Cindy D. Wright Mathematics Tournament 2014
Seventh Grade Written

1. Find 20% of 50% of 80% of 1800.

   A. 14 B. 1440 C. 144 D. 140 E. NOTA

2. Amy bought a dress that was on sale for 20% off. She had a coupon for an additional 25% off after the original reduction. The dress originally cost $60.00. What was the cost of the dress after the discounts and with a 9% sales tax?

   A. $39.24 B. $36.00 C. $68.40 D. $ 3.27 E. NOTA

3. Simplify. $2x^2 + x + 2 + 3x - x^2 + 5$

   A. $3x^2 + 4x + 7$ B. $x^2 + 2x + 5$ C. $-x^2 - 4x + 7$ D. $x^2 + 4x + 7$ E. NOTA

4. Solve. $3x + 5(2 + 6) = 6x(1 + 2)$

   A. $\frac{8}{3}$ B. $\frac{22}{3}$ C. $\frac{3}{8}$ D. $\frac{3}{22}$ E. NOTA

5. Find $f(-4)$, if $f(x) = 5x - x^2$

   A. 36 B. -4 C. -36 D. 4 E. NOTA

6. Simplify. $\left(5 \times 2^{-1} + 5 \cdot 4 \cdot \frac{3}{2}\right)^0 + 16$

   A. 16 B. 17 C. $48\frac{1}{2}$ D. $32\frac{1}{2}$ E. NOTA

7. What is the product of the GCF and LCM of 45, 15, and 20?

   A. 80 B. 900 C. 125 D. 75 E. NOTA

8. If $f(x) = \frac{x^3+1}{x^2-x-1}$, find f(0.5).

   A. 2.08 B. 1.6 C. $3\frac{1}{3}$ D. $-\frac{9}{10}$ E. NOTA

9. Find the upper quartile for the following set.
   {96, 73, 18, 22, 92, 62, 73, 22, 48, 13, 61}

   A. 61 B. 73 C. 96 D. 92 E. NOTA

10. A football is thrown in such a way that it's height is given by the equation $h = \frac{1}{2}t^2 + 6t + 5$. If h represents height in feet and t represents time in seconds, find the height of the football after 9 seconds.

A. 99.5 ft B. 140 ft C. 13.5 ft D. 54.5 ft E. NOTA

11. It takes 5 workers 3 minutes to make 4 shirts. How many minutes will it take for 9 workers to make 6 shirts?

A. 16 B. 3 C. 3.5 D. 2.5 E. NOTA

12. Solve. $124_5 \div 1101_2 =$ _____$_3$

A. 10_3 B. 3_3 C. 1_3 D. 21_3 E. NOTA

13. Avery's age is $\frac{1}{2}$ of Billy's age. Carol's age is 3 more than Avery's age. The sum of all three ages is 31. How old will Carol be in 10 years?

A. 14 B. 20 C. 7 D. 24 E. NOTA

14. If each edge of a square is increased by 50%, find the percent of increase in its area?

A. 100% B. 125 % C. 225 % D. 150 % E. NOTA

15. Jerome took the Pizitz math tournament test. Out of 25 questions he got 80% correct. How many did he miss?

A. 46 B. 28 C. 12 D. 8 E. NOTA

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

A. 85 B. 112 C. 36 D. 46 E. NOTA

17. What is the sum of one interior angle of a regular hexagon and one interior angle of a regular nonagon?

A. 260° B. 1980° C. 720° D. 100° E. NOTA

18. Simplify. $\left(\frac{6!4!2!}{5!\,4!1!}\right)^2$

A. 12 B. 24 C. 144 D. 158.76 E. NOTA

19. A book has 495 pages. Find the number of digits used to number the book assuming the first page is numbered with the numeral 1.

A. 495 B. 1377 C. 1257 D. 585 E. NOTA

20. Write the equation of a line in slope-intercept form that passes through $(0, 5)$ and $(7, -2)$.

A. $y = \frac{7}{3}x + 5$ B. $y = x + 5$ C. $y = -x + 5$ D. $y = -\frac{7}{3}x + 5$ E. NOTA

21. Simplify. $\frac{2x}{x^2-4} + \frac{x}{(x+2)}$

A. $\frac{2}{(x+2)(x-2)}$ B. $\frac{x(x+4)}{(x+2)(x-2)}$ C. $\frac{x^2}{(x+2)(x-2)}$ D. $\frac{2x}{x-2}$ E. NOTA

22. Harry buys a choco-nut sundae from Fortescue's Ice Cream Parlor in Diagon Alley. A knut is the smallest unit of currency. There are 29 knuts in a sickle and 17 sickles in a galleon. The ice cream costs Harry 4 galleons and 15 sickles. How many knuts does that amount represent?

A. 1972 B. 2400 C. 2480 D. 2407 E. NOTA

23. Katniss can defeat district 1 competitors in 6 hours. Peta can defeat them in 4 hours. How long will it take them to defeat district 1 together?

A. $2\frac{2}{5}$ hours B. $4\frac{1}{5}$ hours C. $1\frac{3}{5}$ hours D. 3 hours E. NOTA

24. How many sides does a polygon have if it has a total of 170 diagonals?

A. 18 B. 12 C. 24 D. 20 E. NOTA

25. There are 13 distinct seats lined up in a row in a room. There are 13 of each kind of person in the room: hobbits, humans, and giants. Hobbits take up one seat each. Humans take up two each and giants each need 4 seats. If all hobbits are identical; all humans are identical; and all giants are identical, then how many different ways are there for some of the people to sit in the 13 seats?

A. 193 B. 361 C. 816 D. 1024 E. NOTA

Tiebreakers ***Please write tiebreaker answers in the top margin on the back of the scantron.***

TB1. A two digit number is randomly selected. What is the probability that the sum of the digits of the number is equal to five? (Express your answer as a simplified fraction.)

TB2. Find the area of the polygon which is formed by the lines $y = -2x + 6$, $x + y = 2$, the x axis and and the y axis.

TB3. A three feet wide door swings open 90°. How big is the area in which furniture may not be placed in order to avoid the door? Express your answer in terms of π.