

FEBRUARY REGIONAL FAMAT COMPETITION

GEOMETRY INDIVIDUAL SOLUTIONS

- (1) B  $n=15$  (11) A  $\frac{BC}{2}$  (21) E 50, 40, 130  
 (2) C  $16+16\sqrt{3}$  (12) C 12 (22) D 10  
 (3) D  $15\sqrt{3}$  (13) B (23) A  $29\frac{1}{5}$   
 (4) C (14) B (24) B  
 (5) A  $64$  (15) A  $100-25\pi$  (25) A  $5\sqrt{6}$   
 (6) D  $9\pi$  (16) A 34 (26) B  $-\frac{3}{5}$   
 (7) B (17) B 120 (27) D  $\sqrt{26}$   
 (8) C 16 (18) B (28) C  
 (9) C  $8 \times 8 \times 8$  (19) D (29) D 15  
 (10) A 13 (20) P (30) A  $4\sqrt{3}+4$

GEOM. TEAM

- (1)  $42\frac{1}{4}$  (9)  $2\sqrt{3}$   
 (2)  $1\frac{3}{18}$  (10) 10  
 (3) 35 (11)  $\frac{\sqrt{89}+5}{5}$   
 (4) 4, 60, or 102 (12)  $\frac{1}{2}$  or 1:2  
 (5)  $24\sqrt{3}$  (13)  $5\frac{2}{7}$   
 (6)  $12\pi$  (14)  $\frac{6\sqrt{5}}{5}$   
 (7)  $12\sqrt{2}$  (15) 30  
 (8) 140

(1)  $\frac{n(n-3)}{2} = 90$   
 $n^2 - 3n - 180 = 0$   
 $(n-15)(n+12) = 0$   
 $n = 15$  B

(4)

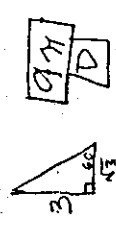
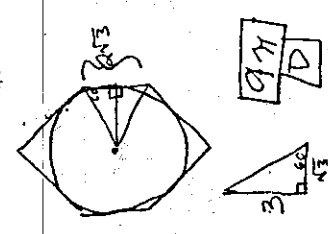
(2)  $A = \frac{d \times d_0}{2}$   
 $= \frac{(8)(4+4\sqrt{3})}{2} \div 2$   
 $= \frac{(32+32\sqrt{3})}{2} \div 2$   
 $= 16+16\sqrt{3}$  C

(3)

(3)  $x^2 = 30^2 - 15^2$   
 $x^2 = 900 - 225$   
 $x = 15\sqrt{3}$  D

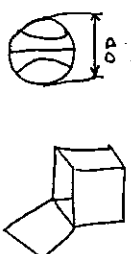
(6)

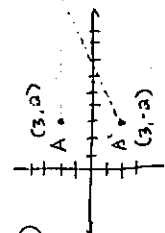
- (7) B  
 (8)  $V = 5^3$   
 $64 = 5^3$   
 $4 = 5$   
 $P = 4.4$   
 $P = \frac{10}{10} = C$

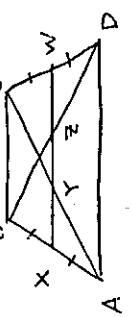


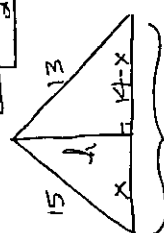
GEOMETRY INDIVIDUAL

4-5

(9)   $SA = 4\pi r^2$   
 $64\pi = 4\pi r^2$   
 $16 = r^2$   
 $4 = r$   
**C 18 = d**

(10)  (3,0)  $\sqrt{(5-3)^2 + (3+0)^2}$   
 $\sqrt{144 + 25}$   
**A 13 = d**

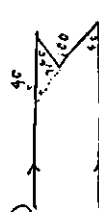
(11)   $XY = 2W = \frac{1}{2}AD$   
 $\frac{BC+10}{2} = XW$   
 $XW = \frac{1}{2}AD + YZ + \frac{1}{2}AD$   
 $XW = AD + YZ$   
 $AD = 10$   
 $XW = 10 + YZ$   
 $\frac{BC+10}{2} = 10 + YZ$   
**A BC-10 = YZ**

(12)   $15^2 - x^2 = 14^2$   
 $15^2 - x^2 = 13^2 - (14-x)^2 = h^2$   
 $15^2 - x^2 = 13^2 - (14-x)^2$   
 $9 = x$   
 $15^2 - 9^2 = h^2$   
**C 18 = h**

GEOMETRY INDIVIDUAL


3-3

(13)  $2x + (3x-5) + (5x+10) = 180$   
 $x = 17\frac{1}{2}$   
 $2(17\frac{1}{2}) = 35$   
 $3(17\frac{1}{2}) - 5 = 47\frac{1}{2}$   
 $5(17\frac{1}{2}) + 10 = 97\frac{1}{2}$   
**B CBTUSE B**

(14)  **B**


(15)  $A_{circle} = 25\pi$   
 $A_{square} = 100$   
 $A = 100 - 25\pi$   
**A**

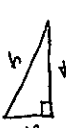
(16)  $2x^2 + 9 = 8x + 1$   
 $2x^2 - 8x + 8 = 0$   
 $x^2 - 4x + 4 = 0$   
 $(x-2)(x-2) = 0$   
 $x = 2$   
 $8(2) + 1 = 17 \times 2 = 34$   
**A 34**

(17)   $4m \times x = mABC$   
 $\frac{mABC - mADC}{2} = m \times x$   
 $\frac{4m \times x - mADC}{2} = m \times x$

(17) ... CONTINUED...  
 $4m \times x - mADC = 2m \times x$   
 $2m \times x = mADC$   
 $2m \times x + 4m \times x = 360$   
 $m \times x = 60$   
 $\therefore mADC = 360 - 4m \times x$   
 $mADC = 180$   
**B**

(18) **B**  
 (19) **D**  
 (20) **D**  
 (21) LET 3 ANGLES BE  $x, 90-x, 180-x$   
 THEN WE HAVE  
 $x + (90-x) + (180-x) = 1440 - 1230$   
 $270 - x = 210$   
 $x = 60$   
**E 50, 40, 130**

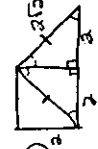
(22)   $A = 25\sqrt{3} - 6\pi$   
 Triangle =  $\frac{5^2\sqrt{3}}{4}$   
 $A_{total} = \frac{1}{2} \times 36\pi = 6\pi$   
 $30 \times 25\sqrt{3} = \frac{5^2\sqrt{3}}{4}$   
**D 5 = 10**

(23)   $K = \frac{\pi}{4}$   
 $K^2 = \frac{25}{121}$   
 $A = \frac{1}{2}(2 \times 4) = 4$   
 $K^2 \cdot A = \frac{25}{121} \cdot 4 = \frac{100}{121}$   
**A**

(24) **B**  
 (25)  $c^2 = 12^2 + 10^2$   
 $c = 16$   
 $\cos x = \frac{10}{16} = \frac{5\sqrt{61}}{61}$   
**A**

(26)  $5x - 3y = 2$   
 $y = \frac{5}{3}x - \frac{2}{3}$   
**B**

(27) **D**  $\sqrt{(5-0)^2 + (1-0)^2} = \sqrt{26}$   
 (28) **C**  
 (29)  $(n-2)180 = 2340$   
 $n-2 = 13$   
 $n = 15$   
**D**

(30)   $4\sqrt{2} + 4$   
**A**