

# Working with Variables and Expressions in Python

Estimated time needed: **10** minutes

## Objectives

After completing this lab you will be able to:

- Use expressions and variables to perform operations

## Expressions and Variables

### Expressions

```
# Addition operation expression
43 + 60 + 16 + 41
160

# Subtraction operation expression
50 - 60
-10

# Multiplication operation expression
5 * 5
25
```

We can also perform division with the forward slash:

```
# Division operation expression
25 / 5
5.0

# Division operation expression
25 / 6
4.166666666666667
```

As seen in the quiz above, we can use the double slash for integer division, where the result is rounded down to the nearest integer:

```
# Integer division operation expression
```

```
25 // 5
```

```
5
```

```
# Integer division operation expression
```

```
25 // 6
```

```
4
```

Let's write an expression that calculates how many hours there are in 160 minutes:

```
# Write your code below. Don't forget to press Shift+Enter to execute the cell
```

```
160//60
```

```
2
```

Python follows well accepted mathematical conventions when evaluating mathematical expressions. In the following example, Python adds 30 to the result of the multiplication (i.e., 120).

```
# Mathematical expression
```

```
30 + 2 * 60
```

```
150
```

And just like mathematics, expressions enclosed in parentheses have priority. So the following multiplies 32 by 60.

```
# Mathematical expression
```

```
(30 + 2) * 60
```

```
1920
```

## Variables

```
# Store value into variable
```

```
x = 43 + 60 + 16 + 41
```

```
# Print out the value in variable
```

```
x
```

```

160
# Use another variable to store the result of the operation between
variable and value

y = x / 60
y
2.6666666666666665
# Overwrite variable with new value

x = x / 60
x
2.6666666666666665
# Name the variables meaningfully

total_min = 43 + 42 + 57 # Total length of albums in minutes
total_min
142
# Name the variables meaningfully

total_hours = total_min / 60 # Total length of albums in hours
total_hours
2.3666666666666667
# Complicated expression

total_hours = (43 + 42 + 57) / 60 # Total hours in a single
expression
total_hours
2.3666666666666667

```

## Exercise: Expressions in Python

Write an expression to add 30 and 20 and subtract 40

```

# Write your code below. Don't forget to press Shift+Enter to execute
the cell
30+20-40
# This will print 10
10

```

Write an expression to subtract 5 from 55 and divide the result by 10

```
# Write your code below. Don't forget to press Shift+Enter to execute the cell
(55-5)/10
# This will print 5.0

5.0
```

Write an expression to multiply 6 with 10 and divide the result by 12

```
# Write your code below. Don't forget to press Shift+Enter to execute the cell
(6*10)/12
# This will print 5.0

5.0
```

## Exercise: Variables in Python

```
# Write your code below. Don't forget to press Shift+Enter to execute the cell
x = 3 + 2 * 2
x
# This will print 7

7

# Write your code below. Don't forget to press Shift+Enter to execute the cell
y = (3 + 2) * 2
y
# This will print 10

10

# Write your code below. Don't forget to press Shift+Enter to execute the cell
z = x+y
z
# This will print 17

17
```

Congratulations, you have completed your hands-on lab on Expressions and Variables in Python.

## Author

Joseph Santarcangelo

## Other contributors

Mavis Zhou

© IBM Corporation 2023. All rights reserved.