2006 Pizitz Mathematics Tournament
Eighth Grade Written Test

1. Simplify $24 - 4(12 - 3^2 - 6^0)$.

A. 40 B. 16 C. 12 D. 60 E. NOTA

2. Evaluate $2c^3 - b + a^2$ given a = 4, b = –3, and c = –2.

A. 29 B. 35 C. 7 D. 3 E. NOTA

3. If M = {even whole numbers less than 10}, N = {non-negative integers}, and P = {primes less than 10}, what is $(N \cap M) \cup P$?

A. {2,3,4,5,6,7,8,9} B. {0,2,3,4,5,6,7,8} C. {0,2,3,4,5,6,7,8,9} D. {2,3,4,5,6,7,8} E. NOTA

4. Find the sum of the coefficients for $5x^2 + 4xy - 3(x + 2)$.

A. 9 B. 6 C. 0 D. 10 E. NOTA

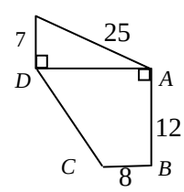
5. Solve: $5(3x - 7) + 13 = \frac{3}{4}(12x + 8) - 2x$.

A. x = 3.5 B. x = 0.25 C. $x = {}^{28}/_{5}$ D. x = –22 E. NOTA

6. A computer system originally cost $1200. What was its total cost after a 15 % discount and an 8% tax rate were applied?

A. $1056 B. $935.19 C. $1058 D. $1101.60 E. NOTA

7. Find the area of the trapezoid ABCD, given $\overline{AD} \parallel \overline{BC}$.



A. 168 sq. units C. 192 sq. units

B. 174 sq. units D. 156 sq. units E. NOTA

8. Fifty-eight men and thirty-three women participated in a 5K run for charity. In how many ways can 1st, 2nd, and 3rd place be awarded to the fastest three runners, regardless of gender?

A. 728,910 B. 1,914 C. 139,230 D. 73,710 E. NOTA

9. If 3 bags of popcorn and 3 drinks cost $17.25, and 2 bags of popcorn and 3 drinks cost $13.75, what is the cost for 1 bag of popcorn and 2 drinks?

A. $9 B. $10.25 C. $11.50 D. $8 E. NOTA

10. Simplify: $(3x - 5)(4x - 7)$.

A. $12x^2 - 12x + 35$ B. $12x^2 - 41x + 35$ C. $12x^2 - 41x - 35$ D. $12x^2 + 41x + 35$ E. NOTA

11. If A = the degree of the term $5g^2h$, and B = the degree of the polynomial $2g^4 + g^2h^3 - 3gh^2$, find A + B.

A. 8 B. 14 C. 7 D. 13 E. NOTA

12. Solve: $0.25x - 1.75(x + 3) = 2x - 0.875$.

A. $x = ½$ B. $x = – ½$ C. $x = – {}^{5}/_{4}$ D. $x = {}^{5}/_{4}$ E. NOTA

13. In a card game, 2 points are awarded for each combination of cards that total 15. How many points would be awarded if a player's hand held the ten of diamonds, five of hearts, five of clubs, five of diamonds and a five of spades?

A. 14 B. 8 C. 12 D. 18 E. NOTA

14. The ratio of the side lengths in a triangle is 5:8:5. If the perimeter is 54, what is its area?

A. 100 sq. units B. 108 sq. units. C. 160 sq. units D. 180 sq. units E. NOTA

15. Find the slope of the line containing the points (1, 1), (2, ${}^{2}/_{5}$) and (– ${}^{2}/_{3}$, 2).

A. ${}^{5}/_{3}$ B. ${}^{3}/_{5}$ C. – ${}^{5}/_{3}$ D. – ${}^{3}/_{5}$ E. NOTA

16. Shopping at the January sales, Mrs. Mills bought an outfit marked down to $84. It had been 30% off, with an extra clearance discount of 40% off, and then Mrs. Mills used a coupon for another 20% off. What was the original price?

A. $201.60 B. $350 C. $250 D. $174 E. NOTA

17. A scale model of a plane has a fuselage length of 8.5 inches. If the full-size plane has a fuselage length of 68 feet, what is the scale in inches to feet?

A. 1:8 B. 1:4 C. 1:9 D. 1:7 E. NOTA

18. Twelve points are located on a circle and C = the number of line segments that can be drawn with these points as endpoints. D = the number of diagonals that can be drawn on a decagon. What is C – D?

A. 30 B. 41 C. 31 D. 0 E. NOTA

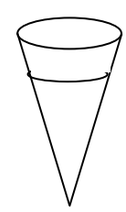
19. In how many ways can the letters in SAVANNAH be arranged?

A. 40,320 B. 6,720 C. 10,080 D. 3,360 E. NOTA

20. Simplify: $3x^2y(2xy) – 2xy^2(5 – x^2)$.

A. $4x^3y^2 – 10xy^2$ B. $8x^3y^2 – 10xy^2$ C. $7x^3y^2 – 10xy^2$ D. $8x^3y^2 – 7xy^2$ E. NOTA

21. The open-end of an ice cream cone is dipped into melted chocolate and then rolled in chopped nuts. If the cone has a radius of 2 in. and a slant height of 8 in., what is the exterior surface area covered by the 2 in. wide band of chocolate and nuts?



A. 3π sq. in. C. 7π sq. in.

B. 4π sq. in. D. 9π sq. in. E. NOTA

22. Simplify: $3\sqrt{75} + 2\sqrt{45} – \sqrt{147}$.

A. $25\sqrt{3} – \sqrt{147}$ C. $15\sqrt{3} + 6\sqrt{5} – \sqrt{147}$

B. $8\sqrt{3} + 6\sqrt{5}$ D. $– 5\sqrt{27}$ E. NOTA

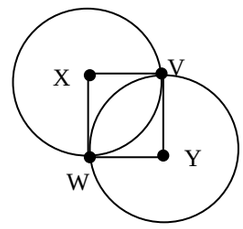
23. A line intersects the parabola $y = 2x^2 + 4x +1$ at its vertex and the point (1,5). What is the slope of the line?

A. –3 B. 3 C. $^1/_3$ D. $-^1/_3$ E. NOTA

24. Pure orange juice is added to a container with five gallons of 30% orange juice concentrate to make a 50% concentrate. How many gallons of the 50% concentrate will be produced?

A. 7 gal. B. 3 ½ gal. C. 9.7 gal. D. 2 gal. E. NOTA

25. Two congruent circles with centers X and Y, intersect as shown at points W and V, forming square XWYV. If the diameter of each circle is 6, what is the area of the "football" shaped intersection?

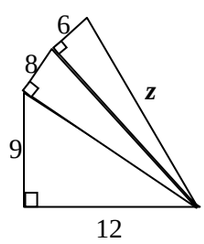


A. $\left(\frac{9}{4}\pi - \frac{9}{2}\right)$ sq. units C. $\left(\frac{9}{4}\pi - 9\right)$ sq. units

B. $\left(9 - \frac{9}{2}\pi\right)$ sq. units D. $\left(\frac{9}{2}\pi - 9\right)$ sq. units E. NOTA

Tiebreakers. ***Please write answers to tiebreakers on the back of the scantron.***

TB1. Find *z*.



TB2. *y* varies directly as *x*. If *y* = 4 when *x* = 7, find *x* when *y* = 9.

TB3. The price of a stamp recently changed from 37¢ to 39¢. To the nearest hundredth, what was the percent of increase?