

## Linear Equation 1 Solutions

$$1. \quad 8 \left( \frac{544}{x+53} - 5 \right) + 77 = 101$$

$$8 \left( \frac{544}{x+53} - 5 \right) = 101 - 77$$

$$8 \left( \frac{544}{x+53} - 5 \right) = 24$$

$$\frac{544}{x+53} - 5 = \frac{24}{8}$$

$$\frac{544}{x+53} - 5 = 3$$

$$\frac{544}{x+53} = 3 + 5$$

$$\frac{544}{x+53} = 8$$

$$\frac{544}{8} = x + 53$$

$$68 = x + 53$$

$$68 - 53 = x$$

$$15 = x$$

$$2. \quad \frac{1328}{32 + 6(115 - 5x)} = 4$$

$$\frac{1328}{4} = 32 + 6(115 - 5x)$$

$$332 = 32 + 6(115 - 5x)$$

$$332 - 32 = 6(115 - 5x)$$

$$300 = 6(115 - 5x)$$

$$\frac{300}{6} = 115 - 5x$$

$$50 = 115 - 5x$$

$$5x = 115 - 50$$

$$5x = 65$$

$$x = \frac{65}{5}$$

$$x = 13$$

$$3. \quad 3 \left( 8 \left( \frac{90}{x} - 2 \right) - 30 \right) = 6$$

$$8 \left( \frac{90}{x} - 2 \right) - 30 = \frac{6}{3}$$

$$8 \left( \frac{90}{x} - 2 \right) - 30 = 2$$

$$8 \left( \frac{90}{x} - 2 \right) = 2 + 30$$

$$8 \left( \frac{90}{x} - 2 \right) = 32$$

$$\frac{90}{x} - 2 = \frac{32}{8}$$

$$\frac{90}{x} - 2 = 4$$

$$\frac{90}{x} = 4 + 2$$

$$\frac{90}{x} = 6$$

$$\frac{90}{6} = x$$

$$15 = x$$

$$4. \quad 9 \left( \frac{60}{x-8} - 8 \right) - 15 = 3$$

$$9 \left( \frac{60}{x-8} - 8 \right) = 3 + 15$$

$$9 \left( \frac{60}{x-8} - 8 \right) = 18$$

$$\frac{60}{x-8} - 8 = \frac{18}{9}$$

$$\frac{60}{x-8} - 8 = 2$$

$$\frac{60}{x-8} = 2 + 8$$

$$\frac{60}{x-8} = 10$$

$$\frac{60}{10} = x - 8$$

$$6 = x - 8$$

$$6 + 8 = x$$

$$14 = x$$

$$5. \quad 63 - 8 \left( \frac{44}{x-4} - 2 \right) = 47$$

$$63 - 47 = 8 \left( \frac{44}{x-4} - 2 \right)$$

$$16 = 8 \left( \frac{44}{x-4} - 2 \right)$$

$$\frac{16}{8} = \frac{44}{x-4} - 2$$

$$2 = \frac{44}{x-4} - 2$$

$$2 + 2 = \frac{44}{x-4}$$

$$4 = \frac{44}{x-4}$$

$$x - 4 = \frac{44}{4}$$

$$x - 4 = 11$$

$$x = 11 + 4$$

$$x = 15$$

$$6. \quad 8 \left( \frac{30}{x-9} - 3 \right) - 12 = 12$$

$$8 \left( \frac{30}{x-9} - 3 \right) = 12 + 12$$

$$8 \left( \frac{30}{x-9} - 3 \right) = 24$$

$$\frac{30}{x-9} - 3 = \frac{24}{8}$$

$$\frac{30}{x-9} - 3 = 3$$

$$\frac{30}{x-9} = 3 + 3$$

$$\frac{30}{x-9} = 6$$

$$\frac{30}{6} = x - 9$$

$$5 = x - 9$$

$$5 + 9 = x$$

$$14 = x$$

$$7. \quad 3(95 + 10(16 + 5x)) = 2415$$

$$95 + 10(16 + 5x) = \frac{2415}{3}$$

$$95 + 10(16 + 5x) = 805$$

$$10(16 + 5x) = 805 - 95$$

$$10(16 + 5x) = 710$$

$$16 + 5x = \frac{710}{10}$$

$$16 + 5x = 71$$

$$5x = 71 - 16$$

$$5x = 55$$

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

$$x = 11$$

$$8. \quad \frac{210 - 2(216 - 10x)}{9} = 2$$

$$210 - 2(216 - 10x) = 2 \times 9$$

$$210 - 2(216 - 10x) = 18$$

$$210 - 18 = 2(216 - 10x)$$

$$192 = 2(216 - 10x)$$

$$\frac{192}{2} = 216 - 10x$$

$$96 = 216 - 10x$$

$$10x = 216 - 96$$

$$10x = 120$$

$$x = \frac{120}{10}$$

$$x = 12$$

$$9. \quad 380 - 10(2(x + 16) - 24) = 20$$

$$380 - 20 = 10(2(x + 16) - 24)$$

$$360 = 10(2(x + 16) - 24)$$

$$\frac{360}{10} = 2(x + 16) - 24$$

$$36 = 2(x + 16) - 24$$

$$36 + 24 = 2(x + 16)$$

$$60 = 2(x + 16)$$

$$\frac{60}{2} = x + 16$$

$$30 = x + 16$$

$$30 - 16 = x$$

$$14 = x$$

$$10. \quad 3 \left( 5 \left( 82 - \frac{x}{2} \right) + 88 \right) = 1419$$

$$5 \left( 82 - \frac{x}{2} \right) + 88 = \frac{1419}{3}$$

$$5 \left( 82 - \frac{x}{2} \right) + 88 = 473$$

$$5 \left( 82 - \frac{x}{2} \right) = 473 - 88$$

$$5 \left( 82 - \frac{x}{2} \right) = 385$$

$$82 - \frac{x}{2} = \frac{385}{5}$$

$$82 - \frac{x}{2} = 77$$

$$82 - 77 = \frac{x}{2}$$

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

$$5 \times 2 = x$$

$$10 = x$$

$$11. \quad 2717 - 4(56 + 10(58 + x)) = 13$$

$$2717 - 13 = 4(56 + 10(58 + x))$$

$$2704 = 4(56 + 10(58 + x))$$

$$\frac{2704}{4} = 56 + 10(58 + x)$$

$$676 = 56 + 10(58 + x)$$

$$676 - 56 = 10(58 + x)$$

$$620 = 10(58 + x)$$

$$\frac{620}{10} = 58 + x$$

$$62 = 58 + x$$

$$62 - 58 = x$$

$$4 = x$$

$$12. \quad 6 \left( 2 \left( 43 + \frac{x}{3} \right) + 31 \right) = 750$$

$$2 \left( 43 + \frac{x}{3} \right) + 31 = \frac{750}{6}$$

$$2 \left( 43 + \frac{x}{3} \right) + 31 = 125$$

$$2 \left( 43 + \frac{x}{3} \right) = 125 - 31$$

$$2 \left( 43 + \frac{x}{3} \right) = 94$$

$$43 + \frac{x}{3} = \frac{94}{2}$$

$$43 + \frac{x}{3} = 47$$

$$\frac{x}{3} = 47 - 43$$

$$\frac{x}{3} = 4$$

$$x = 4 \times 3$$

$$x = 12$$

$$13. \quad 35 + 10(62 + 6(x + 84)) = 6115$$

$$10(62 + 6(x + 84)) = 6115 - 35$$

$$10(62 + 6(x + 84)) = 6080$$

$$62 + 6(x + 84) = \frac{6080}{10}$$

$$62 + 6(x + 84) = 608$$

$$6(x + 84) = 608 - 62$$

$$6(x + 84) = 546$$

$$x + 84 = \frac{546}{6}$$

$$x + 84 = 91$$

$$x = 91 - 84$$

$$x = 7$$

$$14. \quad 4 \left( 7 \left( \frac{112}{x} - 5 \right) - 4 \right) = 68$$

$$7 \left( \frac{112}{x} - 5 \right) - 4 = \frac{68}{4}$$

$$7 \left( \frac{112}{x} - 5 \right) - 4 = 17$$

$$7 \left( \frac{112}{x} - 5 \right) = 17 + 4$$

$$7 \left( \frac{112}{x} - 5 \right) = 21$$

$$\frac{112}{x} - 5 = \frac{21}{7}$$

$$\frac{112}{x} - 5 = 3$$

$$\frac{112}{x} = 3 + 5$$

$$\frac{112}{x} = 8$$

$$\frac{112}{8} = x$$

$$14 = x$$

$$15. \quad 3 \left( \frac{693}{112 - 5x} - 5 \right) = 12$$

$$\frac{693}{112 - 5x} - 5 = \frac{12}{3}$$

$$\frac{693}{112 - 5x} - 5 = 4$$

$$\frac{693}{112 - 5x} = 4 + 5$$

$$\frac{693}{112 - 5x} = 9$$

$$\frac{693}{9} = 112 - 5x$$

$$77 = 112 - 5x$$

$$5x = 112 - 77$$

$$5x = 35$$

$$x = \frac{35}{5}$$

$$x = 7$$

$$16. \quad 9 \left( 29 + 5 \left( 53 - \frac{60}{x} \right) \right) = 2421$$

$$29 + 5 \left( 53 - \frac{60}{x} \right) = \frac{2421}{9}$$

$$29 + 5 \left( 53 - \frac{60}{x} \right) = 269$$

$$5 \left( 53 - \frac{60}{x} \right) = 269 - 29$$

$$5 \left( 53 - \frac{60}{x} \right) = 240$$

$$53 - \frac{60}{x} = \frac{240}{5}$$

$$53 - \frac{60}{x} = 48$$

$$53 - 48 = \frac{60}{x}$$

$$5 = \frac{60}{x}$$

$$x = \frac{60}{5}$$

$$x = 12$$



$$17. \quad 9 \left( 3 \left( \frac{20}{x} - 3 \right) + 35 \right) = 369$$

$$3 \left( \frac{20}{x} - 3 \right) + 35 = \frac{369}{9}$$

$$3 \left( \frac{20}{x} - 3 \right) + 35 = 41$$

$$3 \left( \frac{20}{x} - 3 \right) = 41 - 35$$

$$3 \left( \frac{20}{x} - 3 \right) = 6$$

$$\frac{20}{x} - 3 = \frac{6}{3}$$

$$\frac{20}{x} - 3 = 2$$

$$\frac{20}{x} = 2 + 3$$

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

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

$$4 = x$$

$$18. \quad 7 \left( \frac{333}{x + 98} + 47 \right) + 23 = 373$$

$$7 \left( \frac{333}{x + 98} + 47 \right) = 373 - 23$$

$$7 \left( \frac{333}{x + 98} + 47 \right) = 350$$

$$\frac{333}{x + 98} + 47 = \frac{350}{7}$$

$$\frac{333}{x + 98} + 47 = 50$$

$$\frac{333}{x + 98} = 50 - 47$$

$$\frac{333}{x + 98} = 3$$

$$\frac{333}{3} = x + 98$$

$$111 = x + 98$$

$$111 - 98 = x$$

$$13 = x$$

$$19. \quad \frac{490}{3(90-x)+20} + 92 = 94$$

$$\frac{490}{3(90-x)+20} = 94 - 92$$

$$\frac{490}{3(90-x)+20} = 2$$

$$\frac{490}{2} = 3(90-x) + 20$$

$$245 = 3(90-x) + 20$$

$$245 - 20 = 3(90-x)$$

$$225 = 3(90-x)$$

$$\frac{225}{3} = 90 - x$$

$$75 = 90 - x$$

$$x = 90 - 75$$

$$x = 15$$

$$20. \quad 98 + 10 \left( \frac{490}{x+63} - 3 \right) = 138$$

$$10 \left( \frac{490}{x+63} - 3 \right) = 138 - 98$$

$$10 \left( \frac{490}{x+63} - 3 \right) = 40$$

$$\frac{490}{x+63} - 3 = \frac{40}{10}$$

$$\frac{490}{x+63} - 3 = 4$$

$$\frac{490}{x+63} = 4 + 3$$

$$\frac{490}{x+63} = 7$$

$$\frac{490}{7} = x + 63$$

$$70 = x + 63$$

$$70 - 63 = x$$

$$7 = x$$