Practice 1.

AMC10A 2019 / Problem 9

What is the greatest three-digit positive integer n for which the sum of the first n positive integers is *not* a divisor of the product of the first n positive integers?

A. 995 B. 996 C. 997 D. 998 E. 999

Practice 2.

AMC10A 2003 / Problem 8

What is the probability that a randomly drawn positive factor of 60 is less than 7?

A. $\frac{1}{10}$ B. $\frac{1}{6}$ C. $\frac{1}{4}$ D. $\frac{1}{3}$ E. $\frac{1}{2}$

Practice 3.

AMC10B 2012 / Problem 10

How many ordered pairs of positive integers (M, N) staisfy the equation $\frac{M}{6} = \frac{6}{N}$?

A. 6 B. 7 C. 8 D. 9 E. 10

Practice 4.

2^N is a factor of 20!. Find the largest possible value of N.

(A)18 (B)16 (C)32 (D)33 (E)12

Practice 5.

AMC10A 2011 / Problem 10

A majority of the 30 students in Ms. Deameanor's class bought pencils at the school bookstore. Each of these students bought the same number of pencils, and this number was greater than 1. The cost of a pencil in cents was greater than the number of pencils each student bought, and the total cost of all the pencils was $17.71. What was the cost of a pencil in cents?

A. 7   B. 11   C. 17   D. 23   E. 77

Practice 6.

Suppose that m and n are positive integers such that $150m = n^3$. What is the minimum possible value of $m + n$?

$(A)15$ $\qquad (B)30$ $\qquad (C)60$ $\qquad (D)210$ $\qquad (E)520$

Practice 7.

The smallest positive integer x for which $2016x = N^3$, where N is an integer, is

$(A)105$ $\qquad (B)126$ $\qquad (C)122$ $\qquad (D)294$ $\qquad (E)441$

Practice 8.

What is the least positive integer by which you could multiply 180 to get a product that is a perfect cube?

$(A)50$ $\qquad (B)75$ $\qquad (C)150$ $\qquad (D)180$ $\qquad (E)5$

Practice 9.

AMC10B 2019 / Problem 7

Each piece of candy in a store costs a whole number of cents. Casper has exactly enough money to buy either 12 pieces of red candy, 14 pieces of green candy, 15 pieces of blue candy, or n pieces of purple candy. A piece of purple candy costs 20 cents. What is the smallest possible value of n?

A. 18 B. 21 C. 24 D. 25 E. 28

Practice 10.

AMC10 2001 / Problem 8

Wanda, Darren, Beatrice, and Chi are tutors in the school math lab. Their schedule is as follows: Darren works every third school day, Wanda works every fourth school day, Beatrice works every sixth school day, and Chi works every seventh school day. Today they are all working in the math lab. In how many school days from today will they next be together tutoring in the lab?

A. 42 B. 84 C. 126 D. 178 E. 252

Practice 11.

AMC10B 2010 / Problem 8

A ticket to a school play costs x dollars, where x is a whole number. A group of 9th graders buys tickets costing a total of $\$48$, and a group of 10th graders buys tickets costing a total of $\$64$. How many values of x are possible?

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

Practice 12.

AMC10A 2005 / Problem 22

Let S be the set of the 2005 smallest multiples of 4, and let T be the set of the 2005 smallest positive multiples of 6. How many elements are common to S and T?

A. 166 B. 333 C. 500 D. 668 E. 1001

Practice 13.

AMC10B 2018 / Problem 23

How many ordered pairs (a, b) of positive integers satisfy the equation

$a \cdot b + 63 = 20 \cdot \text{lcm}(a, b) + 12 \cdot \text{gcd}(a, b),$

where $\text{gcd}(a, b)$ denotes the greatest common divisor of a and b, and $\text{lcm}(a, b)$ denotes their least common multiple?

A. 0 B. 2 C. 4 D. 6 E. 8