x = 15$

$x = 5$

$x =$ 5

**(2)**

(b) Solve $6x - 7 = 38$

$6x = 45$

$x = \frac{45}{6}$

$= \frac{15}{2}$

$x =$ $\frac{15}{2}$

**(2)**

(c) Solve $7x + 18 = 74$

$7x = 56$

$x = 8$

$x =$ 8

**(2)**

**(6 marks)**

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**10.** (a) Solve $2y + 3 = 8$

$2y = 5$

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

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

**(2)**

(b) Solve $5(t - 3) = 25$

$5t - 15 = 25$

$5t = 40$

$t = 8$

$t =$ 8

**(2)**

(c) Solve $4(5y - 2) = 48$

$20y - 8 = 48$

$20y = 56$

$y = \frac{56}{20}$

$= \frac{14}{5}$

$y =$ $\frac{14}{5}$

**(2)**

**(6 marks)**

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**11.** Solve $13x + 1 = 11x + 9$

$13x - 11x = 9 - 1$

$2x = 8$

$x = 4$

$x =$ 4

**(3 marks)**

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**12.** Solve $5t - 4 = 3t + 6$

$2t = 10$

$t = 5$

$t =$ 5

**(3 marks)**

---

**13.** Solve $4y + 3 = 2y + 8$

$2y = 5$

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

**(3 marks)**

---

**14.** Solve $5y + 1 = 3y + 13$

$2y = 12$

$y = 6$

$y =$ 6

**(3 marks)**

---

**15.** Solve $3y + 10 = 5y + 3$

$-2y = -7$

$y = \frac{7}{2}$

$y =$ $\frac{7}{2}$

**(3 marks)**

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**16.** Solve $2y + 17 = 6y + 5$

$-4y = -12$

$y = 3$

$y =$ 3

**(3 marks)**

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