

1. Claire orders new checkbooks. Checks are ordered sequentially. If she orders 400 checks and the last one is number 3474, what number is on the first check?
2. How many even integers are less than 600 but greater than 500?
3. How many even perfect squares are there from 100 to 10000 inclusive?
4. Paul is making a ruler. He places a long mark every whole number, a medium mark every half-inch and a tiny mark every quarter inch. How many marks will he need to make a standard six-inch ruler?
5. The circumference of a circular table is 30 feet. If a set of silverware is placed every three feet around the circumference of the table, how many place settings are there?
6. How many whole numbers less than 100 are multiples of 3 but not of 5?
7. Write a general rule. How many positive integers are there between a and b exclusive if $a < b$? How many positive integers are there between a and b inclusive if $a < b$?
8. At a shop you can order your meatball sandwich in two sizes, with or without cheese, and with your choice of five different types of bread. How many different sandwiches are available?
9. A bag contains a 1\$, a 5\$ and a 10\$ bill. A second bag contains a penny, a nickel, a dime and a quarter. If a coin and a bill are selected at random how many different total values are possible?
10. How many four digit numbers can be formed using only the digits 5, 6, 7, and 8 if the digits can be repeated. If they may not be repeated?
11. How many ten-digit whole numbers can be formed using only the digits 1 and 2? Only the digits 0 and 1?
12. How many four-letter words are there (regardless of spelling or meaning)? How many four-letter words are there with a vowel (not 'y') in the second place and a consonant in the fourth?

13. For the 'pick 3 lottery' six balls numbered 1 through 6 are placed in a hopper and randomly selected one at a time and without replacement to create a three-digit number. How many such numbers can be created?
14. Find the number of arrangements of the letters in the word BOOKKEEPER.
15. How many odd numbers with third digit 5 are there between 20000 and 69999 inclusive?
16. How many arrangements in the word ORDERED include the word RED?
17. How many zeroes are there at the end of $103!$?
18. Find the general formula. How many divisors does the number $n = p_1^{e_1} p_2^{e_2} \dots p_k^{e_k}$ have? (Hint: Use prime factorization to find the divisors of a number.)
19. Find the number of arrangements of the letters in the word BOOKKEEPER.
20. Count the different arrangements (permutations) of MASSACHUSSETTS.
21. Standard Wyoming license plates consist of three different letters followed by three different numbers and do not include the letter O or digit 0. How many license plates can be made which begin with the letter A?
22. You are ordering an ice-cream sundae. There are 10 flavors of ice cream and 10 toppings. The special of the day allows you to choose two *different* ice cream flavors and three *different* toppings. How many choices are available for the daily special?
23. How many ways can six slices of pepperoni pizza and three slices of cheese pizza be divided among five students if one is a vegetarian?
24. How many divisors does 1,000,000 have?
25. How many odd numbers with middle digit 5 are there between 40000 and 69999, with no digits repeating?
26. If $n = 100$ find the value of $(n+1)!/(n-1)!$
27. What is the units digit of the sum $1! + 2! + 3! + \dots + 14! + 15!$?
28. Palindromes, like 23432, read the same forward and backward. Find the sum of all four-digit positive integer palindromes.