Python Fundamentals Questions

1. Create a Python program that takes the user's name as input and then uses that input to greet the user personally.
2. Calculate the sum of two numbers entered by the user.
3. Calculate the product of two numbers entered by the user.
4. Write a program to swap two variables.
5. Convert the temperature from Celsius to Fahrenheit.
6. Check if a number is even or odd.
7. Calculate the area of a rectangle given its length and width.
8. Calculate the perimeter of a circle given its radius.
9. Write a program to find a maximum of three numbers.
10. Write a program to check if a number is positive, negative, or zero.
11. Write a program to check if a number is prime.
12. Calculate the factorial of a number.
13. Find the largest among three numbers using nested if-else.
14. Print the first N natural numbers using a for loop.
15. Print even numbers from 1 to N using a for loop.
16. Write a program to check if a number is a palindrome.
17. Calculate the sum of all even numbers between 1 and N.
18. Generate a Fibonacci sequence up to N terms.
19. Calculate the LCM and GCD of two numbers.
20. Write a program to find the roots of a quadratic equation.
21. Create a list of numbers and find the sum and average.
22. Find the largest and smallest elements in a list.
23. Check if an element exists in a list.
24. Reverse a list in place.
25. Write a program to remove duplicates from a list.
26. Create a dictionary of student names and their scores, then find the average score.
27. Merge two dictionaries into one.
28. Create a simple calculator that takes user input for two numbers and an operation (+, -, *, /).
29. Create a program that prompts the user to enter numbers until they enter 'q' to quit, then calculate the sum.
30. Print a pattern of stars in the shape of a right-angled triangle.
31. Print a pattern of numbers in an equilateral triangle.
32. Print a pattern of stars in a diamond shape.
33. Print a pattern of numbers in a square.
34. Find the prime factors of a number.
35. Calculate the area of a triangle using Heron's formula.

36. Check if a year is a leap year.
37. Calculate compound interest.
38. Find the greatest common divisor (GCD) of two numbers.
39. Calculate the volume of different 3D shapes (cube, sphere, cylinder).
40. Check if a number is a perfect number.
41. Calculate the nth term of an arithmetic progression.
42. Calculate the area of a circle segment.
43. Create a matrix and find its transpose.
44. Perform matrix multiplication.
45. Find the sum of the main diagonal elements of a matrix.
46. Implement matrix addition and subtraction.
47. Extract a submatrix from a larger matrix.
48. Find the determinant of a square matrix.
49. Check if the two matrices are equal.
50. Find the intersection of two sets.
51. Find the union of two sets.
52. Check if a set is a subset of another set.
53. Count the frequency of elements in a list using a dictionary.
54. Remove an element from a set.
55. Find the maximum value in a dictionary.
56. Implement a simple address book using a dictionary.
57. Calculate the average value of elements in a list using a set.
58. Find the length of a string.
59. Count the number of vowels and consonants in a string.
60. Check if a string is a palindrome.
61. Find the largest word in a sentence.
62. Reverse the order of words in a sentence.
63. Find the intersection of two lists.
64. Merge two sorted lists into one sorted list.
65. Check if a list is sorted in ascending order.
66. Create a tuple of student names and their scores, then find the student with the highest score.
67. Create a dictionary of words and their frequencies in a text.
68. Merge two dictionaries while summing values for common keys.
69. Find the keys with the highest values in a dictionary.
70. Sort a list of dictionaries by a specific key.
71. Convert a list of strings into a single string.
72. Check if the two sets have any common elements.
73. Find the difference between the two sets.
74. Convert a list of integers into a set and find the maximum and minimum values.

75. Check if a given key exists in a dictionary.
76. Remove a key-value pair from a dictionary.
77. Combine two dictionaries, preserving the original keys.
78. Count the occurrences of each word in a list of sentences.
79. Find the length of the longest word in a list of words.
80. Check if two lists are equal (have the same elements in the same order).
81. Remove all occurrences of a specific element from a list.
82. Find the second largest element in a list.
83. Shuffle a list randomly.
84. Find the common elements between the two dictionaries.
85. Create a list of unique elements from a list with duplicates.
86. Sort a list of strings by their length.
87. Find the index of the first occurrence of a specific element in a list.
88. Merge two dictionaries and handle duplicate keys by concatenating values into lists.
89. Check if a list is a subset of another list.
90. Find the mode (most frequent element) in a list.
91. Split a string into a list of words.
92. Check if two dictionaries have the same keys and values.
93. Create a list of unique elements from a list of lists.
94. Find the first non-repeated character in a string.
95. Check if a list is empty.
96. Remove all whitespace from a string.
97. Remove all punctuation from a string.
98. Convert a list of tuples into a dictionary.
99. Check if a dictionary is empty.
100. Calculate the average of values in a dictionary.