Test 28

1) B $N + D = 11$; $.05N + .10D = .80$

$-5N - 5D = -55$
$5N + 10D = 80$
$5D = 25$
$D = 5$

2) A $D + Q = 7$; $.10D + .25Q = 1.15$

$-10D - 10Q = -70$
$10D + 25Q = 115$
$15Q = 45$
$Q = 3$

3) C $P + N = 25$; $.01P + .05N = .57$

$-P - N = -25$
$P + 5N = 57$
$4N = 32$
$N = 8$

$P + 8 = 25 \rightarrow P = 17$

4) C $3N + (N + 2) + 2 = 3(N + 4)$

$4N + 4 = 3N + 12$
$N = 8 \rightarrow 8, 10, 12$

5) D Each odd integer is 2 more than the one before it

6) A $4N + 2(N + 1) = 4(N + 2)$

$4N + 2N + 2 = 4N + 8$
$6N + 2 = 4N + 8$
$2N = 6$
$N = 3 \rightarrow 3, 4, 5$

7) D $10N + 10(N + 2) = 10 + 10(N + 4)$

$10N + 10N + 20 = 10N + 50$
$10N = 30$
$N = 3 \rightarrow 3, 5, 7$
7 is third number

8) B $A_T + A_E = 90\,ml$

$.20A_T + .08A_E = .10(90)$

$-8A_T - 8A_E = -720$
$20A_T + 8A_E = 900$
$12A_T = 180 \rightarrow A_T = 15\,ml$

9) B $F_1 = 50\%$, $F_2 = 5\%$

$F_1 + F_2 = 150\,lbs$

$.50F_1 + .05F_2 = .12(150)$

$-50F_1 - 50F_2 = -7500$
$50F_1 + 5F_2 = 1800$
$-45F_2 = -5700 \rightarrow F_2 = 126.7\,lbs$

10) C 150 - 126.7 = 23.3 lbs

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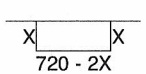
11) D

$D_C + D_B = 20$
$R_C T_C + R_B T_B = 20$ $\quad T_C = T_B$
$4T + 6T = 20$
$10T = 20$
$T = 2$ hours
12 noon + 2 hours = 2:00 p.m.

12) A A) Parabola
B) Line (Y = -X + 9)
C) Hyperbola
D) Circle

13) C $6 \times 180° = 1080°$

14) C



Area $= X(720 - 2X) = -2X^2 + 720X$

$X = \frac{-720}{2(-2)} = 180$

X = 180'
720 - 2(180) = 360'
Dimensions: 180' x 360'

15) B $\frac{\frac{3}{X}}{\frac{2}{X+1}} \cdot \frac{\frac{X+1}{2}}{\frac{X+1}{2}} = \frac{3(X+1)}{2X} = \frac{3X+3}{2X}$

Test 29

1) A $R + 2 = \frac{7}{2}(S + 2)$ $\quad R - 3 = 6(S - 3)$

$R = \frac{7}{2}S + 5$

Substituting:
$\left(\frac{7}{2}S + 5\right) - 3 = 6(S - 3)$
$\frac{7}{2}S + 2 = 6S - 18$
$7S + 4 = 12S - 36$
$40 = 5S$
$8 = S$

2) B $P - 8 = \frac{1}{3}(K - 8)$ $\quad 2(P + 2) = K + 2$

$P = \frac{1}{3}K - \frac{8}{3} + \frac{24}{3}$ $\quad 2P + 4 = K + 2$

$P = \frac{1}{3}K + \frac{16}{3}$

Substituting:
$2\left(\frac{1}{3}K + \frac{16}{3}\right) + 4 = K + 2$
$\frac{2}{3}K + \frac{32}{3} + 4 = K + 2$
$2K + 32 + 12 = 3K + 6$
$38 = K$

3) C $C - 5 = \frac{1}{2}(D - 5)$ $\quad C + 3 = \frac{5}{6}(D + 3)$

$C - 5 = \frac{1}{2}D - \frac{5}{2}$

$C = \frac{1}{2}D + \frac{5}{2}$

Substituting:
$\left(\frac{1}{2}D + \frac{5}{2}\right) + 3 = \frac{5}{6}(D + 3)$
$3D + 15 + 18 = 5D + 15$
$18 = 2D$
$9 = D$

4) B $S + 30 = \frac{3}{5}(D + 30)$ $\quad D - 5 = 4(S - 5)$

$S + 30 = \frac{3}{5}D + 18$ $\quad D = 4S - 20 + 5$

$5S + 150 = 3D + 90$ $\quad D = 4S - 15$

$5S + 60 = 3D$

Substituting:
$5S + 60 = 3(4S - 15)$
$5S + 60 = 12S - 45$
$105 = 7S$
$15 = S$

5) D $R + 10 = 4(C + 10)$ $\quad R = 10C$

Substituting:
$(10C) + 10 = 4C + 40$
$6C = 30$
$C = 5$
$(5) - 2 = 3$

6) C C implies that the rate of the water is greater than the rate of the boat, in which case the boat would be traveling downstream, not upstream.

7) D $D_D = (B + W)T$ $\quad D_U = (B - W)T$

$42 = (B + 4)T$ $\quad 18 = (B - 4)T$

$42 = BT + 4T$
$-18 = -BT + 4T$
$24 = 8T$
$3 = T$

$42 = (B + 4)(3)$
$42 = 3B + 12$
$10 = B$

8) D $60 = (B + 2)T$ $\quad 12 = (B - 2)T$

$60 = BT + 2T$
$-12 = -BT + 2T$
$48 = 4T$
$12 = T$ one way $\quad$ 2 x 12 = 24 hours total

9) A $D_D = (10 + W)2$ $\quad D_U = (10 - W)5$

$D_D = 20 + 2W$ $\quad D_U = 50 - 5W$

$20 + 2W = 50 - 5W$
$7W = 30$
$W = 4.3$ mph (rounded)

10) C $D = (10 + 4.3)2$
$D = 28.6$ miles

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11) B

12) D A) $Y = X - 4$, slope is +1
B) not a line
C) not a line
D) $Y = -X - 4$, slope is -1

13) B $\frac{1}{2} \times 3 = \frac{3}{2}$, $\left(\frac{3}{2}\right)^2 = \frac{9}{4}$

14) C $N + Q = 14$
$.05N + .25Q = 1.90$

$-5N - 5Q = -70$
$5N + 25Q = 190$
$20Q = 120$
$Q = 6 \rightarrow N + (6) = 14$
$N = 8$
$8 - 3 = 5$ nickels

15) A $\sqrt{9X^2Y} = 3X\sqrt{Y}$