

**Pizitz 2011 Mathematics Tournament
Seventh Grade Written Test**

1. Find the sum of the solutions to the equation: $r^2 + 4r = 96$.
A. 8 B. -4 C. -8 D. 2 E. NOTA
2. Find the probability of drawing a red face card followed by a black face card from a standard deck of cards with replacement.
A. $1/4$ B. $1/16$ C. $4/169$ D. $9/676$ E. NOTA
3. Find the mean of the factors of 108.
A. $28\frac{1}{3}$ B. 25 C. $23\frac{1}{3}$ D. 22.5 E. NOTA
4. Given $2x + 5y = 16$ and $x + 3y = 5$, find $x - y$.
A. 13 B. 17 C. 21 D. 29 E. NOTA
5. A circle is inscribed in a square. Find the circumference of the circle if the area of the square is 196.
A. 7π B. 14π C. 13π D. 28π E. NOTA
6. Evaluate: $[10 + 2 - 15 \div 3 \cdot 6 - 5 + (21 \div (7 \cdot 3))]^2$.
A. 484 B. -22 C. 196 D. 576 E. NOTA
7. Find the number of 4-person teams that can be formed from a group of ten people.
A. 140 B. 720 C. 210 D. 5040 E. NOTA
8. A real estate agent makes a \$750 base salary per month and 3% commission on the properties she sells. If she made \$8,430 last month, find the dollar value of the properties she sold.
A. \$25,600 B. \$28,100 C. \$256,000 D. \$281,000 E. NOTA
9. Find the positive difference between the surface area and volume of a cube with side lengths of 8.
A. 64 B. 128 C. 448 D. 512 E. NOTA
10. Find the probability of getting a sum greater than 12 when a pair of eight-sided dice is rolled.
A. $3/16$ B. $5/16$ C. $9/32$ D. $5/32$ E. NOTA

11. Find the sum of the LCM and GCF of 12, 60, and 180.

- A. 192 B. 240 C. 180 D. 912 E. NOTA

12. If A = set of positive even integers ≤ 10 , B = set of factors of 36, and C = set of factors of 60, find the sum of the elements contained in $(C \cap B) \cup A$.

- A. 46 B. 12 C. 36 D. 64 E. NOTA

13. If 30% of x is 9, 12.5% of y is 6, and 15% of z is 7.5, find xyz .

- A. 66,240 B. 7,200 C. 72,000 D. 36,000 E. NOTA

14. By how much does the median exceed the range of the numbers listed in the stem and leaf plot below?

Stem	Leaf
6	2 6
7	2 2 8
8	5
9	0 1 5 6

$$2|3 = 23$$

- A. 42 B. 47.5 C. 30.5 D. 37.5 E. NOTA

15. The ratio of two numbers is 5:13. If the sum of the two numbers is 162, find the sum of the digits of the largest number.

- A. 4 B. 9 C. 10 D. 12 E. NOTA

16. If $5a = 3b$, $\frac{b}{c} = \frac{7}{9}$, and $7c = 10d$, find $\frac{a}{d}$.

- A. $\frac{2}{3}$ B. $\frac{6}{7}$ C. $\frac{3}{2}$ D. $\frac{3}{5}$ E. NOTA

17. Find the single percent discount equivalent to a 60% discount followed by a 35% discount.

- A. 82% B. 68% C. 70% D. 74% E. NOTA

18. Each letter of the following phrase is put on a separate card and one card is drawn at random. Find the odds of getting a vowel. "Auburn Tigers are National Champs"

- A. 12:29 B. 2:3 C. 11:18 D. 4:5 E. NOTA

19. Convert the following: $2200 \text{ cm}^2 = \underline{\hspace{2cm}} \text{ m}^2$

- A. 22 B. 2.2 C. 0.22 D. 0.022 E. NOTA

20. Find the geometric mean of 20 and 25 (in simplest form).

- A. $10\sqrt{3}$ B. 22.5 C. $5\sqrt{5}$ D. $10\sqrt{5}$ E. NOTA

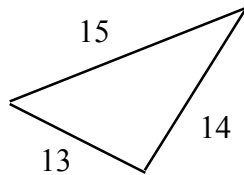
21. Find the distance between the points (1, 26) and (8, 2).

- A. 25 B. 24 C. 19 D. 17 E. NOTA

22. Evaluate: $81^{3/4} - 32^{3/5}$.

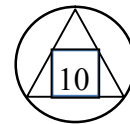
- A. 3 B. 19 C. 21 D. 41 E. NOTA

23. Find the area of the triangle.



- A. 98 B. 105 C. 84 D. 91 E. NOTA

24. If $\boxed{x} = x^2$, $\triangle x = \frac{(x-7)}{3}$ and $\bigcirc x = \sqrt{x+5}$, find the cube of



- A. 216 B. 27 C. 6 D. 360 E. NOTA

25. Find the area of the polygon formed by the lines $y = -2x + 6$, $x + y = 2$, the x-axis, and the y-axis.

- A. 6 B. 5 C. 8 D. 7 E. NOTA

Tiebreakers Please write each tiebreaker answer in the top margin on the back of the scantron.

TB1. The surface area of two cubes is in the ratio of 25:36. Find the ratio of their volumes.

TB2. Find the mean of $15\frac{3}{4}$, $20\frac{1}{2}$, and $12\frac{4}{5}$. Express the answer as a mixed number.

TB3. Factor completely: $8x^2 - 6x - 27$.