

# Python List & Dict Comprehension – 2 Minute Cheat Sheet

## 1. Syntax

[expression for item in iterable if condition] - List comprehension

{key\_expr: value\_expr for item in iterable if condition} - Dict comprehension

## 2. Common Use Cases

Filtering	[x for x in nums if x > 0]
Transformation	[x*x for x in nums]
Flattening	[x for sub in nested for x in sub]
Invert dict	{v:k for k,v in d.items()}

## 3. Performance

- Time Complexity:  $O(n)$  for single loop
- Faster than for-loops due to C-level execution
- Use generator expressions for memory efficiency

## 4. Examples

Even squares	[x*x for x in range(10) if x%2==0]
Names starting with vowel	[w for w in words if w[0].lower() in vowels]
Dict with parity	{x: ('even' if x%2==0 else 'odd') for x in range(1,6)}
Flatten nested list	[x for sub in nested for x in sub]

## 5. When NOT to Use

- Complex multi-step logic → regular loops are clearer
- Very large output → use generators to save memory