Sixth Grade Written Exam
Vestavia Hills High School Math Tournament
2013

1. If you correctly answer 16 of the first 25 questions on this exam, miss three of the first 25, and leave the rest blank, what will be your score?
   A. 64 B. 61 C. 80 D. 77 E. NOTA

2. Simplify $\left|\left(12^2-71\times2+8\right)^2-102\right|$.
   A. 38 B. 3 C. 1 D. 2 E. NOTA

3. Every time Kevin plays basketball, he has to pick 4 people to play with him. If there are 5 players to choose from, in how many ways can Kevin pick 4 players? Order does not matter.
   A. 7 B. 4 C. 5 D. 6 E. NOTA

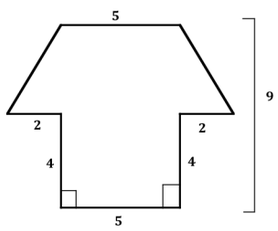
4. Simplify $\frac{5!-4!}{3}$. A. $\frac{1}{3}$ B. 32 C. $\frac{20}{3}$ D. 0 E. NOTA

5. Which proportion is correct?
   A. $\frac{4}{10}=\frac{3}{6}$ B. $\frac{1}{2}=\frac{7}{8}$ C. $\frac{4}{10}=\frac{7}{8}$ D. $\frac{1}{2}=\frac{3}{6}$ E. NOTA

6. Find the base-4 representation of 201_3.
   A. 12 B. 103 C. 201 D. 301 E. NOTA

7. Solve for x: $\sqrt{61+x}=8$.
   A. 3 B. −125 C. ±3 D. Both A & B E. NOTA

8. Find the area of the figure.
   A. 65 B. 80
   C. 55 D. 34.5
   E. 40



9. Kevin had a bag containing 12 red, 16 blue, and 2 green jelly beans. Sophie ate $2(3+2\div0.5)$ of the blue jelly beans. Now, what are the odds of Kevin randomly drawing a red jelly bean?
   A. 3:4 B. 3:1 C. 6:11 D. 6:5 E. NOTA

10. To get home, Kevin first travels 6 miles due east and then travels 8 miles due north. What is the shortest distance between his starting point and his house?
    A. 14 B. 10 C. 100 D. 2 E. NOTA

11. Find $3\☺5$ if $a\☺b=4b^2+3a$.
    A. 49 B. 51 C. 109 D. 27 E. NOTA

12. Simplify $\frac{a^5b^{-1}c^3}{a^3b^{-4}c^{-4}}$.
    A. $a^2b^3c^7$ B. a^2b^3c C. $\frac{a^2c}{b^5}$ D. $\frac{a^2c}{b^3}$ E. NOTA

13. Find the sum of the first ten prime numbers.
    A. 101 B. 130 C. 129 D. 99 E. NOTA

14. Kevin loves to wrestle big game. If he subdues 10 grizzly bears with weights 310, 319, 341, 290, 327, 303, 314, 316, 314, and 326, find the sum of the mean, median, and mode of the weights of the bears that Kevin wrestled.
    A. 946 B. 944 C. 943 D. 945 E. NOTA

15. If 3 Wendis equal 5 Wendys, 4 Lus equal 10 Wendys, and 2 Lus equal 15 Lius, how many Lius are equal to one Wendi?
A. 5 B. 4 C. 3 D. 2 E. NOTA

16. If the probability that Kevin lifts weights on Monday is 2/5 and the probability that he lifts weights on Tuesday is 6/11, what is the probability that Kevin does not lift weights on Monday and Tuesday?
A. $\frac{3}{55}$ B. $\frac{52}{55}$ C. $\frac{8}{11}$ D. $\frac{3}{11}$ E. NOTA

17. Lin Lin has a container with 4200 milliliters of water. How many liters of water are in the container?
A. 0.042 B. 0.42 C. 4.2 D. 42 E. NOTA

18. The NSA has determined that Kevin lives at the midpoint of (1, 5) and (3, 7). What are the coordinates of Kevin's home?
A. (2, 6) B. (1, 1) C. (4, 12) D. (2, 2) E. NOTA

19. If Kevin has 3 different berry bushes, and each grows 246 fruits, how many fruits will he harvest?
A. 738 B. 638 C. 246 D. 324 E. NOTA

20. If 2 Kevins can eat 6 chips in 3 hours, then how long, in hours, will it take for 4 Kevins to eat 12 chips?
A. 6 B. 4 C. 3 D. 2 E. NOTA

21. Kevin's Noodle Nook sells bowls of noodles. Each bowl can be any combination of 1 of 3 sauces, 2 of 6 seasonings, and 1 of 3 types of noodles. How many combinations of noodle bowls are served at Kevin's Noodle Nook? Assume that there can be no doubles of a single seasoning.
A. 270 B. 54 C. 135 D. 27 E. NOTA

22. Kevin loves to go shopping with his best friend Shirley. Shirley wants to buy $130 boots and expects Kevin to pay for them. Kevin forgot his wallet and only has $25 in his pocket. If there is a 10% sales tax, how much more money will Kevin need to buy Shirley the boots?
A. $118 B. $106.30 C. $112 D. $105 E. NOTA

23. Two vertices of a right triangle are (–2, 1) and (–5, 4). What point could represent the third vertex?
A. (5, –1) B. (1, –5) C. (–1, 5) D. (–5, 1) E. NOTA

24. Kevin gets $15 for each A and $7 for each B. If he received $117 for 6A's, 3 B's, and 12 C's, how much money does he get for each C?
A. $2 B. $0.75 C. 0.50 D. $1 E. NOTA

25. What property is shown in the equation $6 \times 0 = 0$?
A. zero property of multiplication B. commutative property of multiplication
C. identity property of multiplication D. inverse property of multiplication E. NOTA

Write the answers to the tie-breakers on the back of your bubble form. Denote each answer as T1, T2, and T3.

T1. Compute $(2 \times 5)^3 - 10 \times 8$.

T2. An airplane leaves Seattle, Washington, at noon and flies three hours to Dallas, Texas. After a one-hour layover, it then flies four hours to New York, New York. What time does it land in New York?

T3. Andrea drove 56 miles to visit Suren. She drove 42 miles before stopping for gas. What percent of the drive did Andrea complete before stopping for gas?

You may keep your copy of the exam.