

Solution 09: Python For-Loop with Break

1) What does it print?

```
numbers = [3, 1, 4]
for x in numbers:
    print(x)
```

Output:

```
3
1
4
```

2) Write code: traverse and print

One possible answer:

```
animals = ["cat", "dog", "fish"]

for x in animals:
    print(x)
```

3) Stop early

```
for x in [1, 2, 3, 4, 5]:
    if x == 3:
        break
    print(x)
```

Output:

```
1
2
```

4) `break` with printing first

```
for x in [1, 2, 3, 4, 5]:
    print(x)
    if x == 3:
        break
```

Output:

```
1
2
3
```

5) Fill in the blanks: search idea

- Start with `found = False`
- If we see the target, set `found = True`
- At the end, we print `found`

6) Search without break: what does it print?

```
numbers = [4, 7, 2, 9, 5]
target = 9

found = False

for x in numbers:
    if x == target:
        found = True

print(found)
```

Output:

True

7) Search with break: what does it print?

```
numbers = [4, 7, 2, 9, 5]
target = 2

found = False

for x in numbers:
    if x == target:
        found = True
        break

print(found)
```

Output:

True

8) Write code: search with break

One possible answer:

```
numbers = [6, 1, 8, 3]
target = 10

found = False

for x in numbers:
    if x == target:
        found = True
        break

print(found)
```

Output:

False

9) What is the output?

```
students = ["Ava", "Ben", "Cody", "Dina"]
target = "Dina"

result = -1
n = len(students)

for i in range(n):
    if students[i] == target:
        result = i
        break

print(result)
```

Output:

3

10) Write code: find the index (or -1)

One possible answer:

```
students = ["Ava", "Ben", "Cody", "Dina"]
target = "Ben"

result = -1
n = len(students)

for i in range(n):
    if students[i] == target:
        result = i
        break

print(result)
```

Output:

1

11) Not found: what is the output?

```
students = ["Ava", "Ben", "Cody", "Dina"]
target = "Eli"

result = -1
n = len(students)

for i in range(n):
    if students[i] == target:
        result = i
        break

print(result)
```

Output:

-1

12) What does it print?

```
nums = [10, 20, 30, 40]
print(nums[-1])
print(nums[-2])
```

Output:

40
30

13) Fill in the blanks

```
letters = ["a", "b", "c", "d", "e"]
```

- `letters[-1]` is `e`
 - `letters[-3]` is `c`
-

14) What does it print?

```
fib = [1, 1]

for _ in range(1000):
    nxt = fib[-2] + fib[-1]
    if nxt > 20:
        break
    fib.append(nxt)

print(fib)
```

Output:

```
[1, 1, 2, 3, 5, 8, 13]
```

15) Write code: Fibonacci up to 50

One possible answer:

```
fib = [1, 1]

for _ in range(1000):
    nxt = fib[-2] + fib[-1]
    if nxt > 50:
        break
    fib.append(nxt)

print(fib)
```

Output:

```
[1, 1, 2, 3, 5, 8, 13, 21, 34]
```

16) First even number

One possible answer (using a flag):

```
numbers = [7, 9, 5, 12, 3, 8]

found_even = False

for x in numbers:
    if x % 2 == 0:
        print(x)
        found_even = True
        break

if found_even == False:
    print("No even")
```

Output:

```
12
```