

Runtime Analysis Examples

Wednesday, March 25, 2020 8:40 AM

```
def sum(N):  
    total = 0  
    for i in range(N):  
        #total += i*i*i  
        total = total + i*i*i  
    return total
```

Analysis

assignment : 1 step

1 add + 2 mults = 3 steps
update i = 1 step

return = 1 step

$$\text{total steps} = 1 + 4N + 1 = 4N + 2 \Rightarrow O(N)$$

repeats N times
4N steps

```
def intro():
```

print("Hello") ← k steps

} total steps = k
⇒ O(1), constant time algorithm