Sample AMC-12 Questions

1. A solid box is 15 cm by 10 cm by 8 cm. A new solid is formed by removing a cube 3 cm on a side from each corner of this box. What percent of the original volume is removed,?

A. 4.5 B. 9 C. 12 D. 18 E. 24

2. If $a \geq b > 1$, what is the largest possible value of $\log_a\left(\frac{a}{b}\right) + \log_b\left(\frac{b}{a}\right)$?

A. -2 B. 0 C. 2 D. 3 E. 4

3. Cindy was asked by her teacher to subtract 3 from a certain number and then divide the result by 9. Instead, she subtracted 9 and then divided the result by 3, giving an answer of 43. What would her answer have been had she worked the problem correctly?

A. 15 B. 34 C. 43 D. 51 E. 138

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4. Mr. Earl E. Bird leaves his house for work at exactly 8:00 AM every morning. When he averages 40 miles per hour, he arrives at his workplace three minutes late. When he averages 60 miles per hour, he arrives three minutes early. At what average speed, in miles per hour, should Mr. Bird drive to arrive at his workplace precisely on time?

A. 45 B. 48 C.50 D. 55 E. 58

5. How many non-congruent triangles with perimeter 7 have integer side lengths?

A. 1 B. 2 C. 3 D. 4 E. 5

6. Let $f(x) = \sqrt{ax^2 + bx}$. For how many real values of a is there at least one positive value of b for which the domain of f and the range of f are the same set?

A. 0 B. 1 C. 2 D. 3 E. infinitely many

ANSWERS

1 (D) 2 (B) 3 (A) 4 (B) 5 (B) 6 (C)