CodeHS

Mathematical Operators Examples Exploration

Class Exercise

Open the example '*Operators and Integers'* and answer the following questions:

1. What happens if you change the values of `x`, `y`, and `z` to `1`, `2`, and `3`, respectively? Fill in the values below:

    a. `x + y`: 1 + 2 = 3

    b. `z * 3`: 3 × 3 = 9

    c. `x - z`: 1 − 3 = −2

    d. `z / x`: 3 ÷ 1 = 3.0

    e. `y ** x`: 2^1 = **2**

    f. `z % y`:3 mod 2 = 1

    g. `-x`: -1

2. With these new values of `1`, `2`, and `3`, add this line of code that uses a new operator (`//`): `print(z // y)`. What is printed? 1

    a. Change `z` to `4`. Run the program again. What is printed? 2

    b. Change `z` to `5`. Run the program again. What is printed? 2

    c. Change `z` to `6`. Run the program again. What is printed? 3

    d. What operation do you think this operator performs? Floor Division

    e. Do some research to try to find this out (It is important to know that we are using Python 3 when looking up the answer to this question!)

    It performs normal division.
    Then it rounds DOWN (toward negative infinity).
    Works with integers and floats.

CodeHS

Translate to Math

Discussion

Oftentimes, programming involves translating mathematical operations into code. Any scientific or business code will need some math in it in order to work. You should be familiar with common mathematical operations and how to create values that have the correct type.

Remember that the types of the variables and numbers you use influence what the type of the result will be. For instance, multiplying a **`string`** and an **`int`** results in a **`string`**. But adding a **`string`** and an **`int`** will result in an error! Dividing two **`int`** numbers will result in either an **`int`** or a **`float`** depending on which division operator you use. Dividing an **`int`** and a **`float`** will result in a **`float`**.

Exercise

Rewrite the English description of the following expressions as Python expressions. Some may be more than one line long.

1. The variable **`x`** has the value 12. The variable **`y`** has the value **`x`** plus 4.
   ```
   x = 12
   y = x + 4
   ```
   ```
   total_price = num_books * price
   ```

2. The variable **`total_price`** holds the cost of **`num_books`** at **`price`** dollars per book.

   ```
   sound = "pop"
   popcorn = sound * 4
   ```

3. The variable **`sound`** has the value "pop". The variable **`popcorn`** has the value "poppoppoppop", but is assigned by only using the variable **`sound`**, multiplication, and a number.
   ```
   remain = 1331 % 4
   ```

4. The variable **`remain`** holds the remainder when 1331 is divided by 4.

   ```
   num = 3 // 2
   ```

5. The variable **`num`** is assigned the whole number resulting from dividing 3 by 2.
   ```
   num = 3 / 2
   ```

6. The variable **`num`** is assigned the decimal number resulting from dividing 3 by 2.
   ```
   num = 3 / 2
   ```