expressions

+ - * / basic arithmetic
** exponentiation
% modulus (remainder)

**value** % 2 tells you whether a number is odd; **VALUE** % 10 chops a digit off of a number

variables

variable = value
variable = input("message") read a numeric value from the keyboard

print "message"
print expression
print expression_1, expression_2, ..., expression_n

selection and repetition

for variable in range(min, max): repeat statements for each number in a range (the min is included, the max is excluded)

if condition: statements
else: statements

while condition: statements

< > <= >= == != operators for comparing numbers/values
and or not operators for combining logical values

example (computes the number of factors $f$ of an integer $n$)

n = input("Please type an integer: ")

f = 0
for x in range(1, n + 1): # see whether the integer n
    if n % x == 0: # divides evenly by each number
        f = f + 1 # from 1 through n inclusive

print n, "has", f, "factors."
random numbers
from random import *

variable = randint(min, max)  # random number between min and max

strings and text processing

"this is a string"

variable = raw_input("message")  # reading a string as input

for letter in string:
    statements

"hello" + "there" → "hellothere"  # gluing strings together
"hello" * 3 → "hellohellohello"

s = "hi there"  # grabbing the pieces of a string
s[0] → "h"
s[1] → "i"
s[2] → " "
...
s[7] → "e"

s[0:3] → "hel"
s[2:5] → "th"
s[3:] → "there"
s[2:] → "hi"

len(string) → number of characters in the string.
str.isalpha(string) → True if the string is a letter, False if not.
str.lower(string) → a lowercase version of the string.
str.upper(string) → an uppercase version of the string.

ord("a") → 97  # converting between numbers and strings
chr(97) → "a"

e.g.,

example (counts vowels in a sentence)
sentence = input("Please type a sentence: ")
vowels = 0
for c in str.lower(sentence):
    if c == "a" or c == "e" or c == "i" or c == "o" or c == "u":
        vowels = vowels + 1
print "Your sentence contains ", vowels, "vowels."