# Complex Equations with Emphasis on Decimals and Fractions

**Example:** $\frac{1}{9}v - \frac{1}{3}v + 1 = 1\frac{1}{2} + v + 1$

$\frac{1}{9}v - \frac{3}{9}v + 1 = \frac{3}{2} + v + \frac{2}{2}$

**Combine like terms on each side**.

$-\frac{2}{9}v + 1 = \frac{5}{2} + v$

$-\frac{9}{9}v - \frac{2}{2} = -\frac{2}{2} - \frac{9}{9}v$

**Isolate variable terms on one side, constants on the other**.

$-\frac{11}{9}v = \frac{3}{2}$

$-\frac{9}{11} \bullet -\frac{11}{9}v = \frac{3}{2} \bullet -\frac{9}{11}$

**Get a coefficient of 1 by multiplying by the reciprocal of the variables**.

$v = -\frac{27}{22}$ or $-1\frac{5}{22}$

**Solve the following equations using the steps outlined in the example above.**

1) $\frac{9}{2}b - 4 + \frac{3}{2}b = 16$

2) $2.1z + 8 - 3.7z = 1.9z + 1$

3) $0.5a - 1.08 + 0.72 = -1.5a + 0.36$

4) $\frac{3}{7}r + 2r - 3 = 2\frac{2}{3}$

5) $2\frac{2}{3}x + 1\frac{1}{3} - x = 8$

6) $0.9b - 0.4 + 0.36 = 3.2$

7) $7.9c + 9 = -3.2c - 2.1$

8) $\frac{11}{2}p + \frac{1}{2} - p = -4 + \frac{2}{3}$

9) $\frac{2}{3}r - r - \frac{11}{6}r = \frac{5}{2}r - \frac{1}{3}$

10) $0.04a - 3.1a - 8.12 = -12.1 + 4.133$

1) $\frac{10}{3}$ 2) 2 3) 0.36 4) $^7/_3$ 5) 4 6) 3.6 7) –1 8) $-\frac{23}{27}$ 9) $^1/_{14}$ 10) –0.05

11) $0.08g + 0.45 + 0.04g = 2.1 + 1.2$

12) $2q - \frac{1}{4} - 1\frac{1}{2}q = -2\frac{1}{4} + 2\frac{1}{4}q$

13) $\frac{1}{4}p - \frac{1}{6}p + \frac{1}{6} = -\frac{2}{3} + \frac{1}{3}p$

14) $4.6 = 0.05k + k + 1.45$

15) $\frac{2}{3}\left(1 - \frac{1}{3}a\right) + \frac{1}{3} = \frac{1}{3}a - \frac{2}{3}$

16) $2x - 5(0.3x - 2) = 1.79$

17) $0.06 - (0.3t - 0.05) = 0.2t + 0.04$

18) $\frac{1}{6}c - \frac{1}{2}(1 + c) = \frac{1}{6}c$

19) $1 - \left(w - \frac{1}{5}\right) = \frac{3}{5}w$

20) $-0.02(13 - 2b + 1) = 0$

21) $p(0.6 - 0.3p) = -0.8 + 0.2p - 0.3p^2$

22) $1\frac{1}{12}q + \frac{1}{6} = \frac{7}{12}(q + 2)$

11) 23.75 13) $\frac{10}{3}$ 15) 3 17) 0.14 19) $\frac{3}{4}$ 21) $-2$

12) $\frac{8}{7}$ 14) 3 16) $-16.42$ 18) $-1$ 20) 7 22) 2