Hybleland L9-Lesson 12 Factor and Multiple II-Assignment

Practice 1.

How many distinct positive integral factors would the following product have: 12×15×17?

$(A)9$ $(B)6$ $(C)18$ $(D)36$ $(E)56$

Practice 2.

Let $N = 71^3 + 3\times 71^2 + 3\times 71 + 1$. How many positive integers are factors of N?

$(A)54$ $(B)45$ $(C)60$ $(D)69$ $(E)70$

Practice 3. (AMC 12)

If n is a positive integer such that 2*n* has 28 positive divisors and 3*n* has 30 positive divisors, then how many positive divisors does 6*n* have?

$(A)32$ $(B)34$ $(C)35$ $(D)36$ $(E)38$

Practice 4.

Find the probability that a randomly drawn positive factor of 84 is less than 11.

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

Practice 5.

How many positive cubes divide $3!\cdot 5!\cdot 7!\cdot 9!$?

$(A)6$ $(B)13$ $(C)24$ $(D)30$ $(E)36$

Practice 6.

How many perfect squares are divisors of the product $1!\cdot 2!\cdot 3!\cdot 4!\cdot 5!\cdot 6!\cdot 7!\cdot 8!\cdot 9!\cdot 10!$?

$(A)4320$ $(B)2160$ $(C)1080$ $(D)912$ $(E)864$

Practice 7.

Find the smallest positive integer by which 252 can be multiplied so that result would be a perfect cube.

$(A)2352$ $(B)147$ $(C)294$ $(D)333$ $(E)128$

Practice 8.

How many of the positive integer factors of 432 are perfect squares?

$(A)3$ $(B)6$ $(C)12$ $(D)20$ $(E)2$

Practice 9.

How many odd perfect square factors does $2^4 \times 3^6 \times 5^{10} \times 7^9$ have?

$(A)60$ $(B)120$ $(C)30$ $(D)115$ $(E)20$

Practice 10.

How many perfect cube factors does $2^4 \times 3^6 \times 5^{10}$ have?

$(A)24$ $(B)20$ $(C)16$ $(D)14$ $(E)12$

Practice 11.

How many perfect cubes are divisors of the product
$1! \cdot 2! \cdot 3! \cdot 4! \cdot 5! \cdot 6! \cdot 7! \cdot 8! \cdot 9!$?

$(A)104$ $(B)220$ $(C)164$ $(D)136$ $(E)108$

Practice 12.

AMC10B 2017 / Problem 20

The number $21! = 51,090,942,171,709,440,000$ has over $60,000$ positive integer divisors. One of them is chosen at random. What is the probability that it is odd?

A. $\frac{1}{21}$ B. $\frac{1}{19}$ C. $\frac{1}{18}$ D. $\frac{1}{2}$ E. $\frac{11}{21}$

Practice 13.

If one of the positive factors of 80 is to be chosen at random, what is the probability that the chosen factor will be less than 10?

$(A)\frac{3}{5}$ $(B)\frac{5}{7}$ $(C)\frac{1}{5}$ $(D)\frac{2}{5}$ $(E)\frac{7}{8}$

Practice 14.

Find the number of positive integers less than 100 with exactly 4 distinct positive factors.

$(A)24$ $(B)30$ $(C)32$ $(D)34$ $(E)22$

Practice 15.

Find the sum of the numbers less than 200 that has exactly 9 divisors.

$(A)332$ $(B)432$ $(C)532$ $(D)232$ $(E)122$