

Math-like notation

- Sum

```
print sum([i**2 for i in xrange(10)])
```

$$\sum_{i=0}^9 i^2$$

- Max

```
print max([i**2 for i in xrange(10)])
```

- And?

```
def land(l): return reduce(lambda x,y: x and y, l)
print land([True]*5)
```

Functions as Objects

- Python functions can be stored in variables

```
def f(i):  
    return i + 1  
  
a = f  
  
print a(1)
```

Function Closures

```
def add(i):  
    def sum(j):  
        return i + j  
    return sum
```

```
addone = add(1)
```

```
print addone(2)
```

value of `i` at the moment `g` is returned is stored together with `g` in a

Return function with one argument

Decorators

```
def make_print_f(f):  
    def wrap ():  
        print "Enter"  
        f()  
        print "Leave"  
    return wrap  
  
def a ():  
    Print "a"  
  
print_a = make_print_f(a)  
  
print_a ()
```

Named Functions Arguments

```
def f ( a, b = 0, c = 0 ):  
    print a, b, c
```

```
f ( 1 )
```

```
f ( 1, 1, 1 )
```

```
f ( a = 1, c = 2 )
```

Named Functions Arguments

```
class Student:
    def __init__(self, name, grade, age):
        self.name = name
        self.grade = grade
        self.age = age
    def __repr__(self):
        return repr((self.name, self.grade, self.age))

student_objects = [
    Student('john', 'A', 15),
    Student('jane', 'B', 12),
    Student('dave', 'B', 10),
]
print sorted(student_objects, key=lambda student: student.age)
```