

Equations, Proportions, and Percent

Solving Equations, Part I

$$\begin{array}{r} 1. \quad 1 = k - 8 \\ + 8 \quad + 8 \\ \hline 9 = k \end{array}$$

$$\begin{array}{r} 3. \quad x - 7 = 10 \\ + 7 \quad + 7 \\ \hline x = 17 \end{array}$$

$$\begin{array}{r} 5. \quad \frac{3}{7} = p - \frac{1}{7} \\ + \frac{1}{7} \quad + \frac{1}{7} \\ \hline \frac{4}{7} = p \end{array}$$

$$\begin{array}{r} 7. \quad 6 = t - 4.5 \\ + 4.5 \quad + 4.5 \\ \hline 10.5 = t \end{array}$$

$$\begin{array}{r} 9. \quad 6 = x - 3 \\ + 3 \quad + 3 \\ \hline 9 = x \end{array}$$

$$\begin{array}{r} 11. \quad 19 + a = 19 \\ - 19 \quad - 19 \\ \hline a = 0 \end{array}$$

$$\begin{array}{r} 13. \quad m + 20 = 3 \\ - 20 \quad - 20 \\ \hline m = -17 \end{array}$$

$$\begin{array}{r} 15. \quad v + 2300 = -800 \\ - 2300 \quad - 2300 \\ \hline v = -3100 \end{array}$$

$$\begin{array}{r} 17. \quad 3.5 = n + 4 \\ - 4 \quad - 4 \\ \hline -0.5 = n \end{array}$$

$$\begin{array}{r} 19. \quad x + 5.34 = 5.39 \\ - 5.34 \quad - 5.34 \\ \hline x = 0.05 \end{array}$$

$$\begin{array}{r} 21. \quad -12 + f = 3 \\ + 12 \quad + 12 \\ \hline f = 15 \end{array}$$

$$\begin{array}{r} 2. \quad u - 15 = -8 \\ + 15 \quad + 15 \\ \hline u = 7 \end{array}$$

$$\begin{array}{r} 4. \quad -9 = p - 2 \\ + 2 \quad + 2 \\ \hline -7 = p \end{array}$$

$$\begin{array}{r} 6. \quad q - 0.5 = 1.5 \\ + 0.5 \quad + 0.5 \\ \hline q = 2 \end{array}$$

$$\begin{array}{r} 8. \quad 4\frac{2}{3} = r - \frac{1}{3} \\ + \frac{1}{3} \quad + \frac{1}{3} \\ \hline 5 = r \end{array}$$

$$\begin{array}{r} 10. \quad 1.75 = k - 0.75 \\ + 0.75 \quad + 0.75 \\ \hline 2.50 = k \end{array}$$

$$\begin{array}{r} 12. \quad 4 = 3.1 + y \\ - 3.1 \quad - 3.1 \\ \hline 0.9 = y \end{array}$$

$$\begin{array}{r} 14. \quad -12 = c + 3 \\ - 3 \quad - 3 \\ \hline -15 = c \end{array}$$

$$\begin{array}{r} 16. \quad b + 42 = 300 \\ - 42 \quad - 42 \\ \hline b = 258 \end{array}$$

$$\begin{array}{r} 18. \quad b + \frac{1}{2} = \frac{1}{2} \\ - \frac{1}{2} \quad - \frac{1}{2} \\ \hline b = 0 \end{array}$$

$$\begin{array}{r} 20. \quad 2 = d + \frac{1}{4} \\ - \frac{1}{4} \quad - \frac{1}{4} \\ \hline \frac{7}{4} = d \end{array}$$

$$\begin{array}{r} 22. \quad -9 = -4 + g \\ + 4 \quad + 4 \\ \hline -5 = g \end{array}$$

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$$\begin{array}{r} 23. \quad -1200 + j = 345 \\ \quad + 1200 \quad + 1200 \\ \hline \quad \quad \quad j = 1545 \end{array}$$

$$\begin{array}{r} 25. \quad 26 = -4 + y \\ \quad + 4 \quad + 4 \\ \hline \quad 30 = \quad y \end{array}$$

$$\begin{array}{r} 27. \quad -\frac{1}{6} + h = \frac{1}{6} \\ \quad + \frac{1}{6} \quad + \frac{1}{6} \\ \hline \quad \quad \quad h = \frac{1}{3} \end{array}$$

$$\begin{array}{r} 24. \quad 90 = -22 + a \\ \quad + 22 \quad + 22 \\ \hline \quad 112 = \quad a \end{array}$$

$$\begin{array}{r} 26. \quad 1\frac{3}{4} = -\frac{1}{4} + w \\ \quad + \frac{1}{4} \quad + \frac{1}{4} \\ \hline \quad 2 = \quad w \end{array}$$

$$\begin{array}{r} 28. \quad -5.2 + a = -8 \\ \quad + 5.2 \quad + 5.2 \\ \hline \quad \quad \quad a = -2.8 \end{array}$$

29. Let a represent the amount in Luis's account before the deposit.

$$\begin{array}{r} a + 500 = 4732 \\ \quad - 500 \quad - 500 \\ \hline \quad a = 4232 \end{array}$$

Luis had \$4232 in his account before the deposit.

Possible answer: Luis deposited \$500 and now has about \$4700. So the original amount will be close to $4700 - 500 = 4200$. So \$4232 is a reasonable answer.

$$\begin{array}{r} 30. \quad \frac{x}{2} = 12 \\ (2)\left(\frac{x}{2}\right) = (2)(12) \\ \quad \quad \quad x = 24 \end{array}$$

$$\begin{array}{r} 31. \quad -40 = \frac{b}{5} \\ (5)(-40) = (5)\left(\frac{b}{5}\right) \\ \quad \quad \quad -200 = b \end{array}$$

$$\begin{array}{r} 32. \quad -\frac{j}{6} = 6 \\ (-6)\left(-\frac{j}{6}\right) = (-6)(6) \\ \quad \quad \quad j = -36 \end{array}$$

$$\begin{array}{r} 33. \quad -\frac{n}{3} = -4 \\ (-3)\left(-\frac{n}{3}\right) = (-3)(-4) \\ \quad \quad \quad n = 12 \end{array}$$

$$\begin{array}{r} 34. \quad -\frac{q}{5} = 30 \\ (-5)\left(-\frac{q}{5}\right) = (-5)(30) \\ \quad \quad \quad q = -150 \end{array}$$

$$\begin{array}{r} 35. \quad 1.6 = \frac{d}{3} \\ (3)(1.6) = (3)\left(\frac{d}{3}\right) \\ \quad \quad \quad 4.8 = d \end{array}$$

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$$36. \quad \frac{v}{10} = 5.5$$
$$(10)\left(\frac{v}{10}\right) = (10)(5.5)$$
$$v = 55$$

$$38. \quad 5t = -15$$
$$\frac{5t}{5} = \frac{-15}{5}$$
$$t = -3$$

$$40. \quad -12 = -12u$$
$$\frac{-12}{-12} = \frac{-12u}{-12}$$
$$1 = u$$

$$42. \quad -52 = -4c$$
$$\frac{-52}{-4} = \frac{-4c}{-4}$$
$$13 = c$$

$$44. \quad 5f = 1.5$$
$$\frac{5f}{5} = \frac{1.5}{5}$$
$$f = 0.3$$

$$46. \quad \frac{4}{7}t = -2$$
$$\left(\frac{7}{4}\right)\left(\frac{4}{7}t\right) = \left(\frac{7}{4}\right)(-2)$$
$$t = -3.5$$

$$48. \quad \frac{2}{3} = -\frac{1}{3}q$$
$$(-3)\left(\frac{2}{3}\right) = (-3)\left(-\frac{1}{3}q\right)$$
$$-2 = q$$

$$37. \quad \frac{h}{8.1} = -4$$
$$(8.1)\left(\frac{h}{8.1}\right) = (8.1)(-4)$$
$$h = -32.4$$

$$39. \quad 49 = 7c$$
$$\frac{49}{7} = \frac{7c}{7}$$
$$7 = c$$

$$41. \quad -7m = 63$$
$$\frac{-7m}{-7} = \frac{63}{-7}$$
$$m = -9$$

$$43. \quad 11 = -2z$$
$$\frac{11}{-2} = \frac{-2z}{-2}$$
$$-5.5 = z$$

$$45. \quad -8.4 = -4n$$
$$\frac{-8.4}{-4} = \frac{-4n}{-4}$$
$$2.1 = n$$

$$47. \quad -\frac{4}{5}p = \frac{2}{3}$$
$$\left(-\frac{5}{4}\right)\left(-\frac{4}{5}p\right) = \left(-\frac{5}{4}\right)\left(\frac{2}{3}\right)$$
$$p = -\frac{5}{6}$$

$$49. \quad -\frac{5}{8} = -\frac{3}{4}a$$
$$\left(-\frac{4}{3}\right)\left(-\frac{5}{8}\right) = \left(-\frac{4}{3}\right)\left(-\frac{3}{4}a\right)$$
$$\frac{5}{6} = a$$

50. Let s represent Alexandra's salary before taxes.

$$\frac{7}{10}s = 392$$
$$\left(\frac{10}{7}\right)\left(\frac{7}{10}s\right) = \left(\frac{10}{7}\right)(392)$$
$$s = 560$$

Alexandra's salary before taxes is \$560.

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$$\begin{aligned} 51. \quad 5 &= 2g + 1 \\ \frac{-1}{4} &= \frac{-1}{2g} \\ \frac{4}{2} &= \frac{2g}{2} \\ 2 &= g \end{aligned}$$

$$\begin{aligned} 53. \quad 0.6v + 2.1 &= 4.5 \\ \frac{-2.1}{0.6v} &= \frac{-2.1}{2.4} \\ \frac{0.6v}{0.6} &= \frac{2.4}{0.6} \\ v &= 4 \end{aligned}$$

$$\begin{aligned} 55. \quad 0.6g + 11 &= 5 \\ \frac{-11}{0.6g} &= \frac{-11}{-6} \\ \frac{0.6g}{0.6} &= \frac{-6}{0.6} \\ g &= -10 \end{aligned}$$

$$\begin{aligned} 52. \quad 6h - 7 &= 17 \\ \frac{+7}{6h} &= \frac{+7}{24} \\ \frac{6h}{6} &= \frac{24}{6} \\ h &= 4 \end{aligned}$$

$$\begin{aligned} 54. \quad 3x + 3 &= 18 \\ \frac{-3}{3x} &= \frac{-3}{15} \\ \frac{3x}{3} &= \frac{15}{3} \\ x &= 5 \end{aligned}$$

$$\begin{aligned} 56. \quad 32 &= 5 - 3t \\ \frac{-5}{27} &= \frac{-5}{-3t} \\ \frac{27}{-3} &= \frac{-3t}{-3} \\ -9 &= t \end{aligned}$$