

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)  $\frac{3}{12} \cdot \frac{3}{4} + \frac{4}{12} \cdot \frac{1}{2} Q = \frac{2}{12} \cdot \frac{5}{8}$   
 $9 + 4Q = 10, \quad Q = 1/4$

$$20) \begin{array}{r} 18.9 \\ 4 \overline{) 75.6} \\ \underline{4} \phantom{00} \\ 35 \phantom{0} \\ \underline{32} \phantom{0} \\ 36 \phantom{0} \\ \underline{36} \phantom{0} \\ 0 \end{array}$$

4D

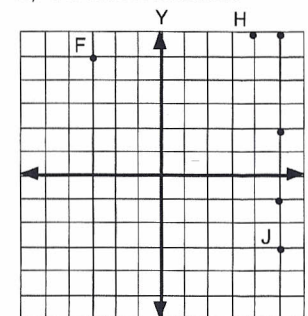
- 1)  $3(A - B - 2) = 3A - 3B - 6$
- 2)  $5(3A - 9 + 2A) = 15A - 45 + 10A$
- 3)  $Q(X + 3) = QX + Q3, \text{ or } QX + 3Q$
- 4)  $-(-A - B + 2C) = A + B - 2C$
- 5)  $10X - 25Y = 40, \quad 5(2X - 5Y) = 5(8)$
- 6)  $24A + 12B = 36, \quad 12(2A + B) = 12(3)$
- 7)  $-14Q - 21D = -42, \quad -7(2Q + 3D) = -7(6)$
- 8)  $3X + 4XY = 7X, \quad X(3 + 4Y) = X(7)$
- 9)  $\frac{22X + 33}{2X + 3} = \frac{44}{4}, \quad \frac{11(2X + 3)}{2X + 3} = \frac{11(4)}{4}$   
 $X = 1/2$
- 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)  $\frac{15}{60} \cdot \frac{3}{4} + \frac{10}{60} \cdot \frac{1}{2} R = \frac{6}{60} \cdot \frac{7}{10}$   
 $-45 + 10R = 42, \quad 10R = 87$   
 $R = 8.7 \text{ or } 8 \frac{7}{10}$
- 17)  $\begin{array}{r} 75. \text{ gum balls} \\ 0.5 \overline{) 3.75} \\ \underline{15} \phantom{00} \\ 225 \phantom{0} \\ \underline{225} \phantom{0} \\ 0 \end{array}$
- 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)  $\frac{5}{6} \times \frac{4}{1} \div \frac{5}{2} =$   
 $\frac{5}{6} \times \frac{4}{1} \times \frac{2}{5} = \frac{4}{3} = 1 \frac{1}{3}$
- 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)  $\frac{4}{12} \cdot \frac{11}{2} + \frac{1}{12} \cdot \frac{5}{2} K = \frac{3}{12} \cdot \frac{5}{2}$   
 $44 + 5K = -15, \quad 5K = -59, \quad K = -11 \frac{4}{5}$
- 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

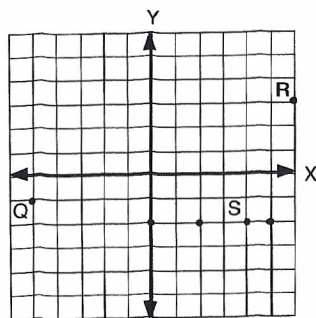
- 1)  $(-2, 3)$
- 2) 2
- 3)  $(-4, -2)$
- 4) 3
- 5)  $(2, -2)$
- 6) 4
- 7)  $(2, 3)$
- 8) 1
- 9)  $(-1, -5)$
- 10) 3
- 11) on graph
- 12) 2
- 13) on graph
- 14) 1
- 15) on graph
- 16) 4
- 17) geometrically
- 18) positive, negative
- 19) the same X coordinate



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

5B

- 1) (2, 3)
- 2) 1
- 3) (-1, -3)
- 4) 3
- 5) (2, -2)
- 6) 4
- 7) (-2, 1)
- 8) 2
- 9) (5, -5)
- 10) 4
- 11) on graph
- 12) 3
- 13) on graph
- 14) 1
- 15) on graph
- 16) 4
- 17) (0, 0)
- 18) negative, negative
- 19) the same Y coordinate

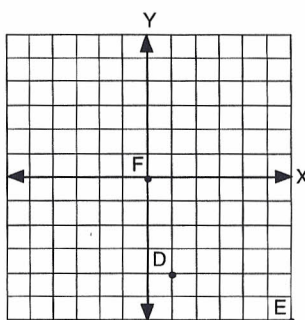


- 21)
- 22)
- 23)
- 24)

5C

- 1) (5, 4)
- 2) (2, 6)
- 3) (-2, 1)
- 4) see graph
- 5) see graph
- 6) see graph
- 7) Descartes
- 8) positive, positive
- 9) Y, X
- 10) origin
- 11)  $100(.05X) + 100(.12X) = 100(.85)$   
 $5X + 12X = 85, 17X = 85, X = 5$
- 12)  $-72 + 8Y = 32$   
 $8Y = 104, Y = 13$
- 13)  $7(-B + 2 + 7 - 1) = 13 + 3B + 5B$   
 $7(-B + 8) = 13 + 8B, -7B + 56 = 13 + 8B$   
 $43 = 15B, 2 13/15 = B$
- 14)  $-4(P - 6) + 2P = |5 - 3 + 6|$   
 $-4P + 24 + 2P = |8|$   
 $-2P + 24 = 8, 16 = 2P, 8 = P$
- 15)  $3 = 3, 4 = 2 \times 2, 7 = 7,$   
 so LCM =  $2 \times 2 \times 3 \times 7 = 84$   
 $\frac{12}{(84)} \frac{18}{7} - \frac{21}{(84)} \frac{1}{4} Q = \frac{28}{(84)} \frac{-17}{2}$   
 $216 - 21Q = -476, Q = 32 \frac{20}{21}$
- 16)  $100(.3X) - 100(.06X) = 100(1.25)$   
 $30X - 6X = 125, 24X = 125,$   
 $X = 5 \frac{5}{24} \text{ or } 5.21 \text{ (rounded)}$

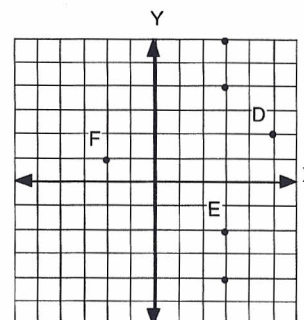
- 17)  $\begin{array}{cc} 116 & \\ 2 & 58 \\ & 2 \quad 29 \end{array}$   
 $2 \times 2 \times 29$
- 18)  $\begin{array}{cc} 36 & \\ 2 & 18 \\ & 2 \quad 9 \\ & & 3 \quad 3 \end{array}$   
 $2 \times 2 \times 3 \times 3$
- 19) B + A
- 20) A + (B + C)



5D

- 1) (-3, -1)
- 2) (0, -4)
- 3) (-4, 2)
- 4) see graph
- 5) see graph
- 6) see graph
- 7) cartesian
- 8) negative, positive
- 9) same X coordinate
- 10) X, 3
- 11)  $10(-1.3) + 10(2.7) = 10(.2Y)$   
 $-13 + 27 = 2Y, 14 = 2Y, 7 = Y$
- 12)  $17Q - 14XQ = 11Q$   
 $Q(17 - 14X) = Q(11)$   
 $17 - 14X = 11, -14X = -6, X = 3/7$
- 13)  $D(3 - 7) - 12 = 0$   
 $3D - 7D - 12 = 0$   
 $-4D = 12, D = -3$
- 14)  $(6^2 \div 9) \times 2 - 9Y = 8(Y - 4 + 9)$   
 $(36 \div 9) \times 2 - 9Y = 8(Y + 5)$   
 $4 \times 2 - 9Y = 8Y + 40$   
 $8 - 9Y = 8Y + 40, -32 = 17Y, -1 \frac{15}{17} = Y$
- 15)  $2 = 2, 4 = 2 \times 2, 7 = 7,$   
 so LCM =  $2 \times 2 \times 7 = 28$   
 $\frac{14}{(28)} \frac{9}{2} = \frac{7}{(28)} \frac{5}{4} R + \frac{4}{(28)} \frac{17}{7}$   
 $126 = 35R + 68, R = 1 \frac{23}{35}$
- 16)  $100(.35P) + 100(3.2) = 100(-4P)$   
 $35P + 320 = -400P$   
 $435P = -320, P = -.74 \text{ (rounded) or } -64/87$

- 17)  $75\% = \frac{75}{100} = \frac{3}{4}$
- 18)  $113\% = \frac{113}{100} = 1 \frac{13}{100}$
- 19)  $\frac{2}{5} = \frac{40}{100} = .40 = 40\%$
- 20) AB + AB



5E

- 1) (3, 3)
- 2) (4, -2)
- 3) (-5, 5)
- 4) see graph
- 5) see graph
- 6) see graph
- 7) analytic
- 8) negative, negative
- 9) same X coordinate
- 10) X, -2
- 11)  $100(1.08V) = 100(.7) - 100(.24)$   
 $108V = 70 - 24, 108V = 46,$   
 $V = .43 \text{ (rounded) or } V = 23/54$
- 12)  $9X^2M = 10X^2 - 19X^2$   
 $X^2(9M) = X^2(10 - 19), 9M = -9, M = -1$
- 13)  $(11 - 4)^2 \div 7 - |3 - 9| = 14(R + 3R - 2R + 1)$   
 $7^2 \div 7 - |6| = 14(2R + 1)$   
 $49 \div 7 - 6 = 28R + 14$   
 $1 = 28R + 14, -13 = 28R, R = -13/28$
- 14)  $6[8 - (Y + 4)] = 3[(10 + 1)^2 - (7 - 5 + 4)]$   
 $6[8 - Y - 4] = 3[11^2 - 6]$   
 $24 - 6Y = 345, -6Y = 321, Y = -53 \frac{1}{2}$
- 15)  $2 = 2, 7 = 7, 8 = 2 \times 2 \times 2$   
 so LCM =  $2 \times 2 \times 2 \times 7 = 56$   
 $\frac{7}{(56)} \frac{25}{8} - \frac{8}{(56)} \frac{11}{7} = \frac{28}{(56)} \frac{3}{2} D$   
 $175 - 88 = 84D, D = 1 \frac{3}{84} = 1 \frac{1}{28}$
- 16)  $1000(-1.203H) + 1000(.9) = 1000(-.6)$   
 $-1203H + 900 = -600, -1203H = -1500$   
 $H = 1 \frac{297}{1203} \text{ or } 1.25 \text{ (rounded)}$
- 17)  $\begin{array}{r} 1.25 \text{ or } .13 \\ 8 \overline{) 1.000} \\ \underline{8} \phantom{00} \\ 20 \phantom{0} \\ \underline{16} \phantom{0} \\ 40 \\ \underline{40} \end{array}$
- 18)  $\begin{array}{r} .6 \overline{6} \text{ or } .67 \\ 3 \overline{) 2.000} \\ \underline{18} \phantom{00} \\ 20 \phantom{0} \\ \underline{18} \phantom{0} \\ 20 \\ \underline{18} \end{array}$
- 19)  $\begin{array}{r} .6 \\ 5 \overline{) 3.0} \\ \underline{30} \end{array}$
- 20)  $\begin{array}{r} .2 \overline{2} \text{ or } .22 \\ 9 \overline{) 2.00} \\ \underline{18} \phantom{00} \\ 20 \phantom{0} \\ \underline{18} \end{array}$