

reduce() Function (from functools module)

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The **reduce() function** is used to apply a function cumulatively to the items in an iterable, reducing it to a single value.

Syntax

```
from functools import reduce  
reduce(function, iterable)
```

Summing All Numbers

```
from functools import reduce  
  
numbers = [1, 2, 3, 4, 5]  
  
# Using reduce with lambda  
sum_result = reduce(lambda x, y: x + y, numbers)  
print(sum_result) # Output: 15
```

Finding Maximum Value

```
numbers = [3, 5, 2, 8, 1]  
  
max_number = reduce(lambda x, y: x if x > y else y, numbers)  
print(max_number) # Output: 8
```

Comparison: filter() vs map() vs reduce()

Function	Purpose	Returns
filter()	Filters elements based on a condition	A subset of the original iterable
map()	Applies a function to each element	A modified iterable of the same length
reduce()	Reduces the iterable to a single value	A single computed result

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