

Solving Equations 12
Geometry

Solve, check, and graph the following equations.

1) $36 = 6z - 15z$

$$\begin{array}{r} 36 = -9z \\ -9 \quad -9 \\ \hline -4 = z \end{array}$$

$$\begin{aligned} 36 &= 6(-4) - 15(-4) \\ 36 &= -24 + 60 \\ 36 &= 36 \end{aligned}$$



4) $33 = 12x + 8 - 15x - 14$

$$\begin{array}{r} 33 = -3x - 6 \\ +6 \quad +6 \\ \hline 39 = -3x \\ -3 = -3 \\ \hline -13 = x \end{array}$$

2) $-70 = 12x - 19x$

$$\begin{array}{r} -70 = -7x \\ -7 \quad -7 \\ \hline 10 = x \end{array}$$

$$\begin{aligned} -70 &= 12(10) - 19(10) \\ -70 &= 120 - 190 \\ -70 &= -70 \end{aligned}$$



5) $-63 + 12f = 5f$

$$\begin{array}{r} -63 + 12f = 5f \\ -12f \quad -12f \\ \hline -63 = -7f \\ -7 \quad -7 \\ \hline 9 = f \end{array}$$

$$\begin{aligned} -63 + 12(9) &= 5(9) \\ -63 + 108 &= 45 \\ 45 &= 45 \end{aligned}$$



3) $-5 = -22b + 13b - 23$

$$\begin{array}{r} -5 = -9b - 23 \\ +23 \quad +23 \\ \hline 18 = -9b \\ -2 = b \end{array}$$

6) $5x + 18 = 14x$

$$\begin{array}{r} 5x + 18 = 14x \\ -5x \quad -5x \\ \hline 18 = 9x \\ 9 \quad 9 \\ \hline 2 = x \end{array}$$

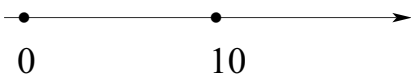
$$\begin{aligned} 5(2) + 18 &= 14(2) \\ 10 + 18 &= 28 \\ 28 &= 28 \end{aligned}$$



7) $163 + 6k = 53 + 17k$

$$\begin{array}{r} 163 + 6k = 53 + 17k \\ -53 \quad -6k \quad -53 \quad -6k \\ \hline 110 = 11k \\ /11 \quad /11 \\ \hline 10 = k \end{array}$$

$$\begin{aligned} 163 + 6(10) &= 53 + 17(10) \\ 163 + 60 &= 53 + 170 \\ 223 &= 223 \end{aligned}$$



8) $2(2x + 6) = 20$

$$\begin{array}{r} 2(2x + 6) = 20 \\ 4x + 12 = 20 \\ -12 \quad -12 \\ \hline 4x = 8 \\ /4 \quad /4 \\ \hline x = 2 \end{array}$$

$$\begin{aligned} 2(2(2) + 6) &= 20 \\ 2(4 + 6) &= 20 \\ 2(10) &= 20 \\ 20 &= 20 \end{aligned}$$

9) $102 = 6(3n + 2)$

$$\begin{array}{r} 102 = 6(3n + 2) \\ 102 = 18n + 12 \\ -12 \quad -12 \\ \hline 90 = 18n \\ /18 \quad /18 \\ \hline 5 = n \end{array}$$

$$\begin{aligned} 102 &= 6(3(5) + 2) \\ 102 &= 6(15 + 2) \\ 102 &= 6(17) \\ 102 &= 102 \end{aligned}$$

10) $-8(-2t + 5) = 24$

$$\begin{array}{r} -8(-2t + 5) = 24 \\ 16t - 40 = 24 \\ +40 \quad +40 \\ \hline 16t = 64 \\ /16 \quad /16 \\ \hline t = 4 \end{array}$$

11) $3(5v + 8) = 16v + 22$

$$\begin{array}{r} 3(5v + 8) = 16v + 22 \\ 15v + 24 = 16v + 22 \\ -15v \quad -22 \quad -15v \quad -22 \\ \hline 2 = v \end{array}$$

$$3(5(2) + 8) = 16(2) + 22$$

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

$$\begin{array}{r} -12w + 6 = -6(4 + 3w) \\ -12w + 6 = -24 - 18w \\ +12w \quad 24 \quad +24 \quad +12w \\ \hline 30 = -6w \\ /-6 \quad /-6 \\ \hline -5 = w \end{array}$$

$$-8(-2(4) + 5) = 24$$

$$-8(-8 + 5) = 24$$

$$-8(-3) = 24$$

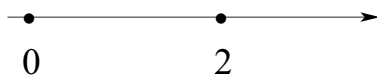
$$24 = 24$$



$$3(10+8) = 32 + 22$$

$$3(18) = 54$$

$$54 = 54$$



$$-12(-5) + 6 = -6(4 + 3(-5))$$

$$60 + 6 = -6(4-15)$$

$$66 = -6(-11)$$

$$66 = 66$$

