Python

Math

Expression (statement)

Using this symbol =

Variable on left set to (assigned) item/items (expression) on the right

Arithmetic operators

\+ Addition

\- Subtraction

* Multiplication

/ Division

Examples:

AA = 5 BB = 6 CC = 0

CC = AA + BB

CC = AA – BB

CC = AA * BB

CC = BB / AA

Write a program to add two numbers together

TRY
THIS

```
N1 = 5
N2 = 10
TL = N1 + N2
print (N1, ' + ', N2, ' = ', TL)
```

MORE: Arithmetic operators

/ division

// Floored Division

% Modulo

** Exponent

- Negation

Examples:

EE = 10 HH = 4 KK = 0

KK = EE // HH

KK = EE % HH

KK = HH ** 2

KK = -EE

```
print('\n'*5)
a = 22/3
print('22/3= ',a)
print
b = 22//3
print('22//3= ',b)
print
c = 22%3
print('22%3= ',c)
return
```

Try This

More: Arithmetic operators

( ) Parentheses

Set order of calculations

Order of Precedence

( )

\- Negation

**

* / % //

+ -

Evaluation: Left to Right

Examples:

SS = 2 TT = 3 XX = 6

JJ = 4 LL = 5 ZZ = 0

ZZ = SS + TT – LL

ZZ = (SS + TT) - LL

TIP

Put a space around operators

OK: a=b+c*d

Better: a = b + c * d

Careful where to put the ()
Examples

aa = t + y * b – u / p + e [20.1667]

aa = (t + y) * b – u / p + e [26.1667]

aa = t + (y * b – u) / p + e [10.1667]

t =2 y=3 b=4 u=5 p=6 e=7

```
t =2
y=3
b=4
u=5
p=6
e=7
aa = t + y * b - u / p + e
print('t + y * b – u / p + e  is:',aa)
zz=input('hit enter key to continue')
aa = (t + y) * b - u / p + e
print('(t + y) * b – u / p + e  is:',aa)
zz=input('hit enter key to continue')
aa = t + (y * b - u ) / p + e
print('t + (y * b – u ) / p + e  is:',aa)
zz=input('hit enter key to continue')
```

```
aa = int(input('Enter a number: '))
bb = int(input('Another number: '))
cc = int(input('One more number: '))
zz = aa + bb - cc * 5
print('aa + bb - cc * 5 is: ‘, zz)
xx = (aa + bb - cc) * 5
print('(aa + bb - cc) * 5 is: ',xx)
ww = aa + (bb - cc) * 5
print('aa + (bb - cc) * 5 is: ‘, ww)
```

Try This

Math Module

Import

Insert as first line

import math

or

from math import *

Usage

math. Proceeds function variable in Parantheses

Math function list (popular)

math.ceil()	Rounds a number up to the nearest integer
math.fmod()	Returns the remainder of x/y
math.pow()	Returns the value of x to the power of y
math.sqrt()	Returns the square root of a number
math.pi	Returns PI (3.1415...)
math.sin()	Returns the sine of a number
math.cos()	Returns the cosine of a number

Examples:

KK = 25 MM = 2 DD = 3

BB = math.sqrt(KK)

AA = math.pow (DD,MM)

Try this

```
import math
 mm = 10
 t25 = 25
 t5=5
 rr=3
 zz=math.ceil(mm/rr)
 print('math.ceil - ',zz)
 aa = input('hit enter key to continue')
 zz=math.fmod(t25,rr)
 print('math.fmod - ',zz)
 aa = input('hit enter key to continue')
 zz=math.pow(t5,rr)
 print('math.pow - ',zz)
 aa = input('hit enter key to continue')
 zz=math.sqrt(t25)
 print('math.sqrt - ',zz)
 aa = input('hit enter key to continue')
 zz=math.pi
 print('math.pi - ',zz)
 aa = input('hit enter key to continue')
 zz=math.sin(mm)
 print('math.sin - ',zz)
 aa = input('hit enter key to continue')
 zz=math.cos(mm)
 print('math.cos - ',zz)
 aa = input('hit enter key to continue')
```

shortcut

Augmented Assignment Operators

+=

-=

*=

/=

%=

Examples

x = x + 1 or x += 1

y = y - 1 or y -= 1

a = a *3 or a *= 2

e = e / 10 or e /= 10

example

```
x = 5
print('x = ', x)
x = x + 1
print('x = ', x)
zz = input('hit enter key to continue')
x = 5
print('x = ', x)
x += 1
print('x = ', x)
zz = input('hit enter key to continue’)
```

Data Conversion

INPUT numbers and convert

Method 1

```
cnum = input('enter number')
fnum = float(cnum)
          or int(…)
```

INPUT numbers and convert

Method 2

```
numb = float(input('enter number'))
        or
numb = int(input('enter number'))
```

Why convert

Try This

```
numb1 = input('enter first number')
numb2 = input('enter second number')
tnumb = numb1 + numb2
print(numb1, '+', numb2, ' = ', tnumb)
```

Add yellow highlighted

Try This

```
numb1 = float(input('enter first number'))
numb2 = float(input('enter second number'))
tnumb = numb1 + numb2
print(numb1, '+', numb2, ' = ', tnumb)
```

done