

Data Types & Arithmetic		
<p>Ask for two numbers and add them:</p> <pre>num1 = input("Enter a number: ") num2 = input("Enter another: ") answer = num1 + num2 print(answer)</pre>	What colour is the word "input"?	
	What technical word do we use to describe that?	
	What happens to the answer?	
	Why does that happen?	
	What data type is "num1"?	
<p>Ask for two numbers and add them:</p> <pre>num1 = int(input("Enter a number: ")) num2 = int(input("Enter another: ")) answer = num1 + num2 print(answer)</pre>	What is different about the first line?	
	How many brackets are there on the first line?	
	What happens to the answer?	
	What data type is "num1"?	

**Data Types & Arithmetic**

<p>Try different operators:</p> <pre>num1 = 7 num2 = 3 answer = num1 - num2 print(answer)</pre>	What does the '-' operator do?	
	What does the '*' operator do?	
	What does the '/' operator do?	
	What does the '**' operator do?	
	What does the '%' operator do?	
<p>Cast data as different types:</p> <pre>num1 = 7 num2 = "3" print(type(num1)) print(type(num2))</pre>	What data type is each variable?	
	What data type would you need to concatenate (join) them?	
	What data type would you need to carry out arithmetic on them?	
	Write one line of code that will change the data type of one variable.	

## Data Types & Arithmetic

### Calculate the Area of a Rectangle

Ask your user to enter the length and width of a rectangle. Your program should calculate the area of the rectangle (length\*width) and display the result with a suitable message.

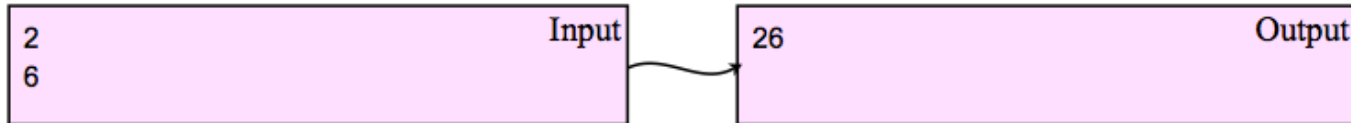
Please enter the following values in cm. **Input**  
Please enter the length of the rectangle.  
12  
Please enter the width of the rectangle.  
6

The area of the rectangle is: **Output**  
72 square centimetres

## Data Types & Arithmetic

### Number Generator (2 digits)

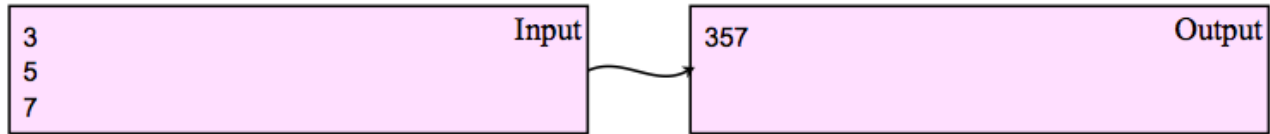
Write a program that inputs two individual integers between 0 and 9. The program should then perform a calculation and store a single number in a third variable called 'total'. As shown below, the total should then be displayed on the screen.



## Data Types & Arithmetic

### Number Generator (3 digits)

Adapt program 7 to work for 3 numbers instead of 2.



## Data Types & Arithmetic

### Calculate the Area of a Circle

Ask your user to enter the radius of a circle. Your program should use what they have entered to calculate the area of the circle ( $3.14 * \text{radius} * \text{radius}$ ) and display the result.

Please enter the following values in cm. **Input**  
Please enter the radius of the circle.  
16

The area of the circle is: **Output**  
803.84 square centimetres

## Data Types & Arithmetic

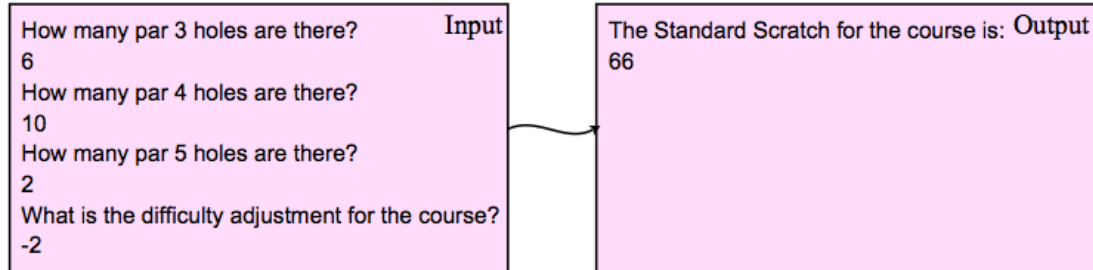
### Standard Scratch

The “standard scratch” of a golf course is calculated by adding together the number of shots it should take to complete each hole. This score is then adjusted depending on the difficulty of the course.

For example:

2 holes take 5 shots (par 5)	$2 \times 5 = 10$	
10 holes take 4 shots (par 4)	$10 \times 4 = 40$	
6 holes take 3 shots (par 3)	$6 \times 3 = 18$	$10 + 40 + 18 = 68$ shots in total
Difficulty adjustment	-2	$68 - 2 = 66$
Standard Scratch = <b>66</b>		

Write a program that allows the user to enter the information required to calculate the standard scratch score of a golf course. The standard scratch should then be calculated and displayed.



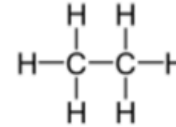
## Data Types & Arithmetic

### Calculating the Atomic Weight of Hydrocarbons (Alkanes)

A hydrocarbon is a molecule made up of linked Carbon (C) atoms with Hydrogen (H) atoms branching off each Carbon. Your program will ask the user to enter the number of Carbon atoms in a hydrocarbon and use the number entered to then calculate the number of Hydrogen atoms using the formula below. Both numbers should be stored.

$$\text{number of H atoms} = (\text{number of C atoms} \times 2) + 2$$

The atomic weight of the molecule is calculated by multiplying the number of carbon atoms by 12 and adding the number of hydrogen atoms. The number of C and H atoms along with the atomic weight should be displayed as shown in the output below.



Enter the number of carbon atoms?      Input  
3

The atomic mass of C3H8 is 44      Output