

# Python for Math and Stat Fall 2023

## Exam 1

1. (20 pts) For the following 4 problems, write down what each code block would display if executed in a Jupyter cell.

(a) `(1703 // 170, 1703 % 10)`

(b) `mascot = 'buffalo'`  
`2 * mascot[:2] + '2'`

(c) `[j > 2 for j in range(-2, 2)]`

(d) `zz = 0`  
`for k in range(2, 5):`  
 `print(zz)`  
 `zz += (-1)**k * k`

2. (10 pts) Use a **list comprehension** to create the list of 20 numbers shown below.  
(Hint: Recall that `range` takes only integer arguments.)

`[100.0, 99.6, 99.2, 98.8, ...]`

3. (10 pts) Write a function **plurals(nouns)** that takes a list of nouns in string format and returns a new list containing the nouns in plural form, using these two rules:

- If the noun ends in `s` or `ch`, add `es` to the end of the string.
- Otherwise add `s` to the end of the string.

Assume that each element of `nouns` consists of at least 2 characters.

Example:

`plurals(['boat', 'iris', 'bench'])` returns `['boats', 'irises', 'benches']`.

4. (10 pts) Write a function **middle(nums)** that takes a non-empty list of numbers and returns

- the number in the middle position of the list if the list has an odd number of elements, or
- the average of the two numbers in the middle positions if the list has an even number of elements.

Assume that each element of `nums` is an `int` or `float`.

Example:

`middle([4, -3, 80, 6, 7.2])` returns `80`.

`middle([4, -3, 80, 85, 6, 7.2])` returns `82.5`.