

Worksheet 16: Python Swap Numbers

Name: _____ Date: _____

Instructions

- Answer in the blanks.
 - For “write code” questions, write valid Python code.
 - For “what is the output” questions, write the exact output (including spaces/newlines).
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Part A – Swap two numbers

1) The glasses idea (ordering)

We want to swap:

```
Glass A: [ WATER ]
Glass B: [ JUICE ]
```

Put the steps in the correct order by writing **1**, **2**, **3**.

- ___ Pour **Glass B** into **Glass A**
 - ___ Pour **Glass A** into **Temp**
 - ___ Pour **Temp** into **Glass B**
-

2) Fill in the blanks: swap two numbers with **temp**

Complete the swap code.

```
a = 6
b = 7

temp = _____
a = _____
b = _____
```

After the swap, `a` should be _____ and `b` should be _____.

3) What is the output?

What does this code print?

```
a = 10  
b = 3  
  
print("a =", a, ", b =", b)  
  
temp = a  
a = b  
b = temp  
  
print("a =", a, ", b =", b)
```

Output:

4) Debugging (2 bugs)

This code is **trying** to swap `a` and `b`, but it has **two bugs** (Line A and B).

Write the **correct version** of those lines below.

```
a = 5  
b = 9  
  
temp = b      # Line A  
a = b  
b = a      # Line B  
  
print(a, b)
```

Corrected lines:

- Line A: `temp =` _____
 - Line B: `b =` _____
-

Part B — In-place reverse a list

5) Fill in the blanks: what does “in-place” mean?

Choose from `do` and `don't`.

In-place means we _____ change the same list.

We _____ create a new list.

6) Trace one full reverse (5 letters)

We start with:

```
letters = ["A", "B", "C", "D", "E"]
left = 0
right = len(letters) - 1
```

We run this loop:

```
while left < right:
    temp = letters[left]
    letters[left] = letters[right]
    letters[right] = temp

    left = left + 1
    right = right - 1
```

Fill in the list after each swap:

- After **1st swap** (swap index 0 and 4):

`letters =` _____

- After **2nd swap** (swap index 1 and 3):

`letters =` _____

7) What is the output?

What does this code print?

```
numbers = [1, 2, 3, 4]

left = 0
right = len(numbers) - 1

while left < right:
    temp = numbers[left]
    numbers[left] = numbers[right]
    numbers[right] = temp

    left = left + 1
    right = right - 1

print(numbers)
```

Output:

8) Fill in the missing code (reverse a list)

Fill in the blanks to complete an in-place reverse.

```
items = ["X", "Y", "Z", "W"]

left = 0
right = len(items) - 1

while left < right:
    temp = items[_____]
    items[_____] = items[_____]
    items[_____] = temp

    left = left + 1
    right = right - 1

print(items)
```

9) Write code: swap the first and last item only

Write code that swaps only the **first** and **last** items of the list (do not reverse the whole list).

Write your code:

```
letters = [ "A", "B", "C", "D", "E"]  
  
# complet the code:  
  
  
  
print(letters)
```

Expected output:

```
[ "E", "B", "C", "D", "A"]
```