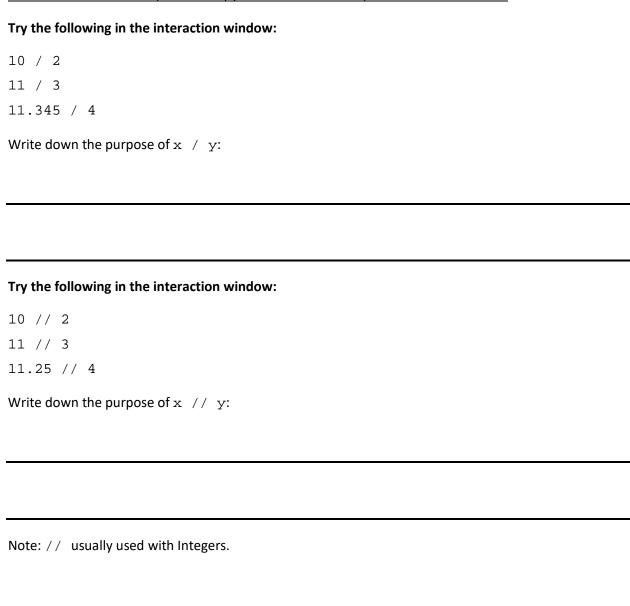
## M1 – Self preparation (After Lec#1 and before Lec#2)

Don't attempt to review this self-study until we introduce Wing IDE in class which should happen during Lec#1.

In this Module we will explore basic python mathematical operations and functions.



### Try the following in the interaction window:

Note: although % works with negatives and Float, but we will use it only with natural numbers.

Write down the purpose of a % b:

Try the following in the interaction window:

```
2 ** 3
2.5 ** 4
```

Write down the purpose of x \*\* y:

### Try the following in the definition window:

```
abs(-3.45)
abs(10)
abs(0)
```

Write down the purpose of abs(n):

## Try the following in the interaction window:

```
len("cs 116")
len('cs 116')
len("")
```

Write down the purpose of len(s):		
Compare your answer with the result of calling $help(len)$ in the interaction window		
Try the following in the interaction window:		
type(6)		
type(3.78)		
type(4.0)		
type("abc")		
Write down the purpose of type(t):		
Try the following in the interaction window:		
min(2,0,-1,10,5)		
min(2)		
$\max(2,0,-1,10,5)$		
max(2)		
Write down the purpose of max and min:		

### import math module by writing: import math in the interaction window

Try each of the following expressions in the interaction window and write down its purpose:

math.pi	Purposes:
math.e	sqrt:
math.sqrt(100)	
math.sqrt(77)	log:
math.sqrt(-10)	
math.log(32,2)	floor:
math.floor(123.987)	factorial:
math.floor(-10.23)	
math.factorial(5)	cos:
math.factorial(0)	
math.factorial(-3)	exp:
math.cos(math.pi)	
math.exp(3)	pow:
math.pow(3,4)	
math.pow(-4,2)	

Note1: Make sure, for each mathematical function, you try it with integers, floats, positives, negatives, zeros, and different number of arguments to explore its behavior completely.

math.pow(3.75, 2.5)

Note2: compare your definition for each function with the formal definition. For example: after you write your definition for math.sqrt, write in the interaction window help(math.sqrt) and compare.

Note3: write dir(math) in the interaction window, skip all the names in the list that start with \_, what is left are valid mathematical functions that you can explore by yourself.

# **Casting and conversion functions:**

## Try the following in the interaction window, write the purpose of each function:

float(1)	Purposes:
float(10.34)	float:
float("34.678")	
float("2.4.5")	
float("34")	
int(4.7)	int:
int(-12.7)	
int(-12.3)	
int("45")	
int("2.3")	str:
str(4)	
str(34.76)	
str(-5)	