Solving Equations

Emphasis on Linear Equations with Variables on Both Sides

Solve each of the following.

1. $24 - 3m = 5m$

$+3m \quad +3m$

$\frac{24}{8} = \frac{8m}{8}$

$3 = m$ OR $m = 3$

2. $20 + c = 4c - 7$

$-c \quad -c$

$20 = 3c - 7$

$+7 \quad +7$

$\frac{27}{3} = \frac{3c}{3}$

$c = 9$

3. $9 - 3k = 17 - 2k$

$+3k \quad +3k$

$9 = 17 + k$

$-17 \quad -17$

$-8 = k$ or $k = -8$

4. $5z - 2 = 2(3z - 4)$

$5z - 2 = 6z - 8$

$-5z \quad -5z$

$-2 = z - 8$

$+8 \quad +8$

$6 = z$ OR $z = 6$

5. $3 - 4a = 5(a - 3)$

$3 - 4a = 5a - 15$

$+4a \quad +4a$

$3 = 9a - 15$

$+15 \quad +15$

$\frac{18}{9} = \frac{9a}{9}$

$a = 2$

6. $8y - 6 = \frac{2}{3}(6y + 15)$

$8y - 6 = 4y + 10$

$-4y \quad -4y$

$4y - 6 = 10$

$+6 \quad +6$

$\frac{4y}{4} = \frac{16}{4}$

$y = 4$

7. $78 + 6x = 2(67 - 4x)$

$78 + 6x = 134 - 8x$

$+8x \quad +8x$

$78 + 14x = 134$

$-78 \quad -78$

$\frac{14x}{14} = \frac{56}{14}$

$x = 4$

8. $13 + 5x = 2x - 8$

$-2x \quad -2x$

$13 + 3x = -8$

$-13 \quad -13$

$\frac{3x}{3} = \frac{-21}{3}$

$x = -7$

9. $4x - 5 = \frac{1}{5}(5x + 20)$

$4x - 5 = x + 4$

$-x \quad -x$

$3x - 5 = 4$

$+5 \quad +5$

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

$x = 3$

10. $9x - 5 = \frac{1}{4}(16x + 60)$

$9x - 5 = 4x + 15$

$-4x \quad -4x$

$5x - 5 = 15$

$+5 \quad +5$

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

$x = 4$

11. $9z + 12 = 9(z + 3)$

$9z + 12 = 9z + 27$

$-9z \quad -9z$

$12 = 27$

False Statement = **No Solution**

12. $3(2a + 2) = 2(3a + 3)$

$6a + 6 = 6a + 6$

$-6a \quad -6a$

$6 = 6$

True statement = **All Real #s**

13. $8t + 5 = 6t + 1$

$-6t \quad -6t$

$2t + 5 = 1$

$-5 \quad -5$

$\frac{2t}{2} = \frac{-4}{2}$

$t = -2$

14. $k + 1 = 3k - 1$

$-K \quad -K$

$1 = 2k - 1$

$+1 \quad +1$

$\frac{2}{2} = \frac{2k}{2}$

$K = 1$

15. $8c + 5 = 4c - 11$

$-4c \quad -4c$

$4c + 5 = -11$

$-5 \quad -5$

$\frac{4c}{4} = \frac{-16}{4}$

$C = -4$

16. $8 + 4m = 9m - 7$

$-4m \quad -4m$

$8 = 5m - 7$

$+7 \quad +7$

$\frac{15}{5} = \frac{5m}{5}$

$m = 3$

17. $40 + 14j = 2(-4j - 13)$

$40 + 14j = -8j - 26$

$+8j \quad +8j$

$40 + 22j = -26$

$-40 \quad -40$

$\frac{22j}{22} = \frac{-66}{22}$

$j = -3$

18. $w + 3 = w + 6$

$-w \quad -w$

$3 = 6$

False Statement = **No Solution**

19. $2(3g + 2) = 0.5(12g + 8)$

$6g + 4 = 6g + 4$

$-6g \quad -6g$

$4 = 4$

True Statement = **All Real #'s**

20. $22x + 70 = 17x - 95$

$-17x \quad -17x$

$5x + 70 = -95$

$-70 \quad -70$

$\frac{5x}{5} = \frac{-165}{5}$

$X = -33$