Solutions to WS 14.2 - More Solving Equations with Variable On Both Sides, # 2-22 even

② $10 + 3(4 - 6a) = -1(6a + 12)$

$\underline{10} + \underline{12} - 18a = -6a - 12$

$22 - 18a = -6a - 12$
$\;+6a +6a$

$22 - 12a = -12$
$-22 \; -22$

$\dfrac{-12a}{-12} = \dfrac{-34}{-12}$

$\boxed{a = \dfrac{17}{6}}$

④ $6 + 2(5 - 3a) = 2a(2 + 8)$

$\underline{6} + \underline{10} - 6a = 2a(10)$

$16 - 6a = 20a$
$\;+6a +6a$

$\dfrac{16}{26} = \dfrac{26a}{26}$

$\dfrac{8}{13} = a \;\rightarrow\; \boxed{a = \dfrac{8}{13}}$

⑥ $2(4a + 3) = 8 + 6(2a - 3)$

$8a + 6 = \underline{8} + 12a \underline{-18}$

$8a + 6 = -10 + 12a$
$-12a - 12a$

$-4a + 6 = -10$
$\; -6 \; -6$

$\dfrac{-4a}{-4} = \dfrac{-16}{-4}$

$\boxed{a = 4}$

⑧ $-2 - 4(2y - 1) = (6 - 2y)3$

$\underline{-2} - 8y \underline{+4} = 18 - 6y$

$2 - 8y = 18 - 6y$
$\;+6y \;+6y$

$2 - 2y = 18$
$-2 \; -2$

$\dfrac{-2y}{-2} = \dfrac{16}{-2}$

$\boxed{y = -8}$

⑩ $-4(7y+9) = (3-5y)3 - 4y$

$-28y - 36 = 9 - 15y - 4y$

$-28y - 36 = 9 - 19y$

$\quad\quad +19y \quad\quad\quad +19y$

$\quad\quad -9y - 36 = 9$

$\quad\quad\quad +36 \quad +36$

$\quad\quad \dfrac{-9y}{-9} = \dfrac{45}{-9}$

$\boxed{y = -5}$

⑫ $3(x+5) + 2 = -11 - 4x$

$3x + 15 + 2 = -11 - 4x$

$3x + 17 = -11 - 4x$

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

$\quad 7x + 17 = -11$

$\quad\quad -17 \quad\quad -17$

$\quad\quad \dfrac{7x}{7} = \dfrac{-28}{7}$

$\boxed{x = -4}$

⑭ $5d - 8 = 3(d+2)$

$5d - 8 = 3d + 6$

$-3d \quad\quad -3d$

$2d - 8 = 6$

$\quad +8 \quad +8$

$\dfrac{2d}{2} = \dfrac{14}{2}$

$\boxed{d = 7}$

⑯ $9y - 3(y+4) = (4+y)3$

$9y - 3y - 12 = 12 + 3y$

$12y - 12 = 12 + 3y$

$-3y \quad\quad\quad\quad -3y$

$9y - 12 = 12$

$\quad +12 \quad +12$

$\dfrac{9y}{9} = \dfrac{24}{9}$

$\boxed{y = \dfrac{8}{3}}$

(18) $6.5(z-2) = -2.5(3z + 3) - 6.5$

$6.5z - 13 = -7.5z - 7.5 - 6.5$

$6.5z - 13 = -7.5z - 14$

$+7.5z \qquad\qquad +7.5z$

$14z - 13 = -14$

$\qquad +13 \quad +13$

$\dfrac{14z}{14} = \dfrac{-1}{14}$

$\boxed{z = -\dfrac{1}{14}}$

(20) $11(2m + 2) - 6 = 4m + 4(3m-2)$

$22m + 22 - 6 = 4m + 12m - 8$

$22m + 16 = 16m - 8$

$-16m \qquad\qquad -16m$

$6m + 16 = -8$

$\qquad -16 \qquad -16$

$\dfrac{6m}{6} = \dfrac{-24}{6}$

$\boxed{m = -4}$

(22) $3(1.5 + 2.5x) = -6.5 + 5.5x - 2.5(4 + 2x)$

$4.5 + 7.5x = -6.5 + 5.5x - 10 - 5x$

$4.5 + 7.5x = -16.5 + 0.5x$

$\quad -0.5x \qquad\qquad -0.5x$

$4.5 + 7x = -16.5$

$-4.5 \qquad\qquad -4.5$

$\dfrac{7x}{7} = \dfrac{-21}{7}$

$\boxed{x = -3}$