

```

#complex
#z=real+imaginary*1j
z=3+4j
print(z)

(3+4j)

print(z.real)
print(z.imag)

3.0
4.0

a=3+4j
b=1+2j
print(a+b)
print(a-b)
print(a*b)
print(a/b)

(4+6j)
(2+2j)
(-5+10j)
(2.2-0.4j)

z=3+4j
print(abs(z))
print(z.conjugate())

5.0
(3-4j)

import cmath
z=1+1j
print(cmath.phase(z))
print(cmath.polar(z))
print(cmath.sqrt(z))

0.7853981633974483
(1.4142135623730951, 0.7853981633974483)
(1.09868411346781+0.45508986056222733j)

#arithmetic operations
print('add',1+2)
print('sub',2-1)
print('mul',2*3)
print('div',4/2)
print('div',6/2)
print('div without remainder',7//2)
print('modulus',3%2)

```

```

print('div without remainder',7//2)
print('exponential',3**2)

add 3
sub 1
mul 6
div 2.0
div 3.0
div without remainder 3
modulus 1
div without remainder 3
exponential 9

print('floating number,pi',3.14)
print('floating number,gravity',9.81)
print('complex number:',1+1j)
print('multiplying complex number:',(1+1j)*(1-1j))

floating number,pi 3.14
floating number,gravity 9.81
complex number: (1+1j)
multiplying complex number: (2+0j)

a=3
b=2
total=a+b
diff=a-b
product=a*b
division=a/b
remainder=a%b
floor_division=a//b
exponential=a**b

print(total)
print('a + b = ', total)
print('a - b = ', diff)
print('a * b = ', product)
print('a / b = ', division)
print('a % b = ', remainder)
print('a // b = ', floor_division)
print('a ** b = ', exponential)

5
a + b = 5
a - b = 1
a * b = 6
a / b = 1.5
a % b = 1
a // b = 1
a ** b = 9

```

```

num_one=3
num_two=4
total=num_one+num_two
diff=num_two-num_one
product=num_one*num_two
div=num_two/num_one
remainder=num_two%num_one

print('total:',total)
print('difference',diff)
print('product:',product)
print('division:',division)
print('remainder:',remainder)

total: 7
difference 1
product: 12
division: 1.5
remainder: 1

radius=10
area_of_circle=3.14*radius**2
print('area of circle:',area_of_circle)

area of circle: 314.0

length=10
width=20
area_of_rectangle=length*width
print('area of rectangle:',area_of_rectangle)

area of rectangle: 200

mass=75
gravity=9.81
weight=mass*gravity
print(weight,'n')

735.75 n

print(3>2)
print(3>=2)

True
True

print(3<2)
print(2<3)
print(2<=3)
print(3==2)
print(len('mango')==len('avocado'))
print(len('mango')!=len('avocado'))

```

```
print(len('mango')<len('avocado'))
print(len('milk')==len('meat'))
print(len('milk')!=len('meat'))
print(len('tomato')==len('potato'))
print(len('mango')>len('avocado'))
```

```
False
True
True
False
False
True
True
True
False
True
False
```

Boolean comparison

```
print('True == True: ', True == True)
print('True == False: ', True == False)
print('False == False: ', False == False)
print('True and True: ', True and True)
print('True or False: ', True or False)
```

```
True == True: True
True == False: False
False == False: True
True and True: True
True or False: True
```

```
print('1 or 1', 1 or 1)
```

```
1 or 1 1
```

```
print(3>2 and 4>3)
```

```
True
```

```
print(3>2 and 4<3)
print(3>2 and 4>3)
print(3<2 and 4<3)
print(3>2 or 4>3)
print(3>2 or 4<3)
print(3<2 or 4<3)
print(not 3>2)
print(not True)
print(not False)
print(not not True)
print(not not False)
```

```
False
True
False
True
True
False
False
False
True
True
False
```

```
int(2.3)
```

```
2
```

```
int(2.3,8.0)
```

```
-----
-----
TypeError                                Traceback (most recent call
last)
Cell In[80], line 1
----> 1 int(2.3,8.0)
```

```
TypeError: 'float' object cannot be interpreted as an integer
```

```
int(True)
print(int(True))
int(False)
print(int(False))
True
print(True)
True+True
print(True+True)
```

```
1
0
True
2
```

```
int(1+2j)
```

```
-----
-----
TypeError                                Traceback (most recent call
last)
Cell In[86], line 1
----> 1 int(1+2j)
```

TypeError: int() argument must be a string, a bytes-like object or a real number, not 'complex'

```
int('10')
```

10

```
int('ten')
```


ValueError Traceback (most recent call last)

Cell In[90], line 1

----> 1 int('ten')

ValueError: invalid literal for int() with base 10: 'ten'

```
float(10)
```

10.0

```
float(2,3)
```


TypeError Traceback (most recent call last)

Cell In[94], line 1

----> 1 float(2,3)

TypeError: float expected at most 1 argument, got 2

```
float(True)
```

```
print(float(True))
```

```
float(False)
```

```
print(float(False))
```

1.0

0.0

```
float(1+2j)
```


TypeError Traceback (most recent call last)

Cell In[100], line 1

----> 1 float(1+2j)

TypeError: float() argument must be a string or a real number, not 'complex'

```
float('10')
```

```
10.0
```

```
float('ten')
```

```
-----
```

```
ValueError                                Traceback (most recent call  
last)
```

```
Cell In[104], line 1
```

```
----> 1 float('ten')
```

```
ValueError: could not convert string to float: 'ten'
```

```
True
```

```
True
```

```
True+True
```

```
2
```

```
complex(10)
```

```
(10+0j)
```

```
complex(0)
```

```
0j
```

```
complex(2.8,9)
```

```
(2.8+9j)
```

```
complex(True,True)
```

```
(1+1j)
```

```
complex(False)
```

```
0j
```

```
a=2
```

```
b=7
```

```
a
```

```
b
```

```
7
```

```
a=4
```

```
b=8
```

```
print(a)
```

```
print(b)
```

4
8

```
print(10)
print(10,20)
print('python')
print(10,20,'python')
```

10
10 20
python
10 20 python

```
num1=20
num2=40
add=num1+num2
print(add)
```

60

```
num1=20
num2=40
add=num1+num2
print('the addition of',num1,'and',num2,'is=',add)
```

the addition of 20 and 40 is= 60

```
name='python'
age=20
city='hyd'
print('my name is ',name,'and i am',age,'years old from',city)
```

my name is python and i am 20 years old from hyd

```
num1=90
num2=80
add=num1+num2
print('the addition of{} and {} is={}'.format(num1,num2,add))
```

the addition of90 and 80 is=170

```
name='python'
age=20
city='hyd'
print('hello my name is {}, and iam{} years old
from{}'.format(name,age,city))
```

hello my name is python, and iam20 years old fromhyd

```
num1=100
num2=25
num3=333
```



```
avg=(num1+num2+num3)/3
avg1=round((num1+num2+num3)/3,2)
print('the average of {}, {}, and {} is= {} or
{}'.format(num1,num2,num3,avg,avg1))
```

the average of 100, 25, and 333 is= 152.66666666666666 or 152.67

```
round(avg,2)
```

152.67

```
num1=20
num2=30
add=num1+num2
print(f' the addtion of {num1} and {num2} is= {add}')
```

the addition of 20 and 30 is= 50

```
name='python'
age=20
city='hyd'
print(f'my name is {name} and iam {age} years old from {city}.')
```

my name is python and iam 20 years old from hyd.

```
num1=100
num2=26
num3=90
add=num1+num2+num3
avg=round((num1+num2+num3)/3,2)
print(f' the average of {num1}, {num2} and {num3} is = {avg}')
```

the average of 100, 26 and 90 is = 72.0

```
num1=100
num2=26
num3=90
add=num1+num2+num3
print('the addition of', num1, num2, 'and', num3, 'is=', add)
```

the addition of 100 26 and 90 is= 216

```
print('the addition of', {}, {}, 'and', {}, 'is=', add)
print('the addition of', {num1}, {num2}, 'and', {num3}, 'is=', {add})
```

the addition of {} {} and {} is= 216
the addition of {100} {26} and {90} is= {216}

```
print('hello')
print('good morning')
```

hello
good morning

```
print('hello',end=" ")
print('world good day')
hello world good day

print('hello','hai','how are you',sep='---->')
hello---->hai---->how are you

print('hello','hai','how are you',sep='&')
hello&hai&how are you

print('hello','hai','how are you',sep='@')
hello@hai@how are you

print('hello','hai','how are you',sep=' ')
hello hai how are you

print(3,' . ')
3 .

print(3,' . ',sep=
```