

Solving 2-Step Equations - Set 1

TSE 1

Instructions: Solve each equation.

$$\begin{aligned} 1 \quad 4x + 7 &= 15 \\ &\quad -7 \quad -7 \\ \hline 4x &= 8 \\ \hline x &= 2 \end{aligned}$$

$$\begin{aligned} 2 \quad 2x - 4 &= 10 \\ &\quad +4 \quad +4 \\ \hline 2x &= 14 \\ \hline x &= 7 \end{aligned}$$

$$\begin{aligned} 3 \quad 6 + 3x &= 15 \\ &\quad -6 \quad -6 \\ \hline 3x &= 9 \\ \hline x &= 3 \end{aligned}$$

$$\begin{aligned} 4 \quad 25 &= 4 + 7x \\ &\quad -4 \quad -4 \\ \hline 21 &= 7x \\ \hline 3 &= x \quad \text{or} \quad x = 3 \end{aligned}$$

$$\begin{aligned} 5 \quad 41 &= 8x - 23 \\ &\quad +23 \quad +23 \\ \hline 64 &= 8x \\ \hline 8 &= x \quad \text{or} \quad x = 8 \end{aligned}$$

$$\begin{aligned} 6 \quad 5x - 12 &= 18 \\ &\quad +12 \quad +12 \\ \hline 5x &= 30 \\ \hline x &= 6 \end{aligned}$$

$$\begin{aligned} 7 \quad 9x + 7 &= 88 \\ &\quad -7 \quad -7 \\ \hline 9x &= 81 \\ \hline x &= 9 \end{aligned}$$

$$\begin{aligned} 8 \quad 25 &= 3x - 8 \\ &\quad +8 \quad +8 \\ \hline 33 &= 3x \\ \hline 11 &= x \quad \text{or} \quad x = 11 \end{aligned}$$

$$\begin{aligned} 9 \quad 1 + 10x &= 91 \\ &\quad -1 \quad -1 \\ \hline 10x &= 90 \\ \hline x &= 9 \end{aligned}$$

$$\begin{aligned} 10 \quad 16 &= 12 + 4x \\ &\quad -12 \quad -12 \\ \hline 4 &= 4x \\ \hline 1 &= x \quad \text{or} \quad x = 1 \end{aligned}$$

Solving 2-Step Equations - Set 2

TSE 2

Instructions: Solve each equation.

$$\begin{aligned} 1 \quad \frac{x}{4} + 5 &= 12 \\ &\quad -5 \quad -5 \\ (\times) \frac{x}{4} &= 7(4) \\ x &= 28 \end{aligned}$$

$$\begin{aligned} 2 \quad \frac{x}{2} - 3 &= 9 \\ &\quad +3 \quad +3 \\ (\times) \frac{x}{2} &= 12(2) \\ x &= 24 \end{aligned}$$

$$\begin{aligned} 3 \quad \frac{x}{6} + 15 &= 20 \\ &\quad -15 \quad -15 \\ (\times) \frac{x}{6} &= 5(6) \\ x &= 30 \end{aligned}$$

$$\begin{aligned} 4 \quad 35 &= 11 + 6x \\ -11 \quad -11 \\ 24 &= 6x \\ 6 \quad 6 \\ 4 &= x \quad \text{or} \quad x = 4 \end{aligned}$$

$$\begin{aligned} 5 \quad 5x + 20 &= 75 \\ -20 \quad -20 \\ 5x &= 55 \\ 5 \quad 5 \\ x &= 11 \end{aligned}$$

$$\begin{aligned} 6 \quad 8 + \frac{x}{9} &= 14 \\ -8 \quad -8 \\ (\times) \frac{x}{9} &= 6(9) \\ x &= 54 \end{aligned}$$

$$\begin{aligned} 7 \quad 11 &= \frac{x}{2} - 7 \\ +7 \quad +7 \\ (2)18 &= \frac{x}{2}(\times) \\ 36 &= x \quad \text{or} \quad x = 36 \end{aligned}$$

$$\begin{aligned} 8 \quad 4x - 11 &= 5 \\ +11 \quad +11 \\ 4x &= 16 \\ 4 \quad 4 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 9 \quad 21 &= 21 + 7x \\ -21 \quad -21 \\ 0 &= 7x \\ 7 \quad 7 \\ 0 &= x \quad \text{or} \quad x = 0 \end{aligned}$$

$$\begin{aligned} 10 \quad \frac{x}{12} - 9 &= 1 \\ +9 \quad +9 \\ (\times) \frac{x}{12} &= 10(12) \\ x &= 120 \end{aligned}$$

Solving 2-Step Equations (with Groups)

TSE 3

Instructions: Solve each equation.

$$1 \quad \frac{3(x-5)}{3} = \frac{18}{3}$$

$$x - 5 = 6$$

$$+5 \quad +5$$

$$x = 11$$

$$2 \quad \frac{5(x+6)}{5} = \frac{40}{5}$$

$$x + 6 = 8$$

$$-6 \quad -6$$

$$x = 2$$

$$3 \quad \frac{x+9}{2} = 5(2)$$

$$x + 9 = 10$$

$$-9 \quad -9$$

$$x = 1$$

$$4 \quad \frac{x-15}{4} = 3(4)$$

$$x - 15 = 12$$

$$+15 \quad +15$$

$$x = 27$$

$$5 \quad \frac{32}{8} = \frac{8(x+1)}{8}$$

$$4 = x + 1$$

$$-1 \quad -1$$

$$3 = x \quad \text{or} \quad x = 3$$

$$6 \quad \frac{3+x}{7} = 4(7)$$

$$3 + x = 28$$

$$-3 \quad -3$$

$$x = 25$$

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

$$x - 10 = 63$$

$$+10 \quad +10$$

$$x = 73$$

$$8 \quad \frac{6(x-11)}{6} = \frac{42}{6}$$

$$x - 11 = 7$$

$$+11 \quad +11$$

$$x = 18$$

$$9 \quad \frac{10(x+2)}{10} = \frac{70}{10}$$

$$x + 2 = 7$$

$$-2 \quad -2$$

$$x = 5$$

$$10 \quad \frac{x+5}{4} = 14(4)$$

$$x + 5 = 56$$

$$-5 \quad -5$$

$$x = 51$$

Solving "Tricky" 2-Step Equations

TSE 4

Instructions: Some 2-Step Equations are tricky because of the location of the unknown in operations that don't commute (subtraction and division). One way to solve these equations is to do an extra initial step to re-arrange the equation so that it looks like one you already know how to solve.

$$1 \quad (\cancel{x+5}) \frac{12}{\cancel{x+5}} = 2(x+5)$$

$$\frac{12}{2} = \frac{2(x+5)}{2}$$

$$6 = x + 5$$

$$-5 \quad -5$$

$$1 = x \quad \text{or} \quad x = 1$$

$$2 \quad (\cancel{x-4}) \frac{21}{\cancel{x-4}} = 7(x-4)$$

$$\frac{21}{7} = \frac{7(x-4)}{7}$$

$$3 = x - 4$$

$$+4 \quad +4$$

$$7 = x \quad \text{or} \quad x = 7$$

$$3 \quad 11 = 23 - 4x$$

$$+4x \quad +4x$$

$$4x + 11 = 23$$

$$-11 \quad -11$$

$$\frac{4x}{4} = \frac{12}{4}$$

$$x = 3$$

$$4 \quad 27 - 3x = 15$$

$$+3x \quad +3x$$

$$27 = 15 + 3x$$

$$-15 \quad -15$$

$$\frac{12}{3} = \frac{3x}{3}$$

$$4 = x \quad \text{or} \quad x = 4$$

$$5 \quad (\cancel{x-3}) 8 = \frac{24}{\cancel{x-3}} (\cancel{x-3})$$

$$\frac{8(x-3)}{8} = \frac{24}{8}$$

$$x - 3 = 3$$

$$+3 \quad +3$$

$$x = 6$$

$$6 \quad (\cancel{x+6}) 7 = \frac{77}{\cancel{x+6}} (\cancel{x+6})$$

$$\frac{7(x+6)}{7} = \frac{77}{7}$$

$$x + 6 = 11$$

$$-6 \quad -6$$

$$x = 5$$

$$7 \quad 41 - 2x = 9$$

$$+2x \quad +2x$$

$$41 = 9 + 2x$$

$$-9 \quad -9$$

$$\frac{32}{2} = \frac{2x}{2} \quad x = 16$$

$$8 \quad 25 = 80 - 11x$$

$$+11x \quad +11x$$

$$11x + 25 = 80$$

$$-25 \quad -25$$

$$\frac{11x}{11} = \frac{55}{11} \quad x = 5$$

Solving 2-Step Equations (with decimals)

TSE 5

Instructions: Solve each equation. You can use a calculator to do the decimal arithmetic if you'd like to.

$$\begin{array}{r} 1 \quad 1.5 + 2x = 12.5 \\ -1.5 \quad -1.5 \end{array}$$

$$\frac{2x}{2} = \frac{11}{2}$$

$$x = 5.5$$

$$\begin{array}{r} 2 \quad \frac{3.5(x + 0.2) = 7}{\cancel{3.5} \quad 3.5} \end{array}$$

$$\begin{array}{r} x + 0.2 = 2 \\ -0.2 \quad -0.2 \end{array}$$

$$x = 1.8$$

$$3 \quad (\cancel{2}) \frac{x + 6.1}{2} = 3.4(2)$$

$$\begin{array}{r} x + 6.1 = 6.8 \\ -6.1 \quad -6.1 \end{array}$$

$$x = 0.7$$

$$4 \quad (\cancel{2.8}) \frac{x - 3}{2.8} = 1.2(2.8)$$

$$\begin{array}{r} x - 3 = 3.36 \\ +3 \quad +3 \end{array}$$

$$x = 6.36$$

$$5 \quad \frac{4(x - 1.9) = 5.2}{\cancel{4} \quad 4}$$

$$\begin{array}{r} x - 1.9 = 1.3 \\ +1.9 \quad +1.9 \end{array}$$

$$x = 3.2$$

$$6 \quad \frac{x}{1.1} + 3.6 = 4.3$$

$$\begin{array}{r} -3.6 \quad -3.6 \end{array}$$

$$(\cancel{1.1}) \frac{x}{1.1} = 0.7(1.1)$$

$$x = 0.77$$

$$7 \quad (\cancel{9}) \frac{x - 2.5}{9} = 4.5(9)$$

$$\begin{array}{r} x - 2.5 = 40.5 \\ +2.5 \quad +2.5 \end{array}$$

$$x = 43.0$$

$$8 \quad 3x + 1.8 = 7.2$$

$$\begin{array}{r} -1.8 \quad -1.8 \end{array}$$

$$\frac{3x}{3} = \frac{5.4}{3}$$

$$x = 1.8$$

$$9 \quad \frac{x}{0.4} - 2.3 = 7.2$$

$$\begin{array}{r} +2.3 \quad +2.3 \end{array}$$

$$(\cancel{0.4}) \frac{x}{0.4} = 9.5(0.4)$$

$$x = 3.8$$

$$10 \quad (\cancel{3.1}) \frac{x + 1.7}{3.1} = 6(3.1)$$

$$\begin{array}{r} x + 1.7 = 18.6 \\ -1.7 \quad -1.7 \end{array}$$

$$x = 16.9$$

Solving 2-Step Equations (with negative numbers)

TSE 6

Instructions: Solve each equation.

$$\begin{aligned} 1 \quad & -5 + 2x = -17 \\ & +5 \qquad +5 \\ & \underline{2x = -12} \\ & \underline{2} \qquad \underline{2} \\ & x = -6 \end{aligned}$$

$$\begin{aligned} 2 \quad & \underline{-9(x - 9) = 27} \\ & \underline{-9} \qquad \underline{-9} \\ & x - 9 = -3 \\ & +9 \qquad +9 \\ & x = 6 \end{aligned}$$

$$\begin{aligned} 3 \quad & \underline{(-5)\frac{x + (-3)}{-5} = -6(-5)} \\ & x - 3 = 30 \\ & +3 \qquad +3 \\ & x = 33 \end{aligned}$$

$$\begin{aligned} 4 \quad & \underline{(-3)\frac{x + 15}{-3} = -2(-3)} \\ & x + 15 = 6 \\ & -15 \quad -15 \\ & x = -9 \end{aligned}$$

$$\begin{aligned} 5 \quad & \underline{\frac{3(x - 8)}{3} = \frac{-60}{3}} \\ & x - 8 = -20 \\ & +8 \qquad +8 \\ & x = -12 \end{aligned}$$

$$\begin{aligned} 6 \quad & \frac{x}{-2} + 10 = -3 \\ & \underline{-10} \quad \underline{-10} \\ & \underline{(-2)\frac{x}{-2} = -13(-2)} \\ & x = 26 \end{aligned}$$

$$\begin{aligned} 7 \quad & \underline{(-6)\frac{x + 8}{-6} = 2(-6)} \\ & x + 8 = -12 \\ & -8 \qquad -8 \\ & x = -20 \end{aligned}$$

$$\begin{aligned} 8 \quad & -3x - 3 = -15 \\ & +3 \qquad +3 \\ & \underline{-3x = -12} \\ & \underline{-3} \quad \underline{-3} \\ & x = 4 \end{aligned}$$

$$\begin{aligned} 9 \quad & \frac{x}{-9} - 1 = 9 \\ & +1 \quad +1 \\ & \underline{(-9)\frac{x}{-9} = 10(-9)} \\ & x = -90 \end{aligned}$$

$$\begin{aligned} 10 \quad & \underline{(-7)\frac{x - 12}{-7} = 4(-7)} \\ & x - 12 = -28 \\ & +12 \quad +12 \\ & x = -16 \end{aligned}$$