

3E

$$1) -2X + 7 + 3X - 4 = 10 - 1$$

$$X + 3 = 9$$

$$X = 6$$

$$2) 3Y + 8 - 2 - 2Y = 9 - 4 + 5$$

$$Y + 6 = 10$$

$$Y = 4$$

$$3) 2X - 2 + 7 + X - X = 6 + 6 - 1$$

$$2X + 5 = 11$$

$$2X = 6$$

$$X = 3$$

$$4) -2B + 3 + 5B + 1 = 2(3 + 2) + 9$$

$$3B + 4 = 2(5) + 9$$

$$3B = 19 - 4$$

$$3B = 15$$

$$B = 5$$

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

$$4Q - 2 = 3(4) - 2$$

$$4Q = 12$$

$$Q = 3$$

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

$$4X + 2 = 2X + 8$$

$$2X = 6$$

$$X = 3$$

$$7) 2Y - 4 + Y + 9 = -2Y - 4 + 4Y + 11$$

$$3Y + 5 = 2Y + 7$$

$$3Y - 2Y = 7 - 5$$

$$Y = 2$$

$$8) -4Q + 2 + 5Q + 2 = 3Q - 6$$

$$Q + 4 = 3Q - 6$$

$$4 = 2Q - 6$$

$$10 = 2Q$$

$$5 = Q$$

$$9) (7 - 3)^2 \times |3 - 7| =$$

$$(4)^2 \times |-4| = 16 \times 4 = 64$$

$$10) 8 + (5 + 4)^2 \times 2 + 11^2 =$$

$$8 + 9^2 \times 2 + 121 = 8 + 81 \times 2 + 121 =$$

$$8 + 162 + 121 = 291$$

$$11) (4 \times 8 - 6 + 3^2) + (3 - 6 - 7^2 \times 3 + 4) =$$

$$(4 \times 8 - 6 + 9) + (3 - 6 - 49 \times 3 + 4) =$$

$$(32 - 6 + 9) + (3 - 6 - 147 + 4) =$$

$$35 + (-146) = -111$$

$$12) (15 - 6 + 8^2 + 3 \div 3) - (10 + 9^2 - 40 \div 8) =$$

$$(15 - 6 + 64 + 3 \div 3) - (10 + 81 - 40 \div 8) =$$

$$(15 - 6 + 64 + 1) - (10 + 81 - 5) =$$

$$74 - 86 = -12$$

$$13) \frac{3}{4} \times \frac{8}{3} \div \frac{2}{1} =$$

$$\frac{\cancel{3}}{\cancel{4}} \times \frac{\cancel{8}^2}{\cancel{3}} \times \frac{\cancel{1}}{\cancel{2}} = \frac{1}{1} = 1$$

$$14) \begin{array}{r} 1.7 \\ .8 \\ \hline 5 \\ 86 \\ \hline 1.36 \end{array} \text{ (two decimal places in answer)}$$

$$15) (-19)(6) = -114$$

$$16) -6^2 = -(6)(6) = -36$$

$$17) -[-(-6)] = -[+6] = -6$$

$$18) -7 - (-3) = -7 + 3 = -4$$

$$19) 3, 6 = 2 \times 3, 8 = 2 \times 2 \times 2,$$

$$\text{so LCM} = 2 \times 2 \times 2 \times 3 = 24$$

$$\frac{3}{(24)} \frac{7}{8} + \frac{8}{(24)} \frac{2}{3} \times = \frac{4}{(24)} \frac{1}{8}$$

$$21 + 16X = 4, 16X = -17, X = -1 \frac{1}{16}$$

$$20) 10 = 10, 100 = 10 \times 10$$

$$\text{LCM} = 10 \times 10 = 100$$

$$100(.03X) - 100(.6) = 100(.75)$$

$$3X - 60 = 75$$

$$3X = 135, X = 45$$

4A

$$1) 5(4 + 3) = 5(4) + 5(3)$$

$$2) 6(2 + 3 + 1) = 6(2) + 6(3) + 6(1)$$

$$3) 7(A + B) = 7A + 7B$$

$$4) 3(4C + 3B) = 3(4C) + 3(3B)$$

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

$$5(2X) + 5(3Y) - 5(3) + 5(4X)$$

$$6) 8(A + 3B + 8 + 4A) =$$

$$8(A) + 8(3B) + 8(8) + 8(4A)$$

$$7) 6X + 6Y = 6(X + Y)$$

$$8) 8A + 16B = 8(A + 2B)$$

$$9) 14X + 21Y = 7(2X + 3Y)$$

$$10) -2M - 6N = -2(M + 3N)$$

$$11) 6B + 18C = 6(B + 3C)$$

$$12) 15X + 10A = 5(3X + 2A)$$

$$13) 5X + 15 = 45$$

$$5(X + 3) = 5(9)$$

$$X + 3 = 9, X = 6$$

$$14) 10X + 16 = 26$$

$$2(5X + 8) = 2(13)$$

$$5X + 8 = 13, 5X = 5, X = 1$$

$$15) 13Y - 26 + 39Y = 52$$

$$13(Y - 2 + 3Y) = 13(4)$$

$$4Y - 2 = 4$$

$$4Y = 6, Y = 1 \frac{1}{2}$$

$$16) 8A - 10 - 6A = 14$$

$$2(4A - 5 - 3A) = 2(7)$$

$$A - 5 = 7, A = 12$$

$$17) 12X + 21 = 30$$

$$3(4X + 7) = 3(10)$$

$$4X + 7 = 10$$

$$4X = 3, X = \frac{3}{4}$$

$$18) 8X - 28 = 12$$

$$4(2X - 7) = 4(3)$$

$$2X - 7 = 3$$

$$2X = 10, X = 5$$

4B

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

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

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

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

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

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

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

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

$$8) -7X - 21Y = 7(-X - 3Y) \text{ or } -7(X + 3Y)$$

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

$$10) 8X + 10 = 16$$

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

$$11) 6A + 3 = 15$$

$$3(2A + 1) = 3(5)$$

$$12) 8A + 10 = 20$$

$$2(4A + 5) = 2(10)$$

$$13) 8X + 32 = 40$$

$$8(X + 4) = 8(5)$$

$$X + 4 = 5, X = 1$$

$$14) 18Y + 27 = 45$$

$$9(2Y + 3) = 9(5)$$

$$2Y + 3 = 5,$$

$$2Y = 2, Y = 1$$

$$15) 15X - 10 + 5X = 25$$

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

$$4X = 7, X = 1 \frac{3}{4}$$

$$16) 9C - 6 - 12C = 18$$

$$3(3C - 2 - 4C) = 3(6)$$

$$-C - 2 = 6, -C = 8, C = -8$$

$$17) 14M - 42 + 56M = 28$$

$$14(M - 3 + 4M) = 14(2)$$

$$5M - 3 = 2$$

$$5M = 5, M = 1$$

$$18) 6A - 16 - 4A = 20$$

$$2(3A - 8 - 2A) = 2(10)$$

$$A - 8 = 10, A = 18$$

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) $3 - 9 < |4 + 12|$
 $-6 < |4 + 1|$
 $-6 < 5$
- 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) $-36 = 72A + 45, \quad 9(-4) = 9(8A + 5)$
 $-4 = 8A + 5, \quad A = -1 \frac{1}{8}$
- 14) LCM = 100
- 15) $100(.2X) - 100(.03) = 100(.97)$
 $20X - 3 = 97$
 $20X = 100, \quad X = 5$
- 16) $3, 4 = 2 \times 2, 6 = 2 \times 3, \text{ so LCM} = 2 \times 2 \times 3 = 12$
- 17) $(12) \frac{3}{4} + (12) \frac{1}{8} Q = (12) \frac{5}{8}$
 $9 + 4Q = 10, \quad Q = 1/4$
- 18) LCM = 100
- 19) $100(-.7A) + 100(.8A) = 100(.12)$
 $-70A + 80A = 12$
 $10A = 12, \quad A = 1.2 \text{ or } 1 \frac{1}{5}$
- 20)
$$\begin{array}{r} 18.9 \\ 4 \overline{) 75.6} \\ \underline{4} \\ 35 \\ \underline{32} \\ 36 \\ \underline{36} \\ 0 \end{array}$$

4D

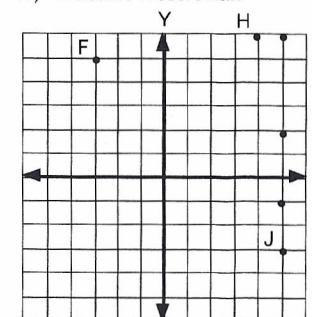
- 1) $3(A - B - 2) = 3A - 3B - 6$
- 2) $5(3A - 9 + 2A) = 15A - 45 + 10A$
- 3) $Q(X + 3) = QX + Q3, \text{ or } QX + 3Q$
- 4) $-(-A - B + 2C) = A + B - 2C$
- 5) $10X - 25Y = 40, \quad 5(2X - 5Y) = 5(8)$
- 6) $24A + 12B = 36, \quad 12(2A + B) = 12(3)$
- 7) $-14Q - 21D = -42, \quad -7(2Q + 3D) = -7(6)$
- 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) $56B - 49 = 28, \quad 7(8B - 7) = 7(4)$
 $8B - 7 = 4, \quad 8B = 11, \quad B = 1 \frac{3}{8}$
- 13) LCM = 100
- 14) $100(.3X) - 100(1.2) = 100(.34)$
 $30X - 120 = 34$
 $30X = 154, \quad X = 5.1\bar{3} \text{ or } 5 \frac{2}{15}$
- 15) $4 = 2 \times 2, 6 = 2 \times 3, 10 = 2 \times 5$
 $\text{so LCM} = 2 \times 2 \times 3 \times 5 = 60$
- 16) $(60) - \frac{3}{4} + (60) \frac{1}{8} R = (60) \frac{7}{10}$
 $-45 + 10R = 42, \quad 10R = 87$
 $R = 8.7 \text{ or } 8 \frac{7}{10}$
- 17)
$$\begin{array}{r} 75. \text{ gum balls} \\ 0.5 \overline{) 3.75} \\ \underline{35} \\ 25 \\ \underline{25} \\ 0 \end{array}$$
- 18) $\frac{1}{4} = \frac{25}{100} = .25 = 25\%$
- 19) $40\% = \frac{40}{100} = \frac{2}{5}$
- 20) $125\% = \frac{125}{100} = 1 \frac{1}{4}$

4E

- 1) $-2(Q + 2R - 3E) = -2Q - 4R + 6E$
- 2) $A^2(3 + B) = 3A^2 + A^2B$
- 3) $-X(Y + 2 + M) = -XY - 2X - MX$
- 4) $-4(A^2 + B^2 + C^2) = -4A^2 - 4B^2 - 4C^2$
- 5) $4A - 16B = -18, \quad 2(2A - 8B) = 2(-9)$
- 6) $20A - 40D = 100, \quad 20(A - 2D) = 20(5)$
- 7) $6Q + 12G = 3, \quad 3(2Q + 4G) = 3(1)$
- 8) $-5R - 15T = -20, \quad -5(R + 3T) = -5(4)$
- 9) $\frac{5}{6} \times \frac{4}{1} \div \frac{5}{2} =$
 $\frac{5}{\cancel{6}} \times \frac{4}{1} \times \frac{2}{\cancel{5}} = \frac{4}{3} = 1 \frac{1}{3}$
- 10) $-8 = -10C - 14, \quad -2(4) = -2(5C + 7)$
 $4 = 5C + 7, \quad -3 = 5C, \quad -3/5 = C$
- 11) $15 = -45M - 30, \quad 15(1) = 15(-3M - 2)$
 $1 = -3M - 2, \quad 3 = -3M, \quad -1 = M$
- 12) $40 + 64 = 48N, \quad 8(5 + 8) = 8(6N)$
 $13 = 6N, \quad 2 \frac{1}{6} = N$
- 13) $63 = 35 - 7P = 7(9) = 7(5 - P)$
 $9 = 5 - P, \quad -4 = P$
- 14) LCM = 1000
- 15) $1000(.5Y) - 1000(.3) = 1000(.002)$
 $500Y - 300 = 2$
 $500Y = 302, \quad Y = .604 \text{ or } 151/250$
- 16) $3 = 3, 4 = 2 \times 2, 12 = 2 \times 2 \times 3,$
 $\text{so LCM} = 2 \times 2 \times 3 = 12$
- 17) $(12) \frac{11}{3} + (12) \frac{5}{12} K = (12) \frac{5}{4}$
 $44 + 5K = -15, \quad 5K = -59, \quad K = -11 \frac{4}{5}$
- 18) $\frac{3}{4} = \frac{75}{100} = .75 = 75\%$
- 19) $20\% = \frac{20}{100} = \frac{1}{5}$
- 20) $380\% = \frac{380}{100} = 3 \frac{4}{5}$

5A

- 1) $(-2, 3)$
- 2) 2
- 3) $(-4, -2)$
- 4) 3
- 5) $(2, -2)$
- 6) 4
- 7) $(2, 3)$
- 8) 1
- 9) $(-1, -5)$
- 10) 3
- 11) on graph
- 12) 2
- 13) on graph
- 14) 1
- 15) on graph
- 16) 4
- 17) geometrically
- 18) positive, negative
- 19) the same X coordinate



- 20) X, 5
- 21)
- 22)
- 23)
- 24)