

Worksheet 1

For this worksheet only, to get full points, you must work in a group of 2-3 students. Each student must submit the finished worksheet on Canvas.

This worksheet is due Tuesday of Week 2, by 11:59pm. (Worksheet 2 is due at the same time.)

Instructions to create a workspace for your group

One group member should create a workspace for the group using the following instructions.

- Click on the workspace name "Math 10 S23" at the top left, then click the "+" icon next to your name.
- Choose the "Free" plan if you are asked to choose a plan.
- Give your workspace a name, like "Worksheet 1 group". Select the option "For a class (I'm a student)".
- Invite your groupmates, giving them "Editor" or "Admin" access.
- Click on "Settings & members", then "Upgrade", then "Get free education plan".
- If you click on the ... next to this **Worksheet 1** project, you should be able to duplicate it into your the new workspace you just created. Once you have this duplicate copy, you can edit it.

Names

Names: Ilyas

Python warm-up

Here is a list of lists. (You need to execute the following code cell every time you start this notebook.)

```
In [1]: mylist = [  
        [2, 4],  
        [3, 1],  
        [-2, 5],  
        [6.2, 4],  
        [1, 4]  
        ]
```

- Check the data type of `mylist`, using `type`.

```
In [2]: type(mylist)
```

```
Out[2]: list
```

- Check the length of `mylist` using `len`.

```
In [3]: len(mylist)
```

```
Out[3]: 5
```

- What is the zero-th element of the inside list at index 3. (In Python, there is some ambiguity if I say the "third" element. I will try to consistently start counting at zero, so in this case, I would say the "third inside list" is the list `[6.2, 4]`. The answer to this question should be `6.2`.)

```
In [4]: mylist[3][0]
```

```
Out[4]: 6.2
```

- Create a new object named `myarray` by converting `mylist` into a NumPy array. Use the `np.array` function to make this conversion. You will need to import NumPy.

```
In [5]: import numpy as np
```

```
myarray = np.array(mylist)
```

- Display `myarray`. (Just evaluate the name on its own line.)

```
In [6]: myarray
```

```
Out[6]: array([[ 2. ,  4. ],
               [ 3. ,  1. ],
               [-2. ,  5. ],
               [ 6.2,  4. ],
               [ 1. ,  4. ]])
```

Counting elements

Don't worry if this material is totally unfamiliar to you. We will discuss it during class on either Monday or during discussion section on Tuesday.

- How many of the inside lists in `mylist` have last element equal to `4`? Use a `for` loop.

```
In [7]: count = 0
        for i in range(len(mylist)):
            if mylist[i][-1] == 4:
                count += 1
        print(count)
```

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- Overall question: How many of the elements in the last column of `myarray` are equal to 4? First, use `myarray[:, -1]` to access this last column. (We'll answer the overall question below.)
- Use `== 4` to create a Boolean array with entries `True` or `False` corresponding to whether the elements in this column are `4` or not.

```
In [8]: boolarr = myarray[:, -1] == 4
        boolarr
```

```
Out[8]: array([ True, False, False,  True,  True])
```

- Count how many of the elements in the last column of `myarray` are equal to `4` by either using `.sum()` at the end (and adding parentheses) or by wrapping the last expression like `sum(???)`.

```
In [9]: boolarr.sum()
```

```
Out[9]: np.int64(3)
```

Markdown practice

- Make a markdown cell below this one. Find a dataset on [Kaggle](#) that you think looks interesting. Provide a link to that dataset using this format: `[text to display]` (URL). For example, the link to Kaggle I provided above was made using `[Kaggle]` (<https://www.kaggle.com/>).
- Write just one or two sentences about what you think is interesting about this dataset.

Basketball Dataset

I think this could be interesting as you can use the draft history in something like a fantasy basketball setting for creating teams, or finding the players with the best stats for a certain pick.

Submission

- Using the **Share** button at the top right, enable public sharing, and enable Comment privileges. Then submit the created link on Canvas.