Pg. 50 (9-24)

(9) $6(a+10) = 6a+60$

OR $(a+10)+(a+10)+(a+10)+(a+10)+(a+10)+(a+10)$

(10) $8(4+x) = 32+8x$

$(4+x)+(4+x)+(4+x)+(4+x)+(4+x)+(4+x)+(4+x)+(4+x)$

(11) $(5+w)5 = 25+5w$

$(5+w)+(5+w)+(5+w)+(5+w)+5+w)$

(12) $(2t+3)11 = 22t+33$

(13) $10(9-t) = 90-10t$

(14) $12(2j-6) = 24j-72$

(15) $16(7b+6) = 112b+96$

(16) $(1+3d)9 = 9+27d$

(17) $(3-8c)1.5 = 4.5-12c$

(18) $(5w-15)2.1 = 10.5w-31.5$

(19) $\frac{1}{4}(4f-8) = f-2$

$\frac{1}{4} \cdot \frac{4f}{1} - \frac{8}{4}$

(20) $6\left(\frac{1}{3}h+1\right) = \boxed{2h+6}$

$2\ 6\cdot\frac{1}{3}h+6$

(21) $(-8z-10)(-1.5)$

↑ distribute

*parantheses next to each other mean multiply

$-8z * -1.5 - 10 * -1.5$

$\boxed{12z+15}$ neg × neg = pos

(22) $0(3.7x-4.21) = \boxed{0}$

(23) $1\left(\frac{3}{11}-\frac{7d}{17}\right) = \boxed{\frac{3}{11}-\frac{7d}{17}}$

(24) $\frac{1}{2}\left(\frac{1}{2}y-\frac{1}{2}\right) = \boxed{\frac{1}{4}y-\frac{1}{4}}$

(33) $33-40$

$-(20+d) = \boxed{-20-d}$

↑ multiplying −1 through

(34) ↓ multiplying −1 through

$-(-5-4y) = \boxed{5+4y}$

Multiplying -1 through

(35) $-(9-7c) = \boxed{-9+7c}$

Multiplying -1 through

(36) $-(-x+15) = \boxed{x-15}$

Multiplying -1 through

(37) $-(18a-17b) = \boxed{-18a+17b}$

Multiplying -1 through

(38) $-(2.1c-4d) = \boxed{-2.1c+4d}$

Multiplying -1 through

(39) $-(-m+n+1) = \boxed{m-n-1}$

Multiplying -1 through

(40) $-(x+3y-3) = \boxed{-x-3y+3}$

53-64

(53) $11x+9x = \boxed{20x}$

(54) $8y-7y = \boxed{1y \text{ or } y}$

(55) $5t-7t = \boxed{-2t}$

(56) $-n+4n = \boxed{3n}$

(57) $5w^2+12w^2 = \boxed{17w^2}$

(58) $2x^2-9x^2 = \boxed{-7x^2}$

(59) $-4y^2+9y^2 = \boxed{5y^2}$

(60) $6c - 4 + 2c - 7 = 8c - 11$

(61) $5 - 3x + y + 6 = 11 - 3x + y$ or $-3x + y + 11$

* write variables in alphabetical order

(62) $2n + 1 - 4m - n = 1n - 4m + 1$ or $-4m + 1n + 1$

(63) $-7h + 3h^2 - 4h - 3 = -11h + 3h^2 - 3$ or $3h^2 - 11h - 3$

(64) $10ab + 2ab^2 - 9ab = 1ab + 2ab^2$ or $2ab^2 + 1ab$

Pg. 86 (55-69)

(55) $\frac{2}{7} = \frac{1}{3} + a$

Get common denominators

$\frac{2 \times 3}{7 \times 3} = \frac{1 \times 7}{3 \times 7} + a$

$\frac{6}{21} = \frac{7}{21} + a$

$-\frac{7}{21} \quad -\frac{7}{21}$ (subtraction prop of equality)

$\frac{-1}{21} = a$

(56) $\frac{23}{7} = \frac{7}{7}x$ (Division Property of Equality)

$x = \frac{23}{7}$ or $3\frac{2}{7}$

(57) $z - 4\frac{2}{3} = 2\frac{2}{3}$

$+4\frac{2}{3} \quad +4\frac{2}{3}$

$z = 6\frac{4}{3}$

$z = 7\frac{1}{3}$

* can leave as mixed #s since you have common denominators

Addition Property of Equality

(58) $\frac{2}{39} = -4\frac{1}{2}$ * change to improper fraction

$\frac{3}{2} \cdot \frac{2}{3}g = \frac{-9}{2} \cdot \frac{3}{2}$ (Multiplication Property of Equality)

multiply by reciprocal to eliminate fraction (this is the process for dividing a fraction out)

$g = \frac{-27}{4}$ or $-6\frac{3}{4}$

(59) $6\frac{1}{4} = \frac{r}{5}$

$5 \cdot \frac{25}{4} = \frac{r}{5} \cdot 5$ (Mult prop of equality)

$\frac{125}{4} = r$

or $31\frac{1}{4}$

(60) $h + 2.8 = -3.7$

$-2.8 \quad -2.8$ (sub prop of equality)

$h = -6.5$

(61) $\frac{3}{2} f = \frac{1}{2} \cdot \frac{2}{3}$ (Mult prop of equality)

$f = \frac{2}{6}$ or $\frac{1}{3}$

(62) $-4\frac{9}{2} \cdot \frac{2}{9} d \cdot \frac{9}{2}$ (Mult prop of equality)

$\frac{-36}{2} = d$

$-18 = d$

(63) $\frac{1.6}{1.6} m = \frac{1.28}{1.6}$

$m = 0.8$

Division property of equality

(64) $\frac{4}{4} d = \frac{-2.4}{4}$

$d = -0.6$

Div. prop of equality

(65) $4\frac{1}{4} = 1\frac{3}{4} + p$

$\frac{17}{4} = \frac{7}{4} + p$

$-\frac{7}{4} \quad -\frac{7}{4}$

$\frac{10}{4} = p$

or $2\frac{2}{4}$ or $2\frac{1}{2}$

(66) $-5.3 + z = 8.9$

$+5.3 \quad +5.3$

$z = 14.2$

Add prop of equality

(67) $-2\frac{1}{2} = \frac{t}{10}$

$10 \cdot \frac{-5}{2} = \frac{t}{10} \cdot 10$

$\frac{-50}{2} = t$

$-25 = t$

Mult prop of equality

(68) $\frac{5b}{5} = \frac{8.5}{5}$

$b = 1.7$

(69) $\frac{3}{5} n = -\frac{3}{10} \cdot \frac{5}{3}$

$n = \frac{-15}{30}$ or $-\frac{1}{2}$

Pg. 91 (26-33)

(26) $\frac{y-4}{2} = 10$

$2 \cdot \frac{y-4}{2} = 10 \cdot 2$

$y - 4 = 20$

$+4 \quad +4$

$y = 24$

$\frac{y}{2} - \frac{4}{2} = 10$

$\frac{y}{2} - 2 = 10$

$2 + 2 \quad + 2$

$2 \cdot \frac{y}{2} = 12 \cdot 2$

$y = 24$

(27) $3.7 = \frac{x-8}{3} \cdot 3$

$21 = x - 8$

$+8 \quad +8$

$29 = x$

* Seperating fractions would be more complicated here

(28) $\frac{z+10}{9} = 2 \cdot 9$ (×9)

$z + 10 = 18$

$-10 \quad -10$

$z = 8$

* Seperating fractions would be more complicated

(29) $2.4 = \frac{a+10}{2}$ (×2)

$8 = a + 10$

$-10 \quad -10$

$-2 = a$

(30) $7\frac{1}{2} = \frac{x+3}{2}$

$2 \cdot \frac{15}{2} = \frac{x+3}{2} \cdot 2$

$15 = x + 3$

$-3 \quad -3$

$12 = x$

(31) $\frac{b+3}{5} = -1.5$ (×5)

$b + 3 = -5$

$-3 \quad -3$

$b = -8$

(32) $-2 = \frac{d-7}{7}$

$-2 = \frac{d}{7} - \frac{7}{7}$

$-2 = \frac{d}{7} - 1$

$+1 \quad +1$

$-1 = \frac{d}{7}$ (×7)

$-7 = d$

(33) $\frac{g-3}{3} = \frac{5}{3}$ (×3)

$g - 3 = 5$

$+3 \quad +3$

$g = 8$

Pg. 106 (21-40)

(21) $3(q-5) = 2(q+5)$

$3q - 15 = 2q + 10$

$-2q \quad +15 \quad -2q \quad +15$

$q = 25$

(22) mult by -1

$8-(3+b) = b-9$

$8-3-b = b-9$

$5-b = b-9$

$+9 \quad +b \quad +b \quad +9$

$14 = 2b$

$\frac{14}{2} = \frac{2b}{2}$

$7 = b$

(23) $7(6-2a) = 5(-3a+1)$

$42 - 14a = -15a + 5$

$-42 \quad +15a \quad +15a \quad -42$

$a = -37$

(24) $(g+4) - 3g = 1 + g$

$g + 4 - 3g = 1 + g$

$-2g + 4 = 1 + g$

$+2g \quad -1 \quad -1 \quad +2g$

$\frac{3}{3} = \frac{3g}{3}$

$g = 1$

(25) multiply by -1

$2r - (5-r) = 13 + 2r$

$2r - 5 + r = 13 + 2r$

$3r - 5 = 13 + 2r$

$-2r \quad +5 \quad +5 \quad -2r$

$r = 18$

(26) $5g + 4(-5+3g) = 1 - g$

$5g - 20 + 12g = 1 - g$

$17g - 20 = 1 - g$

$+g \quad +20 \quad +20 \quad +g$

$\frac{18g}{18} = \frac{21}{18}$

$g = 1\frac{3}{18}$ or $1\frac{1}{6}$

(27) $2(a-4) = 4a - (2a+4)$ (multiply by -1)

$2a - 8 = 4a - 2a - 4$

$2a - 8 = 2a - 4$

No solution

(28) $5y + 2 = \frac{1}{2}(10y + 4)$

$5y + 2 = 5y + 2$ (identity)

Infinite solutions

(29) $k - 3k = 6k + 5 - 8k$

$-2k = -2k + 5$

No solution

(30) $2(2k - 1) = 4(k - 2)$

$4k - 2 = 4k - 8$

No solution

(31) $-6a + 3 = -3(2a - 1)$

$-6a + 3 = -6a + 3$ (identity)

Infinite solutions

(32) $4 - d = -(d - 4)$ (multiply by -1)

$4 - d = -d + 4$

$4 - d = 4 - d$ (identity)

Infinite solutions

(33) $3.2 - 4d = 2.3d + 3$

$-3 \quad +4d \quad +4d \quad -3$

$\frac{.2}{6.3} = \frac{6.3d}{6.3}$

multiply numerator + denominator BOTH by 10 to get rid of decimals

$d = \frac{2}{63}$

(34) $3d + 4 = 2 + 3d - \frac{1}{2}$

$3d + 4 = 1\frac{1}{2} + 3d$

No solution

(35) $2.25(4x - 4) = -2 + 10x + 12$

$9x - 9 = 10 + 10x$

$-10x \quad +9 \quad -10x$

$-1x = 19$

$x = -19$

(36) $3a + 1 = -3.6(a - 1)$

$3a + 1 = -3.6a + 3.6$

$-3.6a - 1 \quad +3.6a - 1$

$\frac{6.6a}{6.6} = \frac{2.6}{6.6}$ * multiply num + den by 10 to eliminate den

$a = \frac{26}{66} = \frac{13}{33}$

(37) $\frac{1}{2}h + \frac{1}{3}(h-6) = \frac{5}{6}h + 2$

$6\left(\frac{1}{2}h + \frac{1}{3}h - 2 = \frac{5}{6}h + 2\right)$

$3h + 2h - 12 = 5h + 12$

$5h - 12 = 5h + 12$

No solution

(38) $0.5b + 4 = 2(b+2)$

$0.5b + 4 = 2b + 4$

$-.5b - 4 \quad -.5b - 4$

$\frac{0}{1.5} = \frac{1.5b}{1.5}$

$b = 0$

(39) $-2(-c-12) = -2c - 12$

$2c + 24 = -2c - 12$

$+2c - 24 \quad +2c - 24$

$\frac{4c}{4} = \frac{-36}{4}$

$c = -9$

(40) $3(m+1.5) = 1.5(2m+3)$

$3m + 4.5 = 3m + 4.5$

Infinite Solutions