1. Write a function that counts how many concentric layers a rug.

Examples

```
count_layers([
  "AAAA",
  "ABBA",
  "AAAA"
])    2

count_layers([
  "AAAAAAAAA",
  "ABBBBBBBA",
  "ABBAAABBA",
  "ABBBBBBBA",
  "AAAAAAAAA"
])    3

count_layers([
  "AAAAAAAAAAA",
  "AABBBBBBBAA",
  "AABCCCCCBAA",
  "AABCAAACBAA",
  "AABCADACBAA",
  "AABCAAACBAA",
  "AABCCCCCBAA",
  "AABBBBBBBAA",
  "AAAAAAAAAAA"
])    5
```

2. There are many different styles of music and many albums exhibit multiple styles. Create a function that takes a list of musical styles from albums and returns how many styles are unique.

Examples

```
unique_styles([
  "Dub,Dancehall",
  "Industrial,Heavy Metal",
  "Techno,Dubstep",
  "Synth-pop,Euro-Disco",
  "Industrial,Techno,Minimal"
])    9

unique_styles([
```

```
  "Soul",
  "House,Folk",
  "Trance,Downtempo,Big Beat,House",
  "Deep House",
  "Soul"
])    7
```

3. Create a function that finds a target number in a list of prime numbers. Implement a binary search algorithm in your function. The target number will be from 2 through 97. If the target is prime then return "yes" else return "no".

Examples

primes = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97]

is_prime(primes, 3)   "yes"

is_prime(primes, 4)   "no"

is_prime(primes, 67)   "yes"

is_prime(primes, 36)   "no"

4. Create a function that takes in n, a, b and returns the number of positive values raised to the nth power that lie in the range [a, b], inclusive.

Examples

power_ranger(2, 49, 65)   2
2 squares (n^2) lie between 49 and 65, 49 (7^2) and 64 (8^2)

power_ranger(3, 1, 27)   3
3 cubes (n^3) lie between 1 and 27, 1 (1^3), 8 (2^3) and 27 (3^3)

power_ranger(10, 1, 5)   1
1 value raised to the 10th power lies between 1 and 5, 1 (1^10)

power_ranger(5, 31, 33)   1

power_ranger(4, 250, 1300)   3

5. Given a number, return the difference between the maximum and minimum numbers that can be formed when the digits are rearranged.

Examples

rearranged_difference(972882) 760833
988722 - 227889 = 760833

rearranged_difference(3320707) 7709823
7733200 - 23377 = 7709823

rearranged_difference(90010) 90981
91000 - 19 = 90981