

Equations and Inequalities 2
Algebra 2

Key

Solve, check, and graph the following equations.

1) $-53 = -6x - 11$

$$\begin{array}{r} +11 \quad +11 \\ -42 = -6x \\ -6 \quad -6 \end{array}$$

$$\boxed{7 = x}$$

$$\begin{aligned} \checkmark -53 &= -6(7) - 11 \\ -53 &= -42 - 11 \\ -53 &= -53 \checkmark \end{aligned}$$



0 7

2) $17 - \frac{t}{5} = 23$

$$t = -30$$

3) $-v + 9 = -24$

$$v = 33$$

4) $19 = -9w + 8w$

$$\begin{array}{r} 19 = -w \\ -1 \quad -1 \end{array}$$

$$\boxed{-19 = w}$$

$$\begin{aligned} \checkmark 19 &= -9(-19) + 8(-19) \\ 19 &= 171 - 152 \\ 19 &= 19 \checkmark \end{aligned}$$



-19 0

5) $-14v + 5v = -54$

$$v = 6$$

6) $27 = -7y + 4y$

$$y = -9$$

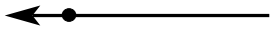
7) $5 + 12x - 7x - 16 = -51$

$$5x - 11 = -51$$

$$\begin{array}{r} +11 \quad +11 \\ 5x = -40 \\ 5 \quad 5 \end{array}$$

$$\boxed{x = -8}$$

$$\begin{aligned} \checkmark 5 + 12(-8) - 7(-8) - 16 &= -51 \\ 5 - 96 + 56 - 16 &= -51 \\ -91 + 40 &= -51 \\ -51 &= -51 \checkmark \end{aligned}$$



-8 0

8) $41 = 9c + 10 - 2c + 17$

$$c = 2$$

9) $-6n - 8 + 2n + 11 = 39$

$$n = -9$$

10) $\frac{-7(-9 - 4x)}{-7} = \frac{147}{-7}$

$$-9 - 4x = -21$$

$$\begin{array}{r} +9 \quad +9 \\ -4x = -12 \\ -4 \quad -4 \end{array}$$

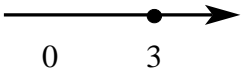
$$\boxed{x = 3}$$

11) $130 = -10(7 + 4x)$

$$x = -5$$

12) $-12w + 6 = -6(4 + 3w)$

$$w = -5$$

$$\begin{aligned} \checkmark -7(-9 - 4(3)) &= 147 \\ -7(-9 - 12) &= 147 \\ -7(-21) &= 147 \\ 147 &= 147 \checkmark \end{aligned}$$


Solve, check, and graph the following inequalities.

13) $11 + q \leq -4$

14) $5t \leq 60$

15) $15 - 6z \geq 57$

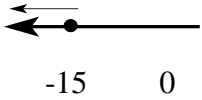
16) $48 < 3x + 5x$

$$\begin{aligned} &\frac{-11}{\quad} \quad \frac{-11}{\quad} \\ \checkmark 11 + (-20) &\leq -4 \\ -9 &\leq -4 \checkmark \end{aligned}$$

$$t \leq 12$$

$$z \leq 7$$

$$6 < x$$

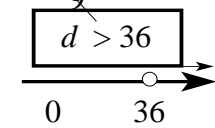


17) $\frac{d}{9} + 4 > 8$

18) $x + 11x < -108$

19) $\frac{k}{-4} - 6 \leq -4$

20) $9b + 12 - 7b > 30$

$$\begin{aligned} &\frac{-4}{\quad} \quad \frac{-4}{\quad} \\ \checkmark \frac{d}{9} &> (4) \cdot 9 \\ d &> 36 \end{aligned}$$


$$x < -9$$

$$k \geq -8$$

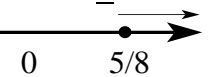
$$b > 9$$

21) $-5x - 3x \leq -5$

22) $-7x + 6 < 13x - 2$

23) $5x + 3x + 18 \leq 24$

24) $8q + 14 \geq -22 + 15q - q$

$$\begin{aligned} &\frac{-8x}{\quad} \leq \frac{-5}{\quad} \\ \checkmark -5(1) - 3(1) &\leq -5 \\ -5 - 3 &\leq -5 \\ -8 &\leq -5 \checkmark \end{aligned}$$


$$2/5 < x$$

$$x \leq 3/4$$

$$6 \geq q$$