

CS 106  
Introduction to Computer Science I

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# Today's Topics

- Questions / comments?
- Math module
- Dictionaries

# Math module

- To use the functions in the math module, first we must do:

```
import math
```

- Then we can call the functions in the math module by preceding them with **math**.
- e.g. `math.ceil(4.2)`
- Math module contains trigonometric functions, ceil/floor, distance functions (Euclidean), absolute value, factorial, combinations, exp (e to a power), greatest common divisor function, log functions, radians/degrees conversions.
- Also contains constants: e and pi

# Math module

- Let's use some of the functions so you can see them in practice.
- Also, can do `help(math.ceil)` or similar after doing `import math`

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# Dictionary

- There is an additional type in python called a dictionary which is a sequence of key value pairs
- e.g.

```
cards = {'ace':1,'king':10,'queen':10,'jack':10, 'ten':10, 'nine':9}
```

Can use square brackets on a key to get a value

Can do `cards.keys()`, `cards.values()`

can change key/values

can add key/values

can remove key/value pairs with `pop`

# Dictionary

```
cards = {'ace':1,'king':10,'queen':10,'jack':10, 'ten':10, 'nine':9}
```

Can use square brackets on a key to get a value

e.g. `cards['nine']` # returns 9

can change key/values

e.g. `cards['ten'] = 42` # changes the value assoc. with 'ten' from 10 to 42

can add key/values

e.g. `cards['eight'] = 8` # because the key 'eight' doesn't exist, it adds the key value pair: 'eight':8

can remove key/value pairs with pop

e.g. `cards.pop('jack')` # looks for key 'jack' removes the key value pair with key='jack' and returns the value