Question 1: String Manipulation and Counting Vowels

```
# Question 1
def reverse_string_and_count_vowels():
    # Taking input from the user
    input_string = input("Enter a string: ")

    # Reversing the string
    reversed_string = input_string[::-1]
    print(f"The string in reverse order is: {reversed_string}")

    # Counting vowels in the string (case-insensitive)
    vowels = "aeiouAEIOU"
    count = sum(1 for char in input_string if char in vowels)
    print(f"The number of vowels in the string is: {count}")

# Call the function
reverse_string_and_count_vowels()
```

Explanation for Question 1:

1. The string is reversed using slicing (`[::-1]`).
2. The vowel count is calculated by iterating through the string and checking if each character is in the string of vowels (`"aeiouAEIOU"`), then counting how many vowels are present.

Question 3: Sorting List Using Numpy and Virtual Environment Setup

Part 1: Python Program to Sort the List Using Numpy

```
# Question 3 - Python Program to Sort a List Using Numpy

import numpy as np

def sort_list_using_numpy():
    # Taking input list from the user
    input_list = list(map(int, input("Enter a list of integers separated by
spaces: ").split()))

    # Sorting the list using numpy.sort()
    sorted_list = np.sort(input_list)

    # Printing the sorted list
    print("The sorted list is:", sorted_list)

# Call the function
sort_list_using_numpy()
```

Explanation for Question 3 (Part 1):

- The user enters a list of integers which are split into a list of integers using `map(int, input().split())`.
- The list is sorted using `numpy.sort()`.

- The sorted list is printed out.

Part 2: Setting Up a Virtual Environment and Installing Numpy

Here are the instructions to complete the rest of Question 3:

1. **Create a virtual environment** called `sortenv`: Open a terminal and run the following command:
2. `python -m venv sortenv`
3. **Activate the virtual environment**:
    - On **Windows**:
    - `sortenv\Scripts\activate`
    - On **Mac/Linux**:
    - `source sortenv/bin/activate`
4. **Install numpy in the virtual environment**: Once the virtual environment is activated, run:
5. `pip install numpy`
6. **Run the Python program**: After the environment is set up and numpy is installed, run your Python script (the program provided earlier).