



Equations with Unknowns on Both Sides

REVISE THIS
TOPIC

1 Solve $6x + 10 = 2x + 18$ [3 marks]

$$\begin{aligned} -2x \quad & 6x + 10 = 2x + 18 \quad -2x \\ & 4x + 10 = 18 \quad -10 \\ & 4x = 8 \quad \div 4 \\ & x = 2 \end{aligned}$$

$x =$ 2

2 Solve $5y + 5 = 2y + 20$ [3 marks]

$$\begin{aligned} -2y \quad & 5y + 5 = 2y + 20 \quad -2y \\ & 3y + 5 = 20 \quad -5 \\ & 3y = 15 \quad \div 3 \\ & y = 5 \end{aligned}$$

$y =$ 5

3 Solve $7w - 1 = 4w + 20$ [3 marks]

$$\begin{aligned} -4w \quad & 7w - 1 = 4w + 20 \quad -4w \\ & 3w - 1 = 20 \quad +1 \\ & 3w = 21 \quad \div 3 \\ & w = 7 \end{aligned}$$

$w =$ 7





4 Solve $9a - 4 = 5a + 32$ [3 marks]

$$\begin{aligned} -5a \quad & 9a - 4 = 5a + 32 \quad -5a \\ +4 \quad & 4a - 4 = 32 \quad +4 \\ & 4a = 36 \\ & 9 \\ a = & \end{aligned}$$

5 Solve $4b - 3 = 3b + 27$ [3 marks]

$$\begin{aligned} -3b \quad & 4b - 3 = 3b + 27 \quad -3b \\ +3 \quad & b - 3 = 27 \quad +3 \\ & b = 30 \\ b = & 30 \end{aligned}$$

6 Solve $10c + 1 = 3c + 8$ [3 marks]

$$\begin{aligned} -3c \quad & 10c + 1 = 3c + 8 \quad -3c \\ -1 \quad & 7c + 1 = 8 \quad -1 \\ & 7c = 7 \\ & 1 \\ c = & \end{aligned}$$

7 Solve $5d + 15 = 2d + 9$ [3 marks]

$$\begin{aligned} -2d \quad & 5d + 15 = 2d + 9 \quad -2d \\ -15 \quad & 3d + 15 = 9 \quad -15 \\ & 3d = -6 \\ & -2 \\ d = & \end{aligned}$$





8 Solve $5g + 17 = 3g + 7$ [3 marks]

$$\begin{aligned} -3g \quad & 5g + 17 = 3g + 7 \quad -3g \\ -17 \quad & 2g + 17 = 7 \quad -17 \\ & 2g = -10 \\ & -5 \\ g = & \end{aligned}$$

9 Solve $6h - 18 = 3h - 3$ [3 marks]

$$\begin{aligned} -3h \quad & 6h - 18 = 3h - 3 \quad -3h \\ +18 \quad & 3h - 18 = -3 \quad +18 \\ & 3h = 15 \\ & 5 \\ h = & \end{aligned}$$

10 Solve $5p - 34 = 2p - 4$ [3 marks]

$$\begin{aligned} -2p \quad & 5p - 34 = 2p - 4 \quad -2p \\ +34 \quad & 3p - 34 = -4 \quad +34 \\ & 3p = 30 \\ & 10 \\ p = & \end{aligned}$$

11 Solve $5k + 20 = 8k - 7$ [3 marks]

$$\begin{aligned} -5k \quad & 8k - 7 = 5k + 20 \quad -5k \\ +7 \quad & 3k - 7 = 20 \quad +7 \\ & 3k = 27 \\ & 9 \\ k = & \end{aligned}$$



Turn over ►



12

Solve $3r + 30 = 7r + 6$

[3 marks]

$$\begin{aligned} -3r \quad & 7r + 6 = 3r + 30 \quad -3r \\ -6 \quad & 4r + 6 = 30 \quad -6 \\ & 4r = 24 \\ & 6 \\ r = & \end{aligned}$$

13

Solve $2m - 30 = 9m - 2$

[3 marks]

$$\begin{aligned} -2m \quad & 9m - 2 = 2m - 30 \quad -2m \\ +2 \quad & 7m - 2 = -30 \quad +2 \\ & 7m = -28 \\ & -4 \\ m = & \end{aligned}$$

14

Solve $3n + 4 = 24 - 2n$

[3 marks]

$$\begin{aligned} +2n \quad & 3n + 4 = 24 - 2n \quad +2n \\ -4 \quad & 5n + 4 = 24 \quad -4 \\ & 5n = 20 \\ & 4 \\ n = & \end{aligned}$$

15

Solve $4t - 8 = 40 - 4t$

[3 marks]

$$\begin{aligned} +4t \quad & 4t - 8 = 40 - 4t \quad +4t \\ +8 \quad & 8t - 8 = 40 \quad +8 \\ & 8t = 48 \\ & 6 \\ t = & \end{aligned}$$





16

Solve $x + 7 = 5x - 3$

[3 marks]

$$\begin{aligned} -x \quad & 5x - 3 = x + 7 \quad -x \\ +3 \quad & 4x - 3 = 7 \quad +3 \\ & 4x = 10 \end{aligned}$$

$$x = 2.5$$

17

Solve $4(y + 3) = 2(y + 10)$

[3 marks]

$$\begin{aligned} -2y \quad & 4y + 12 = 2y + 20 \quad -2y \\ -12 \quad & 2y + 12 = 20 \quad -12 \\ & 2y = 8 \end{aligned}$$

$$y = 4$$

18

Solve $5(a - 5) = 2(a + 1)$

[3 marks]

$$\begin{aligned} -2a \quad & 5a - 25 = 2a + 2 \quad -2a \\ +25 \quad & 3a - 25 = 2 \quad +25 \\ & 3a = 27 \end{aligned}$$

$$a = 9$$

19

Solve $2(b + 5) = 7(b + 10)$

[3 marks]

$$\begin{aligned} -2b \quad & 7b + 70 = 2b + 10 \quad -2b \\ -70 \quad & 5b + 70 = 10 \quad -70 \\ & 5b = -60 \end{aligned}$$

$$b = -12$$

