| Variable names                   |   |        |                                  | lowest priority OPERATORS  |  |                                |                 |                        | hig                  | highest priority  |          | for each             |  |
|----------------------------------|---|--------|----------------------------------|--|--|--------------------------------|-----------------|------------------------|----------------------|---|----------|----------------------|--|
| Start: letters, "_"              |   |        |                                  | ·  |  |                                |                 | Integer                | _                    |   | for      | element in iterable  |  |
| Inside: letters, digits, "_"     |   |        |                                  | Addition   | Subtraction  | Multiplication                 | Division        | division               | Remainder            | Exponent  |          | while                |  |
| Variable types                   |   |        |                                  | +  | -  | *                              | 1               | II .                   | %                    | **  | while    | condition is         |  |
| bool                             |   | True   | False                            | 5+2 = 7  | 5-2 = 3  | 5*2 = 10                       | 5/2 = 2.5       | 5//2 = 2               | 5%2 = 1              | 5**2 = 25   |          |                      |  |
| int                              |   |        | 0                                | 5+2.0 = 7.0  | 5-2.0 = 3.0<br>5.0-2.0 = 3.0   | 5*2.0 = 10.0<br>5.0*2.0 = 10.0 | 5/2.0 = 2.5     |                        | 5%2.0 = 1.0          | 5**2.0 = 25.0   | pass     | does<br>nothing      |  |
| float                            |   |        | 0.0                              | 5.0+2.0 = 7.0  |  |                                | 5.0/2.0 = 2.5   |                        | 5.0**2.0 = 25.0      |   |          |                      |  |
|                                  | str "1"                                     |        | ""                               | 0.0 1 2.0 - 7.0  |  |                                |                 | 0.0//2.0 - 2.0         |                      | 0.0 2.0 - 20.0  | breal    | exits the            |  |
| list                             | list [1]                                    |        | []                               | "a"+"b" = "ab"   | {5,2} - {2} = {5}  | [5]*2 = [5.5]                  |                 | erators: +=, -=, *=, / |                      |   | continue | loop                 |  |
| set                              | <b>set</b> {1}                              |        | set()                            | [5]+[2] = [5,2]  |  |                                |                 | erators: >, >=, <, <   |                      |   |          | goes to ue next loop |  |
| tuple                            | tuple (1,)                                  |        | ()                               | (5,)+(2,)=(5,2)  |  |                                | String concaten | ation without oper     | rator: "a" "b" = "ab | "b" = "ab"  |          | iteration            |  |
| dict                             | _   | 1: 'a' | } {}                             |  | Python fundamental functions (full list)   |                                |                 |                        |                      |   |          |                      |  |
| NoneTy                           | ype None                                    |        |                                  | abs()  | Return the absolute value of a <b>number</b> .   |                                |                 |                        |                      | abs(-5.4) # 5.4   |          |                      |  |
| Logic                            | and   | dor    | not                              | all()  | Return <b>True</b> if all elements of the <b>iterable</b> are true, or if the <b>iterable</b> is empty.  |                                |                 |                        |                      | <b>all</b> ([1, 0]) # False   |          |                      |  |
|                                  |   |        |                                  | any() Return <b>True</b> if any element of the <b>iterable</b> is true. If the <b>iterable</b> is empty, return <b>False</b> |  |                                |                 |                        |                      |   |          |                      |  |
| True Tru                         | ue   True   True                            |        | True False                       |  | Return <b>True</b> if the object argument appears <b>callable</b> , <b>False</b> if not.   |                                |                 |                        |                      | callable(print) # True  |          |                      |  |
| True False False True False True |   |        | False True                       |  | Return <b>str</b> of a character whose Unicode code point is the given <b>int</b> . Inverse is <b>ord()</b> .  |                                |                 |                        |                      | chr(97) # 'a'   |          |                      |  |
|                                  |   |        |                                  |  | complex() Convert <b>str</b> or number to a complex number, or create it from real and imaginary parts.  divmod() Take two <b>numbers</b> and return a quotient and remainder pair after <b>integer division</b> . |                                |                 |                        |                      |   |          |                      |  |
| False Fals                       | se Fals                                     | eFalse | 3+ elements:<br>use all(), any() | enumerate()  | Take two <b>numbers</b> and return a quotient and remainder pair after <b>integer division</b> .  Get an enumerate object out of <b>iterable</b> with (index, value) <b>tuple</b> elements.                        |                                |                 |                        |                      | <pre>divmod(5, 2) # (2, 1) list(enumerate(['a','b'])) # [(0,'a'),(1,'b')]</pre> |          |                      |  |
|                                  |   |        |                                  | frozenset()  | Return a new <b>frozenset</b> (immutable <b>set</b> ) object.  |                                |                 |                        |                      | frozenset([1, 1, 2]) # frozenset({1, 2})  |          |                      |  |
|                                  | Can return its                              |        | str, list,                       | help()   | Invoke the built-in help system.   |                                |                 |                        |                      | help(print)   |          |                      |  |
|                                  |   |        |                                  | id()   | Return object "identity" which is a unique and constant int.   |                                |                 |                        |                      | <b>id</b> (print) # 2174241433264   |          |                      |  |
|                                  | members one                                 |        |                                  | input()  | Read a line from input, convert to <b>str</b> , and return it.   |                                |                 |                        |                      |   |          |                      |  |
|                                  | at a time                                   |        | ict, range                       | int()  | Get int from a number or str. Second optional argument is base of the number.  |                                |                 |                        | ber.                 | int('101010', 2) # 42   |          |                      |  |
|                                  | Preserves                                   |        | bool, int,                       | isinstance()   |  |                                |                 |                        |                      | <pre>isinstance([], list) # True</pre>  |          |                      |  |
| hashable<br>(immutable)          | identity, can                               |        | float, str,                      | len()  | Return the length (the number of items) of an object.  |                                |                 |                        |                      | len('123') # 3  |          |                      |  |
|                                  | be used as<br>dict keys or<br>stored in set |        | tuple,                           |  | Apply a <b>function</b> to every item of <b>iterable</b> , possibly providing additional arguments.  |                                |                 |                        |                      | list(map(abs, [-1, 2])) # [1, 2]  |          |                      |  |
|                                  |   |        | range,                           | max() min()  | Return the largest item in an <b>iterable</b> or the largest of two or more arguments.  Return the smallest item in an <b>iterable</b> or the smallest of two or more arguments.                                   |                                |                 |                        |                      | max([2, 3, 4]) # 4<br>min(2, 3, 4) # 2  |          |                      |  |
|                                  |   |        | NoneType                         | open()   | Open file and return a corresponding file object. Main modes: "r", "w", "x", "a".  |                                |                 |                        |                      | IIIII(2, 3,   | 4) # 2   |                      |  |
| subscrip-<br>table<br>(ordered)  | Can give its<br>members by<br>using [index] |        |                                  | print()  | Print out all arguments converted to <b>str</b> objects. Returns <b>None</b> .   |                                |                 |                        | α.                   |   |          |                      |  |
|                                  |   |        | ist, tuple,                      | range()  | Get a range object which contains int numbers in specific order.   |                                |                 |                        | lis                  | list(range(3, 11, 2)) # [3, 5, 7, 9]  |          |                      |  |
|                                  |   |        | str, dict                        | round()  | Return <b>number</b> rounded to specified precision.   |                                |                 |                        |                      | round(1.253, 1) # 1.3   |          |                      |  |
|                                  |   |        |                                  | sorted()   | Return a new sorted <b>list</b> from the items in <b>iterable</b> .  |                                |                 |                        |                      | sorted((2, 1, 3)) # [1, 2, 3]   |          |                      |  |
| callable                         | Can be called<br>- used with "()"           |        |                                  | sum()  | Returns the sum of numbers from iterable.  |                                |                 |                        |                      | sum([1, 2, 3.0]) # 6.0  |          |                      |  |
|                                  |   |        | Functions                        | type()   | Return the <b>type</b> of given object.  |                                |                 |                        |                      | type(3) # int   |          |                      |  |
|                                  |   |        |                                  | zip() lte  | Iterate over several <b>iterables</b> in parallel, producing <b>tuples</b> with an item from each one  |                                |                 |                        | ch one. list(z       | . list(zip([1,2,3], [4,5])) # [(1,4),(2,5)]                                     |          |                      |  |