Python Activity: Variables and Operations

This activity will help you practice using some of the most important concepts in Python: **variables**, the **len() function**, **exponents**, **floor division**, and **type casting**.

Read each section and follow the instructions to write a small piece of code for each task.

Task 1: Variables

A variable is like a container that holds a value. You give it a name and a value.

Instructions:

1. Create a variable called student_name and set its value to your name (as a string).
2. Create a variable called age and set its value to your age (as an integer).
3. Create a variable called gpa and set its value to a decimal number (a float), like 3.85.
4. Use the print() function to display a sentence that uses all three variables. For example: "My name is [your name], I am [your age] years old, and my GPA is [your GPA]."

Task 2: The len() Function

The len() function is used to find the number of characters in a string.

Instructions:

1. Create a variable called favorite_animal and set its value to your favorite animal's name.
2. Use the len() function to find the length of your favorite_animal string.
3. Store the result in a new variable called animal_length.
4. Print a sentence that says: "The name of my favorite animal is [animal name] and it has [length] letters."

Task 3: Exponents and Floor Division

- **Exponents (**$$): Use two asterisks to raise a number to a power. For example, 2 ** 3 is 23, which equals 8.
- **Floor Division (//):** This operator divides two numbers and rounds the result down to the nearest whole number. For example, 10 // 3 equals 3.

Instructions:

1. Use exponents to calculate the volume of a cube with a side length of 4. Store the result in a variable called cube_volume.
2. Imagine you have 25 pieces of candy to share with 7 friends. Use floor division to find out how many pieces of candy each friend gets. Store the result in a variable called candy_per_friend.

3. Print the results of both calculations.

Task 4: Type Casting

Type casting is when you change a variable from one type to another (e.g., from a number to a string).

Instructions:

1. Create a variable called lucky_number and set its value to an integer.
2. Try to print the string "My lucky number is " combined with lucky_number. You'll get an error!
3. Fix the error by using the **str() function** to type cast lucky_number into a string.
4. Print the correct sentence.

Final Challenge

Now, let's put it all together.

Instructions:

1. Create a variable called total_items and set its value to a number.
2. Create a variable called cost_per_item and set its value to a float (a decimal).
3. Use multiplication to find the total_cost.
4. Use int() to type cast the total_cost into a whole number.
5. Print a sentence that describes the number of items and the total cost.

Example: "You purchased 5 items for a total of $23."