4B

1) $8(5 + 2) = 8(5) + 8(2)$

2) $5(4 - 3 + 2) = 5(4) - 5(3) + 5(2)$

3) $9(C + D) = 9(C) + 9(D)$

4) $5(2C + 4D) = 5(2C) + 5(4D)$

5) $3(X + Y + 4X) = 3(X) + 3(Y) + 3(4X)$

6) $-2(3X + 2Y + Y) =$
$(-2)(3X) + (-2)(2Y) + (-2)(Y)$

7) $8X + 12Y = 4(2X + 3Y)$

8) $-7X - 21Y = 7(-X - 3Y)$ or $-7(X + 3Y)$

9) $18A + 24B = 6(3A + 4B)$

10) $8X + 10 = 16$
$2(4X + 5) = 2(8)$

11) $6A + 3 = 15$
$3(2A + 1) = 3(5)$

12) $8A + 10 = 20$
$2(4A + 5) = 2(10)$

13) $8X + 32 = 40$
$8(X + 4) = 8(5)$
$X + 4 = 5, \quad X = 1$

14) $18Y + 27 = 45$
$9(2Y + 3) = 9(5)$
$2Y + 3 = 5,$
$2Y = 2, \quad Y = 1$

15) $15X - 10 + 5X = 25$
$5(3X - 2 + X) = 5(5)$
$4X = 7, \quad X = 1\ 3/4$

16) $9C - 6 - 12C = 18$
$3(3C - 2 - 4C) = 3(6)$
$-C - 2 = 6, \quad -C = 8, \quad C = -8$

17) $14M - 42 + 56M = 28$
$14(M - 3 + 4M) = 14(2)$
$5M - 3 = 2$
$5M = 5, \quad M = 1$

18) $6A - 16 - 4A = 20$
$2(3A - 8 - 2A) = 2(10)$
$A - 8 = 10, \quad A = 18$

4C

1) $4(A + B + 3) = 4A + 4B + 12$

2) $5(X - Y + 6 + Z) = 5X - 5Y + 30 + 5Z$

3) $3(2Q - 4 + 3T + 7) = 6Q - 12 + 9T + 21$

4) $2(2X + 3Y - 5) = 4X + 6Y - 10$

5) $15Y + 30X = 10, \quad 5(3Y + 6X) = 5(2)$

6) $12Q + 6Y = 15, \quad 3(4Q + 2Y) = 3(5)$

7) $24Q + 18Y = 30, \quad 6(4Q + 3Y) = 6(5)$

8) $36A - 14B = 10, \quad 2(18A - 7B) = 2(5)$

9) $3 - 9 \ (<) \ |4 + 1^2|$
$-6 \qquad |4 + 1|$
$-6 \quad < \quad 5$

10) $4X - 16 = 24, \quad 4(X - 4) = 4(6)$
$X - 4 = 6, \quad X = 10$

11) $30 - 42Y = 18, \quad 6(5 - 7Y) = 6(3)$
$5 - 7Y = 3, \quad Y = 2/7$

12) $-24 + 56 = 16Q, \quad 8(-3 + 7) = 8(2Q)$
$4 = 2Q, \quad Q = 2$

13) $-36 = 72A + 45, \quad 9(-4) = 9(8A + 5)$
$-4 = 8A + 5, \quad A = -1\ 1/8$

14) LCM = 100

15) $100(.2X) - 100(.03) = 100(.97)$
$20X - 3 = 97$
$20X = 100, \quad X = 5$

16) 3, $4 = 2 \times 2$, $6 = 2 \times 3$, so LCM $= 2 \times 2 \times 3 = 12$

17) $\overset{3}{\cancel{(12)}}\frac{3}{\cancel{4}} + \overset{4}{\cancel{(12)}}\frac{1}{\cancel{3}}Q = \overset{2}{(12)}\frac{5}{\cancel{6}}$
$9 + 4Q = 10, \quad Q = 1/4$

18) LCM = 100

19) $100(-.7A) + 100(.8A) = 100(.12)$
$-70A + 80A = 12$
$10A = 12, \quad A = 1.2$ or $1\ 1/5$

20)
$$\begin{array}{r} 18.9 \\ 4\overline{)\,75.6} \\ 4 \\ \hline 35 \\ 32 \\ \hline 36 \\ 36 \\ \hline \end{array}$$

4D

1) $3(A - B - 2) = 3A - 3B - 6$

2) $5(3A - 9 + 2A) = 15A - 45 + 10A$

3) $Q(X + 3) = QX + Q3,$ or $QX + 3Q$

4) $-(-A - B + 2C) = A + B - 2C$

5) $10X - 25Y = 40, \quad 5(2X - 5Y) = 5(8)$

6) $24A + 12B = 36, \quad 12(2A + B) = 12(3)$

7) $-14Q - 21D = -42, \quad -7(2Q + 3D) = -7(6)$

8) $3X + 4XY = 7X, \quad X(3 + 4Y) = X(7)$

9) $22X + 33 = 44, \quad 11(2X + 3) = 11(4)$
$2X + 3 = 4, \quad X = 1/2$

10) $7Q - 15 = 9 - 5Q, \quad 7Q + 5Q = 9 + 15$
$12Q = 24, \quad Q = 2$

11) $30Y - 10 = 10, \quad 10(3Y - 1) = 10(1)$
$3Y - 1 = 1, \quad 3Y = 2, \quad Y = 2/3$

12) $56B - 49 = 28, \quad 7(8B - 7) = 7(4)$
$8B - 7 = 4, \quad 8B = 11, \quad B = 1\ 3/8$

13) LCM = 100

14) $100(.3X) - 100(1.2) = 100(.34)$
$30X - 120 = 34$
$30X = 154, \quad X = 5.13$ or $5\ 2/15$

15) $4 = 2 \times 2, \ 6 = 2 \times 3, \ 10 = 2 \times 5$
so LCM $= 2 \times 2 \times 3 \times 5 = 60$

16) $\overset{15}{\cancel{(60)}}\frac{3}{\cancel{4}} + \overset{10}{\cancel{(60)}}\frac{1}{\cancel{6}}R = \overset{6}{(60)}\frac{7}{\cancel{10}}$
$-45 + 10R = 42, \quad 10R = 87$
$R = 8.7$ or $8\ 7/10$

17)
$$\begin{array}{r} 75. \text{ gum balls} \\ .05\overline{)\,3.75} \\ 35 \\ \hline 25 \\ 25 \\ \hline \end{array}$$

18) $\frac{1}{4} = \frac{25}{100} = \underline{.25} = 25\%$

19) $40\% = \underline{.40} = \frac{40}{100} = \frac{2}{5}$

20) $125\% = \underline{1.25} = \frac{125}{100} = 1\frac{1}{4}$