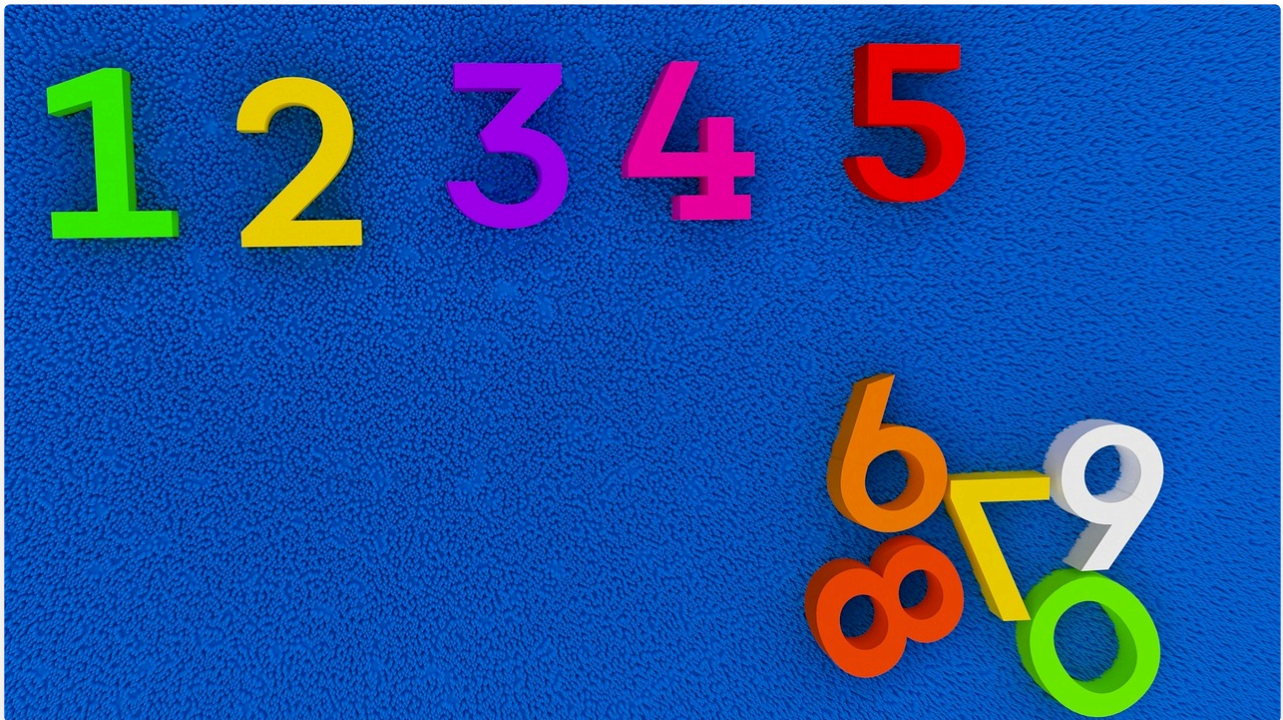


Using Integers from a List

Textbook

Using Integers from a List



Using Integers in a List for Math

```
1 puppies = [2, 3, 6, 5, 10]
2
3 print(puppies[1] + 10)
```

Try it!

This will print out `13`.

Rounding

You can easily round values in Python with the `round()` method.

```
1 pies = 10
2
3 shared = pies/3
4
5 print(round(shared, 2))
```

Try it!

The number `2` used in the parenthesis determines how many decimal points to include in the rounded value.

Range

You can find the range of an integer like this:

```
1 for x in range(0,5):  
2     print(x)
```

Try it!

This will print out the list `[0, 1, 2, 3, 4]` .

Step

See what happens when you add a third number into your range!

```
1 smells = ["skunk", "lilac", "rain", "ocean", "garbage", "cleaner", "cookies", "roses",  
2         "new car", "sweaty feet", "peach"]  
3 print(smells[0:8:2])
```

Try it!

Notice how the print statement only printed every other index value. This is called a step. Steps can be values other than just 2, as seen in the example below.

```
1 for x in range(0, 20, 3):  
2     print(x)
```

Try it!

Max and Min

There is an easy way to find the minimum and maximum value from a list.

To find the largest value use `max()`

```
1 largest = max(4, 20, 62, 18, 9, 45)  
2 print(largest)
```

Try it!

This will print out the largest value in the list, which in this case is `62`.

To find the smallest value use `min()`

```
1 smallest = min(4, 20, 62, 18, 9, 45)
2 print(smallest)
```

Try it!

This will print out the smallest value in the list, which in this case is `4`.

Challenge Help

To create a list of strings from an input, use the following code:

```
my_list = input().split()
```

Remember that inputs are automatically accepted as strings.

The input should look like words separated by spaces. No commas, parenthesis, or brackets are needed. For example: `apple banana strawberry` would be an acceptable input.

This would create a python list: `["apple", "banana", "strawberry"]`

These challenges may require putting a bunch of numbers as input into a list. To do this, use this code:

```
my_list = [int(n) for n in input().split()]
```

This code creates a list called `my_list` and the `input().split()` command breaks up the input into each individual integer. It uses a for loop to assign all the individual inputs to their index in the list.

For this code, put your input question right into the `input()` above. For example:

```
my_list = [int(n) for n in input("Input a list of numbers").split()]
```

The input should look like numbers separated by spaces. No commas, parenthesis, or brackets are needed. For example: `2 6 8 33 24 2` would be an acceptable input.

This would create a python list: `[2, 6, 8, 33, 24, 2]`

Checkpoint

Using Integers from a List

Practice what you learned in this lesson!

Consider the following list:

```
lasers = [3, 10, 4, 15, 11]
```

1. In a print statement, pull out the **center** number of the list named `lasers` and **multiply it by 10**.
2. In a print statement, **round** the value of pi (`3.14159265`) to **3 decimal places**.
3. Use a for-loop and `in range()` to print out the **range of 0 to 10**. Do not include the number 10.
4. Use a for-loop and `in range()` to print out the **range of 0 to 10, but only print every other number**. Do not include the number 10.

Requirements:

- In a print statement, pull out the center number of the list named `lasers` and multiply it by 10.
- In a print statement, round the value of pi (`3.14159265`) to 3 decimal places.
- Use a for-loop and `in range()` to print out the **range of 0 to 10**. Do not include the number 10.

- Use a for-loop and `in range()` to print out the **range of 0 to 10, but only print every other number**. Do not include the number 10.

Questions (9)

1. What will the following code print out?

MULTIPLE CHOICE

```
goldfish = [4, 8, 1, 3, 10] print(goldfish[2] + 1)
```

Choose the correct answer:

- A. 5
- B. 1
- C. 2
- D. 9

2. What will the following code print out?

MULTIPLE CHOICE

```
dessert = 12.4635 print(round(dessert, 2))
```

Choose the correct answer:

- A. 1
- B. .46
- C. 12
- D. 12.4
- E. 12.46

3. What will the following code print out?

MULTIPLE CHOICE

```
for x in range(3): print(x)
```

Choose the correct answer:

- A. 0, 1, 2, 3
- B. 3
- C. 3.33
- D. 1, 2, 3
- E. 0, 1, 2

MULTIPLE CHOICE

4. What will the following code print out?

```
for x in range(0, 6, 2): print(x)
```

Choose the correct answer:

- A. 0 1 2 3 4 5
- B. 0 1 2
- C. 1 3 5
- D. 0 2 4
- E. 0 1 2 3 4 5 6

MULTIPLE CHOICE

5. What is the space that has the number "2" in it called in Python?

```
smells = ["skunk", "lilac", "rain", "ocean", "garbage", "cleaner", "cookies", "roses", "new car", "sweaty feet", "peach"]
print(smells[0:8:2])
```

Choose the correct answer:

- A. step
- B. skip
- C. third
- D. space

MULTIPLE CHOICE

6. True or False: The step in Python is always 2.

Choose the correct answer:

- A. True
- B. False

7. Debug the following code: Assume you are trying to take the number 5 out of the list and add ten to it.

DEBUG CODE

Code to Debug:

```
1 jewels = [4, 10, 5, 2, 7]
2
3 print(jewels[3] + 10)
```

8. Debug the following code: Assume you are rounding the variable named pizza to two decimal places

DEBUG CODE

Code to Debug:

```
1 pizza = 5.879
2
3 print(round(pizza: 2))
```

9. Debug the following code. Assume you are printing the numbers from ten to twenty, skipping every other number.

DEBUG CODE

Code to Debug:

```
1 for x in range(10, 21, 1):
2     print(x)
```

Challenges (4)

1. Add the List

1. Write a program that gets a list of numbers as the input.

Use the Challenge Help section at the bottom of the lesson textbook if you need help with this.

2. Add together all the integers in the list.
3. Print the sum.

Note: For this challenge don't use the built in sum() function.

For example:

Input: 1 5 8 10 12

Output: 36

Another example:

Input: 1 1 2 2 3 3

Output: 12

Reminder: this is how to create a list of integers from an input:

```
my_list = [int(n) for n in input().split()]
```

2. Multiply the List

Write a program that gets a list as the input.

Use the Challenge Help section at the bottom of the lesson textbook if you need help with this.

Multiply together all the integers in the list.

Print the product.

For example:

Input: 5 6 5 8

Output: 1200

Another example:

Input: 1 1 1 569

Output: 569

Reminder: this is how to create a list of integers from an input:

```
my_list = [int(n) for n in input().split()]
```

3. Get Info Fast

Consider the following list:

```
my_list = ["James", 10, "blue", "Zoe", 8, "red", "Dan", 12, "pink", "Shana", 11, "orange", "Sebastian", 9, "yellow", "Cynthia", 13, "green"]
```

1. This list contains the first **name**, **age**, and **favorite color** of a series of people. Create a program that will create lists with only the information requested.
2. The program will have one input that asks the user what they want to know--name, age, or color.
3. Depending on the response, the program will generate a list of just that information from the list provided.

For example:

Input: age

Output: [10, 8, 12, 11, 9, 13]

Another example:

Input: horse

Output: Invalid Input

If the user inputs something other than name, age, or favorite color, print `Invalid Input`.

Hint: Make sure there are **spaces between each word**. You might need to convert your data types to get the correct answer.

Hint: Use slicing with a step value of 3.

4. Paddle Board

1. You were thinking it would be so fun to rent a paddle board this upcoming weekend and cruise around the bay.

The paddle board costs **2995 per day** to rent.

The cool thing is that the rental shop has a scratch off card that gives you different discounts on your rental for the day. The scratch off card is different percentages off.

For example, sometimes it's 70% off and sometimes it's 30% off.

The following is a list of percentages that it could be.

```
options = [.20, .30, .40, .50, .60, .70]
```

You want to see how much it would cost depending on how much the percentage off was. Then you had a great idea! If you invited some friends and asked them to help split the cost, it would be cheaper for everyone!

1. Write a program that takes an input for an index number for the list above.
2. The input will be an **integer between 0-5**.
3. The program will also take an input for how many people will split the cost.
4. Print the **total cost per person, rounded to two decimal points**.

For example:

Inputs: `5` , `8`

Output: `1.12`

Another example:

Inputs: `2` , `50`

Output: `0.36`

Which means, with a 70% discount split between 8 people would only cost each person \$1.12!

A 70% discount split between 50 people would only cost each person 36 cents!

Hint: you would need to do `1-options[index]` in order to get the price of item

Answer Keys & Solutions

Checkpoint Solutions

Using Integers from a List

```
1 lasers = [3, 10, 4, 15, 11]
2
3 print(lasers[2] * 10)
4
5 pi = 3.14159265
6
7 print(round(pi, 3))
8
9
10 for x in range(0,10):
11     print(x)
12
13 for x in range(0,10, 2):
14     print(x)
```

Questions

1. What will the following code print out?

MULTIPLE CHOICE

Correct Answer:

- A. 5 ✗ Incorrect
- B. 1 ✗ Incorrect
- C. 2 ✓ Correct
- D. 9 ✗ Incorrect

Explanation:

What value is at index number 2?

2. What will the following code print out?

MULTIPLE CHOICE

Correct Answer:

- A. 1 ✗ Incorrect

B. .46

✗ Incorrect

C. 12

✗ Incorrect

D. 12.4

✗ Incorrect

E. 12.46

✓ Correct

Explanation:

The `round()` method rounds the decimal to however many places it says, in this case, 2.

3. What will the following code print out?

MULTIPLE CHOICE

Correct Answer:

A. 0, 1, 2, 3

✗ Incorrect

B. 3

✗ Incorrect

C. 3.33

✗ Incorrect

D. 1, 2, 3

✗ Incorrect

E. 0, 1, 2

✓ Correct

Explanation:

`range()` moves through all the numbers up to the number (but not including it) inside the parentheses, starting at 0.

4. What will the following code print out?

MULTIPLE CHOICE

Correct Answer:

A. 0 1 2 3 4 5

✗ Incorrect

B. 0 1 2

✗ Incorrect

C. 1 3 5

✗ Incorrect

D. 0 2 4

✓ Correct

E. 0 1 2 3 4 5 6

✗ Incorrect

Explanation:

The third value in `range()` determines if the range skips numbers or not.

5. What is the space that has the number "2" in it called in Python?

MULTIPLE CHOICE

Correct Answer:

- A. step ✓ Correct
- B. skip ✗ Incorrect
- C. third ✗ Incorrect
- D. space ✗ Incorrect

Explanation:

This number determines how many values to skip.

6. True or False: The step in Python is always 2.

MULTIPLE CHOICE

Correct Answer:

- A. True ✗ Incorrect
- B. False ✓ Correct

Explanation:

The step can be any number.

7. Debug the following code: Assume you are trying to take the number 5 out of the list and add ten to it.

DEBUG CODE

Incorrect Code:

```
1 jewels = [4, 10, 5, 2, 7]
2
3 print(jewels[3] + 10)
```

Correct Solution:

```
1 jewels = [4, 10, 5, 2, 7]
2
```

```
3 print(jewels[2] + 10)
```

Explanation:

Indexing starts counting at 0.

8. Debug the following code: Assume you are rounding the variable named pizza to two decimal places

DEBUG CODE

Incorrect Code:

```
1 pizza = 5.879
2
3 print(round(pizza: 2))
```

Correct Solution:

```
1 pizza = 5.879
2
3 print(round(pizza, 2))
```

Explanation:

The colon needs to be replaced with a different symbol.

9. Debug the following code. Assume you are printing the numbers from ten to twenty, skipping every other number.

DEBUG CODE

Incorrect Code:

```
1 for x in range(10, 21, 1):
2     print(x)
```

Correct Solution:

```
1 for x in range(10, 21, 2):
2     print(x)
```

Explanation:

The third value determines how many to skip. The value of 1 says to not skip any.

Challenges

1. Add the List

Solution:

```
1 my_list = [int(n) for n in input().split()]
2
3 sum = 0
4 for x in my_list:
5     sum = sum + x
6 print(sum)
```

2. Multiply the List

Solution:

```
1 my_list = [int(n) for n in input().split()]
2
3 product = 1
4 for x in my_list:
5     product = product * x
6 print(product)
```

3. Get Info Fast

Solution:

```
1 my_list = ["James", 10, "blue", "Zoe", 8, "red", "Dan", 12, "pink", "Shana", 11,
2 "orange", "Sebastian", 9, "yellow", "Cynthia", 13, "green"]
3
4 user_input = input("Would you like to see name, age, or favorite color?")
5
6 if user_input == "name":
7     print(my_list[0:16:3])
8 elif user_input == "age":
9     print(my_list[1:17:3])
10 elif user_input == "favorite color":
11     print(my_list[2:18:3])
```

4. Paddle Board

Solution:

```
1 options = [.20, .30, .40, .50, .60, .70]
2
3 choice = int(input("Which number will you pick? 0-5"))
4
5 scratch_off = options[choice]
```

```
6
7 price = 29.95
8
9 discount = price * scratch_off
10
11 total = price - discount
12
13 people = int(input("How many people?"))
14
15 per_person = total / people
16
17 print(round(per_person,2))
```