

17F

- 1) 90° (90.7°)
- 2) 0°
- 3) 37.8° (38.1°)
- 4) 140°
- 5) 77°
- 6) -5.8°
- 7) $7 - B + 4 + 2B = 2B + 8 - 7$
 $11 + B = 2B + 1$
 $B - 2B = 1 - 11$
 $-B = -10$
 $B = 10$
- 8) $7 - (10) + 4 + 2(10) = 2(10) + 8 - 7$
 $7 - 10 + 4 + 20 = 20 + 8 - 7$
 $21 = 21$
- 9) $16X = 5$
 $X = \frac{5}{16}$
- 10) $16\left(\frac{5}{16}\right) = 5$
 $5 = 5$
- 11) .456
- 12) .0738
- 13) .0735
- 14) $\frac{12}{5} \times \frac{11}{4} = \frac{33}{5} = 6\frac{3}{5}$
- 15) $\frac{4}{8} \times \frac{8}{2} = \frac{2}{1} = 2$
- 16) $\frac{7}{8} \times \frac{45}{7} = \frac{9}{1} = 9$
- 17) Celsius; 3° Fahrenheit
 is below freezing
- 18) 5.25 buckets
- 19) $\$.99 \times 4 = \3.96
 $\$10 - \$3.96 = \$6.04$
- 20) $4(12 \times 14 \times 1/2) + 12 \times 12 =$
 $4(84) + 144 =$
 $336 + 144 = 480 \text{ sq. in.}$

18A

- 1) done
- 2) done
- 3) $|5 \cdot 6^2| = |5 \cdot 36| = |180| = 180$
- 4) $|-10 - 13| = |-23| = 23$
- 5) $|-6 + 8| = |2| = 2$
- 6) $|18 + 2^3| = |18 + 8| = |26| = 26$
- 7) $|3^2 - 5^2| - (15 \div 3)^3 + 18 =$
 $|9 - 25| - (5)^3 + 18 =$
 $|-16| - 125 + 18 =$
 $16 - 125 + 18 = -91$
- 8) $|10^2 - 5^2| + |-8^2 + 2^2| =$
 $|100 - 25| + |-64 + 4| =$
 $|75| + |-60| =$
 $75 + 60 = 135$
- 9) $|6 \div (-2)| \times 5 + 3^2 =$
 $|-3| \times 5 + 9 =$
 $3 \times 5 + 9 =$
 $15 + 9 = 24$
- 10) $-4(P - 6) + 2P = |5 - 3 + 6|$
 $-4P + 24 + 2P = |8|$
 $-2P + 24 = 8$
 $-2P = 8 - 24$
 $-2P = -16$
 $P = 8$
- 11) $-5X + |9^2 - 3^2| + 13 = 12X$
 $-5X + |81 - 9| + 13 = 12X$
 $-5X + |72| + 13 = 12X$
 $-5X + 85 = 12X$
 $85 = 12X + 5X$
 $85 = 17X$
 $5 = X$
- 12) $3(3G + 5G) - |3 - 12| = 18G + 5(-G - 4)$
 $3(8G) - |-9| = 18G - 5G - 20$
 $24G - 9 = 13G - 20$
 $24G - 13G = -20 + 9$
 $11G = -11$
 $G = -1$
- 13) $(1^2 - 1) \div 12 = 3X + |-2|X$
 $(121 - 1) \div 12 = 3X + 2X$
 $120 \div 12 = 5X$
 $10 = 5X$
 $2 = X$
- 14) $(3 - 5)^2 + |6 - 4| + X = 3X$
 $(-2)^2 + |2| + X = 3X$
 $4 + 2 + X = 3X$
 $6 = 3X - X$
 $6 = 2X$
 $3 = X$
- 15) $|-4|^2 = (-1)^2 + B(-1) \div 1$
 $4^2 = 1 - B$
 $16 = 1 - B$
 $16 - 1 = -B$
 $15 = -B$
 $-15 = B$
- 16) $163 - 75 = 88$

18B

- 1) $|25 - 16| = |9| = 9$
- 2) $|8 - 3| = |5| = 5$
- 3) $|4^2 - 2^2| = |16 - 4| = |12| = 12$
- 4) $|-45 + 11| = |-34| = 34$
- 5) $|-1 \times -1 \times -1| = |-1| = 1$
- 6) $|3^2 - 8^2| = |9 - 64| = |-55| = 55$
- 7) $|18 - 36| + (|3 - 5^2| - 15)^2 =$
 $|-18| + (|3 - 25| - 15)^2 =$
 $18 + (|-22| - 15)^2 =$
 $18 + (22 - 15)^2 =$
 $18 + (7)^2 =$
 $18 + 49 = 67$
- 8) $|4^2 - 9| + (8 \div 4)^2 =$
 $|16 - 9| + (2)^2 =$
 $7 + 4 = 11$
- 9) $|8 - 12| + |6^2 \cdot 5^2| =$
 $|-4| + |36 \cdot 25| =$
 $4 + 900 = 904$
- 10) $(3 + 5)^2 + |8 - 11| + Z = 4(Z - 2)$
 $8^2 + |-3| + Z = 4Z - 8$
 $64 + 3 + Z = 4Z - 8$
 $64 + 3 + 8 = 4Z - Z$
 $75 = 3Z$
 $25 = Z$

- 11) $(6 + 6)^2 + |100 - 1| - 14^2 = 5 \cdot 9 + B$
 $12^2 + |99| - 196 = 45 + B$
 $144 + 99 - 196 - 45 = B$
 $2 = B$
- 12) $|-3 + 7| - 4^2 + (-4)^2 = 2R$
 $|4| - 16 + 16 = 2R$
 $4 = 2R$
 $2 = R$
- 13) $|-3 - 4 - 5 + 2| + W = 3W$
 $|-10| + W = 3W$
 $10 = 3W - W$
 $10 = 2W$
 $5 = W$
- 14) $|-8 - 4| - 8Y = 32 \div |-8|$
 $|-12| - 8Y = 32 \div 8$
 $12 - 8Y = 4$
 $12 - 4 = 8Y$
 $8 = 8Y$
 $1 = Y$
- 15) $|-9 - 3| = -5C + 3 + 8C$
 $|-12| = 3C + 3$
 $12 = 3C + 3$
 $12 - 3 = 3C$
 $9 = 3C$
 $3 = C$
- 16) $|40 - 50| = 10 \text{ miles}$

18C

- 1) $|(-1)(-4)| = |4| = 4$
- 2) $|10 \div 2 - 8| = |5 - 8| = |-3| = 3$
- 3) $|5^2 - 6^2| = |25 - 36| = |-11| = 11$
- 4) $|4 - 8 + 1| = |-3| = 3$
- 5) $|-3 \cdot 4| = |-12| = 12$
- 6) $|6^2 - 5^2| = |36 - 25| = |11| = 11$
- 7) $|(-10)^2 - 9| - |2^2 - 5^2| =$
 $|100 - 9| - |4 - 25| =$
 $|91| - |-21| = 91 - 21 = 70$
- 8) $|9^2 \div 9 + 3| =$
 $|81 \div 9 + 3| =$
 $|9 + 3| =$
 $|3| = 3$
- 9) $-4^2 + (7 - 3)^2 - |-2| =$
 $-16 + (4)^2 - 2 =$
 $-16 + 16 - 2 = -2$
- 10) $|15 + 2| = 3A - 6 + 3 + A$
 $|17| = 4A - 3$
 $17 = 4A - 3$
 $20 = 4A$
 $5 = A$
- 11) $2 \cdot |-6 - 6| = -5 + 10K - K + 2$
 $2 \cdot |-12| = -3 + 9K$
 $2 \cdot 12 = -3 + 9K$
 $24 + 3 = 9K$
 $27 = 9K$
 $3 = K$
- 12) $|-1 - 3 \cdot 4| = 3D - 8 + 7 - D$
 $|-1 - 12| = 2D - 1$
 $|-13| = 2D - 1$
 $13 = 2D - 1$
 $13 + 1 = 2D$
 $14 = 2D$
 $7 = D$
- 13) $|7 \cdot 11| = 10F - 5F + 1 - F$
 $77 = 4F + 1$
 $77 - 1 = 4F$
 $76 = 4F$
 $19 = F$
- 14) $|-(2)^2 - 4| = -7R + (-2)^2 - 2 + 5R$
 $|-4 - 4| = -7R + 4 - 2 + 5R$
 $|-8| = -2R + 2$
 $8 = -2R + 2$
 $8 - 2 = -2R$
 $6 = -2R$
 $-3 = R$
- 15) $3Q + 5Q - 2 - 1 = |10^2 - 7|$
 $8Q - 3 = |100 - 7|$
 $8Q - 3 = |93|$
 $8Q - 3 = 93$
 $8Q = 96$
 $Q = 12$
- 16) $|50 - 80| = |-30| = 30 \text{ feet}$

18D

- 1) $|42 \div 6 - 2| \times 11 =$
 $|7 - 2| \times 11 = |5| \times 11 = 55$
- 2) $(192 \div 8) \times 4 - |67 - 200| =$
 $24 \times 4 - |-133| = 96 - 133 = -37$
- 3) $|10 + 3|^2 - 9| \div 20 =$
 $|13^2 - 9| \div 20 =$
 $|169 - 9| \div 20 =$
 $|160| \div 20 = 160 \div 20 = 8$
- 4) $(-3^2)K - 6 + 3 = |-2^2 \cdot 3| + 3$
 $-9K - 3 = |-4 \cdot 3| + 3$
 $-9K - 3 = |-12| + 3$
 $-9K - 3 = 12 + 3$
 $-9K = 12 + 3 + 3$
 $-9K = 18$
 $K = -2$
- 5) $(-3^2)(-2) \cdot 6 + 3 = |-2^2 \cdot 3| + 3$
 $-9(-2) \cdot 6 + 3 = |-4 \cdot 3| + 3$
 $18 \cdot 6 + 3 = |-12| + 3$
 $15 = 12 + 3$
 $15 = 15$

- 6) $3B + 6 = 6B + 5 - 2B + |3^2|$
 $3B + 6 = 4B + 5 + 9$
 $3B + 6 = 4B + 14$
 $6 - 14 = 4B - 3B$
 $-8 = B$
- 7) $3(-8) + 6 = 6(-8) + 5 - 2(-8) + |3^2|$
 $-24 + 6 = -48 + 5 + 16 + |9|$
 $-18 = -18$
- 8) 59°
- 9) 82.4°
- 10) 18.3° (18.5°)
- 11) 100° (100.8°)
- 12) $.057$
- 13) 1.2
- 14) 2.75
- 15) 7.85
- 16) $37^\circ \text{C}; 98.6^\circ \text{F}$
- 17) $16^2 + 30^2 = 34^2$
 $256 + 900 = 1156$
 $1156 = 1156 \text{ yes}$
- 18) $C + 2 = 2C + 1$
 $2 - 1 = 2C - C$
 $1 = C$

18E

- 1) $4^2 - 2(4) + |3 - 4| =$
 $16 - 8 + |-1| = 16 - 8 + 1 = 9$
- 2) $3(2)^2 - 2 + |4 - 3| =$
 $3(4) - 2 + |1| = 12 - 2 + 1 = 10$
- 3) $|30 - 46| + |-5| - 9 - 2^2 =$
 $|-16| + 5 - 9 - 4 =$
 $16 + 5 - 9 - 4 = 8$
- 4) $3Q - 2 + Q = |-3(2 + 2) + 2|$
 $4Q - 2 = |-3(4) + 2|$
 $4Q - 2 = |-12 + 2|$
 $4Q - 2 = |-10|$
 $4Q - 2 = 10$
 $4Q = 10 + 2$
 $4Q = 12$
 $Q = 3$
- 5) $3(3) \cdot 2 + (3) = |-3(2 + 2) + 2|$
 $9 \cdot 2 + 3 = |-3(4) + 2|$
 $10 = |-12 + 2|$
 $10 = |-10|$
 $10 = 10$
- 6) $3Y + 8 - 2 - 2Y = |9 - 2^2 + 5|$
 $Y + 6 = |9 - 4 + 5|$
 $Y + 6 = |10|$
 $Y + 6 = 10$
 $Y = 4$
- 7) $3(4) + 8 - 2 - 2(4) = |9 - 2^2 + 5|$
 $12 + 8 - 2 - 8 = |9 - 4 + 5|$
 $10 = |10|$
 $10 = 10$
- 8) 77°
- 9) 226.4°
- 10) 5°
- 11) 30° (30.2°)
- 12) 2.44
- 13) 9.6
- 14) 2.4
- 15) 1.25
- 16) $2(5 \times 12) + 2(5 \times 4) + 2(12 \times 4) =$
 $2(60) + 2(20) + 2(48) =$
 $120 + 40 + 96 = 256 \text{ sq. in.}$
- 17) $4(12 \times 15 \times 1/2) + 15 \times 15 =$
 $360 + 225 = 585 \text{ sq. in.}$
- 18) $15.4 \div 2 = 7.7 \text{ days}$
- 19) $1.5 \times 1.5 = 2.25 \text{ sq. mi.}$
- 20) $2N - 2 - N = 16$
 $N - 2 = 16$
 $N = 16 + 2$
 $N = 18$

18F

- 1) $(7-3)^2 \times |3-7| =$
 $4^2 \times |-4| = 16 \times 4 = 64$
- 2) $8 + |4 + 1^2| = 8 + |5| = 8 + 5 = 13$
- 3) $|8 - 3^2| + |-8| = |8 - 9| + 8 =$
 $|-1| + 8 = 1 + 8 = 9$
- 4) $(8+2)^2 = 10X$
 $10^2 = 10X$
 $100 = 10X$
 $10 = X$
- 5) $(8+2)^2 = 10(10)$
 $10^2 = 100$
 $100 = 100$
- 6) $-6(Y-5+9) + 7(2Y+9) = -1$
 $-6Y + 30 - 54 + 14Y + 63 = -1$
 $8Y + 39 = -1$
 $8Y = -40$
 $Y = -5$

- 7) $-6((-5) - 5 + 9) + 7(2(-5) + 9) = -1$
 $-6(-1) + 7(-10 + 9) = -1$
 $6 + 7(-1) = -1$
 $6 - 7 = -1$
 $-1 = -1$
- 8) 32°
- 9) 118.4°
- 10) 40° (40.3°)
- 11) 14.4° (14.6°)
- 12) .84
- 13) 3.8
- 14) 2.5
- 15) 2.94
- 16) $2(8 \times 20) + 2(8 \times 9) + 2(20 \times 9) =$
 $2(160) + 2(72) + 2(180) =$
 $320 + 144 + 360 = 824$ sq. in.
- 17) $4(9 \times 14 \times 1/2) + 9 \times 9 =$
 $4(63) + 81 = 252 + 81 = 333$ sq. in.
- 18) $6.3 \div 3 = 2.1$ hrs; $2.1 \times 60 = 126$ min
- 19) 98.6° F = normal body temperature
- 20) 212° F = boiling: too warm!

19A

- 1) done
- 2) done
- 3) done
- 4) 4
- 5) 9
- 6) $40\frac{4}{5} = 40.8$
- 7) 8
- 8) 45
- 9) 16
- 10) done
- 11) $\frac{3}{8} = \frac{9}{C}$
 $3C = 9(8)$
 $3C = 72$
 $C = 24$
- 12) $\frac{2}{7} = \frac{M}{63}$
 $7M = 2(63)$
 $7M = 126$
 $M = 18$

19B

- 1) 5
- 2) 15
- 3) 5
- 4) 45
- 5) 8
- 6) 21
- 7) $4\frac{1}{2} = 4.5$
- 8) 50
- 9) 63
- 10) 15
- 11) 49
- 12) 3
- 13) $\frac{25}{100}$
- 14) 75 not red:
 $\frac{25}{75}$
- 15) $\frac{1}{10} = \frac{80}{E}$
 $E = 10(80)$
 $E = \$800$

19C

- 1) 5
- 2) 9
- 3) 20
- 4) 21
- 5) 27
- 6) 5
- 7) 56
- 8) $1\frac{3}{5} = 1.6$
- 9) 15
- 10) 3
- 11) 3
- 12) 30
- 13) $\frac{1}{8} = \frac{4}{X}$
 $X = 8(4)$
 $X = 32$
- 14) $\frac{2}{3} = \frac{C}{24}$
 $3C = 2(24)$
 $3C = 48$
 $C = 16$
- 15) $\frac{100}{75} = \frac{20}{M}$
 $100M = 20(75)$
 $100M = 1500$
 $M = 15$