

Python Cheat Sheet

Everything from the lesson on one page (well, two)

1 Maths in the console

+	add	*	multiply	%	remainder
-	subtract	/	divide	()	brackets first

```
>>> 2 + 3 * 4          # multiply first
14
>>> (2 + 3) * 4        # brackets first
20
>>> 10 % 3             # 1 slice left over
1
>>> 5 / 3
1.6666666666666667
```

2 Variables

A variable is a **labelled box** that holds a value.

```
age = 16                # int (whole)
height = 1.75           # float (decimal)
name = "Zendaya"        # str (text)
is_hungry = True        # bool

score = score + 5       # variables can change
type(age)               # check the type
```

= means **store**, not "equals".

3 Functions

Like $f(x) = x + 1$ in maths: something goes in, something comes out.

```
def add(a, b):          # def = define
    return a + b        # return = send back
```

```
add(3, 4)               # calling it → 7
```

def	starts a function
add	name you choose
(a, b)	the inputs (parameters)
return	the output

```
def subtract(a, b):
    return a - b
def multiply(a, b):
    return a * b
def divide(a, b):
    return a / b        # always gives a float
```

4 Making decisions: if

```
score = 72
if score >= 90:
    print("A")
elif score >= 70:
    print("B")
elif score >= 50:
    print("C")
else:
    print("Needs work")
```

Python checks top to bottom and stops at the **first** true one.

==	equal to	>	greater than
!=	not equal to	<	less than
>=	greater or equal	<=	less or equal

```
if age >= 13 and age <= 19:    # both must be true
    print("You're a teenager!")
```

Use == to *compare*. A single = *stores*.

5 Loops

for: a known number of times.

```
for i in range(5):        # 0, 1, 2, 3, 4
    print(i)
```

```
snacks = ["pizza", "chips", "soda"]
for snack in snacks:
    print(snack)
```

while: until something changes.

```
count = 0
while count < 3:
    print(count)
    count += 1            # forget = infinite!
```

6 Input and output

```
num = float(input("Number: "))
print(f"Answer: {num * 2}")
```

input() always gives back *text*, so float() turns it into a number. An f"... " string drops variables into text with { }.

7 Putting it together: calculator.py

```
operation = input("Pick: + - * / ")
num1 = float(input("First number: "))
num2 = float(input("Second number: "))

if operation == "+":
    result = add(num1, num2)
elif operation == "-":
    result = subtract(num1, num2)
elif operation == "*":
    result = multiply(num1, num2)
elif operation == "/":
    result = divide(num1, num2)

print(f"Answer: {result}")
```

How it works

1. Write the 4 functions.
2. Ask the user for a sum.
3. if/elif picks the right function.
4. Print the answer.

Running it

```
Pick: + - * / *
First number: 6
Second number: 7
Answer: 42.0
```

8 The four types of value

Type	Meaning	Examples	Made with
int	whole number	16, -3, 100	age = 16
float	has a decimal point	1.75, 4.0	height = 1.75
str	text (in quotes)	"Zendaya"	name = "Zendaya"
bool	only two values	True, False	is_hungry = True

Common mistakes

- = vs ==: store vs compare.
- Forgetting the : after if, else, def, for, while.
- Forgetting to **indent** the lines inside.
- Text needs **quotes**: "hello", not hello.
- while loop that never changes its condition runs forever (stop it with the red square in the console).

Challenge

Add a **power** operator to the calculator.

Hint: ** is "to the power of" in Python, e.g. `2 ** 3` gives 8. Write a `power(a, b)` function, then add another `elif`.

Stuck? Read the last line of the console. It tells you which line went wrong.