



Competitive Math Assessment - Factorization Practice Quiz #2

Here are some suggestions for how to practice replicating testing conditions:

- Make sure you have a quiet place to practice on your own for an extended period of time. This will help model the actual experience of a competition. When you have finished the quiz, check your solutions using the online Brilliant quiz.
- Set a timer, or at least keep an eye on the clock to learn your own pace. If you want to set a specific time goal, math competitions provide an average of about 2 minutes per problem, so you should give yourself 30-40 minutes to complete these problems. Keep in mind that the general difficulty of problems increases as you move forward.
- Some competitions allow students to use calculators while others do not. We encourage you to use a calculator only for the most in-depth calculations on this practice quiz.

1. _____ How many factors does 1,000,000,000 have?

2. _____ Find the value of E .

$$\begin{array}{r} \times \\ \hline 3 \begin{array}{l} E \\ E \\ E \end{array} \end{array}$$

3. _____ Evaluate

$$\frac{16!}{11!8!}.$$

4. _____ How many **odd** factors does 1260 have?

5. _____

How many numbers between 1 and 1000 inclusive are divisible by 6 or 20?

6. _____

If $x < 270$ and $\gcd(x, 270)$ is a perfect square, what is the largest possible value of x ?

7. _____

Evaluate

$$\frac{9!+8!}{7!+6!} \cdot$$

8. _____

What is the product of all the factors of 126^3 ?

A. 126^3

B. 126^6

C. 126^9

D. 126^{12}

9. _____

If each letter represents a different integer, find the value of the 2-digit integer QR .

$$\begin{array}{r} \times \\ \hline 5P \\ Q R \\ \hline 800 \end{array}$$

10. _____

What is the largest number x such that $x < 200$ and x has exactly 4 factors?

