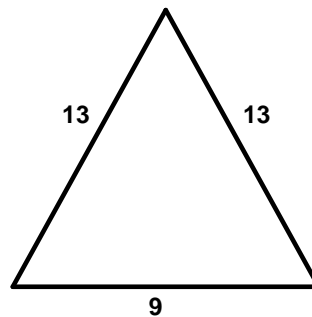


**2010 Vestavia Hills High School
Mathematics Tournament
6th Grade Math Written Examination**

1. Jack bought three pencils for 45¢ each. The tax for all three pencils was 11¢. Jack gave the clerk a \$5 bill. What was his change?
A. \$1.46 B. \$3.75 C. \$1.35 D. \$3.54 E. NOTA
2. Solve for the value of x in the equation $3(2x + 6) = 60$.
A. 7 B. 21 C. 13 D. 9 E. NOTA
3. Norman took four tests. His scores were 78, 95, 90, and 65. What does Norman have to make on his next test to have an overall average of 80?
A. 72 B. 80 C. 82 D. 85 E. NOTA
4. What is the product of the mean and the median of the set $\{5, 10, 15, 20, 25\}$?
A. 125 B. 30 C. 225 D. 15 E. NOTA
5. If A is the greatest common factor of 78 and 108, and B is the least common multiple of 36 and 144, what is $B - A$?
A. -138 B. 138 C. 1368 D. -1368 E. NOTA
6. Fast Farhan can run a mile in 6 minutes and Speedy Sisi can run a mile in 10 minutes. If they started out at the same point and ran in opposite directions, how many miles apart will they be in half an hour?
A. 16 B. 2 C. 26 D. 15 E. NOTA

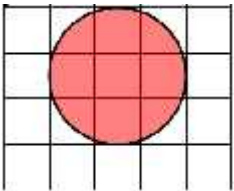
7. Identify the type of triangle shown to the right.

- A. isosceles B. right
C. scalene D. equilateral
E. NOTA



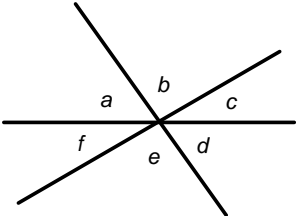
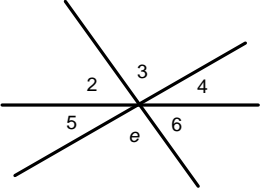
8. A rectangular prism has dimensions 4 cm, 6 cm, and 3 cm. If a similar prism has twice those dimensions, what is the ratio between the volumes of the larger prism and the smaller prism?
A. 2:1 B. 8:1 C. 6:1 D. 4:1 E. NOTA
9. Which phrase correctly completes the sentence $36\frac{5}{8}$ is _____ 36.63?
A. less than B. greater than C. less than or equal to D. greater than or equal to E. equal to
10. Twin primes are two prime numbers that have a difference of 2, such as 3 and 5 or 17 and 19. What is the sum of the greatest twin primes less than 60?
A. 60 B. 36 C. 116 D. 112 E. NOTA

11. If the sides of a regular octagon are each 1.5 cm, what is the perimeter of the octagon?
- A. 0.012 hm B. 1.2 m C. 1.2 mm D. 0.00012 km E. NOTA
12. Given the sequence 18, 16, 12, 6, ..., what is the result if the sum of the next two numbers in the sequence is subtracted from the ninth term in the sequence?
- A. -40 B. -2 C. 12 D. 40 E. NOTA
13. Amy’s Autos is having a big sale. For a car with a sticker price of \$20,000 or less, there is a 43% discount. For cars priced \$50,000 to \$79,000, there is a 22% discount. Cars marked \$80,000 or higher are discounted 15%. If Wendy waltzes in and buys a car with a \$60,000 original sticker price, what will she owe Amy? (Assume there are no taxes or fees.)
- A. 13200 B. 50000 C. 73200 D. 46800 E. NOTA
14. While watching their flocks by night, some shepherds managed to lose two-thirds of their sheep. The next morning, the shepherds found four-fifths of the lost sheep. What fraction of the original flock is NOT missing?
- A. $\frac{19}{25}$ B. $\frac{13}{15}$ C. $\frac{4}{5}$ D. $\frac{11}{13}$ E. NOTA
15. At the Vestavia debate tournament, there are only 14 debaters. If each debater debates all the other debaters exactly once, how many total debate rounds will there be?
- A. 91 B. 196 C. 14 D. 182 E. NOTA
16. Forrest owns X number of Gamble brand golf balls and Y number of Nolan brand golf balls. X is an odd number between 10 and 20 and has a remainder of 1 when divided by 8. Y is an even number between 20 and 30 and has a remainder of 3 when divided by 7. What is the value of $X + Y$?
- A. 41 B. 38 C. 40 D. 37 E. NOTA
17. Which of the following is false?
- A. $\frac{2}{9} > \frac{1}{5}$ B. $\frac{5}{7} < \frac{8}{9}$ C. $\frac{5}{14} > \frac{4}{9}$ D. $\frac{3}{7} < \frac{137.25}{274.5}$ E. NOTA
18. Shanna goes to the Banana Barn to buy exactly 13 bananas. She has \$172. Each banana costs a whole number of dollars. How much can the bananas cost, at most, if there is a sales tax of 10%?
- A. \$11 B. \$11.5 C. \$12 D. \$13 E. NOTA
19. Andrew wants to buy several MIMS CDs for Christmas presents. Music Plus’s special is 5 CDs for \$99.75, Coconuts has a deal that is 2 CDs for \$42.30, and FYE sells 3 CDs for \$60.15. Which store should he go to if he wants to get the best deal?
- A. Music Plus B. Coconuts C. FYE D. Music Plus or FYE E. NOTA
20. In how many distinct ways can you rearrange the letters in the word CINNAMON?
- A. 6720 B. 6 C. 336 D. 720 E. NOTA
21. Which of the following is the best approximation for the portion of the graph that is shaded?
- A. 33% B. 35% C. 38% D. 39% E. NOTA



22. Find the sum: $1 + 3 + 5 + 7 + \dots + 97 + 99$.
- A. 2500 B. 5000 C. 1001 D. 2600 E. NOTA
23. If $A \bullet B$ means $A + B$, $A \odot B$ means $\frac{A \times B}{A + B}$, and $A \ast B$ means $2 \times A - 3 \times B$, what is $5 \bullet [4 \odot (3 \ast 2)]$?
- A. 5 B. 5.25 C. 9 D. -4 E. NOTA
24. On his last math test, Enrico answered 50 questions, left five unanswered, and answered one incorrectly. Approximately what percent of the questions did he answer correctly?
- A. 89 B. 90 C. 92 D. 88 E. NOTA
25. Each can in a 24-can case of Apple Aashka contains 12 ounces of the yummy drink. How many gallons of Apple Aashka are in one case?
- A. 2.25 B. 2.5 C. 4.5 D. 4.25 E. NOTA

PLEASE WRITE YOUR NAME, COMPLETE SCHOOL NAME, AND TIE-BREAKER ANSWERS ON THE BACK OF THE SCANTRON FORM. DENOTE EACH TIE-BREAKER AS T1, T2, AND T3.

- T1. Write $0.\overline{79}$ as a simplified fraction.
- T2. What is the sum of the mode and range of the set $\{8, 4, 20, 5, 2, 35, 4, 3, 17, 4, 3, 29\}$?
- T3. Let  be defined as $a \times f + b \times e + c \times d$.
- If  has a value of 37, then what is the value of e ?

YOU MAY KEEP THIS COPY OF THE EXAM.