



Factorials Stretch

Factorial Notation Review

The notation $n!$, read as “ **n factorial**,” is defined as $n! = n \times (n - 1) \times (n - 2) \times \cdots \times 3 \times 2 \times 1$. For example, $4! = 4 \times 3 \times 2 \times 1 = 24$ and $5! = 5 \times 4! = 5 \times 24 = 120$.

11. _____ What is the value of $\frac{7!}{6!}$?
12. _____ What is the value of $\frac{4!+5!}{4!}$?
13. _____ What is the value of $\frac{4!+5!}{6}$?
14. _____ If $10 \times 4 \times 3 = n!$, what is the value of n ?
15. _____ If n is a positive integer and $(n + 1)! - n! < n^3$, what is the greatest possible value of n ?
16. _____ If $n!$ is the greatest factorial divisible by 10^6 but not by 10^7 , what is the value of n ?
17. _____ zeros How many zeros are to the right of the rightmost nonzero digit of $125!$?
18. _____ What is the greatest prime divisor of $\frac{11! - 10!}{6! - 5!}$?
19. _____ divisors How many divisors of $4! \times 3! \times 2! \times 1!$ are perfect squares?
20. _____ integers How many positive integers $n \leq 25$ are there for which n^2 is a factor of $n!$?