

ANSWERS TO GEOMETRY TEAM

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|------------------|------------------------------------|
| 1. 63 | 9. 676 |
| 2. $\frac{4}{5}$ | 10. $\frac{64\pi}{3} - 16\sqrt{3}$ |
| 3. 1671 | 11. 28 |
| 4. 144π | 12. 9π |
| 5. -1 | 13. $4\sqrt{105}$ |
| 6. 1.5 | 14. 6 |
| 7. 12 | 15. 6 |
| 8. $\frac{3}{5}$ | |

ANSWERS TO GEOMETRY INDIVIDUAL

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|------------------------|-----------------------------|
| 1. C | 16. B |
| 2. A | 17. C |
| 3. B | 18. C |
| 4. C | 19. B |
| 5. C | 20. B |
| 6. B | 21. A |
| 7. D | 22. A |
| 8. A | 23. C |
| 9. D | 24. B |
| 10. C | 25. C |
| 11. C | 26. E ($96 + 96\sqrt{3}$) |
| 12. D | 27. A |
| 13. B | 28. D |
| 14. A | 29. D |
| 15. E ($18\sqrt{2}$) | 30. E (35) |

4 Geometry Team Plant City Invitational 1999

1.
$$-16 + -36 + -4 = -56$$

$$\begin{array}{cccc} -4 & -2 & 6 & -4 \\ 8 & -6 & 1 & 8 \end{array}$$

$24 + -2 + 48 = 70$

$$\left| \frac{70 - -56}{2} \right| = \boxed{63}$$

2. $(-3, -2) \quad 4x - 3y + 2 = 0$

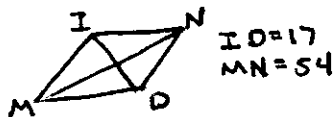
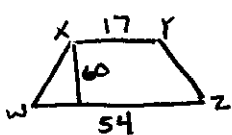
$$d = \left| \frac{4(-3) - 3(-2) + 2}{\sqrt{4^2 + (-3)^2}} \right|$$

$$\boxed{d = \frac{4}{5}}$$

3. $a = \frac{n(n-3)}{2} = \frac{12(9)}{2} = 54$

$$b = \frac{360}{n} = \frac{360}{6} = 60^\circ$$

$$c = \sqrt{(8)^2 + (15)^2} = 17$$



$$A = \left(\frac{17+54}{2} \right) 60 = 2130$$

$$A = \frac{d_1 \cdot d_2}{2}$$

$$A = \frac{(17)(54)}{2}$$

$$A = 459$$

$$2130 - 459 = \boxed{1671}$$

4. $V = \frac{4}{3} \pi r^3$

$$SA = 4\pi r^2$$

$$\frac{4}{3} \pi r^3 = 288$$

$$r^3 = 216$$

$$r = 6$$

$$SA = 4\pi (6)^2 =$$

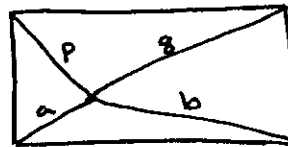
$$\boxed{144\pi}$$

5. Golden Ratio = $\frac{1+\sqrt{5}}{2}$

$$\frac{1+\sqrt{5}}{2} \div \frac{4}{2-2\sqrt{5}} = \frac{1+\sqrt{5}}{2} \cdot \frac{2-2\sqrt{5}}{4} =$$

$$\frac{2-10}{8} = \boxed{-1}$$

6.



Any pt. in a rectangle
 $p^2 + b^2 = a^2 + q^2$

$$(.9)^2 + (1.3)^2 = (.5)^2 + q^2$$

$$q^2 = 2.25$$

$$q = \boxed{1.5}$$

7. $V + F - E = 2$

$$V + 20 - 30 = 2$$

$$V = \boxed{12}$$

8. $x = x_1 + r(x_2 - x_1)$

$$3 = 6 + r(1-6)$$

or $1 = 4 + r(-1-4)$

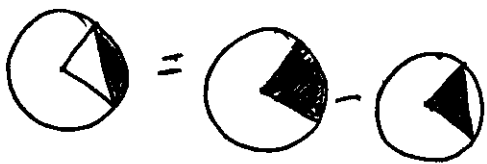
$$r = \boxed{\frac{3}{5}}$$

9. sum of consecutive odd numbers = n^2

51 is the 26th odd number

$$26^2 = \boxed{676}$$

10.



$$8^2 \pi \left(\frac{120}{360}\right) - \frac{1}{2} 8^2 \sin 120$$

$$\boxed{\frac{64\pi}{3} - 16\sqrt{3}}$$

11. Look for vertical angles

$$82^\circ = (3x-1) + (3x-1)$$

$$x = 14$$

$$5y + 8 = 2x + 3y$$

$$5y + 8 = 28 + 3y$$

$$y = 10$$

$$7z + 5 = 4y$$

$$7z + 5 = 40$$

$$z = 5$$

$$\frac{xy}{z} = \frac{(14)(10)}{5}$$

$$\boxed{28}$$

12. Area between the inscribed and circumscribed circles about any regular polygon is

$$\left(\frac{1}{2} \text{ side length}\right)^2 \cdot \pi$$

$$\pi \left(\frac{1}{2}(6)\right)^2 = \boxed{9\pi}$$

13.

$$A = \sqrt{(s-a)(s-b)(s-c)(s-d)}$$

$$\text{where } s = \frac{a+b+c+d}{2}$$

$$A = \sqrt{(13-6)(13-7)(13-5)(13-8)}$$

$$A = \sqrt{7 \cdot 6 \cdot 8 \cdot 5}$$

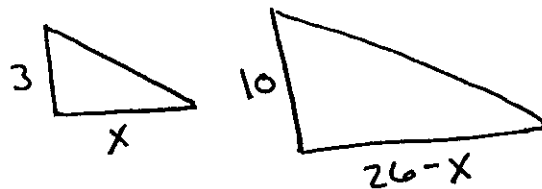
$$A = \boxed{4\sqrt{105}}$$

14. $9+x = (5-y) + (y+10)$

$$9+x = 5+10$$

$$\boxed{x = 6}$$

15. similar triangles



$$\frac{3}{x} = \frac{10}{26-x}$$

$$78 - 3x = 10x$$

$$\boxed{x = 6}$$